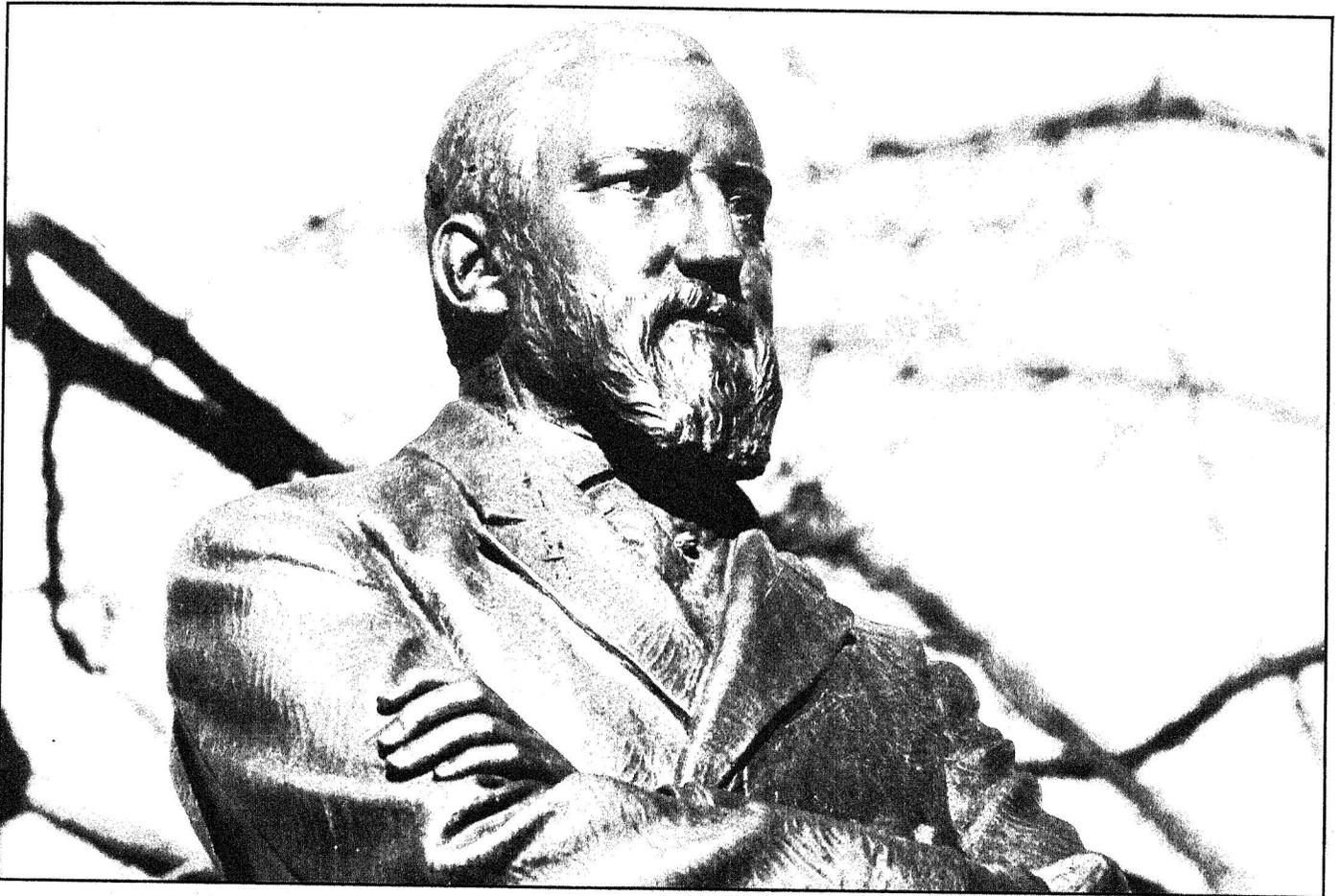


A Commitment to

Agricultural Research

For a Competitive Edge in Missouri Agriculture



This William H. Hatch statue stands in Hannibal, Missouri. Hatch, a Missouri congressman, championed the first successful state agricultural experiment station-founding bill in Congress in 1887.

A Hatch II Program
Agricultural Experiment Station
College of Agriculture
University of Missouri-Columbia
SR 379, April 1988

To: Concerned Citizens of Missouri

The economic progress and quality of life you and other Missourians will enjoy in the future depend greatly on decisions being made now. Of special importance are decisions relating to the quality and quantity of research that will be done on the state's resources and opportunities. Especially needed is "site and situation specific" research that results in practical recommendations Missourians can readily put to use.

Missouri's Agricultural Experiment Station can play a key role in accomplishing the research needed. We invite you to read the following discussion of the potential for research by the Experiment Station. Then we invite you to join in efforts to see that the research is accomplished and that Missourians reap its benefits.

