THE EFFECT OF SOURCE ON AGRICULTURAL PRODUCERS’ PERCEPTIONS OF CREDIBILITY

by

EMILY GARNETT

Bill Allen, Chair
María Len-Ríos
Sandy Rikoon

DECEMBER 2013
I owe many thanks to Bill Allen for his support, guidance, enthusiasm and steadfast commitment to pound every bad writing habit out of my head before I left MU.

A special thank you goes to María Len-Ríos, whose expertise and patience saw me through my research and who endured more frantic e-mails and phone calls to her office than anyone ever should.

Thank you also to Sandy Rikoon, who graciously agreed to step into a project outside of his discipline, to the great benefit of my research.

Finally, thank you to Martha Pickens, who helped me navigate the Missouri School of Journalism, and to Ginny Cowell, who patiently guided me through the final steps of this project.
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS........................................................................................................... ii

LIST OF TABLES........................................................................................................................ iv

Chapter

1. INTRODUCTION.................................................................................................................. 1

2. FIELD NOTES..................................................................................................................... 3

3. EVALUATION....................................................................................................................... 25

4. PHYSICAL EVIDENCE........................................................................................................ 28

5. ANALYSIS.......................................................................................................................... 139

APPENDIX

1. PROJECT PROPOSAL........................................................................................................ 179

2. SURVEY............................................................................................................................. 217

REFERENCES......................................................................................................................... 224
LIST OF TABLES

Table                                           Page

1. Demographics of the Sample                       162
2. Media Use Results for the Sample                  163
3. Tests of Between-Subjects Effects                 165
4. Comparison of Means for Dependent Variables       167
Chapter 1: Introduction

I entered the Missouri School of Journalism after two years working on farms and ranches on the East Coast and in the Midwest. I hoped to gain a foundation in journalism that would prepare me to work as an agricultural journalist. Through courses on field reporting, narrative writing, and editing, I learned the value of telling a good story grounded in rigorous reporting and precise language. Investigative and data reporting classes gave me the tools to pursue reporting in agriculture—an industry dominated by large, opaque corporations, government agencies and complex politics. Finally, a class on quantitative research methods prepared me to conduct thoughtful, scholarly evaluations of the media and its audience.

Internships with two farm media organizations—DTN/The Progressive Farmer and the Missouri Ruralist—taught me how to write for an agricultural audience and furthered my education on the myriad topics that arise in agriculture—from genetics and equipment technology to policy and culture wars. I worked with farmers, ranchers, agricultural company representatives and government agency officials—all important players in the production of agricultural news stories. I had interviewed these same groups of people when I covered agriculture for the Columbia Missourian my first semester, but when I worked under the trusted names of farm media outlets, I noticed the agricultural community was much more willing to cooperate and give me access.

These experiences sparked my interest and prepared me to conduct this study: A quantitative analysis of how agricultural producers—that is, farmers and ranchers—assess the credibility of farm media and mainstream media news outlets differently. After
graduation from MU, I hope to work for many years as an agricultural journalist in farm media, where publications target agricultural audiences. Later in my career, I would like to transition to writing about agriculture for mainstream publications—preferably Midwestern magazines or newspapers that serve the general public. In pursuit of this, I completed my professional project as an agricultural news reporter at DTN/The Progressive Farmer, a farm media news outlet. The research component of my project evaluated how agricultural producers trust and evaluate news content differently between farm and mainstream media news sources. My research relied on “Source Credibility Theory,” a body of research that considers how the entities that produce and publish news stories influence readers’ perceptions of news credibility. The other common use of the word “source” refers to interviewees and individuals consulted in the research stage of a story. For clarity, outside of my field notes, my use of “source” in this study will refer only to the former, that is, news outlets that produce and publish news stories.
Chapter 2: Field Notes

Friday, May 31, 2013

With Memorial Day on Monday, I didn't start work at the Omaha office until Tuesday. After a morning full of the joys of H.R. paperwork and formalities, I launched into some research for an editor. The crops production editor here, Pam Smith, is trying to get a grasp on the enormously controversial storylines on the bee crisis in North America, which are running through the news. Some agricultural pesticides—a group called neonicotinoids—appear to be playing at least a partial role in the decline of the bee population. Like most science issues, it's a hopelessly complex problem and a USDA report has identified a multitude of factors contributing to the sudden drop in the bee population: poor genetics, malnutrition, stresses of the modern world, diseases, and possibly these neonicotinoids. So I spent the afternoon reading USDA reports, news stories, EPA summaries, and scientist publications on the problem in preparation for working on this story with Pam. The USDA also releases weekly crop progress reports on the first day of every work week—in this case, a Tuesday.

As the intern, I have the onerous job of reading the crop progress reports for about 15 states and writing small summaries on each state's weather, precipitation, soil moisture levels, crop planting progress, and crop condition reports for the week. It always makes for a long afternoon, but it keeps you up to date on the state of agriculture that week. In this case, I got a good look at how heavy rainfalls across the Midwest are causing serious problems with planting. Many farmers will miss the planting deadline for their crop insurance and might have to forfeit entire fields this year. It is increasingly unwise to
plant fields that insurance companies won't insure. Many farmers will opt instead to apply for a "prevented planting" payout included in their insurance premiums, which covers up to 60 percent of their average yield and revenue from that field. Just a snapshot of the bewildering world of crop insurance!

On Wednesday, a press release on Sudden Death Syndrome in soybeans fell into my lap. Soggy, cool soils spell doom for freshly planted soybean seedlings. They allow a water-loving fungus to grow in the roots of the young plant, and continued moisture encourages the fungus to release toxins that can kill the entire plant. It's a horribly frustrating disease for farmers--there are no treatments for it once the seed is planted, and it is dictated almost entirely by the weather. A dry summer could save them, but a wet one could ruin them. The fungus is present in most fields in most Midwestern states, and it only requires the right conditions (cool wet springs) to attack. So I called several sources and wrote up an 800-word piece on how farmers can make their fields inhospitable to the disease (before planting). That took up the majority of the day (crop scientists are often long-winded). The rest was devoted to preparing to leave early the next morning for Champaign, Ill. where I had been accepted at a four-day, all-expenses paid workshop on Covering Agribusiness in the Heartland.

I've now been at this workshop for three days so far. We've had speakers on crop insurance, the Farm Bill, food insecurity, food safety, government inspections, labor abuses in farm labor, and environmental issues. It's been exhausting but fascinating. There's a wonderful group of reporters here, and I've met some great sources and mentors through the presenters—a FAPRI scientist, an Environmental Working Group expert, and
Mike McGraw of the Kansas City Star stand out as some of the best. We're supposed to come out with a few story ideas to collaborate on and eventually publish news stories from, while of course crediting the McCormick Institute, which funded this. So far I have a list of a dozen potential stories! I suspect DTN's audience will limit my options. Many of these ideas would be great investigative pieces for a non-agricultural audience. I will have to pick some that are of interest and relevance to a primarily agricultural audience. I expect Greg Horstmeier, DTN's editor-in-chief, will help me narrow them down. The conference runs through Sunday, so I will return to Omaha late Sunday night and head into the newsroom on Monday morning. Not the most restful of weeks, but it’s been worth it.

**Friday, June 7, 2013**

This time of year is a busy one for the newsroom. The USDA starts cranking out crop progress reports, and everyone scrambles to analyze, speculate, and write about what crops might look like this year and what it means for the markets. Farmers are still putting crops in, so stories about fertilizers, herbicides, and weather are hot topics right now. The DTN market analysts arrive to work very early, and the reporters leave rather late. I devoted the first two days of the week to working with some data I found during my agribusiness conference in Illinois last weekend on Farm Labor Contractors--people who recruit seasonal migrant labor for agricultural businesses. I'm comparing two databases of names: People who have been certified to be Farm Labor Contractors and people who have been banned from ever doing so because of criminal records or past abuses. I've spent three days now just cleaning this data because it was very dirty. But
after finally downloading it into a database manager, I've found several matches, i.e. people who are on both lists. It was exciting and satisfying to use my Computer Assisted Reporting skills in a real world context at last. Now starts the long process of getting the Wage and Hour Division to explain what the databases mean and how they're maintained, so I can figure out how I should interpret this.

Otherwise, I tackled pest stories for our crop production editor. I wrote about damaging microscopic worms called soybean cyst nematodes, which showed up very, very early in some Iowa fields on Sunday. This has made some plant pathologists and farmers are uneasy, as SCN has been the number one most damaging soybean pest in past decades. I covered a phone-in press conference by Secretary of Agriculture Tom Vilsack on getting rural populations access to high-speed Internet. I even asked him a question and hoped he didn't hear my voice wavering. I also found out that I'll be presenting a paper on Midwestern Ag-Recording laws that I wrote for Charles Davis last year at the Association for Education and Journalism in Mass Communications's annual conference in D.C. in August. My paper actually won the top student paper award in the Law and Policy division, which was flattering. I'm anxious about presenting a paper at a professional conference but am looking forward to the free awards luncheon and a chance to swing by my Pennsylvania home and see my parents after the conference is over. The conference coincides with the USDA's monthly crop report release, an event for which two DTN editors always fly out to D.C. to cover. So I will stay in D.C. until the Monday after the conference to learn how the DTN markets editor covers that.
Finally, the first e-mail blast for my survey went out on Wednesday, and both versions of the survey produced more than 50 responses. We'll send out a second e-mail blast next week, and hopefully that will give us enough responses to shut it down and start gathering up the data. Most importantly, I need to get Mizzou's VPN working on my laptop so I have access to SPSS!

Friday, June 14, 2013

This week has been a lesson in persistence. I've spent most of the past two weeks repeatedly calling and e-mailing my PR contact at the Wage and Hour Division. Other than one noncommittal e-mail two weeks ago, the PR rep has not returned my calls or e-mails. I'm at wit's end. I think if I haven't heard from her by Monday, I will call the head of their communications department, who set me up with this rep to begin with. Until I get some answers from Wage and Hour, my farm labor contractor story is at a standstill.

I spent the rest of the week chasing after ranchers (via phone) for a series I do called View from the Pasture. Although I had trouble catching some of them, I respect their lack of availability far more than I do my Wage and Hour PR contact, since most of them were racing to put in crops at the last minute or chasing cows. In the end, I got solid interviews with some great ranchers in Missouri and Oklahoma and a feedlot owner in central Nebraska. The Oklahoma interview reminded me that the drought is still alive and pervasive in parts of the country--this particular rancher hasn't seen a substantial rain since October of 2012. Half of his wheat crop is completely dead, and he's downsized from 250 to 120 cows over this 3-year drought. "Makes you wonder why we do this, doesn't it?" he asked me. I'm out on Fridays, so I also spent some time setting up
interviews for early next week, after the Conservation Reserve Program's most recent sign-up will have ended. These four-day work weeks mean I have to think farther ahead than I'm naturally inclined to!

I also took a significant step toward joining the modern world by signing up for Twitter this week. I surprised myself by really enjoying tweeting my stories and ag news I find online. I gave in because I could no longer deny myself the treasure trove of story sources that Twitter supplies. I'm already following hundreds of people, many of them farmers and ranchers. The trick, of course, is getting them to follow you back. My survey went out again, and the last I checked, I had 74 replies to one version and 79 for the other. Inching to a close!

**Friday, June 21 2013**

Another frantically busy week! Two stories dominated my week: 1. The Farm Bill and 2. Farmers who couldn't get their corn and soybean fields in under their crop insurance deadline. The latter was more manageable than the former. I wrote two stories about this phenomenon, known as "prevented planting." The first one looked at the myriad considerations farmers must take into account before making a decision about what to do with their empty fields this summer. Leaving them empty ("fallow") is a disaster for soil health, but planting a cover crop requires navigating a web of conservation and crop insurance requirements. The second story gave farmers a more specific idea of what cover crops are available and when they should be planted for maximum benefit. The Farm Bill story, like most political stories, was far less conclusive. After staying glued to a C-span feed for 6 hours, taking notes, updating our
online news stories, and tweeting numerous amendment votes, I watched wearily as the House voted down the bill. All that work for nothing. Fortunately, by that time, our Ag Policy Editor was back in Omaha (he had been in the air when the most important votes were happening) and I could turn over the rest of the coverage to him. I don't envy him his political reporting duties--I don't think I have the stomach or patience for Congressional coverage!

I also covered the World Food Prize, which made the bold move of awarding its $250,000 annual award to three biotechnology scientists who laid the groundwork for the genetically modified crops that now dominate American agriculture. It's sure to be a controversial pick. The Wage and Hour Division finally got back to me (ahhh the grinding wheels of government bureaucracies), and we are set for a conference call next Wednesday to discuss my many, many questions about their Farm Labor Contractor program. I'm also set for some background interviews with some Conservation Reserve Program experts next week, so I can be prepared to write an in-depth story when the USDA finally releases a report on the general sign-up that ended on June 14. It won't happen for a few weeks, but I'd rather not be scrambling to call people the day of.

Finally, I've been assigned to part of a series on Irrigation with the Ag Policy editor and two other DTN reporters. We're going to examine irrigation's expansion over the years and its effect on water supplies. My job is to look into irrigation companies and pore through their 10K's and other SEC filings to see where they've grown and where they expect to grow. My initial research confirmed what I had expected: irrigation companies
are doing very, very well these days, as more and more farmers try to grow the water-
hungry crop that is corn.

The results of my survey are in! 186 responses. I have some data cleaning to do
because survey monkey downloaded some text into the excel sheet, and not just numbers.
But soon I will be able to download the data into SPSS and run some tests. Already I can
see a problem, though. The question that tested whether producers noticed what source of
news they were reading is showing mixed results--bad news for my experiment on source
credibility!

**Friday, June 28 2013**

A slower week—in both agriculture and my newsroom. The rains that have
soaked the Midwest for weeks continued. It was difficult to get into the spirit of my
assignment on Oklahoma ranchers enduring a three-year drought as rain pelted the
newsroom windows and Twitter brimmed with rants about flooded fields. Nevertheless, I
turned out a long piece on how ranchers are seeing such disparate conditions this year--
flooding and delayed haying in the Midwest versus scorching heat and dryness in
Oklahoma, where the wheat crop is a near failure, hay is elusive, and cattle are being sold
off in droves. It was an interesting story, and I love a chance to catch up with cattle
ranchers, so I enjoyed it. It's hard to see how some of the western Great Plains ranchers
continue to make any money at all, though.

Otherwise, I did research for a big irrigation series I'm helping out with. I pored
through the SEC filings for the only two public irrigation companies in the U.S. My
conclusion? Buy stocks in irrigation! They're having record years, with more growth in
sight. Not, necessarily in the U.S. though. Instead, the companies are setting their sights on Middle Eastern markets where, not surprisingly, irrigation is still scarce. On the crop production side, I wrote about Japanese beetles, which are slowly making a pest of themselves in the Midwest. I also did a preliminary interview with a really great source at USDA who is quite knowledgeable about the Conservation Reserve Program. Because I'm pestering him so early on, he's promised me an interview with Secretary Vilsack when the CRP results are announced later this summer. And finally, one full month after I first contacted them, the Wage and Hour Division agreed to a conference call on Wednesday, and I finally asked my questions. Some of my questions. They cut me off after half an hour, and didn’t go on the record for any of it. Still I found some interesting weaknesses in the system, and I've now filed a FOIA for the complete databases of the lists I'm studying. This story is part of a package of investigative stories coming out of the Covering Agribusiness in the Heartland conference in May. I was relieved to hear that the organizers of the conference are hoping for December deadline. I think I can dig in and do a nice, thorough job with that time span.

I finally finished the revisions to my AEJMC conference paper on ag-gag laws. I was stressed about getting the final version to the moderators of my discussion section before the deadline of July 1. The victim of that endeavor has been my survey results, which are still sitting in my mailbox, begging for some attention. I go on a brief vacation next week, but I hope to tackle my analysis of them soon.
Friday, July 5 2013

I was only in the office one day this week; I spent much of the week with my family in Grand Junction, Colorado, where my sister lives. We went on some spectacular hikes in the Black Canyon and other mountains, and although I spent far more time near suicidal precipices than I would have preferred, it was a great time. Back in Omaha this morning, I caught up on e-mails and news and spent much of the day setting up interviews for next week with irrigation companies and CRP experts. Wage and Hour acknowledged by FOIA request from last week, and I filed two more public records requests with California and Florida. I want to see their certified and ineligible farm labor contractor lists and compare them to the federal ones. Next on the docket are Texas, New Mexico, and Arizona. I'm also making arrangements for the Spring Wheat Tour, which I will cover the last week of July. It goes through North Dakota and requires a slew of prep work--I need a car, netbook, camera, and a wide range of clothes, I've been informed. Apparently the weather there can be quite variable. Finally, I managed to code some of my survey data over the weekend, in preparation for importing it into SPSS. The bad news is that, sure enough, some farmers missed the source of the story they were reading. The good news is that the majority didn't, so I should still have about 50 responses from each survey that DID register the source when they answered the questions about the ag story. I hope to import those results and start running tests next week.

Friday, July 12 2013

This week was one of those where you work long, solid days but have little to show for it. I spent most of the week interviewing USDA people about the Conservation
Reserve Program and doing research on my Wage and Hour farm labor contractor story. I logged a lot of hours on the phone, and even more re-listening to my interviews and transcribing large parts of them. It's probably my least favorite part of journalism, but if I do a bad job of taking interview notes, I know I'll hate myself when it comes to writing.

I spent the week writing about crop progress and soybean rust—a damaging wind-borne fungus that has appeared three weeks early down south, along the Gulf of Mexico. And this Friday, I sat down, coded the last of my survey results, imported them into SPSS, and ran tests. First I ran tests on the entire results, then realized that I needed to filter out the people who did not take note of the source of the story they were reading. The results of the tests were really interesting. Story source appeared to be significant for most of the dependent variables, with a few interesting exceptions. The covariates also showed only scattered significance, so wherever they proved not significant, I re-ran normal ANOVAs on those variables. My discussion section promises to be long and interesting, I think.

Friday, July 19, 2013

This week was a whirlwind. Working only four days a week can really make some work deadlines (like my Friday pest update) tight.

I did a story on soybean aphids. Thanks to two entomologists with fantastic senses of humors, it actually turned out to be one of the more engaging and entertaining stories I’ve written this summer. One entomologist mocked the winged aphid’s broad-shouldered figure and told me scouting them reminded her of “a bad ‘80s movie.” It was a nice change from working with the wearily serious PR reps. The rest of the week was
spent preparing for the Spring Wheat Tour, which starts on Monday in Fargo, ND. I had to have a preview story ready to run, so I talked to the tour’s organizer and rounded up some commentary on this year’s spring wheat crop. I’m a little anxious about this tour. We spend three days driving from wheat field to wheat field in North Dakota, sampling and measuring the wheat crop. At the same time, I’m supposed to be tweet results, take photos, get quotes from other scouts, call in a mid-day report, publish an evening story and process and send all my photos to DTN. It sounds daunting. Multi-tasking is not my forte. Worse yet, it will require me to operate a smartphone in the field, a gadget that I had successfully avoided until now.

The research project is going well. I realized this is the “fun” part, when all the hard work is done, and I get to sort gleefully through all my interesting results and think about what they mean. I’m not sure if I’m supposed to go into detail on the results in my weekly field note, so I’m sending along the highlights in a separate e-mail.

**Friday, July 26 2013**

This week pushed me to my limits, energy-wise. I covered the Hard Red Spring and Durum Wheat Tour in North Dakota, Monday through Thursday, and then went to an irrigation company's field day in Ames, Neb. on Friday morning. Because I worked five full days (more than full), I will take two days off next week to work on my research.

The wheat tour started in Fargo, N.D. The tour is hosted and funded by wheat industry players like the Wheat Quality Council and Northern Crops Institute. This year 74 people participated--media, farmers, millers, bakers, and grain traders mostly. For three days, 18 cars fanned out on pre-determined routes across North Dakota, northern
South Dakota, and western Minnesota, and each tried to stop at a dozen wheat fields. At each stop, you hop out, with a pen and a yardstick, take measurements of row spacing, spikelet numbers, and wheat heads per yard, hope back in the car, plug the numbers into a formula and produce a yield estimate for that field. It's kind of fun, if a little grueling at times.

I was also taking photos, tweeting, writing and filing a mid-day update each day around noon, sending photos every afternoon, filing a longer, evening story, and labeling and dumping photos every evening. So I was exhausted just about every day! I had to file stories using a blackberry, which I don't recommend, and juggling all the reporting along with the stops, trying to interview all the right people (a lot of grain traders and millers never want to be quoted), and network all at once really wore me out. But I was very proud of DTN's coverage by the end. Dow Jones and Bloomberg called in every day for updates, since they no longer send reporters. So I learned a LOT about wheat, and also canola, flax, barley, sunflowers, pinto beans and the wonderful smorgasbord of crops that North Dakota offers. In fact, the great tragedy of the trip was to see how many acres of these diverse crops were disappearing and being overtaken by corn acreage.

I got back from Fargo on Thursday night around 11 p.m., and then headed out to an 8 a.m. irrigation field day in Ames, Neb. this morning. I got great access to the company's vice presidents and general managers, and I got to ask them questions in person, so that was good. It will help with the series DTN is doing on irrigation in the next couple weeks. When I got back to the office Friday afternoon, I found two letters from the FOIA offices of California and Florida. The Florida informed that they were
requesting more time to complete my request, and the California one demanded that I write up a report explaining why I deserve a fee waiver. So those requests won't be going anywhere quickly.

**Friday, August 2, 2103**

This week was a short work week, since I had both Monday and Friday off to work on my research. On Monday, I started pulling together all the different parts of the project—my proposal, weekly field notes, physical evidence, etc—into one document. I’ve already pestered poor Ginny half a dozen times with questions about formatting, which promises to be both the least consequential and yet the most challenging aspect of the project. This project report is going to be monstrously large, I realized, in part because of the requirement to attach your entire original proposal—references, table of contents, and all—to the end of the project report, even if it means you will have two copies of your literature and method section.

Work-wise, I spent three days pulling together all my interviews and research to write my section of DTN’s looming water series. I did a lot of transcribing and organizing and tearing my hair out over my 800-word limit. I have enough material for at least a 2000-word piece. It reminded me of chopping down our final field stories to half their original length in Bill Allen’s class my first semester. I wonder if it ever gets less painful. I also traveled to Lexington, Neb. to interview a farmer who is using a highly efficient but rather unusual form of irrigation in the Midwest called sub-surface drip. It was interesting, but the 6-hour drive roundtrip made for a long day.
I responded to Wage and Hour’s request for me to justify my fee waiver request. Among a list of four points I was instructed to cover, I needed to prove that my request would result in a public understanding that was significant enough to justify their effort and expenses. I couldn’t shake the feeling that making me do this was very far from the original intent of the FOIA law. Especially since personal experience makes me quite sure that their “effort and expenses” involve selecting a few fields and selecting “export file” in a database manager. I also talked to a public records official in California who insisted that they don’t keep the information I requested in a database. I asked where it was kept, and she said she thought there was possibly, sort of, some kind of list out there. Maybe. She’ll get back to me. Soon-ish. I’m pretty sure some public record officials have taken military-style classes on strategic stalling tactics. Fortunately, I finally heard back from an important source with Texas Rio Grande Legal Aid, who has a lot of experience with these farm labor contractors, and we set up an interview. I might have to write a story without my public records requests at this point.

To wrap up the week, I wrote a story on corn rootworms, a major Midwestern corn pest that is rapidly developing resistance to the genetically altered attempts by seed companies to control it.

I might have to put my field note out on next Wednesday, because I’ll be in D.C. to present a paper at the AEJMC conference on Thursday and Friday. I’m completely dreading the presentation, but if I’m lucky, I’ll get to see Maria there!
Friday, August 9 2013

I'm filing this on Wednesday...another frustratingly short work week! I fly to D.C. in a couple hours for the AEJMC conference tomorrow and Friday. I present on Thursday and am most anxious about it. I'll be glad to have it behind me.

So I've had yet another week with only three days of work, which I find incredibly limiting. I've managed to put out the USDA Crop Progress reports and a pest update on southern corn rust this week, while working on my two pieces for DTN's irrigation series. They're almost ready to go--just need fact checking and some editing.

I also got in two important interviews for my farm labor contractor story. One was with a Farm Bureau president of a southern state that uses a lot of migrant farm labor. The other was with a Texas Rio Grande Legal Aid lawyer. The latter was very forthcoming--she gave me oodles of helpful information about the limitations of the labor contractor licensing program, much of which confirmed my findings from the datasets. She also gave me some good insights into why the system doesn't work. The Farm Bureau president was less able to help--he said he knows many farmers who have had trouble with contractors, but would never be willing to go on the record because that often leads to Wage and Hour investigations. So I gave him my name, e-mail, and every phone number I possess, along with a plea for some of those sources to talk to me for off-the-record background information. I don't know how I can report on this story responsibly when some of the most important players are afraid to talk to me! I reviewed DTN's anonymous source policy with the editor-in-chief and Ag Policy editor (who does
a lot of immigration coverage), just in case someone does reach out, but I'm not optimistic.

Maria has reviewed the details of the tests I ran on my survey data, and after I iron out some kinks and run a few additional tests, I should be ready to tackle my discussion section. With only a few weeks left in this internship, it's time to start thinking about defense dates...eek!

Friday, August 16 2013

Another three day week! I spent Monday sitting in on the USDA "lock-up," in Washington, D.C., which is a closed-room, no-electronics session when the USDA releases its monthly crop production reports. To ensure that no one gets early reports of this market-sensitive information, the USDA locks the reporters into a room with no internet access, hands out the reports, and gives everyone an hour and a half to write up their stories on the numbers, before opening internet access back up. It's a stressful, often harried hour, and I was much relieved to be tasked only with observing this time around. There must have been half a dozen news outlets there, and I had the pleasure of running into Alexandria Baca, another Mizzou master's student, who is working at Bloomberg.

The rest of the week was spent pruning and refining my stories for the irrigation series, which will be released next Tuesday and doing research for a story on the declining cotton acreage and another story on the disappearance of grain sorghum in Nebraska. I also listened in on a press conference, where the USDA Undersecretary Doug O'Brien released a list of grants and loans rewarded to rural business owners and farmers
to help improve their energy use. Finally, I compiled a story on three pests plaguing soybean plants this week: sudden death syndrome, aphids, and soybean rust.

A busy, but once again, frustratingly short week. This Friday I wrote up the majority of my discussion section, which I hope to edit and refine next week and send out for review and comments.

Friday, August 23 2013

This week was ambushed by a surprise trip to North Dakota. I found out on Sunday evening that I had been tapped to travel to Bismarck, N.D. for the Grassfed Exchange Conference, because miscommunications between two editors had left them with no one to cover it. So I quickly arranged to make Monday my research day. The project is wrapping up. Once Maria and I get my covariate tests sorted out (I got kicked out of the university's remote access to software because I'm not enrolled in a class), it will be just a matter of putting all the pieces together. I hope to have the compiled project to send you all this week, followed, or perhaps preceded, by a Doodle Poll for a defense date. It won't have passed Ginny's rigorous format review yet, but all the information you will need to evaluate it will be there.

On Tuesday morning, after two hours at the office, I picked up a rental car (incidentally, the nicest car I've ever driven), and headed north. Nine hours later, I checked into my hotel in Bismarck and went to bed! I attended conference sessions on Wednesday and Thursday and found myself immersed in a world that I'm still rather unfamiliar with. It was very, very interesting, and rather exhausting, socially. I interviewed ranchers from all over the country--from Maui to Arkansas to Nebraska. I
talked to breeders, meat distributors, a USDA markets reporter, and dozens of others. The speakers were also an interesting mix of ranchers, buyers, economists, and scientists. It was overall a curious mix of old-school ranchers and sustainable agriculture people. A very controversial figure--Dr. Don Huber from Purdue--gave two lectures on evils of GMO's and glyphosate, which he holds responsible for all manners of problems, from cancer and autism to plant diseases and sick animals. The Grass Fed Exchange Council's choice of bringing him there is in itself worthy of a story.

On Friday morning, I drove nine hours back to Omaha, and arrived in time to catch up with the Ag Policy editor and hash out some story ideas for Monday, download my photos, and (reluctantly) return my rental car. I had just settled into a chair back home with a much-needed drink when I realized I had neglected my field note!

**Friday, August 30 2013**

My last official week of the “professional component” of my project! This week was busy and productive—a nice break from all the traveling and short weeks this past month. It was a really good week—I felt like a real contributing part of the team, for several reasons. On Monday and Tuesday, my two contributions to the “Stretching the Ogallala” series came out—a story about two innovators using sub-surface drip irrigation in the central Nebraska, where pivots are king, and a story about the booming business irrigation companies are doing, even as their core markets in Texas, Kansas, and Nebraska are struggling with water depletion. Last week, someone had forwarded me an embargoed press release (meaning we couldn’t write about it until Monday) about a Kansas State University study on the Ogallala in Kansas. It predicted that at current rates
of irrigation, Kansas would run through nearly 70 percent of its aquifer’s water by 2060. The study was incredibly relevant to the ag policy’s editor’s contribution to “Stretching the Ogallala,” which ran last week, so I had forwarded it to him last Thursday. It was a good lesson in “do-it-yourself-if-you-want-it-done.” The editor was juggling a million things and missed the e-mail, and on Monday we found news of this study starting to hit the wires, right as we wrapped up our series. Fortunately, I had already found and read parts of the study, so I ended up writing up a piece on it to stick on the tail end of our series, and everyone was very pleased that we had it up in time.

I also wrote up a long piece on the Grassfed Exchange Conference in Bismarck. I ended up focusing on the two most interesting tidbits I found there: 1. That just as the grass-fed beef industry is gaining market force and size, the very definition of “grass-fed” is hotly disputed within the industry by the ranchers, buyers, and distributors, and 2. By bringing Don Huber (and his controversial arguments about GMOs and glyphosate) to the conference, the committee members were consciously aligning the grass-fed beef industry with a growing anti-GMO movement in the marketplace.

I really liked the piece. In two ways, it was a triumph for me. First, the editors had said that I might not get to write about Don Huber, because his claims are so inflammatory to a big part of the ag community and so far from the mainstream science. But at the conference, it quickly became clear that he WAS the story, and he was all anyone talked about there. So I found a way to work him into the story, which I’m proud of. Second, by the second day of the conference, my head was spinning with information and I had no idea what my story should be about. I was even thinking about leaving early
to sort it all out in the hotel room. But at the last session, a heated debate broke out, with ranchers in the audience growing steadily angrier as a panel of buyers acknowledged allowing producers to supplement the grass diets of their cattle with distiller’s grains and soy hulls—an economic necessity, they insisted. The debate went on and on, with all the audience getting involved, and all of the sudden I realized all the fractures and growing pains of this expanding industry were being laid out in front of me. And ironically, I was sitting next to a USDA markets reporter who was there to tell people that for the first time, the USDA considered grass-fed beef a large and legitimate enough industry to produce a monthly market report on it. I felt like I was physically witnessing the birth of a new industry—labor and all! So I went home and wrote exactly that.

Midway through the week, some editors started chiming in on what the weekly pest update should be on (a story I write each week). I had been watching the pest newsletters from all the major Midwestern states and was focused on a press release from Illinois that announced the potential discovery of a corn rootworm that was, for the first time, resistant to two modes of action—the GMO protection cooked up by Monsanto years ago and crop rotation. I knew this had to be a big deal, but our editor-in-chief and the crops production editor were at the Farm Progress show and said they weren’t hearing anything about it. Just to be safe, I lined up an interview with the scientist who wrote the press release. By the next day, both the crops editor and the editor-in-chief were back from Farm Progress and had confirmed the importance of the story. So not only did we use my interview to slip a mention into the weekly pest update, but the crops production editor is now using that interview transcript to write up a big piece about it today.
Given that half of the time, I still feel like a fumbling newbie, this week was important to me. I felt like I actually contributed news and reporting that might not have gotten done if I wasn’t there. Incidentally, the editors are extending my internship at DTN, until they can offer me a permanent position, on which they are waiting final approval from the corporate bigwigs. So, God-willing, I will have a real job soon and until then, I will at least have a paycheck coming in. That’s about all a baby reporter can hope for these days, so I’m pretty excited.
Chapter 3: Evaluation

This project has been an invaluable experience for me as both a student and a reporter. Working for such a longstanding and trusted agricultural information company as DTN gave me access to the large and varied agricultural industry. I covered a range of stories, from pressing issues in modern agriculture like water shortages and weed and pest resistance, to the daily flow of life in the agricultural community. The body of work I produced this summer represents the variety of news that agricultural journalism encompasses.

In my fourteen weeks with DTN, I was never treated like an intern. I happily escaped copying duties and never fetched coffee for anyone but myself. Instead, the editors and reporters at DTN welcomed me as a colleague and held me to the same responsibilities and expectations as the rest of the newsroom. I traveled frequently to cover events across the Midwest, pitched and wrote stories beyond my general assignment duties, took photos, helped edit stories and drank too much coffee. At the beginning of the summer, I was assigned to work closely with the crop production and technology editor. She has been a generous mentor, and I now know more about bugs and bacteria than I ever imagined possible. I've gained an increasing fluency in the language and culture of the agricultural industry, which is an important tool as a journalist.

I’ve tried to build a portfolio of agricultural news stories that show my ability as an agricultural writer. Some are stories that were written in a matter of hours, under a tight deadline and in competition with other agricultural news outlets. Others are the
product of assignments which allowed me weeks of research, writing, editing, re-writing, and pulling my hair out. They cover a range of agricultural topics: Agronomy, agricultural policy, environmental issues, crop and water technology and farm management decisions. Working alongside experienced agricultural journalists was often humbling. I’ve discovered that writing for an agricultural audience requires a challenging mix of engaging storytelling and technical detail that will take me many more years to master.

At DTN, I encountered many of the challenging aspects of journalism. I filed freedom of information requests, argued with government officials and filed stories from the field under exhausting time constraints. My editors and I pondered the use of anonymous interviews as I broached controversial and elusive agricultural issues, and I dealt with reader responses to my stories, some favorable, others angry. My greatest struggle in agricultural journalism has been learning to deal with pressure from large, influential advertisers whenever I write news stories involving them. Fortunately, I tackled all these issues under the watchful eyes of veteran editors and reporters, which is surely the best way to learn.

As a student, my research improved my understanding of the agricultural community I will work with as a journalist. Thanks to the careful oversight of my committee and in particular, Marí Len-Ríos, my field experiment went as smoothly as I could hope, and the data were analyzed carefully and thoroughly. I got a glimpse into the inner workings of social science research, and the result is a study that I believe advances the body of research on the agricultural community. I feel prepared to conduct more
studies that will clarify and dig deeper into the complex interaction of source, content, and advertising in an agricultural producer’s perception of news credibility.

I expected to enjoy my time working as an agricultural reporter, but the satisfaction and enjoyment I got from producing original scholarly research was a pleasant surprise. Overall, this project has prepared me to be both a capable journalist and a thoughtful researcher and scholar.
Chapter 4: Physical Evidence

Surge of a Soggy Danger

Saturated Soils Increase SDS Threat

Emily Garnett DTN News Intern

Thu May 30, 2013 06:18 AM CDT

OMAHA (DTN) -- A cool, rainy spring has put many Midwestern farmers and scientists on the alert for Sudden Death Syndrome, a destructive soybean fungus that thrives in cold, wet soil.

The development of SDS is primarily decided by the single least controllable factor in a farmer's world -- weather. This unpredictability, combined with the lack of effective treatment, makes SDS a particularly frustrating disease for farmers and researchers, said Leonor Leandro, a plant pathologist at Iowa State.

The soil-borne fungus invades the roots of the soybean plant and, when the soil is wet, releases toxins that produce the disease's distinctive yellowing and wilting leaves. Depending on the stage of growth during the toxin release, plants can see anything from smaller or reduced seeds to total pod loss, Leandro told DTN.

There are no post-planting treatments to help farmers guard against SDS, and once a seed is in the ground prevention is impossible, Leandro said. However, there are steps farmers can take before planting to make soil less hospitable to the fungus.
Seed selection is the first and most important step to prevent SDS. Glen Hartman, a research pathologist for USDA's Agricultural Research Service at the University of Illinois, attributed some of the worst past outbreaks of SDS to the use of soybean lines that were more susceptible to the fungus. Leandro noted that since the fungus first emerged in Arkansas in 1971, careful genetic selection has improved resistance greatly, but the disease is still mostly governed by the weather.

"New varieties may still develop some SDS" under wet, cold planting conditions, Leandro said, "but they are definitely going to have a lot less yield loss than the most susceptible ones."

For fields with a history of SDS, Leandro recommends testing for nematodes, which have been proven to interact with the SDS fungus to produce earlier and more severe outbreaks. A soybean variety with high resistance to both is ideal for problem fields, Leandro said.

Because the fungus thrives in saturated fields, good drainage and loose soil (not compacted) are also important for prevention. Hartman said some farmers in Illinois have used tiling to keep water from sitting in their fields and experimented with rippers and tillage to allow roots to grow more freely. "The more extensive your root system, the more compensation it has if part of it gets infected," Hartman said.

Although the fungus does live in the soil, traditional corn and soybean crop rotations will not help reduce the risk of recurrence. The fungus thrives in corn debris and can survive even in bare soil on its own for years, Hartman noted.
SDS is among the most destructive diseases soybean farmers can encounter; a University of Missouri report on soybean disease losses estimated that 444 million bushels have been lost to SDS between 1996 and 2010. The most severe outbreak of SDS, in 2010, cost U.S. farmers nearly $1 billion.

Fortunately, Leandro said most farmers are facing better conditions than they did in 2010. That year, a warm spring encouraged farmers to plant early, and a week-long cold snap later in the season left young seedlings in cold, wet soil -- ideal conditions for the fungus. This year, cool and rainy conditions forced many farmers to plant later, when soil temperatures were higher.

Yet, the deciding factor for SDS this year still lies ahead. "Later in the season, the thing that's going to really matter is how wet we get," Leandro said. "If we continue to have a wet spring and a wet summer, we may very well have a year like 2010." A drier summer, however, such as many meteorologists are predicting, could keep even plants with the fungus present in the roots from losing their yields.

Since its unwelcome debut in Arkansas in 1971, SDS has been marching steadily north and west, Leandro said. It has been found as far north as Minnesota, Michigan, Wisconsin and Ontario and as far west as Kansas and Nebraska. Researchers are mostly at a loss to explain the disease's relentless creep, although Leandro says the fungus could be transported in the soil that sticks to field equipment.

Overall, the disease has defied simple solutions. SDS symptoms have disappeared from some states, like Arkansas, for years, then resurfaced again inexplicably. Researchers have identified at least 20 genetic regions within soybean plants associated
with resistance to the disease, which complicates the search for a genetic solution, Leandro said. "It's very frustrating for growers because they've been funding SDS research for so long and they've seen so many of us working for decades on SDS," she said. "But I do think we've come a long way."

Emily Garnett can be reached at Emily.garnett@telventdtn.com

(CZ/ES)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Early Worm Special
Soybean Cyst Nematode Alert Sounded
Emily Garnett DTN News Intern
Thu Jun 6, 2013 01:16 PM CDT

OMAHA (DTN) -- Soybean cyst nematodes (SCN) were discovered on the roots of 26-day-old soybean plants in West Liberty, Iowa, on June 2. Their presence is so early that scientists are still trying to determine what it means.

Nematodes -- microscopic worms that can live in soils for 10 years with no food -- are the most destructive of all soybean pests in terms of yield. SCN is problematic in most of the top soybean-producing states such as Iowa and Illinois. However, rarely do they develop this early in the season or during a cooler, wet spring, Iowa State Plant Pathologist Greg Tylka told DTN.

"I've been working with this critter for about 25 years. I'm just really surprised," Tylka said. "These nematodes are worms, so they're cold-blooded animals. So really their activity is in large part driven by temperature. In a cool, wet spring you would expect them to be sluggish and take longer to complete their life cycle."

Even in a warm spring, nematodes would be expected to take 35 to 36 days after planting to appear on the roots. In a cooler spring such as this one, Tylka said he would have estimated emergence times closer to 40 or 45 days post-planting.

Nematodes appear as tiny, swollen white nodules on the roots. Each nodule is actually a female worm, packed full of hundreds of eggs. While the eggs can lay dormant
for up to 10 years, most will normally hatch within the same growing season, invade other roots and plant more eggs. Four or five life cycles of nematodes are typical in a growing season.

The early emergence and seemingly shorter development period in the Iowa field is concerning, because it gives the nematodes more time than ever to reproduce and spread, Tylka said. The worms attack the plant's circulatory system and stunt root growth, so denser populations can only mean more damage and lower yields.

"I'm a bit baffled from a biologist standpoint, but from a farmer's standpoint, I'm kind of concerned, because it looks like its cranking through life cycles just fine," Tylka said. "And the more it does that, the more it damages soybeans directly and the more it sets up the potential for trouble with Sudden Death Syndrome."

Sudden Death Syndrome (SDS), a fungus that thrives in cool, wet soils, has been a concern during this wet spring and was the subject of a previous DTN story: http://goo.gl/…. Nematode interactions with the SDS fungus have been proven to intensify SDS damage to plants, Tylka said.

While growers can't do anything to prevent nematodes post-planting, they do need to test their fields for the presence of the pest, in order to better manage their acres. The field in Iowa with the early nematodes was planted to a SCN-susceptible variety, Tylka noted. "I still run into farmers who have never tested," he said. "It's important to know because then if you do have it, you can use a resistant soybean variety, there are some seed treatments you could consider using, and it might alter your crop rotation plan."
In Iowa, surveys show that 70% of fields are infested with varying levels of nematodes. In Illinois, the number is closer to 83%, according to a 2005 survey conducted by the university.

While SCN-resistant soybean seed varieties are available, nematodes are steadily gaining genetic resistance to the most common SCN-resistant variety known as PI 88788, Illinois University Plant Pathologist Carl Bradley told DTN. While he hasn't received any reports of SCN yet in Illinois, Bradley noted that 70% of nematode populations in the state are Type 2 that can parasitize PI 88788. For those growers, he said, there are other SCN-resistant seed varieties, such as Peking and PI437654, which would better control nematode populations in their fields.

When scouting, Tylka urged growers to avoid pulling plants out by hand, which can leave behind fragile parts of the root system that often house nematodes. He recommended digging up four to five plants completely with a spade and pulling apart the root system gently by hand.

The probability of soils staying wet for a while prompted both Tylka and Bradley to recommend that soybean growers also scout for root-rotting fungi such as Phytophthora, Pythium, and white mold (Sclerotinia stem rot), which appears later in the season, during the flowering stage.

Emily Garnett can be reached at emily.garnett@telventdt.com

(PS/AG)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- After the wettest, coldest May on record in Iowa, crop producers there are struggling to get all their acres planted.

The northern third of Iowa continues to be saturated by rains, with some areas receiving more than 6 inches of rain from mid-May to early June.

Ben Riensche, who farms in northeastern Iowa near Jesup, has already lost 1,070 out of 7,000 corn acres to wet fields. "We just can't get out into field," he told DTN, noting that he has already applied for prevented planting on those acres. "(Prevented planting) is more attractive than switching to soybeans. The most profitable crop you can raise (in Iowa) is corn, the second is prevented-planting corn, the third is soybeans," he said, only half-jokingly.

Stan Mehman, who farms around Nashua in northeast Iowa, has planted about 65% of intended corn acres. "We've switched to beans, but only have half of those planted," by June 11. "We'll probably end up with about 10% prevented plant acres," said Mehman. "And it's not because of flooding; it just has not stopped raining."
A DTN subscriber who farms on the Minnesota/Iowa border reported only half the ground in Howard County has been touched so far. "Dairy farmers in southern Minnesota are liquidating herds. Their alfalfa experienced 80% to 100% winterkill because of the drought, and now they can't get in to plant anything. This spring, the most time we had in the field at one time was three days. The rest was 12 hours here and there."

The northern Iowa farmer switched 2,000 acres of which he had already applied anhydrous intended for corn to soybeans, and he is mudding those in. "I'm blowing on my beans with a fertilizer applicator and using a track-wheeled tractor pulling light tillage equipment at 12 miles per hour, perpendicular to tile lines to keep from sinking in the ground. We had a foot of snow on May 6 and spent all our growing degree units just melting the snow. And now it keeps raining," he reported.

In north-central Iowa, Paul Anderson reported only 5% of the soybeans have been planted in his area around Dakota City. "About 70% of the corn got planted and most likely the rest won't be planted," said Anderson. "With the high cost of seed corn and the wet, a lot of farmers here are going 'prevent planting.'" He said on June 11 that fields won't be workable for seven to 10 days if no more rain falls during the week.

Riensche estimated that a prevented planting claim on his corn acres with a 175 actual production history (APH) will bring in a crop insurance check worth nearly $500 per acre. He calculated that after inputs, switching to soybeans would only bring in around $335 per acre. Late-planted corn wouldn't fare much better, especially since fields
probably won't be dry enough to plant until June 15. He estimated that planting corn late with a lower guarantee would only bring in $350 per acre.

To add to the lure, Riensche noted that his production history won't go down if he applies for prevented planting, whereas any corn put in now would almost certainly drop below his preferred 200 bushels per acre and lower his history.

Riensche still hasn't planted one-third of his usual 4,000 acres of soybeans and worries that he might have to apply for prevented planting for up to 1,000 soybean acres. Even the slightly drier weather this week hasn't allowed him back into his fields yet.

"We missed rains over the weekend, but our soils were so saturated that even though we'd gone five or six days since rain, they won't hold our planters up," he said. "If this weather system moves through on Wednesday and gets Iowa wet again, there's going to be more prevented planted soybeans than prevented planted corn."

CONDITIONS BETTER IN CENTRAL AND SOUTHERN IOWA

Because conditions were better earlier in the season, farmers in the southern half of Iowa are facing more replanted corn issues and late-planted soybeans than filing for prevented planting claims.

Tom Vincent, who farms in Dallas County just west of Des Moines, is waiting on fields to dry before he can plant 200 acres of soybeans. But he doesn't expect to file a prevented planting claim, even if the June 15 deadline for full crop insurance coverage comes and goes before he can plant.
"Prevent planting on beans isn't very favorable at all, not near like it is for corn," he told DTN. "Basically (it) gets you your cash rent back for the farm and maybe a little more."

He expects to go with late-planted beans instead. "I'll probably plant beans, if I have to, up to the first of July, just because the prevent planting is not that good." Unlike corn, Vincent figures late-planted beans also have a better chance to make a decent yield.

A little farther east, Mark Longnecker of Cambridge, just north of Des Moines, Iowa, got 950 acres of corn planted and 700 acres of soybeans by May 18. However, he had 25-30 acres of corn drown out. "We may or may not get that replanted. It's still too wet," he said. He has about 50 acres of soybeans he'll need to replant.

Shawn Adam from Batavia, in southeast Iowa, said he had to switch about 40 acres from intended corn to soybeans. He had 800 acres of replant corn and got most of that done. But Adam still has 2,000 acres of soybeans to plant. "We can get it done in three days, but we haven't had three decent days to do it," said Adam. He also farms for a cousin who will have 70 corn acres of prevented planting.

Sixty-five miles north, Terry Jones in Williamsburg, Iowa, finished his planting on May 18. "We'll replant about 5% to 10% of both corn and soybeans due to flooding," Jones reported.

In east-central Iowa, Dave Lubben of Monticello just finished planting soybeans on Tuesday. "On corn, we're fine. But we had to mud in our soybeans. This is the poorest conditions we've ever put them in. We're actually hoping it rains so the slot will close up," said Lubben.
"We got all our intended corn acres planted," said Bryce Veldhuizen of Eddyville, "but had to replant about 5%. We finished getting our soybeans in on May 24."

Veldhuizen reports there are still unplanted acres in his area. He noted most farmers will use the end of June as a deadline to get soybeans planted before they'll consider filing prevented planting claims.

It's been a rough spring, "but if farming was easy, everyone would do it," said Batavia farmer Adam from his sprayer as he slogged through another saturated corn field.

What is it like on your farm this year for spring planting? How is it affecting your crop decisions? We welcome your feedback at talk@telventdttn.com.

Elizabeth Williams can be reached at elizabeth.williams@telventdttn.com

Emily Garnett can be reached at emily.garnett@telventdttn.com

(GH/AG/ES)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- As warmer summer weather moves in, pest activity in crops will pick up, entomologists told DTN. Now is the time to scout fields, especially since many producers have been preoccupied with tough planting and spraying decisions for soggy fields.

While insect reports have been scattered and varied across the Midwest this week, cereal aphids and armyworms have emerged as potential threats to wheat and corn fields.

Armyworms love wet, grassy areas, so the soggy spring has encouraged many to take up residence and breed in lush, overgrown roadside ditches beside wheat fields, University of Illinois entomologist Mike Gray told DTN. Some alarmingly dense populations of these worms have moved out of the ditches into adjacent wheat fields in southwestern Illinois, he said.

North Dakota State entomologist Jan Knodel warned that wheat producers in her state should be on alert for similar migrations. "We have very lush ditches and because of all our rain, (armyworms) are very happy in the ditches right now," she said. "But it doesn't mean they won't be moving out of the ditches soon."

In Minnesota, producers should be on the lookout for the pest this week, University of Minnesota Integrated Pest Management Specialist Bruce Potter told DTN.
"We've had quite a few moths and I would expect probably this week we'll start picking up caterpillars at the edge of fields," he said. As wheat matures in Kansas, armyworms have moved out of wheat fields and into corn and brome fields, Kansas State entomologist Jeff Whitworth told DTN.

While armyworms do their worst damage by feeding on the flag leaf of a wheat plant, that isn't the best place to scout for them, because the pest often lurks in lower parts of the canopy. "Look low," Gray said. "Sometimes it involves getting down on your hands and knees in different parts of that wheat field and spreading apart the wheat plants and looking for armyworms, in some cases tucked away maybe beneath debris on the soil surface or feeding on the lower portion of the canopy."

If serious infestations are found, growers should consult the pre-harvest intervals on their insecticides before spraying for armyworms, Gray said.

Cereal aphids -- namely the English Grain aphid and Bird Cherry Oat aphids -- are also showing up in wheat fields in Kansas and Minnesota. "We have English Grain aphids every year, but I've never seen it like this year," Whitworth said. "The infestations are just crazy, mostly in the heads, because that's the only place where there's still moisture."

Aphids will soon abandon wheat plants as they dry out, and it's too close to harvest to spray in many Kansas fields, so it might not be worth it for producers to treat the aphids, Whitworth noted. But corn producers should be on the lookout. "We're seeing lots of (English Grain) aphids moving into corn," Whitworth said. "In (Kansas State) test
plots, I haven't seen that they're feeding on the corn, but they're 80 to 90 aphids per plant in 5- to 6-leaf corn."

Minnesota producers should be more concerned about Bird Cherry oat aphids, because they can transmit barley yellow dwarf virus, Potter told DTN.

The aphids should be visible to scouters on the underside of wheat and corn leaves, Knodel noted.

While scouting, producers should also be on the lookout for other emerging pests such as soybean aphids, corn rootworm, corn earworm, black cutworm, stalk borers, stink bugs, and herbicide resistant weeds, according to pest newsletters from across the Midwest and South.

Emily Garnett can be reached at emily.garnett@telventdt.com

(ES/AG)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- After a 17-month dry spell, China has approved another biotech crop for import. Monsanto's DroughtGard hybrids, the first seed corn genetically engineered to be drought-resistant, received "full regulatory import authorization" from Chinese officials on June 17, according to a Monsanto news release.

DroughtGard was tested by 250 western Great Plains farmers in 2012. This year, the seed was used by 2,300 growers in South Dakota, Nebraska, Kansas, eastern Colorado, western Missouri, Oklahoma, and Texas, Sarah Pierce, Monsanto's U.S. row crops launch lead, told DTN. However, customers had to sign a stewardship agreement promising to limit their use and sale of the corn to on-farm livestock feeding or U.S. markets.

With China's import approval, Monsanto will drop these stewardship requirements. "Letters will be sent to growers who entered into the grain stewardship agreement, as well as to the elevators that agreed to keep the grain domestic, informing them that DroughtGard Hybrids has received all import approvals in key export markets and that their grain marketing commitments are no longer required," Jeff Neu, a media contact for Monsanto, told DTN in an email.
Although China has been generally receptive to genetically-engineered crop technology, it puts potential GE imports through a regulatory process that takes two to three years to grant approvals. Since China annually imports hundreds of millions of bushels of U.S. crops like soybeans and corn, import approval of a biotech trait is highly desirable for seed companies and farmers alike. The US Soybean Board reports that just under a dozen soybean and corn seed traits still awaited Chinese approval as of June 5.

China was the final holdout in the export market for DroughtGard, Pierce said. Eight countries, including major corn importers such as Japan, Korea, Mexico and Taiwan, had opened their doors to the trait. While Monsanto could have permitted DroughtGard to be sold to some outside countries like Mexico and Canada this year, Pierce says they played it safe by waiting until every country had accepted the trait before lifting the domestic market limitation -- a self-imposed restriction meant to bolster trust internationally.

DroughtGard seeds include an inserted soil bacterium gene, which helps bacteria survive periods of stress. Based on the 2012 field trials, Monsanto advertises a 5-bushel-per-acre yield advantage for DroughtGard over other drought-resistant seed varieties produced by competitors with traditional breeding.

According to its website, Monsanto's marketing of the hybrids targeted dryland corn growers in semi-arid regions of the western Great Plains, where limited rainfall and irrigation keep bushel averages between 70 and 130 bushels per acre. With all markets open, the company expects sales in those regions to swell, Pierce said. "In the western
Great Plains, we're going to see approximately four times volume growth in 2014," she said.

Floyd Koehn, who farms in Harvey County, Kan., planted 30 acres of the biotech seed this spring, and has neighbors who planted some last spring. "I'm just glad that we're able to do that without having to worry," he told DTN. "Last year, they were really, really particular about where it went, and it had to all go to livestock, and that has its complications."

Monsanto has set its sights on growers outside the water-stressed western Great Plains, as well. "We'll be looking to conduct large-scale grower testing in 2014 in expanded geographies," Pierce said.

Last year, the Union of Concerned Scientists criticized DroughtGard's "modest results" in certain dryland trials where the GE seed didn't appear to perform any better than traditionally bred hybrids.

For now, Monsanto has only released the results of these dryland trials. However, Pierce said the company is continuing to experiment with irrigation trials, in an effort to help growers with tight water supplies know when to give the plants a drink and when to turn the water off.

Koehn said he couldn't speak to how the GE seed performed against other drought-resistant varieties, but his neighbors who used it did see better yields last year. "Some of my neighbors had it last year," he said. "The consensus was that it was better" than non-drought resistant corn varieties.
Emily Garnett can be reached at emily.garnett@telventdtn.com

(PS/AG/CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- Three scientists whose work in the field of biotechnology laid the foundation for the genetically-engineered crops that now dominate American agriculture were awarded the World Food Prize Wednesday.

The award went to Marc Van Montagu, a Flemish plant scientist; Robert Fraley, Monsanto's chief technology officer; and Mary-Dell Chilton, a science fellow at Syngenta Biotechnology, Inc.

The World Food Prize is an international award established by Norman Borlaug, the Nobel Peace Prize Laureate, to celebrate the achievements of people involved in increasing, improving, or protecting the world's food supply. The $250,000 award has gone to a diverse group of people over the years, from scientists to social justice leaders to policymakers.

Chilton's work kick-started the field of plant biotechnology in the late 1970s, when her research uncovered a way to insert DNA into plant cells. Working independently of each other, Montagu and Chilton were the first to produce genetically-engineered plants in 1983 while working with the soil bacterium Agrobacterium tumefaciens. Their method of inserting genes into a plant to change certain characteristics of the plant dramatically altered agricultural practices by setting off decades of genetic
crop engineering. Fraley was among those who seized upon the technology, and in 1996, he produced the first commercially available biotech crop -- glyphosate-resistant seeds, known as RoundUp Ready crops.

The International Service for the Acquisition of Agri-biotech Applications (ISAAA) estimates that crops which have been genetically engineered for resistance against insects, pesticides, or abiotic stresses like drought and heat are now grown on 240 million acres in 28 different countries. The U.S. Department of Agriculture estimates GE seed varieties account for 94% of all U.S. cotton acres, 88% of all U.S. corn acres, and 93% of all U.S. soybean acres.

This World Food Prize validation of biotechnology comes at an interesting time, when several states are considering labeling genetically-engineered ingredients (as many European countries already do) as part of a larger movement that is critical of the safety and regulation of GE products. The award also comes only days after a report in the International Journal of Agricultural Sustainability roundly criticized the GE-driven U.S. agricultural system as "not exceptional in yields or conservative on environmental impacts."

In the last decade, the ubiquity of GE crops in the U.S. has contributed to a new problem: the rapid emergence of insects and weeds that are resistant to the GE technology developed to control them.

However, many industry leaders and scientists praise GE technology as a global hunger solution and the future of crop technology throughout the world. In 2012, for the first time ever, developing countries planted more GE crops than industrial countries like
the U.S., according to a report by the International Service for the Acquisition of Agri-Biotech Applications.

In an AP article, Fraley said biotechnology will enable the farming industry to meet the needs of a growing global population. "We know we need, from a demand perspective, to double food production around the world in the next 30 years," he said. "The exciting thing is we have the tools available to enable that to happen."

Both Montagu and Chilton expressed hope that the award would help lessen food safety concerns and promote the spread of GE technology. "I hope that this recognition will pave the way for Europe to embrace the benefits of this technology, an essential condition for global acceptance of transgenic plants," Montagu said in a news release from VIB, a Belgium life sciences research center where he is an adviser and former director.

Emily Garnett can be reached at Emily.garnett@telventdttn.com

(PS/CZ/AG)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Prevented Planting Puzzle

Farmers Face Complicated Decisions on Managing Empty Acres

Emily Garnett DTN News Intern

Thu Jun 20, 2013 07:12 PM CDT

OMAHA (DTN) -- Agronomists and conservationists are strongly urging farmers with prevented planting acres or flooded fields to plant some crop -- whether it's late-planted soybeans or cover crops -- on those empty acres. But crop insurance requirements, herbicide and crop residues, timing issues, and the availability of seed have made those planting decisions difficult and confusing for farmers.

Heavy rains have left many fields flooded and unplanted in the Midwest this spring. Farmers have some complicated decisions to make about managing those fields for the rest of the year. (DTN file photo by Pamela Smith)

"Plant something on the ground; I want you to put something on that ground," Mahdi Al-Kaisi, an Iowa State agronomist told DTN. Leaving land fallow can produce a range of problems, he explained.

Depending on weather, soil erosion and nutrient loss from run-off are serious possibilities. The loss of phosphorus is a near certainty; without a root system on which to live, valuable fungi in the soil, which help plants process phosphorus, will die, Al-Kaisi said. He pointed to research that has shown that fields that lie fallow or flooded produce phosphorus-deficient plants the next spring.
While fallow fields may lose soil, organic matter, and valuable nutrients, weeds will happily grow where crops cannot, and bare soils can accumulate a weed seedbank that could haunt farmers for years to come. Tillage or herbicides used to control those weeds will only add to a farmer's costs, Al-Kaisi pointed out.

Crop insurance requirements, however, complicate farmers' options. Prevented planting acres that are labeled as highly erodible have certain conservation compliance requirements that other acres don't, said Barb Stewart, a state agronomist for the Natural Resource and Conservation Service (NRCS) in Iowa, in seminar with Practical Farmers of Iowa on cover crops and prevented planting.

Furthermore, the type of crop residue your prevented planting acres have on them will change your options, as will the fertilizers and nutrients you might have already applied to those fields, Stewart said. Herbicides are another factor for farmers to evaluate. During the seminar, Kevin Erickson, from the USDA's Risk Management Agency, urged producers to carefully examine their herbicide labels before picking a cover crop.

Federal crop insurance also forbids growers from harvesting anything from those prevented planting acres before Nov. 1, further complicating cover crop seed and planting timing decisions.

Kevin Erickson, who led farmers through a labyrinth of crop insurance requirements during the Practical Farmer seminar, noted that this deadline is unlikely to change. "It would be a violation of the federal crop insurance act," he said. "That act said, in order to get 100% of prevent plant payments for one crop, you can't get a benefit from
another crop during the same crop year, and the Nov. 1 date was about as early as they could push it without violating the act."

To add to the confusion, farmers must shuttle between the NRCS -- which can advise them on cover crops and conservation practices -- and their individual crop insurance policies, where separate compliance requirements for prevented planting acres exist. The compliance requirements should hold final sway over cover crop decisions, Erickson noted, because farmers don't want to risk jeopardizing their prevented planting payments.

"The insurance policy is, to be honest, completely disconnected from best-management practices," Al-Kaisi said. "They are committed to the following: Either you put in cover crops, and then you cut it (in) November, or you leave it dirt -- "black dirt" they call it. So I don't think that soil quality is on their radar screen."

Despite the possibility that crop insurance options could convince some farmers to leave their land fallow, Al Kaisi said, ultimately, producers must line up any cover crop decisions with their prevented planting insurance policy. "All these farmers are businessmen," he said. "You need to come to agreement with your insurance policies and don't shoot yourself in the foot."

To add to these tough decisions, farmers might also face a cover crop seed shortage this summer, some seed providers told DTN. Sales "could be 50% over normal," said Karl Dallefeld, owner of Prairie Creek Seed in Worthington, Iowa. "Between prevented planting and normal growth in cover crops, I think we'll run out of just about all the blends and varieties, specifically tillage radish (and) sorghum sudangrass blends."
Dean Ohloff, product manager at Hall Roberts' Sons Inc., a seed company in Postville, Iowa, said this season has him flummoxed. "My crystal ball is broke," he told DTN. He's received lots of calls from confused farmers who are trying to figure out what they can and can not plant. Whether or not they come to an agreement with their insurance companies on planting cover crops could factor into a potential seed shortage, he said.

For a list of cover crop seed providers, see: http://goo.gl/….

For a comprehensive list of cover crop options and seeding requirements see:
http://goo.gl/….

For a link to the RMA Fact Sheet on prevented planting rules, see: http://goo.gl/….

For the Practical Farmer seminar on cover crops and prevented planting see:
http://goo.gl/….

Emily Garnett can be reached at emily.garnett@telventdtn.com.

(MZT/AG/SK)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Cover Crop Options

Agronomists Offer Suggestions for Suitable Cover Crops

Emily Garnett DTN News Intern

Thu Jun 20, 2013 05:01 PM CDT

OMAHA (DTN) -- So you finally threw in the (muddy) towel and filed for prevented planting. Now what? Sadly, there's no time to put up your feet and enjoy the new lakefront property where your corn field used to be.

It's time to put something -- anything -- on those acres, preferably cover crops. Although the "no grazing or harvesting until Nov. 1" ban might complicate things, Iowa State agronomist Stephen Barnhart has sorted out some of the options for you.

Barnhart recommends considering your plans for summer field management (weeds, erosion, etc.) now. Weigh seed availability, whether you want to winterkill or harvest a spring crop, nitrogen you might have applied already, the herbicides you used this spring, and whether or not you hope to get some forage off of the fields in question.

Before you make any purchases, however, consult your crop insurance policy for compliance requirements.

To sum up Barnhart's recommendations:

CEREALS

Spring cereals -- oats, spring triticale, barley, and spring wheat -- can be planted in either early summer or late summer. If you plant them in June, Barnhart warns that they may shatter and spread seed by mid to late summer, and volunteer plants could crop
up in the fall. If you plant them in late summer, he notes, you could get a decent fall
stand, but frost kill before Nov. 1 is a possibility.

Winter cereals such as rye, winter triticale and winter wheat are another option. If
you plant early in the summer, Barnhart recommends clipping rye in the late summer to
help it survive the winter, a tactic that would work well for winter triticale as well. Winter
wheat, however, will still be susceptible to winterkill. If you plant it in late summer, all
three would most likely survive the winter but would provide a limited fall harvest.

FORAGE

If you're interested in forage for grazing, late-summer plantings of the winter
cereals or a June planting of ryegrass could get you a decent forage stand, Barnhart said,
although not a full harvest.

If there's any chance soil moisture will be available in August, Barnhart
recommends waiting until then to plant any forage grasses and legumes. Not annual
legumes like Berseem clover or cowpeas, though -- they might not grow enough to justify
their expense.

Warm-season forages like sorghum sudangrass will help hold nutrients in your
soil over the summer, but will not produce much of a fall forage crop.

Barnhart recommends planting "brassicas," i.e. tillage radishes and turnips, from
late July to August and no sooner if you want useable fall forage. Earlier-planted
brassicas will seed out before Nov. 1.