With best wishes,
Roger Mitchell
Dean, College of Agriculture
Director, Agricultural Experiment Station

What is the Missouri Agricultural Experiment Station?

The Missouri Agricultural Experiment Station is that part of the University of Missouri College of Agriculture responsible for research. It became a part of the College of Agriculture in 1888 after the U.S. Congress, through the Hatch Act, provided for the establishment of experiment stations.

The Dean of the College of Agriculture also serves as Director of the Agricultural Experiment Station. An associate director is responsible for much of the planning and management for Station operation. The Experiment Station has retained its own identity within the College

because it receives specially designated federal funds and has specific relationships with the U.S. Department of Agriculture.

Most faculty members of the College of Agriculture have joint responsibilities, part research and part teaching, and, in some cases, part extension. For their research responsibilities, faculty are considered to be part of the Experiment Station.

This coordinated arrangement is the genius of the U.S. land-grant college system — the tying together of research, classroom teaching and extension.

Agricultural Research A Competitive Edge

Agricultural Research — A Competitive Edge is the name carefully selected for a program to emphasize the importance of Missouri Agricultural Experiment Station research to the state. Many countries, even individual states, are competing vigorously for the world's agricultural markets. The goal of this proposed program is to provide a competitive edge for Missouri's agricultural production, products and performance. Selected current research will be strengthened. New thrusts will be developed in the areas of economic growth, natural resources and technology appropriate to Missouri. Success in this effort will enhance the quality of life and economic well-being of all Missourians.

Why a competitive edge now?

A Competitive Edge program is a natural follow-up to the 100th anniversary of the Hatch Act passed by the U.S. Congress in 1887. This act created the agricultural experiment station system in this country — the world's No. 1 system of agricultural research. The name Hatch has special meaning to Missourians because Missouri Congressman William H. Hatch, Hannibal, championed the act through Congress.

A year later in 1888, the Missouri Agricultural Experiment Station was founded. The ending of one century of service and the beginning of a second provides a unique opportunity to:

1. Summarize the benefits from past investments in Hatch Act research.
2. Focus the role of the Missouri Agricultural Experiment Station so that it can provide maximum research benefits for the future.
3. Help Missouri citizens decide what would be optimal investment in the agricultural research effort.

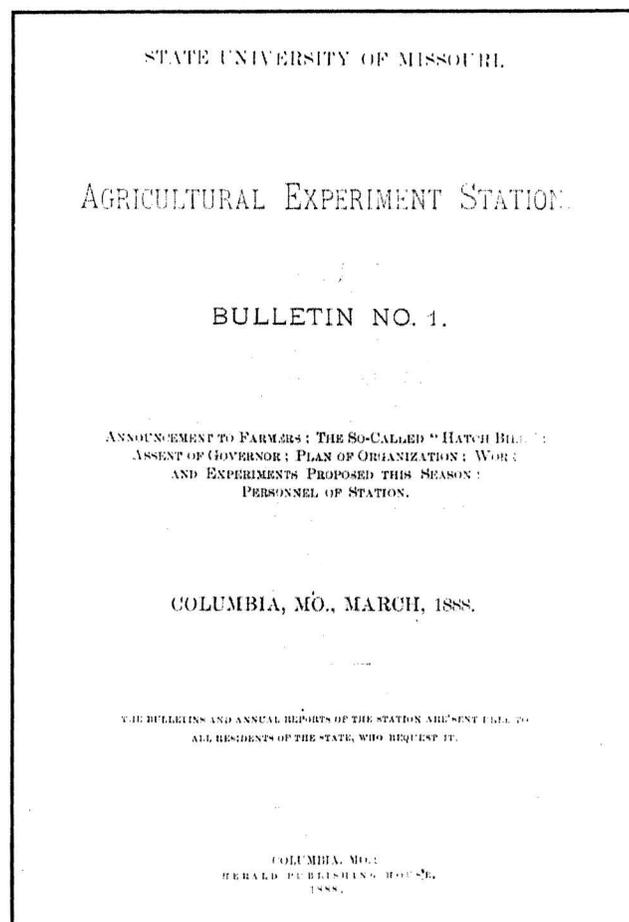
What was the Hatch Act?

The Hatch Act of 1887 provided federal funds to each state to establish an agricultural experiment station under the direction of its land-grant college. Purpose of these stations was to "discover what is yet unknown, either in fact, application or principle, in any one of the agricultural industries; but what is unknown must be found by research, not by accident, and requires knowl-

edge, judgment and industry. It is evident, however, that practical results are aimed at and expected..."

Dr. Paul Schweitzer was appointed first experiment station director in Missouri in 1888. Note his message in Missouri Agricultural Experiment Bulletin No. 1, "The Missouri Agricultural Experiment Station has now been organized and established in conformity with a law and to carry out these ideas. Look to it farmers; it will be your friend, it will work for you, it will try to show you how to render your labor more profitable..."