To see Barnhart's full article on cover crop options, go here: http://goo.gl/….
Emily Garnett can be reached at emily.garnett@telventdtn.com.

(PS/AG)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- As producers across the Midwest struggle with flooded fields and delayed planting, the drought of 2012 might seem like distant history for many. Producers like Dean Graumann, however, are evidence the drought is very much alive in the western Great Plains.

"Our ponds are still dry, our grass is still brown," said the southwestern Oklahoma cow-calf producer and wheat farmer. "I'd say at least half the wheat was disastersed. So it's pretty bleak," Graumann told DTN.

Jordan Shearer, who raises wheat and cattle in the eastern Oklahoma panhandle, said some mid-June rains have revitalized pastures in his area, but not in time to save the 2013 winter wheat crop.

In contrast, Missouri cow-calf producer Brian Lease is struggling to bring in a hay crop, rainy week after rainy week. "It's going to be a long, drawn-out process with more rains coming every few days," he told DTN.

Chris Hayes, a feedlot owner and farmer in Osceola, Neb., told DTN his area received just the right amount of rain to kick off the summer. "We're sitting pretty good right now," he said.
WHEAT IN SHORT SUPPLY

Graumann planted 2,200 acres of wheat last year. After making disaster claims on 600 of those acres, he's now making his way through a discouraging harvest. "I'm in the midst of harvest now, and I should have disasters it all," he said with a dark chuckle. He estimates he and his neighbors are averaging between 10 to 15 bushels per acre this year. The small crop he does bring in will mostly go into his seed supply for next year and very little will make its way to grain elevators.

In the eastern edge of the Oklahoma panhandle, Shearer was celebrating the area's first significant moisture since the winter's snows, but the rain won't help his wheat. Snow fell all winter long -- 40 blessed inches of it -- and wheat in his region looked pretty good when March rolled around.

Then the temperature plummeted to 19 degrees Fahrenheit one mid-April night, and the resulting frost snatched the hard-won wheat crop right out of farmers' hands. "The wheat crop is going to be really poor out here," Shearer told DTN. "Seed wheat is going to be a hot commodity in our part of the world. We went ahead and hayed ours this year."

STRETCHING FORAGE

Feed in Oklahoma is understandably tight. Graumann's cows are munching their way through the 600 lost acres. "Our cattle eat about anything right now," Graumann noted. Grass hay is mostly a memory in this part of the country, so Graumann is buying bales of disastered wheat for roughage, and those are in good supply. However, the low-quality bales must be heavily supplemented with protein tubs or cakes, he said.
Shearer made a conscious decision a few years ago to stop growing wheat for elevators and concentrate on feeding cows. Of the 500 acres of wheat he grows, all but 80 were grazed this year. He buys around 350 steers early in the spring to graze out his wheat and sells them back in May.

Shearer also runs a smaller, personal herd of 70 mama cows on about 2,400 acres of pastureland. It might sound like a lot of pasture, he noted, but the carrying capacity of Oklahoma land has dropped in the last few drought years; each cow-calf pair once needed 25 acres, but Shearer estimates they now need at least 40. He picked up another lease to push his acreage to 2,400 this year but said he will have to wait out the drought before he expands his herd.

While timely June rains have greened up pastures in his part of the panhandle, Shearer said the drought is far from over. "We have a long ways to go to get these pastures in any kind of shape," he noted.

Graumann is in a far worse situation. With no substantial rains since last October, producers in his area have continued to hack away at their herds; he estimates most are down to half of their original numbers. Graumann himself has dropped from 250 mama cows to only 120, and he sold his fall calves two months earlier than usual, at 200 to 300 pounds lighter than he prefers.

Fewer cows have allowed him to set aside 700 acres for two years with no grazing, but the ponds on those pastures are dry and he can't afford to carry water there. Graumann said he will give Mother Nature another couple weeks to produce some rain before he takes matters into his own hands and re-drills some old wells on that land.
THE WETTER WORLD

In the Midwest, on the other hand, the rains just keep coming. Lease has 400 acres of hay that were ready for baling in mid-May where he ranches near Clark, Mo. By mid-June, he'd only been able to cut and bale 20 acres. "I've got a long ways to go," he said. "It's just been rain, rain, rain here."

The wait is more than just an inconvenience. "We're getting into our hay late and the quality's not going to be there," Lease pointed out. "The longer the head's out, the quality of your hay goes down, down, down as far as protein and energy goes. Guys really need to test their hay again this year, and you're going to have some supplemental feeding to do."

Still, the drought of last year isn't too far from his thoughts -- when high temperatures and little moisture forced Lease to cut the little hay he had in early May. "Anything will be better than what we had last year," he said.

MORE OF THE SAME AHEAD

DTN Senior Ag Meteorologist Bryce Anderson has bad news for western ranchers: The drought probably won't break this summer. "We are seeing hot upper-atmosphere high pressure focusing over the southern Rockies-Four Corners region," Anderson noted. "This feature is one that means more dry conditions in the Western Plains this summer. Temperatures are on track to be above normal as well. So, the net effect is hot and dry over that part of the country."

Midwestern ranchers, on the other hand, have a more favorable forecast to look forward to. "The Midwest is on track to have normal to above-normal temperatures -- but
obviously not the hot, hot trend that the area had last year," Anderson said. "Along with that, there appears to be a more variable upper-air flow across the region, and with that feature comes the energy needed to fire up thunderstorms every so often. So, near-to above-normal temperatures with normal precipitation looks like the best combination to describe how the Midwest looks at this time for the summer season."

A COMMON ENEMY

Even as Mother Nature has visited nearly opposite weather conditions upon ranchers this year, they all told DTN they do share one common enemy: corn prices.

"We need a good corn crop to get corn prices back in line with the rest of the ag economy," Nebraska feedlot owner Chris Hayes told DTN. "Seven-dollar corn is great if you sell it, and farmers love it, but in the long run, it's too high. We can't make it. It's kind of out of whack; it doesn't fit into the economy that well." He said even with strong cattle prices, his feedlot is lucky to break even on its sales these days, much less turn a profit, because of the high input costs of feeder cattle and corn.

Down in parched Oklahoma, Shearer said decent cattle prices have helped him out this spring, but the feedlot owners' tight margins concern him. "The guy buying that calf from you isn't going to make any money on that calf," he said. "It's all because of the price of gain. They need to raise a corn crop in this country or I don't know what will happen to this cattle market. These feeders have been losing money for too long."

Lease also benefited from higher cattle prices, and noted that his cull cows got the highest prices he'd ever seen. But high corn prices continue to bite into his profits. "This year is going to be another wash," he said. "If we can keep from going backwards, we'll
be lucky, because expenses are just way too high.” Lease was a long-time fan of corn gluten pellets, which he has used to supplement forage for his cattle. This year, for the first time, he's planting alfalfa in an effort to replace gluten pellets completely, in preparation for another round of sky-high corn prices.

Emily Garnett can be reached at emily.garnett@telventdtn.com.

(AG/CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- Keep an eye out for the strange, metallic glow of Japanese beetles in your soybean and corn fields in the next few weeks. A cool spring slowed their development, but reports of the leaf- and silk-munching pests are starting to stream in from Illinois, Indiana, Iowa and Missouri fields.

The beetles typically do their most damage during critical pollination periods -- the flowering stage of a soybean and the silking period in corn. However, this year's late-planted crops and subsequent pollination delays don't diminish the threat, Iowa State Entomologist Erin Hodgson told DTN.

"Unfortunately, they're out before the corn silks are out, so in areas with heavier populations, we'll have to put more scouting efforts into those fields," she said. Japanese beetles have only one generation per year. The adults can emerge throughout the growing season, but peak emergence generally occurs four to five weeks after you first start seeing them.

For now, the beetles will happily feast on soybean leaves, many of which are younger than usual due to late plantings this spring. "They're [beetles] coming out at a time when soybeans are very small," Hodgson said. "They [soybeans] can tolerate more defoliation before bloom -- about 30% -- but on a smaller plant, 30% can be reached very
quickly." After flowering, soybean plants can only handle 20% defoliation before yield starts to be affected, she added.

Japanese beetle defoliation is very distinctive, so scouting isn't too difficult. The beetles will eat between leaf veins, leaving a lacy, skeletonized leaf behind. Because growers often only scout the top of the plant, and a damaged plant can look so alarming, producers tend to overestimate damage and spray sooner than necessary, Hodgson said.

For a better idea of what 20% or 30% defoliation looks like, see this guide from Iowa State University: http://goo.gl/…. Hodgson recommends that growers take into account the entire plant, not just the affected leaves, when they are calculating the percentage of damage.

Corn silks are also something of a delicacy for the hungry Japanese beetle. "It's really tasty to the adults; I'm not sure why," Hodgson said. "They'll clip off the silks to the base of the husk, so if it's timed right, it can really interfere with pollination."

Unfortunately, treatment can be tricky. While most insecticides will kill a Japanese beetle on contact, any residual left on the plant is usually not strong enough to kill the dozens of beetles ready to take their dead companion's place. "If you're having problems during pollination, you might have to spray twice, and then the cost really goes up," Hodgson said. "(The beetles) are just so migratory." They are also very social and often congregate in spots within the field.

In general, growers can expect to get very familiar with this pest in coming years, Hodgson noted. Since they arrived on the East Coast in 1916, Japanese beetles have made a slow, but steady westward creep. With no natural predators and a hearty, flexible
appetite for more than 400 types of flowers, shrubs, trees and crops, they're making themselves at home in the Midwest.

For now, entomologists are unsure how much of a threat the beetles represent for field crops. "We don't really know, once they get established, what we can expect year to year," Hodgson explained. "That's the thing about invasive species, you never really know if they will become prominent or if they'll kind of crash and burn. So it's still too soon to tell."

Other pests to look out for in coming weeks:

Soybean aphids: Throughout June, pest newsletters from Iowa, North Dakota, Minnesota and Michigan have been reporting modest levels of this pest.

Goss's Wilt: Louisiana was the most recent state to witness the official debut of this wind- and hail-driven bacteria. In Midwestern states that have seen recent damaging windstorms, producers who have fields with a history of this disease should be on the lookout.

Corn rootworm: Around mid-June, rootworm hatches were underway in Iowa, Illinois and Indiana, so producers with a history of this problem should be scouting.

Emily Garnett can be reached at Emily.garnett@telventdtn.com

(PS/AG)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Soybean Rust Hits Early
Midwest Urged to be Alert
Emily Garnett DTN News Intern
Fri Jul 12, 2013 09:24 AM CDT

OMAHA (DTN) -- Soybean rust has made an early appearance down South this year, and plant pathologists warn that could have implications for the entire Soybean Belt.

As of July 11, 30 U.S. counties have confirmed cases of the disease, mostly in Alabama, Mississippi and Louisiana, and the majority of the discoveries have been in soybean fields.

"Rust is about three weeks ahead of last year's pace when it caused some significant damage in the state," Auburn Extension plant pathologist Ed Sikora told DTN.

An early appearance of the soybean fungus, combined with a delayed soybean crop and wet conditions in most Southern states, is cause for some concern, Mississippi State plant pathologist Tom Allen told DTN.

"We really need to stay alert," he said. "We're scouting fast and furiously, looking at as many places as we can, trying to get out there to see how widespread this is."

As a relatively new disease for U.S. growers, with economic damage mostly limited to Southern regions, soybean rust might not be on some Midwestern growers' radar. But depending on weather patterns this summer, Midwesterners should keep an eye out as well, Missouri agronomist Bill Weibold told DTN.
"When you have late planting, it makes sense to be a little more observant," Weibold said. "And if we get into a year where we have really humid days and the nights are sticky, and the dew stays on the plants until noon or so, that's when we really get nervous," he said. Once a plant is infected, moisture and moderate temperatures help the fungus develop and spread.

Since its first appearance in Japan in 1902, soybean rust has been a highly destructive disease in other soybean-producing countries, particularly Brazil and Paraguay. The disease, which travels on wind currents, first appeared in the U.S. in 2004. A University of Missouri study estimated that in 2009, up to 2.9 million bushels of soybeans were lost to the fungus in the southeastern and central states.

Wet weather has delayed soybean planting and caused replanting in many states. Delays in wheat harvest have also led to later double-crop soybean plantings. As a result, soybean fields could be especially vulnerable to rust damage this year, Sikora told DTN.

"In the past, the beans would get up to R5 or R6 before rust would get there, so it wasn't going to cause significant yield loss," Sikora said. "But now if the beans get infected at an earlier growth stage, then you can start seeing some of those yield losses that we haven't realized in the last seven or eight years."

The key to protecting your crop is vigilant, comprehensive scouting, Allen noted. "Scouting is definitely the best preventative rather than just applying a fungicide wholesale across a wide geography," Allen said. However, in Alabama, Sikora said growers will most likely have to apply at least one fungicide treatment this summer, and more Southern fields might require two.
Scouting for soybean rust requires a lot of legwork from farmers. The disease often begins in lower canopies, can be widely scattered, and can be hard to spot without previous experience.

"You need to be out there to find low percentages of infection -- 5% or less -- and that's really your best treatable level. The problem is that's a difficult percentage to detect on a wide-scale acreage," Allen acknowledged. "It's one of those diseases that if you're only talking about three pustules on the underside of a leaf, it's difficult for the untrained eye to determine that they have soybean rust."

Freezing temperatures kill the rust spores -- which helps insulate soybeans grown in more northerly regions. Mild winters and the fact that kudzu can serve as an alternative host for the disease, makes Southern soybeans more vulnerable.

"Kudzu is kind of the green bridge, so to speak," Allen said. "If susceptible kudzu overwinters that's infected, then that can be your primary spore load for the epidemic to occur the next year." Sikora said soybean rust survived by overwintering on a kudzu patch farther north in Alabama this year than he has ever observed in the past.

Summer weather -- particularly hurricanes -- will be an important determinant of how far north soybean rust spreads this year. "Southerly winds off the Gulf of Mexico, along with early tropical systems, really appear to be kind of the important keys to this disease to cause widespread devastation in any part of the country," Allen said.

The U.S. Department of Agriculture maintains a website which tracks the disease's spread on a state-by-state basis. You can find the website here:

http://sbr.ipmpipe.org/…
For Southern growers, Allen said: "Focus on the monitoring information other states are putting out on the Internet; be aware of where soybean rust is present."

Although less urgent, Weibold had a similar suggestion for the Midwestern soybean growers. "It's kind of a word to the wise, there's no reason to get all excited, but probably keeping an eye on that website would make sense," he concluded.

Emily Garnett can be reached at emily.garnett@telventdtn.com

(PS/AG)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
AKRON, IOWA (DTN) -- During last year's drought, Dave Heeren's corn averaged 40 bushels per acre, a far cry from the 140 to 150 bpa quoted in his contract with a nearby ethanol plant. But the only sweat on this Iowa grower's brow came from the searing heat that summer. The ethanol plant took the bushels he had with no penalty, he received a 40-cent premium on the corn delivered, and a crop insurance check on the lost bushels still came in the mail.

The key to this trick? Heeren grew 700 acres of Enogen, Syngenta's corn seed genetically engineered to aid in ethanol production. Enogen grower contracts with ethanol plants are based on acres, not bushels. This arrangement protects the producer from the volatile effects on yield from weather, disease or pests. The corn is not categorized as a specialty crop, so it's eligible for regular crop insurance coverage, Heeren noted. Getting insurance on the 40-cent premium he receives for Enogen, however, requires establishing a new actual production history (APH) on the Enogen hybrids, so Heeren only insured his acres for market value.

Taking shelter in his Akron farm office from the sweltering heat and humidity of a July afternoon, Heeren and Todd Axtell, the Enogen account lead for Syngenta, sat
down with DTN for an interview. The two sang the Enogen system's praises over root beers and the blessed hum of an air conditioner.

"There's no downside risk to him at all," Axtell noted as they discussed the area's trend line of 35 to 40 bpa last year. Heeren, who is also one of the nation's largest farmer-dealers for Syngenta, concurred. "There was no penalty because I couldn't deliver. It's not like selling on the board of trade, where you're out of luck. I'm delivering the acres," he told DTN.

This year Syngenta contracted with 268 farmers in Iowa, Nebraska, South Dakota, and Kansas to grow Enogen corn on 65,000 acres, up from 25,000 acres last year. Axtell said if all goes well, they hope to nearly triple their sales next year to 175,000 acres.

Enogen seed, which was deregulated in 2011, produces its own alpha amylase enzyme, a necessary ethanol ingredient, which prompts the corn's breakdown into sugar. The seed also helps to thin the ethanol mash as it moves through the plant, which can lower water and electricity usage at the ethanol plant.

In June, Syngenta announced contracts with eight more ethanol plants in Iowa, Nebraska, Minnesota and South Dakota for trial runs of Enogen. Three more plants -- Plymouth Energy in Merrill, Iowa; Quad County Corn Processors in Galva, Iowa; and Bonanza BioFuels in Garden City, Kan. -- already hold commercial contracts with the seed company to use Enogen corn to replace their liquid alpha amylase enzyme.

Only 10% to 20% of an ethanol plant's total corn input needs to be Enogen seeds to produce the desired effect, so a natural acreage cap emerges in the area within 40 to 50 miles around each participating ethanol plant. A plant with a 50-million-gallon capacity,
for example, would never need more than 25,000 acres of Enogen -- roughly 20 to 30 growers -- to operate. While Syngenta won't say exactly what their maximum targeted acreage is, Axtell said the company is targeting all dry mill ethanol plants in the country -- roughly 80% of the nation's 211 ethanol plants.

Axtell and Heeren predicted Enogen growers will soon make up an exclusive club of farmers who snagged the 40-cent premium contracts while they were still available. Heeren said already people have been turned away from the program in his area because, with the ethanol plants available, no further acreage was needed.

While discussing the seed-to-plant system, Axtell stressed local, even patriotic benefits. "We're not delivering corn to the ethanol plant anymore -- we're delivering their alpha amylase enzyme," he said. So instead of buying liquid alpha amylase from distant or foreign enzyme plants, ethanol plants buy it from local corn growers, keeping the profits close to home, Axtell explained.

Enogen hasn't always been viewed as a savior of the domestic economy. When the seed was deregulated by USDA in 2011, major grain companies and stakeholders such as Bunge and the North American Millers' Association launched a public protest, arguing that the corn's commercial use could endanger the food supply. Research showed that Enogen corn could negatively affect the quality of some corn products, such as corn chips.

Syngenta established a series of stewardship requirements in its grower contracts to keep the corn from commingling with commodity corn. The requirements include cleaning planters and combines between uses, storing the grain on farm in a separate bin,
and planting a minimum 30-foot buffer of non-Enogen plants around every Enogen field. The buffer is also planted to corn. Growers contract all their Enogen acres with ethanol plants, and Syngenta uses GPS units to track the transportation of the grain. Farmers also use an online system to set up an exact schedule of deliveries, so the company knows when they should be seeing movement of the grain.

Enogen fields are checked frequently by Syngenta. Before planting, company inspectors check the field location and storage unit; after planting, they check each field's border row placement and content to ensure they are non-Enogen plants. After pollination, representatives visit the fields again to sample and predict yield, so ethanol plants can prepare for the number of bushels coming or not coming in after harvest.

This diligence, along with regular meetings of an advisory board composed of both grain and food stakeholders and Enogen representatives, has helped keep opponents of the seed program informed of the program's process, Axtell said.

Heeren, who also raises soybeans, alfalfa, and 150 mama cows, hasn't been fazed by the stewardship requirements. "When the Enogen corn was first released, we were a little skeptical about all of the stewardship things we were going to have to do," he said, while filming a Syngenta video interview. "The actual experience on the stewardship was very minimal. A little bit of cleaning out planters and cleaning out combines, but very minor -- well worth the enhanced revenue that we received from the acres."

For more detail on what an Enogen grower must comply with, visit http://goo.gl/…
Heeren estimated his operation has seen an additional $60 to $80 of revenue per acre because of the Enogen premium. Although some of the Enogen hybrids did benefit from a fungicide treatment, overall the plants required no additional inputs and showed no real agronomic or yield difference from his other corn hybrids, he noted.

Syngenta requires that Enogen growers only grow the seed on half of their corn acreage, so Heeren is maxed out at 700 acres. But the Enogen dealer encourages other farmers to get on board. "Why not?" he said. "It's the hybrids that we raise, so why not enhance your bottom line significantly by raising it?"

The ethanol industry has faced several challenges -- continued calls for a waiver of the Renewable Fuel Standard, the E10 blend wall, a short corn crop last year, and tight margins -- but neither Heeren nor Axtell expressed any concern for the health and viability of the industry. Despite its optimism, Syngenta has seen fit to announce a three-year commitment to donate $1 to the renewable fuels industry for every Enogen acre planted -- which could total $175,000 if they meet their acreage goals next year. In a July 13 news release, the company said the initiative is designed to "help support America's Renewable Fuel Standard (RFS) and promote the benefits of renewable fuels grown in America."

The seed company doesn't anticipate any competition on their ethanol-specific corn seed trait, Axtell said. Syngenta has many U.S. patents dating back to the 1990s on the product (the company lists at least a dozen in its grower contracts), and they don't ever plan to license it out to another company. One of the patents even protects the very process of using corn seed to deliver an enzyme: http://goo.gl/….
Enogen can be sold overseas to most major export countries, except the EU, which said Syngenta's application for import approval in early July lacked sufficient data for them to accept it. The import approvals have mostly been sought for the purpose of exporting DDGs, and not necessarily the grain itself. According to the U.S. Grain Council, the top three importers of DDGs are Mexico, China, Canada, all of which have approved Enogen imports. The seed trait is approved for cultivation only in Canada and the U.S., but for now, Syngenta is focused on domestic production.

Emily Garnett can be reached at emily.garnett@telventdtn.com

(PS/SK/AG/CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- Slowed by a wet spring and delayed soybean planting, soybean aphid infestations are just now picking up speed and starting to catch producers' eyes across the Midwest. Light to moderate populations have been reported in fields in Minnesota, the Dakotas, Nebraska, Wisconsin and Ohio. Michigan is experiencing a "mini-outbreak" in the thumb region of the state, Michigan State Extension entomologist Christina DiFonzo told DTN.

In Minnesota, a minor heat wave and the abundance of natural predators has so far contained aphid populations to smaller fields and field edges, according to University of Minnesota integrated pest management specialist Bruce Potter. He told DTN that fields tend to start showing the most economic damage from aphids in July and early August when a winged aphid generation migrates into larger fields and the predator population struggles to keep up. Aphid populations can grow exponentially in a matter of days, so while there are aphid-tolerant soybean varieties out there, growers should still scout often in the next week or two, Potter said.

Aphids have a complicated lifecycle that can involve up to 18 distinct generations. The eggs overwinter on trees or a type of woody shrub known as buckthorn.
Once they hatch and reach a soybean field, several generations of wingless females will be produced, which are content to munch away on their hometown soybean field.

When their hometown starts to turn into a city, however, they become less satisfied. "They literally start to bump into each other and they can sense that there's crowding," DiFonzo said. The next generation can be up to 90% winged aphids, DiFonzo said, a development that is visible in the aphid's figure. "They have kind of big shoulders, like the '80s when you wore shoulder pads," DiFonzo explained. "That's what I always think they look like -- bad '80s movies."

This new, less stylish generation, is programmed to leave the soybean field in search of less-populated areas. The aphids take flight, often high enough to catch winds and storm systems, which move them from one region or state to another.

Aphids are drawn to a plant's nitrogen supply, so they congregate on new growth higher up on the soybean plant. To protect themselves from the sun, they tend to cluster on the underside of leaves.

Aphid populations thrive under moderate temperatures -- mid-70s Fahrenheit to low 80s. At 77 degrees, "the population could double in one-and-a-half days," DiFonzo said. At higher temperatures, aphid reproduction tends to stall out and extreme heat can even kill them, she noted. However, to escape the heat, they often burrow deeper in the plant canopy, making scouting more difficult. Potter said he has seen several fields with lower canopy infestations and aphids residing on the upper side of the leaves -- strange behavior that he attributes to the heat.
The good news is that predators with an appetite for aphids are abundant throughout the Midwest. Aphid midges, Asian lady beetles, flower bugs, green lacewings, brown lacewings, damsel bugs or Nabids, spined soldier bugs and certain parasitoid species all consider aphids a welcome snack.

"The predators are doing a bang-up job right now," Potter said. "If it's warm, the predators are favored; if it's cool, the aphids have a little lower developmental temperature, and they can kind of out-produce the predators," he said.

Convincing farmers that these predators are often sufficient to control aphid populations can be a challenge, DiFonzo said. "There's a tremendous amount of predation out there," she said. "But it's hard to tell guys, 'Hey look at all the parasitoid wasps that are out here!'"

The sight of hundreds of tiny, green aphids swarming the leaves of a soybean plant is often enough to give most producers an itchy sprayer finger, but both DiFonzo and Potter urged restraint. The recommended threshold for treatment is traditionally 250 aphids per plant in a field that is 80% infested, but that number is designed to get growers' attention and not necessarily trigger immediate treatment, entomologists stressed.

"The real injury level where you begin to get yield loss that equals the cost of spraying is more like 600 to 700 aphids," DiFonzo explained. "The 250 is the minimum. We built in a timeframe of about five to seven days, because during big aphid outbreaks, sometimes it's hard to get equipment, product runs out, you need some days." She
encouraged growers to wait a few days and make sure natural predator populations don't start doing the insecticide's job for free.

Potter recommends producers adopt speed scouting, a quicker way to determine if soybean aphids have reached the 250 aphids per plant threshold. Plants are considered infested if there are 40 or more aphids in that one-leaf sample. They don’t count if they have 40 or less aphids. Access a video to learn how at http://www.youtube.com/…. For a close look at what aphid infestations look like below and over the threshold, see this Michigan State guide: http://goo.gl/…. Producers can also look for aphid damage: yellow, distorted leaves, stunted plants, or moldy charcoal-colored residue that collects on the honeydew aphids leave behind on a plant.

Growers should never attempt preventative spraying, which can kill the aphid's natural predators and force growers to spray later in the season. If you absolutely have to spray, "my goal is always to spray once," DiFonzo said. "Don't throw the $2 insecticide in with the RoundUp. The biggest thing you can control is just not spraying when the aphid numbers are really low or you don't have them."

Keeping up proper fertility in your soybean fields is another good way to discourage aphid populations. Aphids love the increased nitrogen content and certain amino acids that a potassium-deficient soybean brings to the menu. "It's like eating steak instead of hamburger," DiFonzo said.

For more information on the aphid life cycle and management, see http://goo.gl/…. 
OMAHA (DTN) -- Scouts on the 2013 Hard Red Spring Wheat and Durum Tour can expect to see plenty of unplanted acres in North Dakota, but overall they'll see a good-quality spring wheat crop that's catching up quickly after a wet spring and late planting.

"They had a really wet spring, and some of it didn't get planted -- that's the biggest issue we've got," tour organizer Ben Handcock told DTN.

USDA estimates that 4.4 million acres in North Dakota have been left unplanted, shy of the 5.6 million prevented planting acres in 2011. Handcock estimated that up to a 1 million of those acres might be wheat, and most if it is in northern counties.

"The snow melts faster in the southern end of the state, so typically the farther north you go, the less mature the crop is," Handcock said. "I think that's where a lot of what didn't get planted is at."

A USDA Farm Service Agency map shows the highest concentrations of prevented planting acres are in Renville, Bottineau and Ward counties along the northern border. See the map here: http://goo.gl/....

On Tuesday, the tour will leave Fargo, N.D., scouting western Minnesota, eastern South Dakota and central North Dakota before finishing in Bismarck. On Wednesday, scouts will fan out into western and northwestern North Dakota, almost to the Montana
and Canadian borders, before ending the day in Devils Lake, N.D. The final day of the
 tour moves through northeastern parts of the state before returning to Fargo.

At 74 participants, Handcock says a record number of scouts will be taking field
measurements and plugging the results into a formula to estimate yield. The tour will
release yield estimates Tuesday and Wednesday evening. On Thursday afternoon, the
tour will release an estimate of the average yield for the whole state. The spring wheat
tour doesn't release a production estimate.

Scouts will see a crop that is slightly behind the average pace of development
since farmers struggled to get their spring wheat planted before the June 5 crop insurance
deadline, Handcock said.

"They typically try to start (planting) in April, but they still had snow on the
ground most places, and they planted close to the first of June," he said. "Very little of it
will be turning color probably, but it will all be headed out, I think."

USDA crop progress reports estimated that 62% of North Dakota's wheat was
headed out on July 14, 10 percentage points behind the average pace. This year's pace is a
full 37 points behind last year, when a hot, dry spring spurred wheat progress two to three
weeks ahead of normal.

Despite the late start, scouts will probably see a good-quality crop thanks to
favorable weather. "It's been warm to hot," Handcock said. "So everything that's planted
is going to look pretty good. It's caught up a lot in the last couple weeks."

Stress, from high temperatures for instance, pushes protein levels up. "Typically
when the wheat is really good, like I think it is, you would expect to have high yields and
a little bit lower protein, but that may not be the case," Handcock explained. "If it gets stressed enough, if there's enough heat on it, it will still have good protein, so this really could be an excellent-quality crop."

Scouts will also be on the lookout for diseases and pests. Handcock said scab tends to show up after a wet spring, but he hasn't heard of any yet.

USDA estimates spring wheat production at 513 million bushels, slightly above the 504 mb average but 5% lower than last year's 542 mb crop.

North Dakota spring wheat planting delays were the worst since 1981, DTN Cash Grains Analyst Mary Kennedy said. Yet USDA left acreage unchanged from its March estimates at 12 million acres. Yields are forecast at 42.9 bushels per acre, 2.1 bpa lower than last year.

"Many farmers planted spring wheat well into the third week of June. The risk can be lower yields and possible quality problems," Kennedy said.

Durum production was estimated at 58 mb, down from 82 mb last year, a 30% drop. "Besides the wet spring preventing 'on time' durum planting, many farmers have backed away because durum is perhaps the most sensitive of the wheats, and quality issues can create big discounts to a farmer," Kennedy said. "One other reason was price... the durum price did not give the U.S. farmers an incentive to plant this spring."

Follow DTN coverage of the Spring Wheat Tour at @EmilyGarnett6.

Emily Garnett can be reached at emily.garnett@telventdtn.com

(KM/AG/CZ)
Spring Wheat Tour - Day 1
Scouts Seeing Average to Above-Average Yields in South, North Dakota
Emily Garnett DTN News Intern
Tue Jul 23, 2013 01:33 PM CDT

BOWDLE, S.D. (DTN) -- Scouts on the Hard Red Spring and Durum Wheat Tour fanned out Tuesday morning across northern South Dakota and central and southern North Dakota. By noon, scouts were reporting average to above-average yields.

Scouts from cars pushing through central North Dakota, from Traill County through Foster County, reported yields in the upper 40s for the morning. The five-year average in those counties ranges from 46 bpa (Foster and Griggs) to 54 bpa (Traill). Some fields showed significant insect pressure from aphids and grasshoppers.

Scouts moving through southern North Dakota counties of Ransom, LaMoure and Logan were recording an average of 46.7 bushels per acre by noon. The five-year average for those counties ranges from 33 bpa (Logan) to 52 bpa (Ransom). Scouts reported little disease or insect pressure and estimated that most fields were two to three weeks from harvest.

In South Dakota, scouts saw fields ranging in yield from 41 bpa to 71 bpa, with the average pushing 59 bpa by noon. They moved from the northeastern counties of Day and Brown through Edmunds, Walworth and Campbell, where 2012 yields ranged from 41 bpa (Campbell) to 49.2 bpa (Edmunds). Several fields had damage from lodging and many showed some moderate scab and aphid presence.
Most North Dakota fields were in the soft dough stage, and South Dakota scouts saw a majority of fields in the hard dough stage.

Tour scouts will release yield estimates for the day later Tuesday evening.

Emily Garnett can be reached at emily.garnett@telventdtn.com

(AG/CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Spring Wheat Tour - Day 1

Strong Showing for Spring Wheat

Emily Garnett DTN News Intern

Tue Jul 23, 2013 09:32 PM CDT

BISMARCK, N.D. (DTN) -- Scouts fanned out across the southern half of North Dakota and parts of northern South Dakota and western Minnesota Tuesday to take measurements and produce yield estimates for the Hard Red Spring and Durum Wheat Tour. Many were pleasantly surprised by above-average yields, low disease and insect pressure, and a fairly mature crop, given a cool, wet spring that led to many late and prevented plantings.

"There were stronger yields than I expected, especially west of Bismarck," Jim Peterson, North Dakota Wheat Commission's marketing director, told DTN. "I was expecting later maturity wheat, but it was farther advanced."

After combing through 203 fields, scouts calculated a 43.5 bpa yield overall, with hard red spring -- the vast majority of the fields -- coming in at 43.3 bpa. Last year on the first day of the tour, scouts estimated hard red spring yields at 42.9 bpa.

"There is a wider range in growth and development," North Dakota State University entomologist Janet Knodel had warned scouts on Monday evening. "Farmers planted early May through late June." Most scouting reports placed hard red spring wheat only two to three weeks away from harvest, in the soft dough stage. On Monday, USDA's
Crop progress report put North Dakota spring wheat at 82% headed and 11% turning color, down from a five-year average of 88% headed and 27% turning color.

Scouts measure the spaces between rows, the number of wheat heads in a yard, and even count the individual spikelets to come up with an estimate. Traditionally, the wheat tour's estimate has come close to USDA's closing estimate. Last year, the tour's final estimated yield for hard red spring wheat came within one-tenth of the final USDA estimate of 45 bpa.

Wheat fields were sometimes hard to find Tuesday, especially in the southeastern regions of North Dakota. "The big thing for me, in the wheat fields we looked at, is the level of penetration of corn and soybeans into that southeast corner," Peterson said. It was a sentiment echoed by most of the scouts who explored southern and eastern regions of the tour, often driving for many miles before spotting any amber waves.

"Twenty years ago, you had to hunt to find a corn field around here. Now you have to hunt to find a wheat field," tour organizer Ben Handcock told DTN. Handcock's tour dipped down into the northern tier of South Dakota counties and measured a 52 bpa average, slightly below estimates for that route last year, but well above the 10-year trendline.

Insect and disease incidence was scattered and low, according to scouts. Many saw scattered evidence of Fusarium head blight (or scab), wheat stem maggots, aphid feeding, and grasshopper activity, but few reports of economic-threshold damage came in. "Disease has been low this year," NDSU Extension plant pathologist Andrew Friskop,
told scouts. "As the crop matures, those critical time periods when you can really see yield loss -- those have probably passed."

Some reports of lodging -- usually from strong winds and hail -- came in from South Dakota fields and central western North Dakota fields.

Protein remains a "wild card," Peterson said. Higher yields generally produce a low-protein crop and that might be the case for early-planted wheat fields. But late-planted fields, which will be flowering and filling during the heat of August, might produce higher protein levels than expected, Peterson noted.

Wednesday, the second day of the tour, promises to be interesting as scouts move farther into western and northern parts of North Dakota. While many of the southern fields scouted today escaped the flooding and endless May and June rains, northern acres were not so lucky.

"It's going to be a little bit like night and day," Peterson said of Day 2's scouting. "Because where we had a lot of our delays were in the northern half of the state. When we get north, you going to see more fields that were prevented planting, you're going to see more water damage in the fields. You're going to catch the later wheat, planted through the twelfth of June."

Only three durum fields were scouted Tuesday and they produced a very high estimated yield of 53.1 bpa, up from a 28.6 estimated bpa last year on the first day of the tour. Five hard red winter wheat fields caught the eyes of scouts and averaged 47 bpa, also well above last year's first-day estimated average of 30.3 bpa.
You can follow DTN's progress tomorrow on Twitter @EmilyGarnett6

Emily Garnett can be reached at Emily.garnett@telventdtn.com

(AG/CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Spring Wheat Tour - Day 2

Yields Slow Down as Scouts Head North

Emily Garnett DTN News Intern

Wed Jul 24, 2013 01:01 PM CDT

TURTLE LAKE, N.D. (DTN) -- Early morning reports from central North Dakota wheat fields boasted above-average yields, but as scouts moved farther north on the second day of the Hard Red Spring and Durum Wheat Tour, delayed planting and empty acres were surfacing by noon.

Farther south, things looked better. Tour organizer Ben Handcock's car was pulling in good yields, averaging 47.9 bushels per acre after seven stops by noon. Scouts in that car had roamed through fields in McHenry, Ward and Burleigh counties, where average hard red spring wheat yields range from 35 bpa (McHenry) to 40 bpa (Ward). A car moving through Mclean County reported an average yield pushing 60 bpa, where the five-year average is closer to 36 bpa.

As cars continue to advance north, yields have slowed down, however. North Dakota Wheat Commission's marketing specialist Erika Olsen said scouts in her car had begun encountering empty acres and late-planted wheat fields in McHenry and Sheridan counties.

"Our yields have kind of been all over the place," she told DTN. Her car's yield estimates ranged from 16 bpa to 46 bpa, with an average of 31 bpa by noon.
The northern counties of North Dakota saw the worst of the wet spring and delayed and prevented planting, so more empty acres are likely ahead for scouts for the rest of day two. "As we head toward Fessenden (N.D.), we'll probably see more," Olson noted.

Scouts weren't reporting any serious insect or disease damage by midday. "The wheat looks good, clean," Handcock said. "You can find spikelets with scab, but it looks good."

Tonight scouts will end the day in Devils Lake, N.D., and release a day two average yield estimate.

Emily Garnett can be reached at Emily.garnett@telventdtn.com

(AG/CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
DEVILS LAKE, N.D. (DTN) -- Scouts spent a long day sweeping through 191 fields in northern, northwest, and north-central North Dakota on the second day of the Hard Red Spring and Durum Wheat Tour. Despite widespread sightings of flooded, delayed, and prevented planting acres, scouts found above average yields and little insect or disease pressure.

Hard red spring wheat was estimated at 45.1 bpa, just below last year's estimated average of 45.5 bpa, but still well above the 10-year trend line. The two-day total for the spring wheat tour this year averaged the exact same estimated yield as last year's two-day total: 44.1 bpa.

From reports on 38 fields, the two-day average for durum wheat was 43.4 bpa, more than two bushels above last year's two-day average of 41.5 bpa.

Since scouts only examine planted wheat fields, the tour cannot account for unplanted acres and the impact they might have on final production numbers. USDA has estimated total prevented planting acres in North Dakota at 4.4 million, but USDA's most recent production report left spring wheat acres unchanged, at 5.7 million acres.

"I think the USDA numbers are way too high," said David Clough, a wheat, soybean, and pinto bean farmer from Fessenden, N.D., who also serves as a N.D. Wheat
Commissioner. He pointed out that USDA prevented planting acre numbers don't include acres that were switched from wheat to soybeans after the late, wet spring.

"We had seven inches of rain the last two weeks of May," he told DTN. "I seeded my last wheat acres June 8, and then I switched to soybeans," he said. He estimates that 25% of his wheat acres have been seeded into soybeans, and that most spring wheat farmers in his area made similar adjustments.

"We're going to be combining in September," he said. "Quality really goes down when you have to wait that late." However, Clough has been pleasantly surprised by how well his late-planted wheat has caught up. "It's a lot better than I would have thought," he said.

Wheat tour scouts agreed. Most cars reported clean fields, with little insect or disease damage, and above average yields. Tour organizer Ben Handcock's car ventured through north-central counties like Burleigh, Mclean, and Ward, and produced a 45.9 estimated bpa, well above the five-year average for that area. "The wheat looked good, clean," he said.

Starting as far south as Wells County, however, scouts started spotting empty fields lying fallow and covered in weeds like downy brome and curly dock. Scouts who swung through more northern routes and scouted counties like McHenry, Burke, Mountrail, and Bottineau reported lots of water, flooded acres, empty fields and late-maturing wheat. One car spotted ducks bobbing in a wheat field in the northernmost central region of North Dakota.
Most scouts saw fields in soft dough or milk stages, but more northern counties reported late-planted wheat fields in the boot or flowering stages. Many appeared to be as far as four to six weeks from harvest.

"When I see harvest being four weeks away, that's just scary to me," one Wells County farmer told the wheat tour scouts as they gathered for their dinner in Devils Lake, N.D. "If we don't get consistent cool weather, there could be a huge reduction in those fields you saw flowering."

The deadline for certifying acres in Wells County, where Clough farms, was delayed to August 2 recently, to accommodate the many farmers still figuring out what to do with their acres. As a result, the final amount of unplanted acres won't be known for another week or two.

Whether above average yield potential will salvage production in such a delayed season is even less certain.

"It's going to be a crapshoot this fall," Clough said. "Hopefully we don't get a frost until October."

You can follow DTN's progress on the spring wheat tour at @EmilyGarnett6.

Emily Garnett can be reached at Emily.garnett@telventdtn.com

(CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Spring Wheat Tour: 44.8 BPA
Crop Far From Out of the Woods, Tour Veterans Say
Emily Garnett DTN News Intern
Fri Jul 26, 2013 03:08 PM CDT

FARGO, N.D. (DTN) -- Scouts experienced deja vu on the final day of the Hard Red Spring and Durum Wheat Tour. Despite widespread flooding, delayed planting and prevented planting reports, the tour's total spring wheat yield estimate of 44.8 bpa

By the end of the tour, scouts had visited 472 fields across North Dakota, South Dakota and Minnesota. Of those, 433 were hard red spring, which was estimated at 44.9 bpa, once again matching the final hard red spring average from last year. Last year, durum yield was estimated at 42.4 bpa; this year, scouts produced an average of 41.7 bpa from 31 fields.

This year joins the last four years of 40-plus-bushel-per-acre predicted yields that have averaged well above the spring wheat tour's trend line. In 2012, the wheat tour's 10-year average for hard red spring wheat stood at 37.6 bpa. Unlike last year's spring wheat crop, however, this year's crop is far from out of the woods, tour veterans and organizers noted.

"A year ago was a very different year -- last year they were cutting wheat at this time, this year it's got quite a bit to go," tour veteran Dave Green told scouts. "Hopefully we can see these yields realized."
The wheat tour has a history of coming very close to final USDA estimates of the spring wheat crop. Last year, the wheat tour's final estimate of hard red spring wheat came within one-tenth of the USDA's final estimate of 45 bpa.

"If it stays cool, this crop is going to yield just what we said," tour organizer Ben Handcock told DTN. "If it's hot and dry, some test weights will be too low. Mother Nature is in charge now. But right now it's as good as we could hope for."

At 74 participants, the spring wheat tour reached record numbers, Handcock said. The tour included millers, bakers, farmers, grain traders and media.

The tour started on Tuesday in Fargo, and scouts fanned out across the northern South Dakota, western Minnesota, and southern and western North Dakota on the first day, ending in Bismarck, N.D. On the second day, they ventured into central, northwest, and north-central counties of North Dakota and finished up in Devils Lake, N.D. The final day looped through northeastern North Dakota, with some cars sweeping the northwestern counties of Minnesota before returning to Fargo.

As the tour advanced north, field measurements produced steadily higher yields. Scouts produced an average of 43.5 bpa on the first day, 44.6 bpa on the second, and 48.7 bpa for the third day. The rising yields took many by surprise, as flood damage and delayed planting was especially prevalent in northern North Dakota this spring.

At the final tour meeting in Fargo, N.D., scouts reported a wide variety of maturity among wheat fields, ranging from one to six weeks away from harvest. Several cars that explored northeastern counties reported fields that had only just started to boot.
Over the course of the three days, however, very few reports of disease or insect damage came in. Although some fields had scab, wheat stem maggot, aphid and grasshopper presence, most fields were headed out and beyond the stage where these pests can do economic damage to yield.

After the wet, cool spring, protein remains a big question mark for farmers, millers and other wheat industry players. "Usually in a wet year, we get a little lower protein, but there has been some heat out there," North Dakota Mill President and General Manager Vance Taylor told DTN. "So we're watching it."

Wells County farmer and ag retailer dealer Terry Weckerly expects an average year of 14% protein in his area. Ultimately, weather and the growth stage of the field will determine final protein levels. Very delayed fields could be too young to benefit from heat in the next week or so. "From milk on up to hard dough, that's when you start building protein," Weckerly said. "You need that heat stress during grain fill or it does you no good."

Back at the North Dakota Mill, Taylor remains cautiously optimistic. "I think the wheat is going to be fine; there's going to be plenty of good-quality wheat," Taylor said. "But we don't really know until we're done and it's in the bins."

Emily Garnett can be reached Emily.garnett@telventdtn.com

(AG/CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- As pollination gets underway across the Midwest, emerging corn silks might find adult corn rootworm beetles waiting for them.

The cool spring that led to delayed planting also slowed the rootworm hatch in many states. Farmers and entomologists are only now starting to spot adult beetles in states such as Iowa, Minnesota, North Dakota and South Dakota. At the same time, nearly three-quarters of the nation's corn crop has started silking, according to the USDA's crop progress report.

"It is always a smart idea to scout for insects in corn fields during pollination. But with adult corn rootworm becoming active during silking this year, we highly recommend keeping an eye on fields in order to protect yield," warned Iowa State Extension Entomologist Erin Hodgson in an ISU crop management article.

Western and northern corn rootworms are a very thorough pest when it comes to the corn plant. The rootworm larvae spend their early summer childhood dining on corn roots underground. Like many teenagers, the larvae then lapse into a period of adolescent inactivity -- the pupal stage -- before becoming fully functional adult beetles, usually in July. The adults crawl up the corn plant to feed on leaves and, if they're lucky, fresh corn silks.
Ada Szczepaniec, South Dakota State Extension entomologist, recommended that growers scout for adult beetles every two to three days starting right before silking and ending when corn silks are starting to dry up and turn brown. The beetles aren’t early risers, so late morning and early afternoon scouting will catch them in their most active state, she explained in a South Dakota State Extension newsletter.

This week, Tristan Mueller, operations manager of the Iowa On-Farm Network, urged growers to monitor fields, particularly continuous corn. He noted that replanted areas and late-planted fields may be especially vulnerable to rootworm damage, both from larvae and from adult feeding. He said late-planted corn may draw in large numbers of adult beetles looking for something on which to feed.

The On-Farm Network is evaluating soil insecticide used in conjunction with Bt traits. Mueller reported heavy feeding in rootworm hotspots. Read the total report (PDF) here: http://goo.gl/…. See images of the northern and western corn rootworm beetles here: http://goo.gl/….

In drought-stressed fields, plants can only tolerate around five beetles per pollinating plant. During wetter seasons, the treatment threshold is closer to 15 beetles per plant, Hodgson said. When beetles have eaten still-green silks down to less than one-half inch from the corn ear on the plants you sample, a foliar insecticide treatment may be warranted, she added. Silks that are longer than one-half inch are still capable of full pollination, according to Szczepaniec.

Hodgson also recommended digging up some plants to check for root damage. It's too late to protect your plants against the lodging and yield loss that root feeding can
produce, but scouting roots every year will help you understand how well your rootworm management plan is working to make adjustments for next year.

Iowa State University has designed a 0 to 3 scale for ranking root injury that can help farmers evaluate how severe their damage is. See an interactive version of the scale here: http://goo.gl/….

In Nebraska, adult corn rootworm control programs have been used to manage corn rootworm populations in continuous corn since the 1960's. The goal of adult spray programs is to suppress beetle populations and reduce egg laying so larval populations the following season will not cause economic loss.

Adult corn rootworm management takes a good understanding of beetle biology and can be labor intensive. A guide sheet to help with sampling techniques and assessments can be found here: http://goo.gl/…

Emily Garnett can be reached at emily.garnett@telventdtin.com

(PS\SK)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- That bright orange color coating skin and clothing after walking cornfields isn't a trendy new type of tan. Southern rust has blown in for an unwelcome visit in several parts of the Midwest this week.

Recent rainfall and an overall wetter summer than last year have encouraged the development of some foliar corn diseases, particularly southern corn rust. While typically more frequent in the South, the disease has recently surfaced in Nebraska, Kansas, Illinois, Kentucky and Arkansas.

Nebraska has seen the most reports of southern rust, with 11 eastern and south-central counties confirming infected fields. Kansas has three counties with confirmed infections. Kansas State Plant Pathologist Doug Jardine told DTN he expects that number to grow. "The [rust] levels so far have been kind of light," he said. "But it's been perfect weather for it, so I'm expecting it to increase here."

University of Nebraska Plant Pathologist Tamra Jackson said the prevalence of late-planted corn fields in Nebraska and other states puts farmers at a greater risk for yield loss should the disease start gaining speed.

"Since it's been a little cooler, those temperatures have held southern rust back a little bit," Jackson told DTN. "If we get into a warmer weather pattern and continue to see
the rainfall, we very well could have it blow up on us because we do have a lot of spores and infected leaves out there."

This season might produce flashbacks to 2006 for some central Nebraska farmers, she said. A similarly cool spring that year delayed planting, and an epidemic of southern rust dropped yields significantly in late-planted corn fields. According to recent USDA crop progress reports, most of the nation's corn crop has entered pollination stages a little later than usual this year, which makes them more vulnerable to yield loss, Jackson said.

In general, the earlier southern rust comes, the worse, she explained. "And that's why several of us got kind of bent out of shape when it showed up a week ago when we've got corn that has just barely tasseled in some of these fields. Now we're just past pollination in some fields and beginning to get into grain fill, and so of course if you start losing leaf area during grain-fill stages, that's mainly when you have yield impact."

Southern rust can be easily confused with common rust, another rust disease that has been cropping up in Nebraska and other Midwestern states. Both diseases produce spore-filled pustules on leaves, but southern rust pustules are mostly confined to the top of the leaves, whereas common rust can be found on both sides of corn leaves. Southern rust pustules tend to be small and reddish orange. Common rust pustules are larger and darker, Jackson said.

The distinction can be elusive to the untrained eye, but fortunately good images of the diseases side by side exist, such as in this University of Nebraska publication: http://goo.gl/….
Common rust is just that -- common -- so most commercial hybrids have some resistance to it. Southern rust is a less frequent visitor to Midwest cornfields. While many seed corn companies screen for the disease, genetic resistance is limited.

Like many rust diseases, southern rust has the ability to increase exponentially very quickly. "In one pustule, you can have as many as 5,000 spores, and so if there're a few hundred pustules in a little patch on a leaf, you can see where you can get up to a million spores really fast on a single section of a leaf," Jackson explained. "It goes from just a little bit to a whole lot in just a matter of days under the right conditions."

Hybrids with little tolerance for the disease combined with opportunity for a speedy spread make scouting an important component of protecting yield this year.

Unfortunately, scouting a field can be a bit grueling. "Rust is not going to be evenly distributed across a field, especially when it first starts, so people really have to do a good job scouting in a pattern across their fields repeatedly over the course of the next couple weeks, Jackson said. The disease is wind-borne and doesn't overwinter in the U.S., so previous infections won't put your fields at greater risk. Any field is fair game for the disease this season.

No solid spray threshold exists for southern rust at this point, Jackson said. Growers should take into account weather forecasts, since the disease spreads best during humid days with temperatures between 70 and 85 degrees.

Growth stage of the corn is also important. "Every field has to be evaluated on an individual basis," Jardine said. "We've got corn that's everywhere from early milk to getting ready to dent. So if you're at or near dent, just ignore it, don't worry about it. If
you're still in milk and you've got a pretty susceptible hybrid out there, it could still do a lot of damage."

For a list of fungicides and information about their effectiveness against various foliar diseases, see this University of Nebraska publication: http://goo.gl/....

In general, farmers in states where the disease has been spotted should keep an eye on both their corn leaves and the weather forecasts for the next few weeks. "We're not in a widespread epidemic by any means at this point," Jackson said. "It just seems we've got quite a bit of it around, and we're on the edge of something that could happen if the weather turns right."

Emily Garnett can be reached at emily.garnett@telventdt.com.

(PS\SK)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Revamping Rural Energy Use

Farmers Receive $22 Million From Federal Loan, Grant Program

Emily Garnett DTN News Intern

Thurs Aug 15, 2013 02:30 AM CDT

OMAHA (DTN) -- What does a cattle company in Los Lunas, N.M., have in common with a Chinese veterinary herbal company in Reddick, Fla.? Both are planning to install a solar panel system with loans made available by the Rural Energy for America program (REAP).

In a press conference Thursday morning, Undersecretary for Rural Development Doug O'Brien announced that through REAP, USDA has rewarded nearly $22 million in grants and loans this year to 631 farmers and small rural businesses in 42 states, as well as Puerto Rico and the U.S. Virgin Islands. Seventy-two percent of those recipients received loans or grants exceeding $20,000.

REAP began in 2002 as a smaller program that mostly funded Corn Belt farmers' efforts to switch to more efficient grain dryers. In the 2008 farm bill, the program was expanded and received $255 million in mandatory funding through 2012. When Congress failed to pass a farm bill last year, the January 2013 appropriations bill helped pad the $20.8 million left over from the 2008 farm bill for REAP, which brought its total funding for 2013 to $60 million.

Through the program, USDA accepts applications for loans and grants for any project by a rural business or farmer that will promote cleaner or more efficient energy
use. Funding for "feasibility studies" and "energy audits" are also available to help farmers or business owners tabulate their current energy use and potential savings of a new system. Applications that score the highest points for energy savings are accepted.

A conscious effort has been made to expand the program's reach, O'Brien said. "In 2002 ... we saw the biggest uptake in the Corn Belt, primarily with supporting retro-fitting grain dryer systems," he explained to listeners on the news conference call. "When the Obama administration came in, one of our chief tasks at Rural Development was to implement the 2008 farm bill (where) there were significantly more resources and a retooled REAP program, and one of the goals that we had was to make sure it was a national program that supported different types of renewable energy and energy efficiency systems."

This year's successful applications give a good picture of how much the program has grown since its 2002 debut. Only 22% of the recipients hailed from Corn Belt states, and grain dryer replacements made up only one-quarter of REAP loans and grants.

Solar panel systems were a popular choice among applicants, making up 34% of the listed recipients. Updating irrigation pumps or pivot systems accounted for another 9%. A smattering of other projects from geothermal systems to updating poultry and hog facilities made up the rest.

Only one applicant listed applied for a loan to install a flexible fuel pump, which allows users to select a variety of ethanol-blended fuels at one pump. However, Kelley Oehler, branch chief of the USDA's Rural Development energy division, said that number will go up as the year continues.
"We're going to be doing some more announcements for the remainder of the year, and we'll have a few more flexible fuel pumps that are going to be announced in those," he told listeners. "Currently, to date, I'm showing about 13 (applications) totaling about $400,000 for flexible fuel pump awards," he told listeners.

One caller to the news conference expressed surprise at the number of tobacco farms which received federal loans or grants, given the government's overall effort to curb tobacco use. In total, 22 tobacco farms received a total of nearly $242,000.

"The program was designed to support farmers generally, as well as small rural businesses, and as those applications came in, we looked at those that had the most promise in improving the bottom line of that farmer or that business, and what came through that system were a very, very small number of projects involving a tobacco farm," O'Brien explained.

Oehler added he expects the award total for 2013 to exceed the $35 million and 872 projects awarded by REAP last year. Since 2008, the program has funded 7,000 energy projects, with $220 million in grants and $180 million in loan guarantees.

Emily Garnett can be reached at Emily.garnett@telventdtn.com

(CZ/AG)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- Wet spring soils and late planting left many soybean fields more susceptible to a rash of diseases and pests early this summer and the assault has continued into August.

DTN warned earlier this spring about the possibility of sudden death syndrome (SDS) in soybeans, as many soybeans were planted into wet, cooler soils, where the fungus thrives. Now some soybean fields are starting to show symptoms of this yield-robbing fungus. Alerts were issued this week for Illinois, Indiana and Minnesota farmers to monitor for SDS.

This week, positive confirmations of soybean rust continued to mount in Southern states and moved as far north as Arkansas. Soybean aphids have also been detected in several Midwestern states.

SUDDEN DEATH SYNDROME

"Sudden death syndrome, or SDS, has been observed in soybean fields in Indiana over the last week," Purdue Plant Pathologist Kiersten Wise told growers in a university newsletter. "Many soybeans throughout Indiana emerged from wet soils this spring, and growers should be watching for symptoms of SDS in fields over the next few weeks."
Illinois plant pathologist Carl Bradley told DTN the first incidences of the disease have shown up in that state. "It seems like symptoms really started to become much more obvious last week, but I'm not sure how widespread they are," said Bradley.

Even states that haven't seen symptoms of SDS yet are encouraging growers to look for it. "Weather and soil conditions this season have also been favorable for two other diseases of soybean that can cause considerable damage...white mold and sudden death syndrome (SDS)," University of Minnesota Plant Pathologist Dean Malvick said in a university crop news publication. "Although I'm not aware of any confirmed reports of these diseases developing yet, I expect them to be appearing in many fields soon," he said.

Farmers who planted beans into cool, wet soils should scout. Classic symptoms include leaves that have brown and yellow patches running between the veins, which will remain green. See Purdue Extension's pictures of infected plants here: http://bit.ly/…

Wise said the disease is sometimes confused with brown stem rot, which is also present in Indiana fields. Splitting the lower stem and peering inside can help distinguish the diseases. Brown stem rot -- as the name suggests -- turns the internal stem brown, whereas the center of plant stems with SDS will remain white.

Although there is no treatment for plants damaged by SDS, scouting for the disease now can help farmers make informed decisions about their seed variety selections this fall. Many seed companies offer seed varieties with varying levels of SDS-tolerance.
SOYBEAN RUST

Soybean rust (SBR) arrived two to three weeks early in Southern states this season. The disease has been spreading and advancing north ever since. Fields with the disease have been confirmed in 70 counties in eight states.

Travis Faske, Arkansas extension plant pathologist, reported SBR was positively identified in two commercial soybean fields near Baxter and Jerome in Drew County in southeast Arkansas this week. Soybeans were at the R6 growth stage in both fields. For more information on treatment recommendations and a field day to allow growers a chance to learn scouting techniques: http://bit.ly/…

Plant pathologists in more Northern states are warning growers to stay alert for the disease. "Soybean rust (SBR) has made it to northern Alabama," Ohio State soybean Extension specialist Anne Dorrance told the state's growers in a university newsletter on Aug. 5. "We have been scouting southern Ohio and to date have not found soybean rust. We will increase our efforts over the next week."

The fungus is carried on winds and thrives in warm, moist conditions, so growers should be on the alert as hurricane season bears down on the southeast U.S.

"Soybeans that were planted during May/early June are not at risk from soybean rust [in Ohio]," Dorrance explained. "However, there are several fields in the very southern counties that were not planted until early July. These may be at some risk. This will be dependent if rain storms come up from the south."

The spread of soybean rust is tracked by a U.S. Department of Agriculture website, which provides state-by-state updates. You can find the website here:
SOYBEAN APHIDS

Aphid populations, which arrived later than usual this summer, are making up for lost time. In pest newsletters, entomologists in Ohio, Iowa, Indiana, Illinois, Minnesota, and Wisconsin have reported rising, even economic, populations in some soybean fields.

The cooler weather that many Midwest states have enjoyed this August has been popular with the aphid population too, which fares best in moderate temperatures.

"Cool to moderate late-summer temperatures will promote favorable conditions for aphid development and survival," University of Illinois entomologist Michael Gray warned growers in the university's pest bulletin this week. "Producers are encouraged to scout their soybean fields vigilantly over the next several weeks for soybean aphids."

For more information on the life cycle, scouting and treatment threshold of aphids, refer to an earlier DTN story about this pest: http://bit.ly/…

For a helpful chart showing how treatment thresholds change as the soybean plant develops, see this Purdue University Extension table: http://bit.ly/…

(Ps/AG/CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Editors' note: DTN reporters took time this summer to examine how farmers and states are managing groundwater resources from the Ogallala aquifer. The series reports on challenges in Texas, Kansas and Nebraska, as well as how the irrigation business is expanding.

LEXINGTON, Neb. (DTN) -- Pivot irrigation is king in central Nebraska. Long, spindly arches stretch endlessly out across field after field, a visible reminder of the invisible -- the vast and cherished Ogallala aquifer, buried hundreds of feet below Nebraska's thirsty cornfields.

In Dawson County, however, a less visible irrigation system has been gaining traction with a few farmers. Since 2005, Lexington, Neb., farmer Don Anthony has been laying miles of small plastic tubing under his corn and soybean fields, until nearly one-fourth of his 1,200 acres are now solely watered by sub-surface drip irrigation. His neighbor and best friend, Don Batie, has an 80-acre field in drip tape and hopes to add another 80 acres in the next five years.

They are oddities in this part of the country. "They think I'm crazy," Anthony said of his neighbors, who primarily use center pivots and furrow irrigation to water the corn
and soybeans that dominate this area. Sub-surface drip irrigation has been around since the 1970s, but it has been mostly limited to smaller, more specialized fruit and vegetable operations. For the two Dons, however, drip irrigation has proven to be a flexible, water-saving addition to their irrigation systems.

BUCKING THE TREND

Just 200 miles east of Anthony and Batie's farms, the first center pivots were manufactured by Robert Daugherty, the founder of Valmont Industries, who is credited with successfully commercializing the massive sprinkler systems. Today, such sprinkler systems account for 80% of Nebraska's irrigated acres and more than 50% of the nation's total irrigated acres.

As pervasive as pivots have become in large-scale row-crop operations, they do have some drawbacks. They are prone to wind and weather damage -- Anthony credits a lightning strike with causing $40,000-plus in damage to one of his pivots four years ago. Their reach is limited in rectangular fields, and even corner arms -- the costly additions that help center pivots reach field corners -- leave some acres not watered. Their long, uniform arches make it difficult to set them up in odd-shaped fields, steep or uneven fields, or acres with obstacles such as creeks or power lines. And finally, despite excellent overall water efficiency, pivots can lose 10% to 25% of water they emit to evaporation and runoff, according to USDA studies.

Laying drip tape under their acres with creeks and power lines, steep hillsides and field corners have allowed Batie and Anthony to eek additional bushels out of their land
with minimal water use. Drip irrigation systems can produce water efficiency rates as high as 95%, some studies show.

The Central Platte Natural Resource District that regulates water use in Dawson County, where Batie and Anthony farm, forbids landowners to convert any dryland to irrigation, and no new wells have been dug since 2006. In such regions, drip irrigation is at its most attractive, since any method that will save some water and add yields makes sense for these water-locked farmers, Anthony pointed out.

Last year, their area saw less than an inch of rain between May and harvest, Batie said. He applied between 18 and 25 inches of water on his pivot fields and 36 inches on his furrow irrigation fields. His 80 acres in the drip irrigation system, however, only needed 10 to 12 inches.

One 80-acre field of Anthony's had been especially wasteful in the past. A power-line ran through the middle of it, forcing him to use furrow irrigation on it for years. The field's soil, a heavy Hall-series silty clay, slowed the water running through it, and the far side of the field often burned up from lack of moisture, no matter how much water he applied. At the land's driest, he soaked the field with 70 inches of water; even with a more water-efficient surge valve system, he could only cut it down to 40 inches. After burying drip tape under the problem field, Anthony said he averages only 8 to 10 inches of water on that field. In one exceptional year -- in 2010 -- he applied only 3.5 inches of water and grew 228-bushel corn.
AND PAYING FOR IT

Both Batie and Anthony acknowledge the drip irrigation system has its drawbacks and is only worthwhile on certain acreages.

Depending on the field's shape and size, costs of installing the system run from $1,200 to $2,300 an acre, double the cost of a traditional pivot system. Batie estimates it will take him six to 10 years to recover his 80-acre investment. The bigger the water savings, the faster the payback: Anthony estimated that paying back the problematic 80-acre field he converted from furrows to drip tape would take closer to five years.

Both Batie and Anthony have only installed drip tape on family-owned acres. With such a high initial investment, landowners are more wary. "The payout is so long, that I don't know how you would do it with a landlord," Anthony admitted.

While the tape may be safe from the effects of wind and weather, it does lie 16 inches underground, 60 inches apart, under a healthy stand of crops for part of the year, so maintenance involves getting your hands pretty dirty.

Also, Anthony and Batie have to filter their water before sending it through the drip tape. Both fight a constant battle with "clay-sand grit" that pervades their water supply and can clog the drip tape, which ranges in diameter from 5/8 of an inch to 1 and 1/8 inches. Anthony said adding a complex filter system called a "sand-media" filter upped his input costs by 12% in several fields where his tubes were clogging very quickly after the pump was turned on. Batie is now installing a remote monitoring system that will allow him to turn the water on and off, check on the pressure and flow of the water, and track his water use from a smartphone or computer.
Pressure gauges alert Batie and Anthony to clogs and leaks in the tape, and both have to do a fall "acid rinse" of the tape. Enfuric acid is mixed into their water tank until the water registers a PH of 2. The acidic water pumped through the drip tape burns away any deposits and has the added benefit of putting nitrogen into the soil and deterring rodents.

Although drip tape can be used to apply nitrogen, Batie and Anthony must spray foliar insecticides, fungicides, and other fertilizers separately. The tape also cannot help germinate seeds because it lies so far below the seedling. Fortunately, the no-till system that drip tape requires means the soil usually has enough moisture to put a stand up, Batie said. In his soybean fields, this very inability of weed seeds to germinate quickly after an initial post-planting spray has allowed him to cut his spraying passes from three to two.

WHILE THE GETTING'S GOOD

Both Batie and Anthony have plans to add more drip tape, but whether more neighbors will invest remains to be seen. "In this area, it'll continue to go in, but you won't see a land rush or anything," Anthony predicted. Good farm incomes and high crop prices will be the driving factor, both men agreed.

"It's hard when you're scraping by to break even to make investments that have a 10-year or 15-year payback," Anthony said. "It's just a function of finances. But when you can put most of the money right down now, you'll pay for it."

Batie said farmers should take advantage of good farm incomes while they can. "High crop prices have made it a lot easier to do technological improvements, whether it's pivots or drip tape or GPS technology," he said. "Those are things we should have been
doing years ago, but couldn't. That's why everyone's doing it now, before this boom ends."

Emily Garnett can be reached at emily.garnett@telventdtn.com

(CC/ES/SK/CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Editors' note: DTN reporters took time this summer to examine how farmers and states are managing groundwater resources from the Ogallala aquifer. The series reports on challenges in Texas, Kansas and Nebraska, as well as how the irrigation business is expanding. Other parts of the series can be found at http://www.dtn.com/…. 

OMAHA (DTN) -- One sector of agriculture thrived last year as a record-setting drought scorched crops and drained wells.

    Companies such as Valmont Industries and Lindsay Corp. -- two of the world's leading irrigation companies -- posted record revenues for 2012 and have seen unprecedented levels of irrigation sales continue into 2013.

    "Our business has really blossomed," said Randy Wood, the vice president of sales and marketing for Lindsay's irrigation sector.

    Healthy farm incomes, high commodity prices, soaring land prices and an unusually widespread drought last year have pressured farmers to squeeze every last possible dollar out of their land, irrigation company representatives told DTN. Farmers who never considered irrigation to be a cost-effective or a necessary investment are now scrambling to add irrigation systems. Moreover, concerns about the depletion of water
supplies spurred some states to establish limits on water use, sending farmers in search of ever more efficient irrigation options, often with the help of state and federal cost-share programs.

The result has been booming irrigation sales in a previously untapped market -- the Eastern Corn Belt. There has also been steady growth in the semi-arid Great Plains, long a reliable market for irrigation, where every inch of water counts for farmers.

"IRRIGATION MAKES IT ALL POSSIBLE"

Irrigation company representatives characterized the drought as an eye-opening experience for farmers. "The drought raised awareness that irrigation can pay off in just one year sometimes," Aaron Schapper, Valley Irrigation's vice president and general manager of international irrigation, told DTN.

Pivots are cropping up in untapped lands, in part thanks to the eastward creep of last year's drought and steadily high farm incomes. "We're seeing a lot of first-time irrigators right now, and that's resulting from the growth we're seeing in the Eastern Corn Belt," Wood told DTN. Dryland sales -- company lingo for converting non-irrigated acres to irrigation--used to only make up a third of Lindsay's sales. Replacement sales and switching from one type of irrigation to another made up the rest. Now converting dryland to irrigation supplies 40% to 50% of Lindsay's annual irrigation sales, Wood said.

Bill Taylor, a farmer in eastern Nebraska, estimates he has steadily added four to five pivots a year to his land over the past decade. "We've been converting about 400
dryland acres to pivots just about every year for the past 10 to 12 years," he told DTN at a Valley Irrigation Field Day held at his farm near Ames, Neb.

With help from underground water supplies, farmers have increasingly embraced water-hungry crops like corn. "Growing corn without (irrigation) would be profitable, but not as consistent," Taylor said. He estimated that irrigation on his Nebraska corn acres increases their profitability by 30% and has allowed the farm to expand steadily for nearly two decades. "Irrigation makes it all possible with the steady income it gives you," he said.

TURNING DOWN THE SPIGOT

In the Lower Platte North Natural Resource District where Taylor farms, officials are busy certifying all existing irrigated acres, in anticipation of the state shutting down any irrigation expansion there. "We've known for 20 to 25 years that they would someday put a stop to irrigation. We knew it was coming," Taylor said.

Irrigation companies have made the pleasant discovery that such state and federal intervention to turn down the spigot doesn't necessarily hurt their sales. States like Colorado, Kansas, Nebraska, Texas and Utah have increasingly moved to limit the amount of water farmers can pump, by setting well moratoriums or water allocations.

"That really sounds like it should be bad for our business," Wood explained. "But in some ways it's positive. As growers need to use water more efficiently because their allocation is being cut, switching from furrow or flood irrigation to center pivot irrigation results in significant water savings."
Irrigation companies have also found an ally in federal financial assistance programs like Environmental Quality Incentive Programs and the Ogallala Aquifer Initiative. These federal programs are authorized to write checks for up around 30% of the installation costs of new irrigation systems for a grower, such as pivots or sub-surface drip irrigation.

Brad Sonckson, the assistant state conservationist for the Natural Resources Conservation Service in Nebraska, said these financial assistance programs are usually not designed or authorized to police water use after farmers install the new irrigation system, so actual water savings are dependent on state regulation.

"We're working on an individual producer basis, and we don't have authority to determine what a producer grows -- what crop they grow or where they grow it or how much they grow," Sonckson said. "It's up to the regulatory agencies to determine if there's regulations in place as far as can they expand their irrigated acres or can they pump more water."

Wood used the phrase "core markets" to describe the area of Nebraska, Kansas and down into the plains of Texas. These regions are all places where DTN has chronicled agriculture grappling with increasingly tight or non-existent water supplies earlier in this series, but Wood declined to comment on any possible connection between irrigation and water depletion.

Valley Irrigation's National Sales Manager Doug Dale said he doesn't consider shrinking water reserves to be an industry responsibility. "We're all concerned about it as individuals, but I don't know what the industry can do to change it," he told DTN.
Schapper said the issue belongs in the hands of governments, not irrigation companies. "Governments have to step in and help regulate," he told DTN. "Farmers will always do what's in their best interest, moneywise. Governments right now don't realize water is a scarce resource."

He said irrigation companies actually perform better where governments intercede and regulate farmers' water usage. "We want water management, and we want government to place a real value on water," Schapper said.

LOOKING AHEAD

At one point during the Valley Irrigation field day, Taylor found himself surrounded by a cluster of international visitors from Ukraine, Russia, Ghana, and the Democratic Republic of the Congo. With the help of translators, they peppered him with questions about irrigation and American cropping practices. As dryland conversion picks up speed in the U.S., companies are looking overseas, where population growth and rising middle classes have driven the demand for large-scale agriculture.

Valley Irrigation, for example, does a healthy business in large crop-producing countries like Brazil and Argentina, and its annual report identified Africa, Russia and Eastern Europe as potential major future markets. Lindsay Corporation is also looking overseas, with sales in South America, the Middle East, Russia, and China.

Even if domestic dryland dwindles, U.S. farmland will still have plenty of growth to offer, just a different kind of growth. "The market over time migrates to a replacement market, because the majority of ground that is eligible for dryland conversion becomes converted over time," Wood explained.
Taylor estimated that in another two years, irrigation purchases for his eastern Nebraska cornfields would start transitioning entirely from new pivots to replacement machines.

Emily Garnett can be reached at Emily.garnett@telventdtnc.com

(CC/ES/AG/)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- A new study on future depletion of the Ogallala issued some dire predictions for the heavily-tapped aquifer, which supplies one-third of the nation's irrigated groundwater.

The Kansas State University study announced that in Kansas, 30% of the aquifer (referred to in the study as the High Plains aquifer), has been depleted already. At current rates, researchers predicted that an additional 39% would be depleted by 2060 -- for a total loss of 69% of the aquifer in just 50 years.

The study was released just as DTN's series on "Stretching the Ogallala" chronicled the shrinking aquifer reserves in Texas and Kansas. The deepest and widest part of the Ogallala resides under Nebraska, where rivers fed by the Rocky Mountain snowmelt help recharge the aquifer, and its water levels have been mostly stable.

In Kansas, however, rainfall and rivers can only replenish up to 15% of the amount of water pumped from the aquifer, according to the study.

This particular analysis of the Ogallala relied on Kansas' comprehensive water-reporting system, which allowed researchers to use data on water use from all 105 counties.
In 1987, the state's Groundwater Management District Act created districts governing local water, which the state considers public property. The districts required the installation of flow-meters on wells, which has supplied fairly reliable and consistent data on the state's water use since then.

Irrigation in Kansas has been on the rise since the 1800s, researchers noted. Supplementing rainfall with groundwater has allowed for the expansion of commodities like corn and cattle to take hold in a state where western and central regions are generally classified as "semi-arid." Last year, more than a third of Kansas' 4.7 million acres of corn were irrigated and the state was home to 6.1 million head of cattle.

Based on trends in corn and cattle production and irrigation technology, the study predicted irrigated water use in Kansas would peak around 2025, then decrease as water supplies becomes more depleted.

Researchers modeled hypothetical scenarios for four possible rates of water conservation: A reduction in pumping by 20%, 40%, 60% and 80%. Only the last and greatest reduction -- 80% -- could allow the aquifer to replenish naturally in Kansas.

Unfortunately, any reductions in water use rely on not only increasing water efficiency technology, but also a dramatic adjustment to the state's current agricultural production, researchers noted.

"The production levels at 80% ... can support only 12% of today's cattle population -- 0.5 (million) head of cattle, rising to 1.4 (million) head in 2110 as the result of increased water use efficiencies," the study said.
But accepting short-term reductions in agricultural production to conserve water would actually allow for greater production in the future, researchers said.

"Increasing water savings now from 20%, 40% and 60%-80% extends the time to peak production further into the future, and, ultimately, the region produces more corn and cattle because of more available water when increased water use efficiencies are realized," researchers wrote.

Water policy will play a key role, researchers concluded. "Although agricultural practices and technologies have led to advances in crop and cattle production, water policies have not yet realized significant reductions in the rate of groundwater use," the study said.

In Part 3 of the "Stretching the Ogallala" series, "Western Kansas Seeks to Preserve Irrigation Economy," DTN chronicled attempts by western districts to slow the rate of aquifer depletion. State officials are encouraging the production and development of more drought-tolerant crops, like sorghum, and the establishment of Local Enhanced Management Areas, or LEMAs, which could reduce water pumping by 20% in participating districts.

See the study here: http://goo.gl/…

Paid DTN subscribers can find the entire "Stretching the Ogallala" series in Recent Features.

Emily Garnett can be reached at Emily.garnett@telventdtn.com
Grass-Fed Beef Growing Pains
Producers Ponder the Definition of Grass-Fed, Non-Biotech Marketing
Emily Garnett DTN News Intern
Thu Aug 29, 2013 11:12 AM CDT

BISMARCK, N.D. (DTN) -- A grass-fed beef ranch manager from Maui, Hawaii, swapped grazing techniques with a ranching couple from northeastern Kansas. Across the room, a central Nebraska rancher who still finishes most of his cattle on grain explained how hard it is to sell grass-fed beef in the Cornhusker state, while a Mississippi producer explained he can hardly meet the demand for beef fed only non-biotech crops.

The diversity and tensions within the small, but wide-ranging, grass-fed beef industry were on display in Bismarck, N.D., last week as nearly 400 ranchers, breeders, academics, and beef industry representatives gathered for the fifth Grassfed Exchange Conference. Chief among the issues hashed out in Bismarck were industry disagreements over the definition of grass-fed beef, and the potential for grass-fed producers to tap into a growing anti-biotech market.

People came from 37 states and four countries and ranged from small, specialized ranches to large buyers and distributors. They heard from an equally varied set of speakers -- from the usual experts on soil health and grazing techniques, to Don Huber, a Purdue University professor emeritus whose controversial claims about the dangers of glyphosate and genetic engineering have made him a pariah among many in the agricultural industry.
AN INDUSTRY IN FLUX

Although the grass-fed beef industry remains small, Allen Williams, a geneticist and livestock industry consultant, told the crowd the industry has seen between 25% to 30% annual growth for the past 10 years. "One of the things we found in our research is that in a number of major metro areas in the U.S., grass-fed beef now accounts for somewhere between 3% and 6% of all beef sales," he told the audience. "That’s major, folks, considering where we've come from."

USDA market reporter Nina Biensen attended the conference to spread the word about USDA's plan to release a monthly market report on grass-fed beef prices. "They're growing to the point where they are becoming organized enough to climb to that next level of recognition," she said of the grass-fed beef industry. Biensen estimated the report will officially be released in the next two months.

The industry's expansion has not been without growing pains. As it strives to move beyond the niche market label, the very definition of grass-fed beef remains disputed by the assorted ranchers who produce it.

The temperature of the well air-conditioned conference room rose considerably when a panel of grass-fed beef buyers took the stage. When it became clear that four of the five buyers were permitting their producers to supplement their forage-based programs with soy hulls and dried distiller's grains (DDGs), some members of the audience expressed indignation.

"I'm going to have a heart attack," Idaho rancher Dusty Shifflett told DTN angrily. "You feed them grass, you stay with grass."
In 2007, USDA released a "marketing claim standard" for grass-fed beef, which demands that "grass and forage shall be the feed source consumed for the lifetime of the ruminant animal, with the exception of milk consumed prior to weaning." However, it also permits "silage, crop residue without grain, and other roughage sources" to be fed, and does not forbid the confinement of animals in feedlots, as long as they have access to pasture.

The American Grass Fed Association has produced a more stringent certified label (AGA-certified) that permits only grass and forage, bans feedlot confinement, and forbids antibiotics or growth hormones.

One of the presenters on the panel, Blaine Hitzfield, manages Honored Prairies, a company which markets grass-fed beef from 15 to 20 farmers to 3,000 customers in the Midwest. Honored Prairies only accepts meat that is completely grass-fed, and Hitzfield expressed concern for the integrity of the label when producers veer away from straight grass and hay rations. "We're playing with fire, as far my opinion goes," he said to a smattering of applause. "From my perspective dealing with the end consumer, I think that the term 'grass-fed' carries a lot of weight with it right now; there's a lot of integrity in that term."

The buyers on the panel who currently allow producers to supplement their grass-fed diets appeared apologetic and stressed the economic necessity behind that decision. Ryan Jepson runs Grass Run Farms, which markets "all-vegetarian" feed, and allows the feeding of soy hulls and distiller's grains. Initially, he tried to allow only grass in his producer protocol. "I started there but I migrated back toward the center as the
marketplace and the quality and profitability of production has guided us that way," he told the audience. "It doesn't always go with my personal beliefs on how the system should be run."

Hitzfield admitted sticking to pure grass-feeding makes for slower expansion but defended that rate. "I think we're going to have to be careful to let our capabilities determine how fast the market grows," he said. "Our protocol has kept us small; we've grown slow. I think it's important that we pay attention to what the consumer's expectations are, and deliver and keep the integrity of our product."

Jepson, along with the other buyers, expressed a desire to someday afford a grass-only production system. "This is a work in progress. We can't make change if we don't stay alive," Jepson said. "We like to work with producers and help them progress so that our program can progress toward what I call a 'cleaner system,' with higher barriers for entry."

THE GENETIC FACTOR

In a two-session presentation, Huber argued that glyphosate hampers plants' ability to take up valuable nutrients and has encouraged the national production of crops that lack proper levels of critical nutrients such as manganese. He also attacked the genetic engineering of plants, which he argued is more akin to a viral infection than traditional breeding. Huber attributes the development of a multitude of ailments from autism to irritable bowel syndrome and gluten intolerance to the proliferation of biotech crops and the widespread use of glyphosate.
Huber and his arguments -- which are hotly disputed by the biotech industry -- found open ears at the Grassfed Exchange conference. He was given a standing ovation, and many ranchers told DTN they were swayed by his points.

Bringing Huber to the conference was a long-considered decision to potentially align the grass-fed movement with the anti-biotech movement, Grassfed Exchange committee members told DTN. "A few of us had heard him speak before. I wanted to bring him a few years ago," Wayne Rasmussen, the founder of the Grassfed Exchange said. "And once more members of the committee heard him talk, we decided we needed to let producers know about this. We figured they would be receptive, and they can start this change in the industry."

All of the grass-fed beef buyers who spoke to the conference said they have plans to phase out biotech ingredients -- namely soy hulls and DDGs from biotech grain and Roundup Ready alfalfa.

"The next step obviously in order to have integrity, in order to sell a product that I'm confident is going to make my customers well instead of make them sick, is to figure out how we eliminate the use of glyphosate," Todd Churchill told the audience. Churchill, who works for Thousand Hills Cattle Company, which buys and distributes grass-fed beef, said the company plans to use a non-GMO label on its meat by spring of 2014. "Based on my read of consumers' understanding of GMO issues, I think we've only got a matter of months before, if you're going to sell a premium product for a premium price, the expectation is that it's going to be a GMO-free product," he said.
Allen Williams agreed, noting that embracing the non-GMO label would mean added value and a bigger market for the grass-fed brand. "As Huber's information gets out to the general public -- once the consumer hears of the issues with Roundup Ready crops and glyphosate, it'll be a game changer -- they will be the game changer," he told DTN. "GMO-free products will become very important."

Emily Garnett can be reached at Emily.garnett@telventdtn.com

(CZ/BAS)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
OMAHA (DTN) -- It's a pressure cooker out there and the Midwest corn crop is feeling the heat.

Recent windshield tours of Indiana have convinced Purdue Extension Corn Specialist Bob Nielsen that corn stalks are in danger. This week, Illinois entomologists added to the worry when they reported Western corn rootworm damage on first-year Bt corn in several counties. It all adds up to a need to scout fields now to appropriately stage fields for harvest.

"There's been a real difference on the physical appearance of the crops as you drive around the state," Nielsen told DTN. "So you kind of know that photosynthesis is really shutting down."

The timing of this dry, hot spell is problematic because it has descended just as much of the Corn Belt corn crop enters grain fill. Stress hurts the plant's ability to conduct photosynthesis, which is a critical step in grain fill. Instead, plants are forced to plunder their own stock of carbohydrates, stored in the stalks and leaves.

Not only does this self-looting weaken the stalks, but it makes the plant more susceptible to root and stalk rots, Nielsen noted. "As I drive up and down the highways of the state, I've seen areas of fields that are clearly dying prematurely, and I have to suspect
that there's stalk rot already in some of these fields," he said. The compromised stalks leave corn plants vulnerable to lodging and breaking during storms or windy days.

Drought and heat are the biggest crop stressors in Indiana, Nielsen said, but other factors are contributing to the problem. Some late-planted cornfields are battling nitrogen deficiencies and shallow root systems. Many states are also reporting a high incidence of leaf diseases like southern rust and hail damage, all of which can further stress the plant during grain fill.

Cool night temperatures in July and August have helped preserve stalk strength in areas with adequate soil moisture, Emerson Nafziger, University of Illinois professor of crop science, told a crowd at the Farm Progress Show in Decatur, Ill., this week.

"A lot of corn in Illinois had the chance to lay in lignin in the stalks thanks to the plants not being stressed at night. Those fields should be in good shape for standability, but you need to scout and test them to know." Nafziger said the next danger sign to watch for is firing, or yellowing, in the top leaves. "We often worry about the loss of bottom leaves, but they're down in shade of the crop canopy and really aren't doing much. But if we start seeing yellowing in the top leaves, that's a sign we could be losing yield and standability."

Western corn rootworm had been relatively quiet this summer. Then, this week, University of Illinois entomologists Mike Gray and Joseph Spencer, announced they had found some first year cornfields in Livingston and Kankakee counties exhibiting severe damage, despite rotation and the use of Cry3Bb1, a common Bt trait.
"We haven't proven resistance yet to the protein, although it does look suspicious," Gray told DTN. "So you've got potentially a Western corn rootworm that in same species has rotation resistance and it looks awfully suspicious that they may have developed resistance to this Cry3Bb1 protein as well."

Nielsen said severe rootworm injury to roots also makes corn plants more susceptible to drought stress.

Healthy, high-producing plants have their own set of challenges during these hot spells, Nielsen warned. "The ironic or depressing part of this whole thing is that plants with a high kernel count by itself have become the stress, because when you've got 600 or 700 kernels demanding dry matter, that actually puts a big stress on that photosynthetic machinery," he said. Certain hybrids can also be more susceptible -- clues to this can sometimes be gleaned from stalk health ratings in sales literature.

Damaged stalks might not become apparent until mid- to late-September, but growers should be scouting now in order to adjust harvest schedules if fields are found to be at risk for severe lodging.

Unfortunately, weakened stalks aren't always evident from the air-conditioned cab of your truck.

"It's more a matter of getting out and walking these fields in the next 30 days and finding out for yourself, because even the best hybrid in terms of a stalk health rating could still get into trouble if the conditions are severe enough," Nielsen said. "As you can imagine, none of us like to walk corn at this time of year. It's easy to tell someone to walk a field, but in reality it's a real chore to do it, and I understand that."
The best test is to simply rough up your plants a little. Nielsen recommended walking through your fields, perpendicular to the rows, and shoving the plants aside firmly as you go -- like a high school bully moving through a crowded school hallway.

"That is often enough of a push to tell you whether they're going to collapse easily or not," he explained. "I make sure that I give them a good push as I go between the rows. They will collapse pretty easily if it's severe."

If you find the potential for serious lodging -- or find actual lodging already -- Nielsen said an early harvest is typically the best move. "When I say early, I mean early relative to grain moisture," he clarified. "They [farmers] may have to harvest at a higher moisture than they want just to make sure that they avoid the standability issues if we get some October storms."

Weighing the cost of lodging against drying costs can be a tough decision. "You can fairly easily estimate the drying cost, if you know what kind of moisture you're starting at." Nielsen said. "The other though is more difficult because it depends on how severe the lodging is, and how successfully your header can pick up the corn or what percent ear drop are you going to have."

Emily Garnett can be reached at Emily.Garnett@telventdtn.com

(PS/GH/CZ)

© Copyright 2013 DTN/The Progressive Farmer. All rights reserved.
Chapter 5: Analysis

A large body of research on source credibility informed this study. The theory of source credibility contends that the credibility of the communicator of a message has substantial bearing on how the content of that message is perceived and evaluated by readers or an audience (Hovland et al., 1953). Carl Hovland and other researchers’ foundational studies on the theory in the early 1950s drew a distinction between “high credibility” sources and “low credibility” sources, and their evidence showed that reader opinions were more likely to be swayed by stories from high credibility sources—defined mostly as government sources or sources linked to respected institutions. They isolated the concepts of “source expertise” and “trustworthiness” as the primary influencing factors on a reader’s perception of source credibility (Hovland & Weiss, 1951; Hovland et al., 1953). Much of the later research on source credibility has continued to build on the ideas and definitions determined by this early work (Avery, 2009; Brinol et al., 2007; Heesacker et al., 1983; Lucassen & Schraagen, 2012; Petty et al., 1981).

The study and theories of source credibility have evolved and shifted focus over the past six decades, but one truth stands out: Credibility matters. The “credibility crisis” for the American media has been a topic of ample discussion and debate since the 1970s (Maier, 2005; Rouner et al. 1999; Gaziano, 1987). Public distrust is an obstacle to journalism’s primary goal “to provide citizens with the information they need to be free and self-governing” (Kovach & Rosenstiel, 2001, 17). Moreover, when the public questions the credibility of health and science communication, a credibility problem can threaten public safety and health (Avery, 2009).
The mechanics of source credibility are less certain; researchers have spent more than half a century debating the primary factors involved in reader trust and the measurements used to evaluate it. Several areas of focus have emerged as the primary culprits in shaping a reader’s perception of the credibility of a source of information. Much research has dwelled on the source—the communicator and his or her attributes—as the primary predictor of reader trust. Especially in early studies on source credibility, researchers tended to focus on the source of journalistic messages and operated under the idea that source credibility was controlled primarily by the characteristics of the person or institution delivering the message (Hovland & Weiss, 1951; Kelman & Hovland, 1953; Osgood et al., 1957). Some source-focused research has also noted a significant effect in the timing of a reader’s discovery of the source on their thoughts on the message’s credibility (Brinol et al., 2007). Other research has scrutinized the biases, attitudes and ideologies of the source and noted disparities in political ideology and assumptions about the news process between journalists and the general public that could affect perceptions of source credibility (Gaziano, 1987; Gladney, 1996; Martin et al., 1972).

Other researchers have devoted their attention to the reader and his or her biases, attitudes, and background. Often such studies try to pinpoint how readers assess bias and what role that plays in their perceptions of source credibility. Such studies tend to trace perceptions of bias to the reader’s personal viewpoints and ideologies (Gaziano, 1987; Gladney, 1996; Kocher & Shaw, 1981; Rouner et al., 1999). Age and gender have also shown strong statistical significance as factors in reader attitudes toward media sources.
(Robinson & Kohut, 1988). Overall, it seems clear that news consumers are a complex and varied group, and they bring attitudes and beliefs to every story they read.

Still other researchers in source credibility focus on the content of journalism; they evaluate its accuracy, biases, and level of complexity. Most accuracy-focused content studies show high rates of news inaccuracies, to the detriment of public trust (Maier, 2005; Tankard & Ryan, 1974; Tichenor et al., 1970). In general, most academic studies find error rates in general news stories that range between 40 and 60 percent. Perhaps not inaccurately, respondents considered reporter ignorance to be the primary factor behind the mistakes (Maier, 2005).

Agricultural journalism covers an increasingly complex industry. As agricultural producers become more reliant on advanced scientific and technological developments such as genetic engineering and self-driving tractors, communicating these changes and developments coherently and accurately can be challenge. Many studies have shown that scientific news, such as agricultural issues, poses a particular challenge to journalists. The content is more complex and nuanced, the general public has a low scientific literacy, the scientific community is smaller and not always cooperative, and traditional newsrooms are not equipped to deal with the long-term coverage science news requires (Dunwoody, 1986; Nelkin, 1995; Rogers, 1999; Stocking, 1999).

Thus the mainstream media—prone to inaccuracies in even general news stories—faces an even greater challenge in producing accurate agricultural news. Studies that have scientists review stories they were interviewed for find that science reporting is often distinguished by a significantly higher rate of error than regular new stories and
scientist interviewees were highly critical of science reporting in general (Tankard & Ryan, 1974; Tichenor et al., 1970). Agricultural news stories often rely on farmers and ranchers for interviews and information. Therefore, studies on the effect of content on a media outlet’s credibility are doubly important when investigating the agricultural community’s perceptions of media credibility.

With the growth of the Internet, more recent studies have attempted to measure the effect of different mediums and channels of news on source credibility (Chung et al., 2012; Johnson & Kaye, 1998; Kiousis, 2001; Lucassen et al., 2012). The most sophisticated, and probably most accurate, studies have combined all these factors—source, reader, content, and channel—in some measure. Some studies—psychology as well as mass media—focus on the influence of an audience’s relationship and familiarity with the content and the source on the credibility and effectiveness of the source (Kohn et al., 1976; Heesacker et al., 1983; Henkel & Mattson, 2011).

Most studies that examine the agricultural community’s trust and use of various information sources tend to use source-focused or channel-focused credibility theory and focus on agricultural information sources (as opposed to agricultural news). Many studies of agricultural producers’ perceptions of source credibility—particularly older, foundational studies—have generally analyzed the producers’ reactions and opinions to the source of their information alone (Ford & Babb, 1989; Gloy et al., 2000; Lichtenberg & Zimmerman, 1999; Sandoz Agro Inc., 1993; Schnitkey et al., 1992; Thomas, 1963). Increasingly, more recent studies of the agricultural community have examined the influence of the channel or medium by which producers receive their information on
source credibility (Boone et al., 2000; Lasley et al., 2001; Licht & Martin, 2007; O’Keefe et al., 2001; Tucker & Napier, 2002; Vergot et al., 2005). Finally, some research on the agricultural community’s relationship to sources focuses on farm media’s editorial content and assesses the potential for bias and omission due to advertising influences (Banning & Evans, 2001 & 2004; Hays & Reisner, 1989 & 1991; Reisner & Hays, 1989 & 1994; Reisner & Walter, 1994; Sommer & Pilisuk, 1982).

Since little quantitative source credibility research on the agricultural community has focused on views of mainstream media’s agricultural news content, this study leaned heavily on foundational source-focused credibility theory. Content and medium have been proven to interact and influence perceptions of credibility, so this study attempted to remove the influence of content from the study by using a bland, self-composed story that does not touch on controversial agricultural issues, and all respondents received the story by one medium alone—email. Because reader attitudes and beliefs do influence source credibility, this study only sampled agricultural producers who use the agricultural services of DTN/The Progressive Farmer, which limits the sample to one group of people with similar backgrounds and occupations. The only factor that directly influenced these producers’ responses to questions about their perceptions of credibility was the source of story. No doubt, as previous source credibility research has shown, the readers brought their own beliefs, knowledge, and biases to the content and to their perception of the source, but that is for another study. This study only tried to test the effect of the source on the readers’ trust and asked additional questions measuring their awareness of advertising influence.
Literature Review

Literature

Farm media—defined as any published magazine or paper “targeted at farm producers and [not including] academic journals” (Banning & Evans, 2001, 22)—have long held an influential and trusted place in the agricultural producer’s world. They first emerged in the early 1800s, often in conjunction with a growing number of agricultural societies. The publications started to gain significant traction and popularity in the agricultural community in the 1850s, and farmers have relied on them as a primary source for independent agricultural information since. Farm media expanded in the early 20th century, held steady during the world wars and then continued to grow and thrive with the introduction of television and radio (Boone et al., 2000). The 1970s were a high point for the industry, when the average American farm subscribed to seven different farm journals (23). However, the farm crisis of the 1980s, a rapidly shrinking percentage of Americans involved in agriculture, and industry-wide consolidation took a toll on farm media in the latter half of the 20th century (Boone et al., 2000; Evans, 2012).

Around the same time that farm media were expanding their role as an information source for farmers in the 1850s, mainstream newspapers were also beginning to incorporate agriculture into their daily reporting. Improved print and telegraph technology allowed newspapers to reach more readers than ever, and metropolitan dailies like the New York Times and the Chicago Tribune began employing farm writers to cover agriculture (Boone et al., 2000, 9-10). The farm beat, as such coverage was known,
thrived in the early and mid-1900s, but like farm media, mainstream agricultural coverage suffered as the 20th century neared its close.

During the nationwide reduction of agricultural coverage in newspapers in the 1970s, agricultural editors, reporters, beats, journalism training programs and news stories disappeared in great numbers (Evans, 2012; Pawlick, 2001). Scholars and critics familiar with the industry argue that mainstream agricultural coverage that does persist is low quality and spotty, and the industry is largely under-covered (Crossfield, 2011; Hochberg, 2010; Pawlick, 2001; Reisner & Walter, 1994). Because the bulk of the American populace relies primarily on the mainstream news media for news on agriculture, the public’s knowledge of a vital, influential industry is increasingly inadequate (Reisner & Walter, 1994).

The waning mainstream coverage of agriculture has left the agricultural community feeling marginalized and misunderstood by the public (Licht & Martin, 2007). Agricultural news that does reach the public tends to be shallow, stereotyped, and event-based (Reisner & Walter, 1994, Pawlick, 2001). With the advent of genetic modification, precision technology, and industrialized farming practices, agriculture is an increasingly scientific field, and science journalism is a challenging profession. Most mainstream newsrooms lack the resources for the long-term, in-depth coverage science news requires, interview subjects can be hard to find, and the content is complex and often foreign to the general public (Dunwoody, 1986; Nelkin, 1995; Rogers, 1999; Stocking, 1999). A comparatively higher rate of inaccuracies in science news stories due to these tensions is also well documented (Tankard & Ryan, 1974; Tichenor et al., 1970).
Unsurprisingly, this combination of marginalization and inadequate and often inaccurate coverage of agriculture has left many agricultural producers wary and distrustful of mainstream media. Most research on agricultural producers’ use of information sources has focused on where farmers get agricultural information as opposed to agricultural news; however, producers’ attitudes toward mainstream media inevitably surface in most of these studies. In focus groups directed by Melea Licht and Robert Martin, Iowa farmers explained that they use mass media for the bulk of their information but turn to interpersonal communications for more specific, local, farm issues. They consider information from individual meetings and consultations to be more reliable and necessary for distilling the larger quantities of information they received from mass media news outlets, which they regarded with limited trust (Licht’s thesis, 2007; Licht & Martin, 2007). Intense feelings of misrepresentation by mainstream media were widely shared by the participating farmers. They described local newspapers as “anti-agriculture,” focused on “bad news,” and generally uninterested in agriculture. Television coverage and ads evoked even stronger statements: “Most of them [sic] makes the farmers look like a bunch of idiots,” one said. Another said: “Their perception of farmers is insulting to our intelligence—including ads. They make us look like hicks sitting out there with three-pronged pitchforks” (Licht’s thesis, 2007, 106, 77). Other comments highlighted a feeling of marginalization and invisibility: “There just aren’t enough farmers to make it ag [sic] a priority for them (daily newspapers),” one farmer noted. “You’ve got to be quick to catch any ag information on TV… only negative ag info makes it to TV” another reported (Licht’s thesis, 2007, 59, 34).
A sense of persecution by mainstream media often pervades studies on agricultural producers’ attitudes toward information sources. Public and media scrutiny of agriculture-related environmental problems over the last three or four decades is widely resented among agricultural communities (Sandoz-Agro Inc., 1993; Lichtenberg & Zimmerman, 1999; Vandenabeele & Wildemeersch, 2012). In one study, an overwhelming 87 percent of producers stated that the news media’s inaccurate reporting had produced unnecessarily negative public perceptions of farming-related environmental issues. Overall, farmers indicated that news media poorly educated in environmental and agricultural issues were distorting farmers’ image as stewards of the land, and although they felt proper education could correct the problem, they did not trust the media to do it (Sandoz Agro, Inc., 1993). In another study, farming landowners’ rankings of information sources were compared to non-farming landowners. The results showed that farmers were far more likely to rank newspapers, radio, and TV as the least influential and the least trusted sources than the non-farming respondents (Perry & Rikoon, 1992).

Other studies have acknowledged that mainstream media do tend to emphasize agriculture’s role in environmental problems, and farmers who place more value on mainstream news tend to show more concern about environmental issues (Lichtenberg & Zimmerman, 1999; O’Keefe et al., 2002). Perhaps the most damaging feeling of all—fear—emerged in one study where researchers observed that, in the media landscape, some farmers feel like an “anxious spectator” who “feels quite vulnerable and experiences little involvement in the debate” (Vandenabeele & Wildemeersch, 2012, 63).
In the same study, farmers reported feeling a sense of “powerlessness” in the face of media reports on environmental disasters (66).

In contrast, farmers have consistently ranked farm media as one of the most important and trusted informative sources for farmers since studies on this topic began back in the 1960s (Thomas, 1963; Ford & Babb, 1989). Only interpersonal, direct communication—such as consultations or on-farm visits and tours—outranks or comes close to farm magazines for trust and credibility among farmers (Bruening et al., 1992; Ford & Babb, 1989; Licht & Martin, 2007; Schnitkey et al., 1992; Thomas, 1963; Tucker & Napier, 2002). In every study where mainstream media sources such as consumer newspapers or television stations were included as an option for information sources, they ranked far below farm media options in credibility and usefulness (Bruening et al., 1992; Gloy et al., 2000; Licht & Martin, 2007; Lichtenberg & Zimmerman, 1999; Perry & Rikoon, 1992; Schnitkey et al., 1992; Thomas, 1963).

Even early studies noted the influence of the information channel—print, television, or radio—on credibility (Thomas, 1963). As the Internet has emerged as a major media platform, more recent studies have specifically focused on the effect this channel of information could have on credibility. Internet access for rural agricultural communities is growing. Between 2003 and 2011, the number of rural residents with Internet access rose from 52 to 61 percent (Gualtieri, 2012). Farmers are more likely than ever to use computers, Internet information sources, and social media (Gloy & Akridge, 2000; Gualtieri, 2012). Although most studies on farmers’ information preferences produce contradictory reports on the influence of certain demographic factors (Gloy et
al., 2000), the factors of age and education indisputably influence technology use. Younger, more educated producers are more likely to use and prefer Internet channels for their information (Gloy & Akridge, 2000; Tucker & Napier, 2002).

Despite this digital information expansion, agricultural producers show a continued preference for traditional farm media, and Gloy et al. (2000) report that it “appears that the Internet might be a complement rather than a substitute for traditional information sources” (258). Even though the Internet has given farmers a wide range of rapidly disseminated information options, this range and speed has instead reinforced and renewed their well-documented desire for personal, one-on-one communication (Lasley et al., 2001). Even as they move online, farm media publications remain a highly ranked and widely preferred source of agricultural news and information among farmers’ increasingly large pool of options (Licht & Martin, 2007; Tucker & Napier, 2002).

Just as mainstream media coverage of agriculture has contracted and suffered, many studies contend that the quality and extent of farm media’s agricultural news coverage has also suffered. Farm magazines were initially subscription-based. With each subscription, farmers exchanged money for the magazine’s content, so in essence, every payment or lack thereof was input from the reader on the content; the reader had influence on editorial decisions. Farm magazines have become smaller and more specialized and have mostly transitioned to free, controlled circulation, wherein farmers receive a free subscription in exchange for giving the magazine their demographic information. The result is a publication almost entirely dependent on advertising income, and the advertisers, not the readers, are now a primary influence on editorial content.
At the same time, the agricultural industry, including publishers, has undergone massive consolidation. Between 1993 and 2002, the top agricultural publishers increased their market share by more than 30 percent (Evans, 2012). Likewise, a shrinking number of corporations now control the vast majority of biotechnology patents, seed production, and livestock production systems (Banning & Evans, 2005).

The consequences of a highly consolidated industry, fewer publishers of farm media, and extremely powerful advertisers have been well documented. Studies over several decades have consistently shown that farm media reporters and editors are increasingly subject to substantial advertising pressure on their content, in the form of threats, withdrawn ads, and editorial trade-offs (Banning & Evans, 2001 & 2004; Hays & Reisner 1990 & 1991; Reisner, 1994; Reisner & Hays 1989 & 1991; Reisner & Walter, 1994). Not only do farm media face more intense agricultural advertising pressure than mainstream media (Reisner & Hays, 1991), but many agricultural writers and editors reported that this influence does change and influence their content (Reisner 1994; Reisner & Walter, 1994).

In one study, agricultural journalists themselves evaluated news stories produced by mass media reporters, farm media reporters, and newspaper agriculture beat reporters (Reisner & Walter, 1994). They concluded that mass media reporters who are not familiar with agriculture produced superficial, stereotyped stories that were not biased toward industry, farm media reporters produced stories that were not superficial or stereotyped but were biased toward industry, and newspaper agriculture beat reporters
produced stories that were less superficial than mainstream reports and less biased toward agro-industry than farm media reports (526). As a result, scholars have expressed concern that farm media under-cover social, economic, and environmental problems related to agricultural practices and tend to serve an advocacy role for agro-industry in controversial issues (Bannings & Evans, 2001; Reisner 1992; Reisner & Walter, 1994).

Although many anecdotal accounts suggest agricultural producers are aware of these advertising tensions and trade-offs in farm media content, only one study attempted to quantitatively measure this awareness (Bannings & Evans, 2004). The majority of respondents (from a variety of ages and types of operations) reported that they did see advertising influence in farm media content in the form of editorial trade-offs, bias in stories, and decisions on what and what not to cover. Other studies have shown that farmers are capable of separating the usefulness or influence of a source from its trustworthiness. Although farmers generally indicated that they seek information from sources they trust most highly, they do use some sources (particularly mass media) a moderate amount while maintaining a lower level of trust in them (Constance & Rikoon, 1992 & 1993). These studies suggest that farm media readers are fairly savvy when it comes to evaluating content from various information sources, but more research is needed.

Most of the available studies on the agricultural community only measure their preferences for agricultural information sources, as opposed to agricultural news sources. Few mainstream media sources could be expected to match farm media for its production of agricultural information such that a farmer uses to run a farming operation. However,
farm media and mainstream media do overlap in their coverage of major agricultural news events, and this convergence is an understudied topic (Reisner & Hays, 1991, 42). Moreover, in the focus groups of Licht’s 2007 study, farmers at times indicated that they do actively compare mainstream media’s agricultural news coverage to farm media’s (Licht, 2007, 97). This study attempts to fill a gap in the research by specifically examining how agricultural producers perceive differences in credibility between mainstream and farm media in relation to their agricultural news content. It also measures whether producers detect the presence of advertising influence in a farm media story or consider the lack of such influence in a mainstream media story.

**Method Review**

Mass media researchers have long lamented the lack of an academic consensus for a functional definition of credibility (Meyer, 1988). Yet most studies accept the Webster’s New Collegiate definition that Philip Meyer recommends—something that “offers reasonable grounds for being believed” (567). Many researchers also invoke Carl Hovland and Walter Weiss’s concept of “trustworthiness,” from their foundational study on source credibility (Gaziano & McGrath, 1986; Hovland & Weiss, 1951, 636).

In 1986, Cecilie Gaziano and Kristin McGrath developed a 12-point scale for measuring credibility for the American Society of News Editors to use in credibility research. The scale consisted of 12 bipolar semantic differential items such as “fair or unfair” and “biased or unbiased,” and sought to measure fairness, bias, trustworthiness, completeness, factual nature, and accuracy (Gaziano & McGrath, 1986, 455). The researchers also added three items that would attempt to measure a “social concerns
factor,” which would account for feelings of trust associated with a media source’s relationship to the community (454-455).

In 1988, Meyer analyzed and tested this scale and offered a smaller, more concise credibility index of his own. He broke the concept of credibility into two factors: believability and “community affiliation,” defined as “maintaining harmony in and leadership status with the newspaper’s community.” He argued that the two concepts must be measured separately (Meyer, 1988, 567). His credibility scale pared down the Gaziano-McGrath scale to these semantic differential items: “Fair-Unfair,” “Unbiased-Biased,” “Tells the whole story-Doesn’t tell the whole story,” “Accurate-Inaccurate,” and “Can be trusted-Can’t be trusted.” His community affiliation scale contained only four items: “ Watches out after your interests,” “Concerned about community’s well being,” “Patriotic,” and “Concerned mainly about the public interest” (Meyer, 1988, 573-574).

In 1994, Mark West attempted to cross-validate the Gaziano-McGrath and Meyer credibility scales. He concluded that only Meyer’s five-point credibility scale had acceptable reliability and sufficient empirical validity to accurately and reliably measure the concept of credibility. His results showed that the Gaziano-McGrath scale items did not measure the same concept and that Meyer’s community affiliation scale produced unacceptable reliability and validity levels (West, 1994).

Many quantitative academic studies on agricultural producers’ use and preference of information sources and source credibility use semantic differential items similar to Meyer and McGrath-Gaziano’s scales or list the source and employ Likert scale responses to measure the respondent’s opinion on the items or the source (Bruening.
1992; Gloy et al., 2000; Lichtenberg & Zimmerman, 1999; Vergot et al., 2005). Other studies on this topic use directional statements about the credibility or usefulness of the source and use either Likert scales or nominal categories to measure the respondent’s agreement or disagreement (Banning & Evans, 2001 & 2005; Bruening, 1992; Constance 1995; Reisner & Hays, 1989 & 1991; Reisner & Walter, 1991 & 1994). Others employ a ranking scale and allow producers to list their source options in order of preference or use (Ford & Babb, 1989; Schnitkey et al., 1992; Thomas, 1963; Tucker & Napier, 2001).

Academic studies on how farmers and journalists perceived the presence of advertising influence on farm media content have generally used two sets of questions to measure these perceptions (Banning & Evans, 2001 & 2004). One set measures perceptions of the presence of advertising influence by offering three nominal categories (“agree,” “neutral,” and “disagree”) in response to statements such as “Agricultural reporters and editors are under no obligation to please advertisers” (Banning & Evans, 2004, 12). The other set focuses on whether producers believe advertising influence is a problem. Farmers are given several statements such as “attempts by advertisers to influence what stories appear” and can select one of two nominal categories: “Not a problem” or “problem in some cases” (12).

The majority of these agricultural community studies were self-administered mail or email surveys. Surveys have the advantage of high external validity, relative ease of production and administration, and an inexpensive design, particularly in the case of email or Internet surveys. However, they also lack the control over independent and dependent variables that can be found in field experiments (Wimmer & Dominick, 2011).
Samuel Stouffer once accurately noted that field experiments leave “a wide-open gate through which other uncontrolled variables can march.” (Meyer, 1988, 567-568). Yet field experiments have the critical ability to show causality between variables while maintaining a natural setting (Wimmer & Dominick, 2011). Since this study sought to identify the effect of source on perceptions of credibility and not just a correlation, the study was designed as a field experiment in the form of an email survey containing an agricultural news story—both a format and content with which agricultural producers are familiar. The only validated credibility scale—Meyer’s five-point scale—was used to evaluate and measure the first research question:

RQ 1: How does the media source of an agricultural news story—mainstream or agricultural media—affect agricultural producers' trust and perceptions of the credibility of the story, regardless of content?

A trimmed-down version of Banning and Evans’ statements about advertising pressure was used to evaluate the second research question. Three of their statements were revised to focus only on the reader’s knowledge of potential influence, without attempting to measure attitudes toward that influence. For consistency of design, the three statements used a corresponding five-point Likert scale to answer the second research question:

RQ 2: Do agricultural producers detect the presence or influence of advertising in agricultural news stories differently when they read stories produced by mainstream and agricultural media sources?
Method

Design

This study was a one-factor field experiment design, implemented through the use of online surveys. Participants received an email survey composed of a news story and a series of questions. Everyone in the sample read the same news story, but the story was labeled with one of two possible news sources (the between subject condition). Half of the stories were labeled with a mainstream media source, the Chicago Tribune, and the other half were labeled with a farm media source, DTN/The Progressive Farmer.

Sample

The sample was drawn from an email list of subscribers to DTN/The Progressive Farmer, an agricultural company that distributes agricultural information, data and news to more than half a million U.S. subscribers. Using a random number generator, two sets of 10,000 email addresses were selected from subscribers who fit the criteria of commercial farmers who work on 250 or more acres of row crops, with no geographic limits. One set of 10,000 emails was assigned to one condition and the other set of 10,000 to the second condition, so each participant received one of two possible versions of the survey. To determine how many responses were needed to generate a proper sample size, a G-power was calculated for ANCOVA and for one-tailed t-tests, using the standard media research effect size of 0.3 to 0.4. According to the results, the sample needed 250 participants per group.
Stimulus

The survey asked participants to read a mock news story of roughly 250 words (see Appendix 2). The news story was written deliberately to be a bland and uncontroversial article about the conclusion of one agricultural company, DuPont’s, lawsuit against another agricultural company, Monsanto, in the summer of 2012. The events were factual and both mainstream and farm media covered the lawsuit. The survey story was written using six sources’ accounts of the event: the New York Times, the Wall Street Journal, Farm Journal, Successful Farmer, Monsanto, and DuPont. Therefore, the story was one agricultural producers could expect to find in either mainstream or farm media. It involved agricultural companies that produce a lot of agricultural advertising, so questions about advertising influence were relevant despite the uncontroversial content. The story was reviewed and deemed appropriate for the survey and its audience by Dr. Sandy Rikoon, MU Professor and Curators Distinguished Teaching Professor of Rural Sociology, who has extensive experience surveying agricultural communities.

Half of the news stories bore the headline of DTN/The Progressive Farmer, a farm media company that regularly covers agricultural news and whose name is familiar to agricultural producers. The other set of stories bore the headline of the Chicago Tribune. The Chicago Tribune was selected because it is a major newspaper that most agricultural producers would readily recognize and identify as a mainstream news source but would also be less likely to elicit the predetermined opinions that national papers such as the New York Times and the Wall Street Journal might produce. Likewise, the Tribune is
urban enough to avoid eliciting feelings of familiarity or comfort, such as a newspaper like the Des Moines Register might produce for an agricultural producer.

The source of the story—either DTN/The Progressive Farmer or the Chicago Tribune—acted as the independent variable of news source in the field experiment. To ascertain that participants noted and processed the independent variable, one final question on the survey asked respondents which type of source—farm or mainstream media—produced the story they read.

**Dependent Variables**

Two dependent variables were evaluated by a series of questions respondents answered after reading the news story.

The first dependent variable was the readers’ perception of credibility. Using Meyer’s validated credibility scale, five of the survey questions addressed this variable by offering respondents five bipolar semantic differential items: Unfair-Fair, Biased-Unbiased, Can’t be trusted-Can be trusted, Did not tell the whole story-Told the whole story and Inaccurate-Accurate. Each item had a corresponding 5-point Likert scale response option, where 1 was the lowest score possible (i.e. unfair, biased, can’t be trusted, did not tell the whole story, and inaccurate) and 5 was the highest score possible (i.e. fair, unbiased, can be trusted, told the whole story, and accurate). The five credibility variables produced a Cronbach’s Alpha of 0.91, well within the standard range of 0.7 to 1.0. Out of 25 possible points, the credibility scale’s overall mean was a 17.3, with a standard deviation of 4.84.
The second dependent variable was the readers’ perception of agricultural advertising influence in the story. Three questions addressed this variable by posing three bipolar semantic differential items: The news story was probably influenced by agricultural advertising-The news story was probably not influenced by agricultural advertising, The writer had an obligation to please agricultural advertisers-The writer had no obligation to please agricultural advertisers and The news story was probably hard to write without influence from agricultural advertising-The news story was probably easy to write without influence from agricultural advertising. These questions also corresponded with a 5-point Likert scale response option, where 1 was the lowest score possible (i.e. the news story was probably influenced by advertising, the writer had an obligation to please advertisers, and the news story was probably hard to write without influence), and 5 was the highest score possible (i.e. the new story was probably not influenced by advertising, the writer had no obligation to please advertisers, and the news story was probably easy to write without influence). The three advertising items produced a Cronbach’s Alpha of 0.85, within the accepted range of 0.7 and 1.0. Out of 15 possible points, the scale’s overall mean was a 10.58, with a standard deviation of 2.99.

Four additional questions measuring the participants’ gender, occupation, age, and education followed the credibility and advertising items. The survey concluded with six questions asking participants about their use and opinion of farm and mainstream media news sources. Of these, the first two questions asked participants how often they used farm media and mainstream media for their agricultural news. A corresponding 5-point Likert scale gave them the following options: 1 (never), 2 (rarely), 3 (sometimes), 4
(often) and 5 (daily). The next two questions asked participants how well they thought farm media and mainstream media covered agriculture. They answered on a 5-point Likert scale, from 1 (very poorly) to 5 (very well). The last two questions asked participants if they felt farm media and mainstream media had their best interests at mind. A 5-point Likert scale measured these responses, from 1 (not at all) to 5 (very much so).

Covariate

A covariate item asked respondents how often they do business with Monsanto and DuPont Pioneer, the two companies featured in the mock news story. A corresponding 5-point Likert scale gave them the following options: 1 (never), 2 (rarely), 3 (sometimes), 4 (often) and 5 (daily). This question sought to account for any variance a relationship with the featured companies might have produced in responses to the questions about credibility and the influence of agricultural advertising.

Procedure

In two email blasts, a link to one version of the survey was sent to one email set of DTN subscribers and a link to the second version of the survey was sent to the second set. The recruitment script in the body of the email explained that the recipient had been selected to volunteer for a research survey conducted by a University of Missouri graduate student studying agricultural journalism. As an incentive, the script explained that participating in the survey gave respondents a chance to enter into a drawing for a farm supply store gift card. The email included a link to the survey. A week after the initial email, a follow-up email was sent out to the subscriber list, which reminded them
they had been selected to participate in the survey. The two sets of e-mail blasts produced 183 responses, 93 from the DTN story and 90 from the Chicago Tribune story.

**Data Analysis**

Descriptive tests were run on the demographic and media use questions. A Pearson’s correlation was run to check for correlation between the covariates and the dependent variables. No correlations were found, so simple ANOVAs were run on the two scales, credibility and advertising influence, to answer RQ 1 and RQ 2. A multivariate analysis of variance (MANOVA) was then run on the individual credibility items, as well as a comparison of means, to further explore the interaction of the news source with the credibility scale.

**Results**

Two e-mail blasts produced 183 responses—93 participants read the DTN/Progressive Farmer story and 90 read the Chicago Tribune story. To ensure that the results represented the source’s effect on credibility, only the respondents who correctly identified the source of their story as farm or mainstream media were considered. Any responses that incorrectly identified the source of the story were dropped, which left a total of 122 responses, 70 from the Chicago Tribune story, and 52 from the DTN story. The total usable responses were less than the minimum sample size of 250 participants per condition determined by the G-power test.

The response rate, 0.9 percent, and the usable response rate, 0.6 percent, are low. Online surveys often produce the lowest responses of almost all data collection methods, with rates as low as 2 percent reported in some studies (Adams & Monroe, 2012). DTN’s
Advertising Promotion Manager, Jackie Rowell, noted that past DTN e-mail surveys produce steeply declining response rates when the surveys pose more than three to four questions. She reported rates as low as 0.5 percent for some e-mail surveys, which used similar methods to this study. This low response rate presents the potential for non-response bias.

Table 1
Demographics of the Sample

<table>
<thead>
<tr>
<th>Gender</th>
<th>Occupation</th>
<th>%</th>
<th>Age</th>
<th>%</th>
<th>Education</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Active Ag Prod.</td>
<td>62.2</td>
<td>Under 35</td>
<td>5.9</td>
<td>High School Attendance</td>
<td>1.7</td>
</tr>
<tr>
<td>Female</td>
<td>Retired Ag Prod.</td>
<td>16.0</td>
<td>35 to 44</td>
<td>10.1</td>
<td>High School Graduate</td>
<td>16.8</td>
</tr>
<tr>
<td></td>
<td>Not an Ag Prod.</td>
<td>16.0</td>
<td>45 to 54</td>
<td>23.5</td>
<td>2-Yr College/Trade Program</td>
<td>11.8</td>
</tr>
<tr>
<td></td>
<td>Ag Supplier</td>
<td>5.9</td>
<td>55 to 64</td>
<td>31.1</td>
<td>4-Yr College Attendance</td>
<td>10.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>65 to 74</td>
<td>18.5</td>
<td>4-Yr College Graduate</td>
<td>32.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Over 75</td>
<td>10.9</td>
<td>Advanced Degree</td>
<td>26.1</td>
</tr>
</tbody>
</table>

Of the final sample used for analysis, 81.5 percent of respondents were male, and 18.5 percent were female. (For demographic breakdowns, see Table 1). Sixty-two percent identified themselves as active producers, 16 percent identified themselves as retired, another 16 percent said they were not an agricultural producer and 5.9 percent identified themselves as agricultural suppliers. The social trend of aging farmers was evident in the sample. Only 16 percent of the respondents were under the age 45, 73.1 percent were between the ages of 45 and 74, and 10.9 percent were over the age of 75.

Respondents with at least some college education made up 69.8 percent of the sample. Graduates of a 4-year college made up 32.8 percent, and 26.1 reported having
advanced graduate degrees. Two-year college or trade program graduates made up 11.8 percent, 17 percent were high school graduates and only 1.7 percent lacked a high school degree.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Media Use Results for the Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MM Use for Ag News</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>1 (Never)</td>
<td>1.7</td>
</tr>
<tr>
<td>2 (Rarely)</td>
<td>15.5</td>
</tr>
<tr>
<td>3 (Sometimes)</td>
<td>39.7</td>
</tr>
<tr>
<td>4 (Often)</td>
<td>31.0</td>
</tr>
<tr>
<td>5 (Daily)</td>
<td>12.1</td>
</tr>
<tr>
<td>Mean</td>
<td>3.36</td>
</tr>
</tbody>
</table>

MM = Mainstream Media  
FM = Farm Media

Respondents reported using farm media far more for agricultural news: 74.1 percent said they use farm media for agricultural news often or daily compared to the 43.1 percent who said they use mainstream media for agricultural news often or daily.  
(For all media use results, see Table 2). However, 39.7 percent of respondents said they sometimes used mainstream media for agricultural news, 31 percent said they used it often, and 12.1 percent said they used it daily.
Respondents were critical of the mainstream media’s agricultural coverage. The quality of mainstream media coverage of agriculture received an average ranking of 2.14, whereas farm media received a much higher average ranking of 3.78. Thirty-one percent of respondents gave mainstream media the lowest ranking (very poorly), compared to 4.3 percent who gave farm media the lowest ranking. Only 2.6 percent gave mainstream media the highest ranking (very well), compared to 19.8 percent who gave farm media the highest ranking. Overall, among this group, farm media was valued much more highly for agricultural news.

When respondents were asked to rank how much farm media and mainstream media had the agricultural community’s interests in mind, the disparity in responses between the two types of media widened. Respondents gave the mainstream media a low average ranking of 1.89 and gave farm media a high average ranking of 3.8. Almost half of the respondents (48.3 percent) said mainstream media did “not at all” have the best interests of the agricultural community in mind, compared to only 4.3 percent who said the same of farm media. Only one person (0.9 percent) said mainstream media “very much so” had the best interests of the agricultural community in mind, compared to the 19 percent who said the same of farm media.

The covariates, which ranked how often the respondent interacted with Monsanto or DuPont Pioneer, were measured to see if they had a relationship with the eight dependent variables. No significant correlation was found, so including them in the analysis was not necessary.
A one-way ANOVA was run to determine the effect of source on the readers’ perception of credibility for the news story. News source was significantly related to credibility ($F(1,121) = 7.44, p = .007$), with readers ranking the credibility of the DTN story ($M = 3.73, SD = .13$) significantly higher than the credibility of the Tribune story ($M = 3.26, SD = .11$).

A one-way ANOVA was also run to determine whether news source was predictive of readers’ perceptions of advertising influence. News source was not significantly related to perceptions of advertising influence ($F(1,121) = 1.32, p = 0.25$), with readers ranking the likelihood of advertising influence in the DTN story ($M = 3.65, SD = 0.14$) not significantly different from the Tribune story ($M = 3.45, SD = 0.12$).

To probe the interactions between the story source and each item of the credibility scale, a Multivariate Analysis of Variance (MANOVA) was calculated for the five items: The amount of bias in the story, the story’s fairness, the story’s accuracy, the story’s completeness and the story’s trustworthiness.

<table>
<thead>
<tr>
<th>Table 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Tests of Between-Subjects Effects</em></td>
</tr>
<tr>
<td>Source: Survey Source</td>
</tr>
<tr>
<td>Dependent Variable</td>
</tr>
<tr>
<td>Bias: <strong>Significant at $p &lt; .05$ level</strong></td>
</tr>
<tr>
<td>Completeness: <strong>Significant at $p &lt; .05$ level</strong></td>
</tr>
<tr>
<td>Accuracy: <strong>Significant at $p &lt; .05$ level</strong></td>
</tr>
<tr>
<td>Trustworthiness: <strong>Significant at $p &lt; .05$ level</strong></td>
</tr>
</tbody>
</table>
The one-way MANOVA was calculated to test the effect of story source on the reader’s responses to the individual credibility items. A significant effect was found ($\Lambda(8,113) = .85, p = 0.02$), as expected. Follow-up univariate ANOVAS (see Table 3) indicated that the readers’ perception of the fairness of the story was significantly related to news source ($F(1, 120) = 6.43, p = 0.01$). The readers’ ranking of the fairness of the DTN story ($M = 4.02$, $SD = 1$) was significantly higher than the readers’ ranking of the fairness of the Chicago Tribune story ($M = 3.54$, $SD = 1.05$). (For all means and standard deviations, see Table 4). The readers’ perception of the bias in a story was also significantly related to news source ($F(1,120) = 10.5, p = 0.002$). The readers ranked the DTN story ($M = 4.15$, $SD = 1.07$) as significantly less biased than the Chicago Tribune story ($M = 3.49$, $SD = 1.16$). The readers’ perception of the trustworthiness of the story was also significantly related to news source ($F(1,120) = 4.80, p = 0.03$). The readers’ ranking of the DTN story ($M = 3.71$, $SD = 1.14$) was significantly higher than the readers’ ranking of the Tribune story ($M = 3.26$, $SD = 1.13$).

However, the readers’ perception of the accuracy of the story was not significantly related to news source ($F(1,120) = 3.66, p = 0.06$). Readers’ ranking of the accuracy of the DTN story ($M = 3.71$, $SD = 0.89$) was not significantly different from readers’ ranking of the accuracy of the Chicago Tribune story ($M = 3.36$, $SD = 1.09$). Nor was the readers’ ranking of the completeness of the story significantly related to news source ($F(1,120) = 3.22, p = 0.08$). Readers’ ranking of the completeness of the DTN story ($M = 3.06$, $SD = 1.30$) was not significantly different from their ranking of the Tribune story ($M = 2.66$, $SD = 1.18$).
Table 4

Comparison of Means for Dependent Variables

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Source</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fairness</td>
<td>DTN/PF Chicago Tribune</td>
<td>4.02</td>
<td>1.00</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Chicago Tribune</td>
<td>3.54</td>
<td>1.05</td>
<td>70</td>
</tr>
<tr>
<td>Bias</td>
<td>DTN/PF Chicago Tribune</td>
<td>4.15</td>
<td>1.07</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Chicago Tribune</td>
<td>3.49</td>
<td>1.16</td>
<td>70</td>
</tr>
<tr>
<td>Completeness</td>
<td>DTN/PF Chicago Tribune</td>
<td>3.06</td>
<td>1.27</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Chicago Tribune</td>
<td>2.66</td>
<td>1.18</td>
<td>70</td>
</tr>
<tr>
<td>Accuracy</td>
<td>DTN/PF Chicago Tribune</td>
<td>3.71</td>
<td>.893</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Chicago Tribune</td>
<td>3.36</td>
<td>1.09</td>
<td>70</td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>DTN/PF Chicago Tribune</td>
<td>3.71</td>
<td>1.14</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Chicago Tribune</td>
<td>3.26</td>
<td>1.13</td>
<td>70</td>
</tr>
</tbody>
</table>

Discussion

The results of the study showed that the news source of the story significantly influenced the respondents’ perceptions of overall credibility. Testing the individual credibility items separately helped unpack this result. Specifically, readers who read the story labeled DTN/The Progressive Farmer ranked the story’s trustworthiness, fairness and lack of bias significantly higher than those who read the story labeled the Chicago Tribune. The variable of bias produced the most significant difference among readers’ responses to the credibility variables (see Table 4).

Reader responses to the survey questions about their media use help shed some light on why producers showed more trust and regard for the DTN story. Overall, respondents indicated that they favored farm media sources for agricultural news, with 74 percent reporting using it “often” or “daily” for agricultural news. However, a substantial number—43 percent—reported that also they use mainstream media sources often or
daily for agricultural news, and another 40 percent reported using it for agricultural news “sometimes.” This total of 83 percent of respondents who at least sometimes use mainstream media sources for agricultural news is surprising, given the low ranking of trust and use that agricultural producers have given mainstream media sources in past studies. However, it does echo Melea Licht’s 2007 focus groups, where farmers explained that they do consult mass media sources regularly but rely on “interpersonal” communication with trusted people such as Extension representatives to distill and filter that information. “They depend on interpersonal information more even though they receive a higher quantity of information from the media,” Licht explained (Licht, 2007, p. 29-30).

Respondents indicated a starkly negative perception of the mainstream media’s agricultural news, despite their high consumption of it. Echoing results of past studies, respondents gave the mainstream media low scores for the quality of agricultural coverage and reported a strong sense of estrangement from mainstream news sources (see Table 4).

These results present an agricultural community that displays little trust and comfort with the mainstream media’s coverage of agriculture but that nonetheless consults it on a regular basis for agricultural news. This combination—the familiarity that comes with regular use of mainstream media and the reported sense of estrangement and disrespect toward that same media—helps explain why readers trusted the DTN story more and considered it more fair and less biased than those who read same story labeled as the Chicago Tribune. Overall, these results lend support to the idea that, for
agricultural producers, disrespect for the mainstream media’s agricultural coverage has translated into an automatically more negative perception of the credibility of a news story produced by a mainstream media source.

However, when the credibility variables were tested alone, two items—the story’s completeness and accuracy—were not significantly influenced by the source of the story. Readers of both stories gave it low rankings for completeness and middling scores for accuracy (see Table 4).

Perhaps the source of the story simply has less influence on producers’ perceptions of a story’s accuracy or completeness, but the influence of content is more likely at play here. Although this study attempted to remove the variable of content, writing any news story where content will not interact with reader’s attitudes, previous knowledge, and regard for the story is impossible. In this case, the blandness of the story, which was intended to limit its influence on perceptions of credibility, might have produced these similar rankings of accuracy. The story was a short and an entirely factual recital of events. Such straightforward (and dull) content would have made it difficult for even a distrustful reader of the mainstream media to suspect significantly more inaccuracies than a more trusting reader of the DTN story. Likewise, the story’s short length (250 words) presented readers with a mere summary of the lawsuit, lacking detail or context. Readers’ low rankings for completeness, which did not vary significantly by source, are probably a natural (and laudable) reaction to such a brief news article.

Overall, this study reflects and advances past research on how agricultural producers use information sources. The results of Licht and Martin’s 2007 study, which
exposed farmers’ intense feelings of marginalization and misrepresentation by the mainstream media, are mirrored in the low scores that the mainstream media earned in this study on the quality of its agricultural coverage and its interest in the agricultural community. In general, previous research has shown that the agricultural community trusts and ranks farm media far higher than mainstream media sources for agricultural information (Bruening et al., 1992; Gloy et al., 2000; Licht & Martin, 2007; Lichtenberg & Zimmerman, 1999; Perry & Rikoon, 1992; Schnitkey et al., 1992; Thomas, 1963). This study takes these results a step farther by suggesting that those factors—more regard for farm media and more exposure to it—have produced a community more likely to consider a news story fair, unbiased, and trustworthy when it is labeled with a farm media source.

However, when it came to assessing the story’s accuracy and completeness, producers in this study were less influenced by the story source. Content might hold more sway with these concepts than even the source of the story. Interestingly, although readers ranked the stories similarly for accuracy and completeness, they still showed a tendency to rank the bias, trust, and fairness of the story differently by source. So although readers probably do consider content when evaluating a story, their pre-determined attitudes toward the source of the story appear capable of overruling the merits of an individual story when they consider its overall credibility.

Even the few nonresponses to individual items in the survey contribute to the overall impression of discomfort with mainstream media and corresponding trust in farm media. All of the survey’s nonresponses were from readers of the Chicago Tribune story;
readers of the DTN story answered all the questions. Of the six nonresponses among the Tribune respondents, half chose not to answer the media use questions and half passed over both the demographic and media use questions.

With regard to RQ 2, the survey responses to the role of agricultural advertising influence were less consistent with previous literature—limited as it is. Reader responses to questions of advertising influence were not significantly different between the DTN and Tribune story.

These results run somewhat counter to a previous study where the majority of farmers surveyed did acknowledge increased agricultural advertising influence on farm media in the form of editorial trade-offs, bias in stories, and decisions on what to cover (Banning & Evans, 2004).

The results of the present study are concerning, in part because of a key difference between this survey and the Banning & Evans survey. In that 2004 study, readers were asked point-blank whether they noticed or considered increased advertising influence in farm media stories, and their answers suggested that they did. Here, however, when agricultural producers were asked about advertising influence on specific content—namely a story about two major agricultural advertisers—they showed little awareness of this interaction. So although readers might recognize the general possibility of more advertising influence in farm media content, they might not necessarily take it into account every time they read a news story, such as this one.
The sample size could have contributed to this result, as well. A sample size closer to the minimum indicated by the G-Power test (250 per condition) might have shown an effect for producers’ perceptions of advertising influence.

Yet another possible factor at play here is, once again, content. Although the story did address two major agricultural advertisers, it presented a summarized, factual, and uncontroversial account, which could have led readers to expect little advertising influence. Nonetheless, this remains a somewhat disquieting result when viewed in light of the many studies that reveal a farm media under more advertising pressure than ever before (Banning & Evans, 2001 & 2005; Hays & Reisner, 1989, 1990 & 1991; Reisner, 1994; Reisner & Walter 1994).

The lack of correlation between the covariates and the dependent variables is interesting. The participants’ responses to the questions about credibility and advertising influence were not influenced by the varied relationships they held with the advertisers. Here, the savvy farmer from the 2004 Banning & Evan study resurfaces. The results suggest that agricultural producers are capable of separating their assessment of a news story from their personal interaction with the subjects of the story—even when those subjects are large agricultural advertisers who are extremely influential in their lives and work.

**Limitations**

This study’s sample was pulled from a list of individuals who had given DTN/The Progressive Farmer an e-mail address for all their correspondence. As a result, the respondents likely have experience and habits involving computer technology that might
not represent the larger universe of agricultural producers. Specifically, a 2011 study reported that only 60 percent of rural residents (which generally include agricultural producers) have access to high-speed Internet connections (Gualtieri, 2012). Past studies have shown that higher levels of education are positively correlated with technology use, so this sample probably represents participants with more education than the general farm and ranching population (Gloy & Akridge, 2000). Education levels reported by this sample—nearly 70 percent of respondents with at least some college education and more than one-quarter with advanced graduate degrees—are notably higher than past studies (Oshel et al., 2009; Tucker & Napier, 2002; Gloy et al., 2000). However, several studies have found that education has little or no influence on agricultural producers’ opinion of media and agricultural information sources (Bruening et al., 1992; Constance, 1995; Gloy et al., 2000; Israel, 1991). So this slight skewing toward more educated readers might not have a substantial effect on their responses to questions about the story they read.

In the other categories of age, gender, and occupation, this sample was consistent with past studies; it presented an aging, primarily male population, with 84 percent of the respondents directly involved in agriculture, either as an active or retired producer or an agricultural supplier. The aging of America’s agricultural community is well documented by the U.S. Department of Agriculture’s 2007 Census of Agriculture, which showed that one-quarter of the nation’s agricultural operators were over 65 and only 8 percent were under 35. Likewise, 29 percent of this study’s respondents were over 65, and only 6 percent were under 35. The percentage of female respondents to this study—18.5 percent—also seems fairly representative of the larger farming population. The Census of
Agriculture estimated that only 9 percent of the nation’s “primary agricultural operators” were female. However, up to 30 percent of “all operators,” which included people who are the second or third person involved in a farming or ranching operation, were estimated to be female. This study’s number seems to fall safely in between these extremes, which makes sense, since it is possible that either the primary operator or a less involved member of the farm could be responding to the DTN e-mail.

The final usable sample size, 122, came in well under the G-power test’s result of 250 participants per condition. As a result, the sample might not have been large enough to detect real effects. Furthermore, the low response rate (0.9 percent) and usable response rate (0.6 percent) make non-response bias—the possibility that non-respondents differed in attitude and demographics from those who did respond—a legitimate concern. As discussed, the results of this study likely exclude agricultural producers who do not use the Internet regularly. Given the agricultural community’s well documented distrust of mainstream media, some might suspect that many producers declined to finish the survey when they saw the Tribune news story label. However, the even initial distribution of the responses to each survey—93 for DTN and 90 for the Tribune—suggests that no, producers appeared to answer (and not answer) both surveys with equal frequency.

However, those who read the DTN story were twice as likely to identify the source of the story incorrectly. Forty-three of the 93 DTN respondents (46 percent) incorrectly identified the source as mainstream media, compared to 18 of the 90 Tribune respondents (20 percent) who incorrectly identified the source as farm media.
Since both stories were labeled in the same manner, this discrepancy is hard to explain. Perhaps the story’s content played a role. In past studies, producers have accused the media of only covering agriculture when something negative happens in the industry (Licht’s thesis, 2007). This news brief, which documented a court battle between two agricultural companies, could be perceived as negative agricultural news, and could have caused recipients of the DTN story to automatically attribute it to a mainstream media source.

Perhaps also, the agricultural community’s disregard for the mainstream media’s agricultural news coverage surfaced here. Reading a story labeled by a news source that inspires feelings of distrust could have prompted recipients of the Chicago Tribune story to be more alert and aware of the source and thus more likely to identify it correctly.

We can at least conclude that for 33.3 percent of all respondents, the news source was not significant enough to be noted accurately. This alone is interesting, because it suggests that producers might not always assess the credibility of a news story with source in mind. As suggested earlier, perhaps the content of a news article is more important to some readers than its source.

**Future Direction**

Overall, this study’s findings on agricultural producers’ perceptions of credibility provide a logical progression in the body of research on the agricultural community. Previous research has demonstrated that farmers and ranchers rank and trust farm media highly among their information options. This study now suggests that this positive relationship with farm media (and a negative relationship with mainstream media), has
made agricultural producers’ perceptions of a news story’s credibility partly dependent on the source of the story. Although producers evaluated the accuracy and completeness of the story without significant influence from the news source, they showed a strong tendency to trust the farm media story more and view it as less biased and fairer than the mainstream media story.

The results of this study should not be overstated, and future studies are needed to examine and elaborate upon its findings. The primary limiting factor here was the aforementioned problem of content. No amount of careful writing could remove the influence of content, and the factual and summarized nature of the story used in this study might have influenced some of the responses. Nor can we ignore the fact that one-third of the respondents did not correctly register the source of the story they read. As a result, the findings of this study can only be generalized so far.

The results of the advertising variables especially should be considered with caution. Where the credibility scale is a verified and oft-used measure of credibility, this smaller advertising influence scale was modeled after previous studies but tailored for the news story in question. As such, it does not represent an accepted measurement of advertising influence, although the high reliability of the scale does suggest that the items successfully measured the same concept. Still, more studies are needed to determine an appropriate scale to measure perceptions of this influence and to unpack the interaction of content and source on agricultural producers’ perceptions of advertising pressure.

The body of research on the agricultural community could benefit from future studies that use the design and questions of this survey but include different kinds of
content, such as a controversial news story. For instance, several studies show that farmers and ranchers feel they have been misrepresented in mainstream media coverage of agriculture-related environmental issues (Lichtenberg & Zimmerman, 1999; Sandoz Agro, 1993; Vandenabeele, J. & Wildemeersch, 2012). The news story could address, for example, hypoxia in the Gulf of Mexico, which is a large zone of oxygen-depleted water that cannot support animal life. This phenomenon has been attributed to fertilizer chemicals running off farmland into rivers that discharge into the Gulf of Mexico. Perhaps a more controversial environmental news story such as this one might cause producers to evaluate the accuracy and completeness of the story with more attention to news source than they demonstrated for this study’s bland, uncontroversial news story.

News stories with different mainstream or farm media labels might also produce different results. Perhaps using a more familiar mainstream media source—such as group of producers’ local newspaper—would inspire more trust in the credibility of a story. National urban newspapers with perceived political leanings—such as the New York Times and the Wall Street Journal—might produce different results, as well.

Changing content in a future study might also clarify the interaction of content with perceptions of advertising influence. A more controversial story involving the interests of an agricultural advertiser, for instance, might make producers more alert to advertising influence than the bland story they read in this study. Future studies could also phrase the advertising influence scale’s three items differently or pose different questions entirely regarding advertising. For instance, questions that make the respondent consider the role of advertising in their life—How often do you encounter agricultural
advertising? Which seed/equipment/fertilizer companies do you do business with most?—might inspire more consideration of advertisers’ influence on the content they just read.

Overall, as the discussion of the covariate findings and the advertising scale suggest, agricultural producers’ perceptions and evaluations of advertising influence in farm and mainstream media are complex and not yet well understood. More studies like this could further our understanding of how content and source interact when agricultural producers weigh the credibility and advertising influence in an agricultural news story.
Appendix 1

The Effect of Source on Agricultural Producers’ Perceptions of Credibility

A Professional Project Proposal

Committee Members:

Bill Allen, Chair

María Len-Ríos

Sandy Rikoon

Emily Garnett

Missouri School of Journalism

Spring 2013

179
# TABLE OF CONTENTS

INTRODUCTION........................................................................................................181

PROFESSIONAL SKILLS COMPONENT.................................................................183

STATEMENT OF RESEARCH...........................................................................184

THEORETICAL FRAMEWORK........................................................................187

LITERATURE REVIEW

   Literature...........................................................................................................192

   Method Review................................................................................................200

METHOD...............................................................................................................204

POTENTIAL OUTLETS FOR PRODUCTION.......................................................209

APPENDIX

1. ON-SITE SUPERVISOR APPROVAL..............................................................210

2. ON-SITE SUPERVISOR RESUME.................................................................212

3. IRB LETTERS OF APPROVAL......................................................................215
Introduction

I entered the Missouri School of Journalism after two years working on farms and ranches on the East Coast and in the Midwest. I hoped to gain a foundation in journalism that would prepare me to work as an agricultural journalist. Through courses on field reporting, narrative writing, and editing, I learned the value of telling a good story grounded in rigorous reporting and precise language. Investigative and data reporting classes gave me the tools to pursue reporting in agriculture—an industry dominated by large, opaque corporations, government agencies and complex politics. Finally, a class on quantitative research methods prepared me to conduct thoughtful, scholarly evaluations of the media and its audience.

Internships with two farm media organizations—DTN/The Progressive Farmer and the Missouri Ruralist—taught me how to write for an agricultural audience and furthered my education on the myriad topics that arise in agriculture—from genetic and equipment technology to policy and culture wars. Most importantly, I worked with farmers, ranchers, agricultural company representatives, and government agency officials—all key players in the production of agricultural news stories. I had used these same individuals for agricultural stories when I wrote for the Columbia Missourian my first semester, but when I worked under the trusted names of farm media outlets, I noticed that the agricultural community was much more willing to work with me and give me access.

These experiences sparked my interest and prepared me to conduct this study: A quantitative analysis of how agricultural producers—that is, farmers and ranchers—
assess the credibility of farm media and mainstream media news sources differently.

After graduation from MU, I hope to work for many years as an agricultural journalist in farm media, where publications target agricultural audiences. Later in my career, I would like to transition to writing about agriculture for mainstream publications—preferably Midwestern magazines or newspapers that target the general public. In pursuit of this, I will complete my professional project as a general news reporter at DTN/The Progressive Farmer, a farm media news outlet. The research component of my project will give me insight into how agricultural producers view and evaluate farm and mainstream media.
Professional Skills Component

I will complete the professional component of my project by working as an agricultural reporter for DTN/The Progressive Farmer in Omaha, Neb. DTN is a farm media company that runs a digital agricultural news and market data website and owns a print agricultural magazine, The Progressive Farmer, which operates out of Birmingham, Ala. I worked as a news intern for this company from May to December of 2012. Greg Horstmeier, the editor-in-chief of DTN, has agreed to take me on again for a 14-week internship this summer and will act as my on-site supervisor. I will work at least 30 hours a week and will start May 27, 2013 and finish on August 31, 2013. I will work in DTN’s digital newsroom in Omaha as a general assignment reporter primarily for the online website and will cover whatever agricultural stories arise, as well as some of my own enterprise reporting. I will be permitted to travel and cover stories in different states in the Midwest. Occasionally, I will also write stories for Progressive Farmer, the magazine. My work for the digital newsroom will be published on DTN’s online news site and any stories for The Progressive Farmer will be published in the monthly print magazine.

In my final report, I will include copies and links to stories I write or collaborate on for the daily online news site, as well as any stories published in the print magazine, as physical evidence of the professional component.
Statement of Research

Starting in the 1970s, substantive agricultural reporting in the mainstream media took a nosedive. As the agricultural community shrunk to less than 2 percent of the population, agricultural news retreated to specialized trade journals known as farm media (Pawlick, 2001). However, in the past decade, increasing interest and concern about the largely opaque food industry and unprecedented technological advances in agriculture have produced a resurgence of public interest in agriculture. Farm media outlets have covered the agricultural industry consistently for centuries, and farmers and ranchers recognize and cooperate with farm media publications (Boone et al., 2000). In contrast, mainstream media outlets interested in agricultural stories have an uphill battle. A significant portion of the agricultural community is used to being marginalized and ignored by consumer media.

Many scholarly studies have examined which agricultural information sources farmers trust and whose information they prefer—university extension, company representatives, farm media publications, farm radio, etc. Less has been done on where they get their agricultural news. Here, farmers and ranchers have a choice between farm media and mainstream media sources. When I covered agricultural news for two farm media outlets in 2012, I frequently reported alongside newspaper reporters and followed the same stories in the mainstream media. So which sources of agricultural news do agricultural producers trust more? This study will attempt to answer the following research questions by taking the content out of the equation and testing only how the source of an agricultural news story alone changes an agricultural producers’ perception
of credibility. The answer to this has important implications for the mainstream media, especially those outlets interested in covering agricultural news and using the agricultural community for interviews and information. If a farmer will instinctively trust a message when it wears a farm media label and will instinctively distrust the same message when it’s labeled with a mainstream news source, then the media does have a credibility crisis among an important group of the public.

Research Question 1: How does the media source of an agricultural news story—mainstream or agricultural media—affect agricultural producers' trust and perceptions of the credibility of the story, regardless of content?

Much research has been devoted to the role advertising plays in farm media. Most of the studies conclude that farm media reporters and editors face substantially more advertising influence and pressure than non-ag media (Banning & Evans, 2001 & 2004; Hays & Reisner, 1990 & 1991; Reisner & Hays 1989 & 1994). Farm media encompasses a smaller world of news, and the advertisers (seed, chemical, and equipment companies, mostly) are increasingly consolidated and highly influential in the industry (Banning & Evans, 2005; Boone et al., 2000). Some studies have even tried to demonstrate the toll this advertising influence has taken on farm media’s editorial content, both from the view of readers and agricultural journalists themselves. One study found that the farmers surveyed did show an awareness of advertising pressures and took it into account when evaluating the content of farm media stories (Banning & Evans, 2004). Likewise, in another study, farm media stories were judged by agricultural journalists to be substantial
but more biased in the favor of industry players than mainstream stories, which were judged more superficial but less biased (Reisner & Walter, 1994).

Using the same source-focused study of the previous research question, the second research question will seek to compare how agricultural producers perceive the influence of advertising in a story labeled farm media and the same story labeled as mainstream media. The answer to the following research question will determine whether agricultural producers consider the role advertising might play in the story labeled as farm media or consider the lack of that role in the story labeled as mainstream media. Research Question 2: Do agricultural producers detect the presence or influence of advertising in agricultural news stories differently when they read stories produced by mainstream and agricultural media sources?
Theoretical Framework

A large body of research on source credibility will inform this study. The theory of source credibility contends that the credibility of the communicator of a message has substantial bearing on how the content of that message is perceived and evaluated by readers or an audience (Hovland et al., 1953). Carl Hovland and other researchers’ foundational studies on the theory in the early 1950s drew a distinction between “high credibility” sources and “low credibility” sources, and their evidence showed that reader opinions were more likely to be swayed by the high credibility sources—defined mostly as government sources or sources linked to respected institutions. They isolated the concepts of “source expertise” and “trustworthiness” as the primary influencing factors on a reader’s perception of source credibility (Hovland & Weiss, 1951; Hovland et al., 1953). Much of the later research on source credibility has continued to build on the ideas and definitions determined by this early work (Avery, 2009; Brinol et al., 2007; Heesacker et al., 1983; Lucassen & Schraagen, 2012; Petty et al., 1981).

The study and theories of source credibility have evolved and shifted focus over the past six decades, but one truth stands out: Credibility matters. The “credibility crisis” for the American media has been a topic of ample discussion and debate since the 1970s (Maier, 2005; Rouner et. al 1999; Gaziano, 1987). Public distrust is an obstacle to journalism’s primary goal “to provide citizens with the information they need to be free and self-governing” (Kovach & Rosenstiel, 2001, 17). Moreover, when the public questions the credibility of health and science communication, a credibility problem can threaten public safety and health (Avery, 2009).
The mechanics of source credibility are less certain; researchers have spent more than half a century debating the primary factors involved in reader trust and the measurements used to evaluate it. Several areas of focus have emerged as the primary culprits in shaping a reader’s perception of the credibility of a source of information. Much research has dwelled on the source—the communicator and his or her attributes—as the primary predictor of reader trust. Especially in early studies on source credibility, researchers tended to focus on the source of journalistic messages and operated under the idea that source credibility was controlled primarily by the characteristics of the person or institution delivering the message (Hovland & Weiss, 1951; Kelman & Hovland, 1953; Osgood et al., 1957). Some source-focused research has also noted a significant effect in the timing of a reader’s discovery of the source on their thoughts on the message’s credibility (Brinol et al., 2007). Other research has scrutinized the biases, attitudes and ideologies of the source and noted disparities in political ideology and assumptions about the news process between journalists and the general public that could affect perceptions of source credibility (Gaziano, 1987; Gladney, 1996; Martin et al., 1972).

Other researchers have devoted their attention to the reader and his or her biases, attitudes, and background. Often such studies try to pinpoint how readers assess bias and what role that plays in their perceptions of source credibility. Such studies tend to trace perceptions of bias to the reader’s personal viewpoints and ideologies (Gaziano, 1987; Gladney, 1996; Kocher & Shaw, 1981; Rouner et al., 1999). Age and gender have also shown strong statistical significance as factors in reader attitudes toward media sources.
(Robinson & Kohut, 1988). Overall, it seems clear that news consumers are a complex and varied group, and they bring attitudes and beliefs to every story they read.

Still other researchers in source credibility focus on the content of journalism; they evaluate its accuracy, biases, and level of complexity. Most accuracy-focused content studies show high rates of news inaccuracies, to the detriment of public trust (Maier, 2005; Tankard & Ryan, 1974; Tichenor et al., 1970). In general, most academic studies find error rates in general news stories that range between 40 and 60 percent. Perhaps not inaccurately, respondents considered reporter ignorance to be the primary factor behind the mistakes (Maier, 2005).

Agricultural journalism covers an increasingly complex industry. As agricultural producers become more reliant on advanced scientific and technological developments such as genetic engineering and self-driving tractors, communicating these changes and developments coherently and accurately can be challenge. Many studies have shown that scientific news, such as agricultural issues, poses a particular challenge to journalists. The content is more complex and nuanced, the general public has a low scientific literacy, the scientific community is smaller and not always cooperative, and traditional newsrooms are not equipped to deal with the long-term coverage science news requires (Dunwoody, 1986; Nelkin, 1995; Rogers, 1999; Stocking, 1999).

Thus the mainstream media—prone to inaccuracies in even general news stories—faces an even greater challenge in producing accurate agricultural news. Studies that have scientists review stories they were interviewed for find that science reporting is often distinguished by a significantly higher rate of error than regular new stories and

189
scientist interviewees were highly critical of science reporting in general (Tankard & Ryan, 1974; Tichenor et al., 1970). Agricultural news stories often rely on farmers and ranchers for interviews and information. Therefore, studies on the effect of content on a media outlet’s credibility are doubly important when investigating the agricultural community’s perceptions of media credibility.

With the growth of the Internet, more recent studies have attempted to measure the effect of different mediums and channels of news on source credibility (Chung et al., 2012; Johnson & Kaye, 1998; Kiousis, 2001; Lucassen et al., 2012). The most sophisticated—and probably most accurate—studies have combined all these factors—source, reader, content, and channel—in some measure. Some studies—psychology as well as mass media—focus on the influence of an audience’s relationship and familiarity with the content and the source on the credibility and effectiveness of the source (Kohn et al., 1976; Heesacker et al., 1983; Henkel & Mattson, 2011).

Most studies that examine the agricultural community’s trust and use of various information sources tend to use source-focused or channel-focused credibility theory and focus on agricultural information sources (as opposed to agricultural news). Many studies of agricultural producers’ perceptions of source credibility—particularly older, foundational studies—have generally analyzed the producers’ reactions and opinions to the source of their information alone (Ford & Babb, 1989; Gloy et al., 2000; Lichtenberg & Zimmerman, 1999; Sandoz Agro Inc., 1993; Schnitkey et al., 1992; Thomas, 1963). Increasingly, more recent studies of the agricultural community have examined the influence of the channel or medium by which producers receive their information on
source credibility (Boone et al., 2000; Lasley et al., 2001; Licht & Martin, 2007; O’Keefe et al., 2001; Tucker & Napier, 2002; Vergot et al., 2005). Finally, some research on the agricultural community’s relationship to sources focuses on farm media’s editorial content and assesses the potential for bias and omission due to advertising influences (Banning & Evans, 2001 & 2004; Hays & Reisner, 1989 & 1991; Reisner & Hays, 1989 & 1994; Reisner & Walter, 1994; Sommer & Pilisuk, 1982).

Since little quantitative source credibility research on the agricultural community has focused on views of mainstream media’s agricultural news content, this study will lean heavily on foundational source-focused credibility theory. Content and medium have been proven to interact and influence perceptions of credibility, so this study will attempt to remove the influence of content from the study by using a bland, self-composed story that does not touch on controversial agricultural issues, and all respondents will receive the story by one medium alone—email. Because reader attitudes and beliefs do influence source credibility, this study will only sample agricultural producers who use the agricultural services of DTN/The Progressive Farmer, which limits the sample to one group of people with similar backgrounds and occupations. The only factor that should directly influence these producers’ responses to questions about their perceptions of credibility will be the source of story. No doubt, as previous source credibility research has shown, the readers will bring their own beliefs, knowledge, and biases to the content and to their perception of the source, but that is for another study. This study will only try to test the effect of the source on the readers’ trust and ask additional questions measuring their awareness of advertising influence.
Literature Review

Literature

Farm media—defined as any published magazine or paper “targeted at farm producers and [not including] academic journals” (Banning & Evans, 2001, 22)—have long held an influential and trusted place in the agricultural producer’s world. They first emerged in the early 1800s, often in conjunction with a growing number of agricultural societies. The publications started to gain significant traction and popularity in the agricultural community in the 1850s, and farmers have relied on them as a primary source for independent agricultural information since. Farm media expanded in the early 20th century, held steady during the world wars and then continued to grow and thrive with the introduction of television and radio (Boone et al., 2000). The 1970s were a high point for the industry, when the average American farm subscribed to seven different farm journals (23). However, the farm crisis of the 1980s, a rapidly shrinking percentage of Americans involved in agriculture, and industry-wide consolidation took a toll on farm media in the latter half of the 20th century (Boone et al., 2000; Evans, 2012).

Around the same time that farm media were expanding their role as an information source for farmers in the 1850s, mainstream newspapers were also beginning to incorporate agriculture into their daily reporting. Improved print and telegraph technology allowed newspapers to reach more readers than ever, and metropolitan dailies like the New York Times and the Chicago Tribune began employing farm writers to cover agriculture (Boone et al., 2000, 9-10). The farm beat, as such coverage was known,
thrived in the early and mid-1900s, but like farm media, mainstream agricultural coverage suffered as the 20th century neared its close.

During the nationwide reduction of agricultural coverage in newspapers in the 1970s, agricultural editors, reporters, beats, journalism training programs and news stories disappeared in great numbers (Evans, 2012; Pawlick, 2001). Scholars and critics familiar with the industry argue that mainstream agricultural coverage that does persist is low quality and spotty, and the industry is largely under-covered (Crossfield, 2011; Hochberg, 2010; Pawlick, 2001; Reisner & Walter, 1994). Because the bulk of the American populace relies primarily on the mainstream news media for news on agriculture, the public’s knowledge of a vital, influential industry is increasingly inadequate (Reisner & Walter, 1994).

The waning mainstream coverage of agriculture has left the agricultural community feeling marginalized and misunderstood by the public (Licht & Martin, 2007). Agricultural news that does reach the public tends to be shallow, stereotyped, and event-based (Reisner & Walter, 1994, Pawlick, 2001). With the advent of genetic modification, precision technology, and industrialized farming practices, agriculture is an increasingly scientific field, and science journalism is a challenging profession. Most mainstream newsrooms lack the resources for the long-term, in-depth coverage science news requires, interview subjects can be hard to find, and the content is complex and often foreign to the general public (Dunwoody, 1986; Nelkin, 1995; Rogers, 1999; Stocking, 1999). A comparatively higher rate of inaccuracies in science news stories due to these tensions is also well documented (Tankard & Ryan, 1974; Tichenor et al., 1970).
Unsurprisingly, this combination of marginalization and inadequate and often inaccurate coverage of agriculture has left many agricultural producers wary and distrustful of mainstream media. Most research on agricultural producers’ use of information sources has focused on where farmers get agricultural *information* as opposed to agricultural *news*; however, producers’ attitudes toward mainstream media inevitably surface in most of these studies. In focus groups directed by Melea Licht and Robert Martin, Iowa farmers explained that they use mass media for the bulk of their information but turn to interpersonal communications for more specific, local, farm issues. They consider information from individual meetings and consultations to be more reliable and necessary for distilling the larger quantities of information they received from mass media news outlets, which they regarded with limited trust (Licht’s thesis, 2007; Licht & Martin, 2007). Intense feelings of misrepresentation by mainstream media were widely shared by the participating farmers. They described local newspapers as “anti-agriculture,” focused on “bad news,” and generally uninterested in agriculture. Television coverage and ads evoked even stronger statements: “Most of them [sic] makes the farmers look like a bunch of idiots,” one said. Another said: “Their perception of farmers is insulting to our intelligence—including ads. They make us look like hicks sitting out there with three-pronged pitchforks” (Licht’s thesis, 2007, 106, 77). Other comments highlighted a feeling of marginalization and invisibility: “There just aren’t enough farmers to make it ag [sic] a priority for them (daily newspapers),” one farmer noted. “You’ve got to be quick to catch any ag information on TV… only negative ag info makes it to TV” another reported (Licht’s thesis, 2007, 59, 34).
A sense of persecution by mainstream media often pervades studies on agricultural producers’ attitudes toward information sources. Public and media scrutiny of agriculture-related environmental problems over the last three or four decades is widely resented among agricultural communities (Sandoz-Agro Inc., 1993; Lichtenberg & Zimmerman, 1999; Vandenabeele & Wildemeersch, 2012). In one study, an overwhelming 87 percent of producers stated that the news media’s inaccurate reporting had produced unnecessarily negative public perceptions of farming-related environmental issues. Overall, farmers indicated that news media poorly educated in environmental and agricultural issues were distorting farmers’ image as stewards of the land, and although they felt proper education could correct the problem, they did not trust the media to do it (Sandoz Agro, Inc., 1993). In another study, farming landowners’ rankings of information sources were compared to non-farming landowners. The results showed that farmers were far more likely to rank newspapers, radio, and TV as the least influential and the least trusted sources than the non-farming respondents (Perry & Rikoon, 1992).

Other studies have acknowledged that mainstream media do tend to emphasize agriculture’s role in environmental problems, and farmers who place more value on media news tend to show more concern about environmental issues (Lichtenberg & Zimmerman, 1999; O’Keefe et al., 2002). Perhaps the most damaging feeling of all—fear—emerged in one study where researchers observed that, in the media landscape, some farmers feel like an “anxious spectator” who “feels quite vulnerable and experiences little involvement in the debate” (Vandenabeele & Wildemeersch, 2012, 63).
In the same study, farmers reported feeling a sense of “powerlessness” in the face of media reports on environmental disasters (66).

In contrast, farmers have consistently ranked farm media as one of the most important and trusted informative sources for farmers since studies on this topic began back in the 1960s (Thomas, 1963; Ford & Babb, 1989). Only interpersonal, direct communication—such as consultations or on-farm visits and tours—outranks or comes close to farm magazines for trust and credibility among farmers (Bruening et al., 1992; Ford & Babb, 1989; Licht & Martin, 2007; Schnitkey et al., 1992; Thomas, 1963; Tucker & Napier, 2002). In every study where mainstream media sources such as consumer newspapers or television stations were added as an option for information sources, they ranked far below farm media options in credibility and usefulness (Bruening et al., 1992; Gloy et al., 2000; Licht & Martin, 2007; Lichtenberg & Zimmerman, 1999; Perry & Rikoon, 1992; Schnitkey et al., 1992; Thomas, 1963).

Even early studies noted the influence of the information channel—print, television, or radio—on credibility (Thomas, 1963). As the Internet has emerged as a major media platform, more recent studies have specifically focused on the effect this channel of information could have on credibility. Internet access for rural agricultural communities is growing. Between 2003 and 2011, the number of rural residents with Internet access rose from 52 to 61 percent (Gualtieri, 2012). Farmers are more likely than ever to use computers, Internet information sources, and social media (Gloy & Akridge, 2000; Gualtieri, 2012). Although most studies on farmers’ information preferences produce contradictory reports on the influence of certain demographic factors (Gloy et
al., 2000), the factors of age and education indisputably influence technology use. Younger, more educated producers are more likely to use and prefer Internet channels for their information (Gloy & Akridge, 2000; Tucker & Napier, 2002).

Despite this digital information expansion, agricultural producers show a continued preference for traditional farm media, and Gloy et al. (2000) report that it “appears that the Internet might be a complement rather than a substitute for traditional information sources” (258). Even though the Internet has given farmers a wide range of rapidly disseminated information options, this range and speed has instead reinforced and renewed their well-documented desire for personal, one-on-one communication (Lasley et al., 2001). Even as they move online, farm media publications remain a highly ranked and widely preferred source of agricultural news and information among farmers’ increasingly large pool of options (Licht & Martin, 2007; Tucker & Napier, 2002).

Just as mainstream media coverage of agriculture has contracted and suffered, many studies contend that the quality and extent of farm media’s agricultural news coverage has also suffered. Farm magazines were initially subscription-based. With each subscription, farmers exchanged money for the magazine’s content, so in essence, every payment or lack thereof was input from the reader on the content; the reader had influence on editorial decisions. Farm magazines have become smaller and more specialized and have mostly transitioned to free, controlled circulation, wherein farmers receive a free subscription in exchange for giving the magazine their demographics. The result is a publication almost entirely dependent on advertising income, and the advertisers, not the readers, are now a primary influence on editorial content (Boone et
al., 2000; Banning & Evans, 2001). At the same time, the agricultural industry, including publishers, has undergone massive consolidation. Between 1993 and 2002, the top agricultural publishers increased their market share by more than 30 percent (Evans, 2012). Likewise, a shrinking number of corporations now control the vast majority of biotechnology patents, seed production, and livestock production systems (Banning & Evans, 2005).

The consequences of a highly consolidated industry, fewer publishers of farm media, and extremely powerful advertisers have been well documented. Studies over several decades have consistently shown that farm media reporters and editors are increasingly subject to substantial advertising pressure on their content, in the form of threats, withdrawn ads, and editorial trade-offs (Banning & Evans, 2001 & 2004; Hays & Reisner 1990 & 1991; Reisner, 1994; Reisner & Hays 1989 & 1991; Reisner & Walter, 1994). Not only do farm media face more intense agricultural advertising pressure than mainstream media (Reisner & Hays, 1991), but many agricultural writers and editors reported that this influence does change and influence their content (Reisner 1994; Reisner & Walter, 1994).

In one study, agricultural journalists themselves evaluated news stories produced by mass media reporters, farm media reporters, and newspaper agriculture beat reporters (Reisner & Walter, 1994). They concluded that mass media reporters who are not familiar with agriculture produced superficial, stereotyped stories that were not biased toward industry, farm media reporters produced stories that were not superficial or stereotyped but were biased toward industry, and newspaper agriculture beat reporters
produced stories that were less superficial than mainstream reports and less biased toward agro-industry than farm media reports (526). As a result, scholars have expressed concern that farm media under-cover social, economic, and environmental problems related to agricultural practices and tend to serve an advocacy role for agro-industry in controversial issues (Bannings & Evans, 2001; Reisner 1992; Reisner & Walter, 1994).

Although many anecdotal accounts suggest agricultural producers are aware of these advertising tensions and trade-offs in farm media content, only one study attempted to quantitatively measure this awareness (Bannings & Evans, 2004). The majority of respondents (from a variety of ages and types of operations) reported that they did see advertising influence in farm media content in the form of editorial trade-offs, bias in stories, and decisions on what and what not to cover. Other studies have shown that farmers are capable of separating the usefulness or influence of a source from its trustworthiness. Although farmers generally indicated that they seek information from sources they trust most highly, they do use some sources (particularly mass media) a moderate amount while maintaining a lower level of trust in them (Constance & Rikoon, 1992 & 1993). These studies suggest that farm media readers are fairly savvy when it comes to evaluating content from various information sources, but more research is needed.

Most of the available studies on the agricultural community only measure their preferences for agricultural information sources, as opposed to agricultural news sources. Few mainstream media sources could be expected to match farm media for its production of agricultural information such that a farmer uses to run a farming operation. However,
farm media and mainstream media do overlap in their coverage of major agricultural news events, and this convergence is an understudied topic (Reisner & Hays, 1991, 42). Moreover, in the focus groups of Licht’s 2007 study, farmers at times indicated that they do actively compare mainstream media’s agricultural news coverage to farm media’s (Licht, 2007, 97). This study will attempt to fill a gap by specifically examining how agricultural producers perceive differences in credibility between mainstream and farm media in relation to their agricultural news content. It will also measure whether producers detect the presence of advertising influence in a farm media story or consider the lack of such influence in a mainstream media story.

**Method Review**

Mass media researchers have long lamented the lack of an academic consensus for a functional definition of credibility (Meyer, 1988). Yet most studies accept the Webster’s New Collegiate definition that Philip Meyer recommends—something that “offers reasonable grounds for being believed” (567). Many researchers also invoke Carl Hovland and Walter Weiss’s concept of “trustworthiness,” from their foundational study on source credibility (Gaziano & McGrath, 1986; Hovland & Weiss, 1951, 636).

In 1986, Cecilie Gaziano and Kristin McGrath developed a 12-point scale for measuring credibility for the American Society of News Editors to use in credibility research. The scale consisted of 12 bipolar semantic differential items such as “fair or unfair” and “biased or unbiased,” and sought to measure fairness, bias, trustworthiness, completeness, factual nature, and accuracy (Gaziano & McGrath, 1986, 455). The researchers also added three items that would attempt to measure a “social concerns
factor,” which would account for feelings of trust associated with a media source’s relationship to the community (454-455).

In 1988, Meyer analyzed and tested this scale and offered a smaller, more concise credibility index of his own. He broke the concept of credibility into two factors: believability and “community affiliation,” defined as “maintaining harmony in and leadership status with the newspaper’s community.” He argued that the two concepts must be measured separately (Meyer, 1988, 567). His credibility scale pared down the Gaziano-McGrath scale to these semantic differential items: “Fair-Unfair,” “Unbiased-Biased,” “Tells the whole story-Doesn’t tell the whole story,” “Accurate-Inaccurate,” and “Can be trusted-Can’t be trusted.” His community affiliation scale contained only four items: “Watches out after your interests,” “Concerned about community’s well being,” “Patriotic,” and “Concerned mainly about the public interest” (Meyer, 1988, 573-574).

In 1994, Mark West attempted to cross-validate the Gaziano-McGrath and Meyer credibility scales. He concluded that only Meyer’s five-point credibility scale had acceptable reliability and sufficient empirical validity to accurately and reliably measure the concept of credibility. His results showed that the Gaziano-McGrath scale items did not measure the same concept and that Meyer’s community affiliation scale produced unacceptable reliability and validity levels (West, 1994).

Many quantitative academic studies on agricultural producers’ use and preference of information sources and source credibility use semantic differential items similar to Meyer and McGrath-Gaziano’s scales or list the source and employ Likert scale responses to measure the respondent’s opinion on the items or the source (Bruening,
Other studies on this topic use directional statements about the credibility or usefulness of the source and use either Likert scales or nominal categories to measure the respondent’s agreement or disagreement (Banning & Evans, 2001 & 2004; Bruening, 1992; Constance 1995; Reisner & Hays, 1989 & 1991; Reisner & Walter, 1991 & 1994). Others employ a ranking scale and allow producers to list their source options in order of preference or use (Ford & Babb, 1989; Schnitkey et al., 1992; Thomas, 1963; Tucker & Napier, 2001).

Academic studies on how farmers and journalists perceived the presence of advertising influence on farm media content have generally used two sets of questions to measure these perceptions (Banning & Evans, 2001 & 2004). One set measures perceptions of the presence of advertising influence by offering three nominal categories (“agree,” “neutral,” and “disagree”) in response to statements such as “Agricultural reporters and editors are under no obligation to please advertisers” (Banning & Evans, 2004, 12). The other set focuses on whether producers believe advertising influence is a problem. Farmers are given several statements such as “attempts by advertisers to influence what stories appear” and can select one of two nominal categories: “Not a problem” or “problem in some cases” (12).

The majority of these agricultural community studies were self-administered mail or email surveys. Surveys have the advantage of high external validity, relative ease of production and administration, and an inexpensive design, particularly in the case of email or Internet surveys. However, they also lack the control over independent and dependent variables that can be found in field experiments (Wimmer & Dominick, 2011).
Samuel Stouffer once accurately noted that field experiments leave “a wide-open gate through which other uncontrolled variables can march.” (Meyer, 1988, 567-568).

However, field experiments do have the critical ability to show causality between variables while maintaining a natural setting (Wimmer & Dominick, 2011). Since this study seeks to identify the effect of source on perceptions of credibility and not just a correlation, it will operate as a field experiment in the form of an email survey containing an agricultural news story—both a format and content with which agricultural producers are familiar. The only validated credibility scale—Meyer’s five-point scale—will be used to evaluate and measure the first research question:

RQ 1: How does the media source of an agricultural news story—mainstream or agricultural media—affect agricultural producers' trust and perceptions of the credibility of the story, regardless of content?

A trimmed-down version of Banning and Evans’ statements about advertising pressure will be used to evaluate the second research question. Three of their statements will be revised to focus only on the reader’s knowledge of potential influence, without attempting to measure attitudes toward that influence. For consistency of design, the three statements will use a corresponding five-point Likert scale to answer the second research question:

RQ 2: Do agricultural producers detect the presence or influence of advertising in agricultural news stories differently when they read stories produced by mainstream and agricultural media sources?
Method

Design

This study is a one-factor analysis field experimental design. Participants will receive an email survey composed of a news story and a series of questions. Everyone in the sample will read the same news story, but the story will be labeled with one of two possible news sources—a mainstream media source and a farm media source.

Sample

The sample will be drawn from an email list of subscribers to DTN/The Progressive Farmer, an agricultural company that distributes agricultural information, data, and news to more than half a million agricultural producers across the United States. Using a random number generator, two sets of 10,000 emails will be randomly selected from subscribers who fit the criteria of commercial farmers with 250 or more acres of row crops, with no geographic limits. One set of 10,000 emails will be assigned to one condition and the other set of 10,000 to the second condition, i.e., each participant will receive one of two possible versions of the survey. To determine how many responses are needed to generate a proper sample size, a G-power was calculated for ANCOVA and for one-tailed t-tests, using the standard media research effect size of .3 to .4. According to the results, the sample size needs to be about 250 participants per group. To be safe, I will wait until each survey has 300 participants. After that number is reached, the survey link will be deactivated, and no further data will be collected.
Stimulus

The survey asks participants to read a mock news story of roughly 250 words. The news story was written deliberately to be a bland and uncontroversial article about the conclusion of one agricultural company, DuPont’s, lawsuit against another agricultural company, Monsanto, in the summer of 2012. The events are factual and were covered by both mainstream and farm media. The survey story was written using six sources’ accounts of the event: the New York Times, the Wall Street Journal, Farm Journal, Successful Farmer, Monsanto, and DuPont. Therefore, the story is one agricultural producers could expect to find in either mainstream or farm media. It involves agricultural companies that produce a lot of agricultural advertising, so questions about advertising influence will be relevant despite the uncontroversial content. The story has been reviewed and deemed appropriate for the survey and its audience by Dr. Sandy Rikoon, MU Professor and Curators Distinguished Teaching Professor of Rural Sociology, who has extensive experience surveying agricultural communities.

Half of the news stories will bear the headline of DTN/The Progressive Farmer, a farm media company that regularly covers agricultural news and whose name is familiar to agricultural producers. The other set of stories will bear the headline of the Chicago Tribune. The Chicago Tribune was selected because it is a major newspaper that most agricultural producers would readily recognize and identify as a mainstream news source, but would also be less likely to elicit the predetermined opinions that national papers such as the New York Times and the Wall Street Journal might produce. Likewise, the Tribune
is urban enough to avoid eliciting feelings of familiarity or comfort, such as a newspaper like the Des Moines Register might produce for an agricultural producer.

The source of the story—either DTN/The Progressive Farmer or the Chicago Tribune—will act as the independent variable of news source in the field experiment. One final question on the survey will ask participants which type of source—farm or mainstream media—they would attribute to the story to, to check that they noted and processed the independent variable.

**Dependent Variables**

Two dependent variables will be evaluated by a series of questions respondents will answer after reading the news story.

Perception of credibility: Using Meyer’s validated credibility scale, five of the survey questions address this variable by offering respondents five bipolar semantic differential items (“Unfair-fair,” “Biased-Unbiased,” etc.), with a five-point Likert scale response option.

Perception of agricultural advertiser influence in the story: Three questions address this variable by posing three bipolar semantic differential items (“Was probably influenced by agricultural advertising” and “Was probably not influenced by agricultural advertising,” etc.), with a five-point Likert scale response option.

Four additional questions measuring the participants’ demographics will follow these items. The survey will conclude with six questions asking participants about their use and opinion of farm and mainstream media sources. These questions will allow me
not only to analyze *how* participants responded to the dependent variables, but to also consider *why* they might have done so in my discussion section.

**Covariate**

A covariate item will ask respondents how often they do business with Monsanto and DuPont Pioneer, the two companies featured in the mock news story. This question will attempt to account for any variance a relationship with the featured companies might produce in responses to the questions about credibility and the influence of agricultural advertising.

**Procedure**

In two email blasts, a link to one version of the survey will be sent to one email set of DTN subscribers and a link to the second version of the survey will be sent to the second set. The recruitment script in the body of the email will explain that the recipient has been selected to volunteer for a research survey conducted by a University of Missouri graduate student studying agricultural journalism. As an incentive, the script will explain that participating in the survey will give respondents a chance to enter into a drawing for a farm supply store gift card. The email will include a link to the survey. If the initial email blast does not produce a substantial amount of responses, a week after the initial email, two follow-up emails will be sent out to the subscriber list, each one a week apart.

**Data Analysis**

To check for reliability, Cronbach’s Alpha will be run on the five-point credibility scale items and the three items measuring perceptions of advertising influence.
Descriptive tests will be run on the rest of the questions, and an ANCOVA will be used to look for significance and answer RQ 1 and RQ 2, while allowing for covariance.
Potential Outlets for Publication

Mass media and communication journals such as *Journalism & Mass Communication Quarterly, Journal of Mass Media Ethics, Newspaper Research Journal, Mass Communication & Society, Public Opinion Quarterly, Communication Research,* and *Journal of Information Science* might be interested in this study, since it could have important implications for mass media’s news credibility in the agricultural community. More likely, however, this study could be submitted to journals that specialize in agricultural or scientific communications, such as *Journal of Rural Sociology, Journal of Applied Communications, Agriculture and Human Values, Agribusiness, Journal of Extension, Research in Rural Sociology and Development, Journal of Agricultural and Environmental Ethics, Journal of Agricultural Education, Science Communication* and *Agriculture Ecosystems & Environment.*
Appendix 1

February 28, 2013

MU Journalism Graduate Program
Committee
RE: Internship and Graduate Project of Emily Garnett

Dear Committee Members,

As an introduction, I am editor-in-chief of the DTN/The Progressive Farmer digital newsroom. Our news organization includes reporters and editors who cover daily news affecting farm business professionals, a six-person commodity markets analysis team and a five-person meteorological team, in addition to freelance and contributing writers who cover agricultural and food production issues on four continents.

As our intern, Emily Garnett will work daily with this team to report and write on topics of the day of importance to our subscribers. She will housed in our office in Omaha, NE., and be directly supervised by me and by subject-matter editors depending on the stories she will be working on.

Emily will work at least 30 hours per week throughout the summer for at least 14 weeks. Her role will include coverage of business, crop production and ag policy articles and research for feature packages written by a team of our reporters.

She will be given assignments by me or by other editors, and also will be responsible for coming up with enterprise story ideas. All her reporting and research will be supervised by me or by the appropriate editor under my direction.

I will evaluate Emily both during her time with us and at the end of her internship, and am willing to provide a written evaluation of her work.

Respectfully,
Appendix 2

Greg D. Horstmeier
7915 Harney Street
Omaha, NE 68114
402.707.0982
greg.horstmeier@telventdtnc.com

WORK EXPERIENCE

2007-present
Editor-in-Chief, DTN/ The Progressive Farmer
Supervise staff of 33 news writers and editors, meteorologists, commodity analysts, photographers/videographers and technical support personnel for major agricultural information enterprise. Direct coverage for business-to-business news, weather, markets and other vital information used by farmers, agribusinesses and investors in the U.S. and Canada. Manage information delivery strategy using multitude of channels including satellite feeds, internet, and mobile/tablet delivery; training and educational events; online webinars. Consult with senior management and other divisions on product development and expansion into global markets. Manage multi-million-dollar personnel, equipment and vendor budgets.

Aug. 2007-July 2010
Production Editor, DTN/The Progressive Farmer
Direct coverage of news, features, columns and visuals related to feed, food and fiber crops. Track latest information on crop production, seed, chemicals, fertilizer and other inputs, machinery and related technologies, grain storage and management. Write news and feature articles, collect still photography and video/audio to supplement articles on production topics. Write production features for Progressive Farmer when appropriate. Lead coverage of federal and state agencies that create policies on crop production issues (EPA, USDA, State and federal crop research divisions).
Assign and edit news articles to reporters on crop production and machinery/technology coverage
Member of editorial team, help set news/feature priorities, advise other editors and writers on production-related issues they may cover
Develop event coverage and news/feature writing related to crop production with Progressive Farmer editors
Supervise staff agronomist, edit columns and supervise subject coverage
Advise DTN product management on crop-production related tools and products

2001-2007
News Director, Extension and Agricultural Information, University of Missouri
Supervise staff of news writers and photographers for MU campus extension programs: Agriculture, Community Development, Human Environmental Sciences, continuing education divisions and departments. This roll included hiring, firing and disciplinary authority.
Manage $500,000 budget; co-manage communications budget of approximately $2 million
Assign and edit news articles, features and Web content
Develop communications strategies integrating print, broadcast, Web-based communications vehicles
Develop news/public information distribution strategies
Coordinate coverage with other campus news offices
Writing, photography on agriculture, research, other MU subjects
Media relations spokesperson with local, state, national and international media

1992-2001
Crops and Technology Editor, Farm Journal Magazine.
Led coverage of crop production articles including biotechnology, seeds, crop chemicals and pesticide policy issues, and agronomy. Supervised other editors and team of freelance writers in crop production related coverage.

1988-1992
Publications Editor, Extension and Agricultural Information, University of Missouri
   Designed and edited publications, manuals, technical reports.
   Created and edited College of Agriculture magazine Focus 21

1986-1988

1985-1986
   Public Relations Writer, Fletcher/Mayo PR, Atlanta, Ga.

1983-1985
   Associate Editor, Missouri Ruralist Magazine, Columbia, Mo.

EDUCATION
1983
   Bachelors of Science, Agricultural Journalism, University of Missouri, Columbia, Mo.
Appendix 3

April 5, 2013

Principal Investigator: Garnett, Emily Susan
Department: Agricultural/Applied Economics

Your Application to project entitled The Effect of Source on Agricultural Producers' Perceptions of Credibility was reviewed and approved by the MU Campus Institutional Review Board according to terms and conditions described below:

<table>
<thead>
<tr>
<th>IRB Project Number</th>
<th>1207818</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Application Approval Date</td>
<td>April 5, 2013</td>
</tr>
<tr>
<td>IRB Expiration Date</td>
<td>April 5, 2014</td>
</tr>
<tr>
<td>Level of Review</td>
<td>Exempt</td>
</tr>
<tr>
<td>Project Status</td>
<td>Active - Open to Enrollment</td>
</tr>
<tr>
<td>Regulation</td>
<td>45 CFR 46.101b(2)</td>
</tr>
<tr>
<td>Risk Level</td>
<td>Minimal Risk</td>
</tr>
</tbody>
</table>

The principal investigator (PI) is responsible for all aspects and conduct of this study. The PI must comply with the following conditions of the approval:

1. No subjects may be involved in any study procedure prior to the IRB approval date or after the expiration date.
2. All unanticipated problems, serious adverse events, and deviations must be reported to the IRB within 5 days.
3. All modifications must be IRB approved by submitting the Exempt Amendment prior to implementation unless they are intended to reduce risk.
4. All recruitment materials and methods must be approved by the IRB prior to being used.
5. The Annual Exempt Form must be submitted to the IRB for review and approval at least 30 days prior to the project expiration date.
6. Maintain all research records for a period of seven years from the project completion date.
7. Utilize the IRB stamped document informing subjects of the research and other approved research documents located within the document storage section of eIRB.

If you have any questions, please contact the Campus IRB at 573-882-9585 or umcrestearchairb@missouri.edu.

Thank you,

[Signature]

Charles Borduin, PhD
Campus IRB Chair
May 1, 2013

Principal Investigator: Garnett, Emily Susan
Department: Agricultural/Applied Economics

Your Exempt Amendment to project entitled *The Effect of Source on Agricultural Producers’ Perceptions of Credibility* was reviewed and approved by the MU Campus Institutional Review Board according to terms and conditions described below:

<table>
<thead>
<tr>
<th>IRB Project Number</th>
<th>120781B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Application Approval Date</td>
<td>April 5, 2013</td>
</tr>
<tr>
<td>Approval Date of this Review</td>
<td>May 1, 2013</td>
</tr>
<tr>
<td>IRB Expiration Date</td>
<td>April 5, 2014</td>
</tr>
<tr>
<td>Level of Review</td>
<td>Exempt</td>
</tr>
<tr>
<td>Project Status</td>
<td>Active - Open to Enrollment</td>
</tr>
<tr>
<td>Risk Level</td>
<td>Minimal Risk</td>
</tr>
</tbody>
</table>

The principal investigator (PI) is responsible for all aspects and conduct of this study. The PI must comply with the following conditions of the approval:

1. No subjects may be involved in any study procedure prior to the IRB approval date or after the expiration date.
2. All unanticipated problems, serious adverse events, and deviations must be reported to the IRB within 5 days.
3. All modifications must be IRB approved by submitting the Exempt Amendment prior to implementation unless they are intended to reduce risk.
4. All recruitment materials and methods must be approved by the IRB prior to being used.
5. The Annual Exempt Form must be submitted to the IRB for review and approval at least 30 days prior to the project expiration date.
6. Maintain all research records for a period of seven years from the project completion date.
7. Utilize the IRB-stamped document informing subjects of the research and other approved research documents located within the document storage section of eIRB.

If you have any questions, please contact the Campus IRB at 573-882-9585 or umcresearchcirb@missouri.edu.

Thank you,

[Signature]
Charles Borduin, PhD
Campus IRB Chair
Appendix 2

Thank you for agreeing to participate in this survey about news credibility.

**What it involves:** You will be asked to read a short news story (250 words) and then answer a series of questions about the story. You will also be asked to provide some demographic information. The survey should only take 3 to 5 minutes.

**Benefits and Risks:** There are no risks associated with your participation in this survey. There are also no consequences if you choose not participate.

For your participation, you will have the opportunity to enter into a drawing for a $50 Tractor Supply gift card at the end of the survey.

**Reporting of data/Anonymity:** Your personal information will not be linked to your data, and nowhere in the results or discussion of the findings will your name be mentioned.

If you choose to enter the lottery for the gift card, you will be taken to a separate survey and your contact information will be stored separately and will be unable to be linked to your responses.

**Your participation is voluntary:** You have the right to exit the study at any time. Your anonymous responses or the act of exiting the study will not affect your relationship with the University of Missouri or DTN/The Progressive Farmer. All research materials we have must be kept for a period of 7 years following the completion of the project.

**Contact:** If you have any questions about the study, please contact Emily Garnett at esgd49@mail.missouri.edu, 246 Walter Williams, Missouri School of Journalism, Columbia, MO 65211.

If you have questions about your right as a study participant, or are dissatisfied with any aspect of this study, you may contact, anonymously if you wish, the Campus Institutional Review Board, 483 McReynolds, University of Missouri, Columbia, MO 65211 or by phone at (573) 882-9585.

**By continuing to the next page,** you acknowledge that you have read the above information, have received answers to any questions you asked, and consent to take part in the study.
Monsanto wins patent infringement case against DuPont

By DTN/The Progressive Farmer OR Chicago Tribune staff writer

August 3, 2012

In a victory for Monsanto this week, a federal jury decided DuPont Pioneer must pay the St. Louis-based seed company $1 billion for willful patent infringement.

Monsanto argued that DuPont’s development of a seed line called Optimum GAT violated their patent on Roundup Ready technology and an earlier licensing agreement.

In 2002, Monsanto extended a license to DuPont to use Roundup Ready—a patented glysophate-resistant trait—in Pioneer seeds. They argued that Pioneer’s attempt to stack that trait with its own glysophate-resistant trait in a new seed line violated that license and infringed on their patent.

DuPont lawyers argued that patent was invalid and that Monsanto had intentionally misled the U.S. Patent and Trademark Office during its patent application process. In its official press statement, Monsanto called these charges “‘smokescreen and rhetoric intended to divert a sympathetic ear to why their misuse of our technology is a good thing.’”

The same statement called the attempt to stack traits in the Optimum GAT product, “an apparent attempt to remedy unacceptable risk posed by DuPont’s product.”

In a press release promising to appeal the decision, DuPont stated that, “There were several fundamental errors in the case which deprived the jury of important facts and arguments.” DuPont has also argued that the $1 billion settlement is unnecessarily high because the company discontinued the Optimum GAT seed line and will never make any money from it.

DuPont has also filed antitrust charges concerning the same Monsanto patent in a separate case that will go trial in September 2013.
Please select the number that most accurately describes your reaction to the previous news story from The Chicago Tribune OR DTN/The Progressive Farmer:

1. The news story was

UNFAIR
1  2  3  4  5
FAIR

2. The news story was

BIASED
1  2  3  4  5
UNBIASED

3. The news story

DID NOT
TELL THE
WHOLE
STORY
1  2  3  4  5
TOLD
THE
WHOLE
STORY

4. The news story was

INACCURATE
1  2  3  4  5
ACCURATE

5. The news story

CAN’T BE
TRUSTED
1  2  3  4  5
CAN
BE TRUSTED

6. The news story

WAS PROBABLY
INFLUENCED BY
AGRICULTURAL
WAS PROBABLY
NOT INFLUENCED
BY AGRICULTURAL
7. The writer of news story

HAS AN OBLIGATION
TO PLEASE
AGRICULTURAL
ADVERTISERS

HAS NO OBLIGATION
TO PLEASE
AGRICULTURAL
ADVERTISERS

8. The news story

WAS PROBABLY HARD
TO WRITE
WITHOUT INFLUENCE
FROM AGRICULTURAL
ADVERTISING

WAS PROBABLY EASY
TO WRITE
WITHOUT INFLUENCE
FROM AGRICULTURAL
ADVERTISING
These final questions will attempt to measure the characteristics of the participants. Responses will only be evaluated as a whole; no individual responses will be pulled out or examined separately.

Please select the category that most accurately describes yourself:

1. MALE or FEMALE

2. ACTIVE AGRICULTURAL PRODUCER
   RETIRED AGRICULTURAL PRODUCER
   NOT AN AGRICULTURAL PRODUCER
   AGRICULTURAL SUPPLIER

3. Under 35 years
   35 to 44 years
   45 to 54 years
   55 to 64 years
   65 to 74 years
   75 years and over

4. ATTENDED HIGH SCHOOL
   HIGH SCHOOL GRADUATE
   GRADUATE OF A 2-YR COLLEGE OR TRADE PROGRAM
   SOME 4-YR COLLEGE ATTENDANCE
   4-YR COLLEGE GRADUATE
   ADVANCED GRADUATE DEGREE

5. I do business with Monsanto

   NEVER       RARELY      SOMETIMES    OFTEN      DAILY
   1            2           3           4          5

6. I do business with DuPont Pioneer

   NEVER       RARELY      SOMETIMES    OFTEN      DAILY
   1            2           3           4          5
(For the following questions, *mainstream media* is defined as media reaching the general population, such as network television, general interest newspapers, magazines, and AM/FM radio. *Farm media* is defined as television programming, magazines, and radio targeted at farm producers.)

7. How often do you read mainstream media sources for agricultural news?

<table>
<thead>
<tr>
<th>NEVER</th>
<th>RARELY</th>
<th>SOMETIMES</th>
<th>OFTEN</th>
<th>DAILY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

8. How often do you read farm media sources for agricultural news?

<table>
<thead>
<tr>
<th>NEVER</th>
<th>RARELY</th>
<th>SOMETIMES</th>
<th>OFTEN</th>
<th>DAILY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

9. Overall, how well do you think mainstream media sources cover agriculture?

<table>
<thead>
<tr>
<th>VERY POORLY</th>
<th>VERY WELL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

10. Overall, how well do you think farm media sources cover agriculture?

<table>
<thead>
<tr>
<th>VERY POORLY</th>
<th>VERY WELL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

11. In general, do you feel that mainstream media sources have the best interests of the agricultural community in mind?

<table>
<thead>
<tr>
<th>NOT AT ALL</th>
<th>VERY MUCH SO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

12. In general, do you feel that farm media sources have the best interests of the agricultural community in mind?

<table>
<thead>
<tr>
<th>NOT AT ALL</th>
<th>VERY MUCH SO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

13. Would you classify the source of the story you just read as:

- A FARM MEDIA NEWS SOURCE
- A MAINSTREAM MEDIA NEWS SOURCE

222
Thank you for participating in this research study. The news story you read was never published by [DTN/The Progressive Farmer or The Chicago Tribune]. The purpose of the study was to examine the effects of source on an agricultural producer’s perception of a news story’s credibility and the influence of advertising.

This study will look for a difference in perceptions of credibility and advertising influence between two source types: Farm media and mainstream media. Two versions of the same story you read were distributed; one was labeled with a mainstream media news source and the other with a farm media news source. The news story you read, while factual and accurate, was composed entirely for the purpose of researching how these different sources of information affect a news story’s credibility in the eyes of an agricultural producer.

Final results of this study will be available from Emily Garnett by October 2013. You may contact me at esgd49@mail.missouri.edu to receive a copy of the final report or to report any concerns or questions.

As a reminder, all results will be grouped together, so your individual results will not be examined separately. Your participation is and will remain anonymous.

If you would like to be entered into the lottery for a $50 Tractor Supply gift card, please follow this link:
References


American Society of Newspaper Editors’ Poll (1998). Why credibility has been dropping. (Washington: ASNE)


Banning, Steven & Evans, Jim (2004). Farmers’ voices: Concerns within the agricultural advertiser-media-reader triad. *Journal of Applied Communications* 88 (2), 7-20


Constance, D.H. & Rikoon, J.S. (1992). Agricultural pesticide and ground water issues: Research on farmers in Missouri regions most susceptible to ground water contamination from pesticide use. Final Report of Research and Analysis for the Environmental Protection Agency (Region VII) and Missouri Department of Agriculture (Plant Industries Division)


Evans, Jim (2012). 50 years of agricultural media. Agri Marketing 50(8), 90-96


Hochberg, Adam (2010). “Would beat reporters have seen early inconsistencies in Sherrod story?” *Poynter*, July 28


Lichtenberg, Erik & Zimmerman, Rae (1999). Information and farmers’ attitudes about pesticides, water quality, and related environmental effects. *Agriculture Ecosystems & Environment* 73, 227-236


Rogers, Carol (1999). “The importance of understanding audiences.” In Dunwoody, Sharon, Sharon M. Friedman, and Carol L. Rogers (Eds.), *Communicating uncertainty: Media coverage of new and controversial Science*. 179-200

228
Rouner, Donna, Slater, Michael D. & Judith M. Buddenbaum (1999). How perceptions of
news bias in news sources relate to beliefs about media bias. *Newspaper Research
Journal* 20(2), 41-51

Inc., Des Plaines, Ill.

Ohio commercial farmers: Implications for extension. *American Journal of
Agricultural Economics* 74, 486–496

Communication* 32(1) 37-42

*Communication Research* 21(1), 105-123

Dunwoody, Sharon, Sharon M. Friedman, and Carol L. Rogers (Eds.),
*Communicating uncertainty: Media coverage of new and controversial science.*
23-39

Tankard, James W. & Michael Ryan (1974). News source perceptions of accuracy of
science coverage. *Journalism & Mass Communications Quarterly* 51, 219-225

Mass communication systems and communication accuracy in science news
reporting. *Journalism & Mass Communication Quarterly* 47, 673-683

Research Report* 14, University of Illinois

conservation information among farmers in three Midwestern US watersheds.
*Agriculture, Ecosystems and Environment* 92, 297-313


issues: Reflections on a sociobiographical approach. *Adult Education Quarterly*
62(1), 56-72