Sixty years later, in 1948, the Station's Annual Report, Bulletin 528, reported this, "So it has been from the



Bulletin No. 1



Research technician Teresa Newman studies soybean crossbreeding at the Delta Center near Portageville.

very beginning — 60 years ago — that the research workers at the Missouri Agricultural Experiment Station have served the farmers of the state in an endless effort to find ways to conserve the soil, improve and maintain its fertility, select more productive crop rotations, use more economical livestock feeding practices and rations, to develop and improve new varieties of trees and plants and indirectly to help raise the standard of living of all Missouri."

Now, after 100 years of research efforts, the work continues to "help raise the standard of living of all Missouri."

What difference has it made?

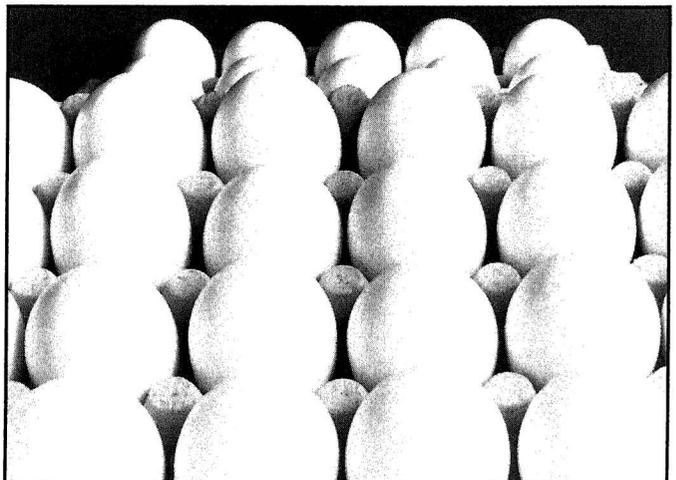
Many significant achievements are credited to Missouri Station scientists. A few examples and their payoffs include:

1. Initial cattle crossbreeding work in Missouri provides the basis for today's gains from hybrid vigor. Yearly value of this research is estimated at \$21 million.

2. Missouri has a long history in soybean research — in fertility; insect and disease control; storage; marketing and utilization; crop management; variety development. Scientists say research has added one-third bushel per acre per year yield to the soybean crop in recent

years. This means, with \$5 per bushel beans and 5,300,000 acres planted to the crop, an annual return of \$9,535,000 from soybean research.

3. Missouri swine research has given the state's hog producers the edge in producing the leaner, meatier product today's consumer demands. This research effort, in conjunction with an agricultural extension educational program directed to farmers, easily means an extra



Hens produce better eggs at a lower cost thanks to research.



This field day at the Greenley Center near Novelty, is a prime example of the flow of findings that go out to farmers.

dollar for each of the 5,000,000 market hogs sold — or \$5 million dollars annually.

4. The cattle industry in Missouri was saved in the 1890s from the devastating Texas fever that threatened to destroy newly established herds, and prevent the state from becoming a major cattle producer. The initial research cost only \$10,000; it has prevented the equivalent of \$75 million in damages in each of the last 100 years.

5. Fescue pastures cover an estimated 10 million acres in Missouri. The hardy forage has been a mainstay in the state's beef cow operations. Research pasture systems, identification and handling of the toxic fescue fungus and the development of a fungus-resistant variety results in a minimum annual return of \$30 million.

6. Corn breeders in Missouri have more than doubled the stalk strength of some corn hybrids. Since 1960, more than 43 speciality corn hybrids have been developed in Missouri. One inbred line accounts for one-seventh of all the corn grown in the United States. Corn research equates to a \$2 million annual return; a \$50 million annual contribution nationally.

7. By breeding wheat varieties loaded with protein and tough enough to withstand the stresses of pests and bad weather, wheat geneticists have assured a hungry world of increased production, amounting annually to \$3.5 million benefit in Missouri alone.

8. Through careful selection, breeding and control of light-dark cycles, researchers have developed a laying flock that averages more than an egg a day. The hens produce a uniform, large egg in less space and with less feed. These research results amount to \$3 million in a year for commercial egg producers.

9. Cows affected by heat stress show a marked drop in milk production. Missouri researchers have developed an index to help dairymen select the best heat-adaptable cows and have developed procedures to relieve stress. The increased milk production means an additional \$2 million for Missouri agriculture.

10. Sanborn Field on the UMC campus provides a 100-year record of soil management and crop production research. The use of recommended cropping practices and soil treatments developed at Sanborn Field return about \$5 million annually to Missouri agriculture.

An everyday flow of findings

Perhaps the most valuable service of the Station has been the everyday flow of findings and recommendations going out to farmers, agribusinessmen and consumers:

1. Field days, tours, demonstrations and special events at which farmers could see experimental plots and animals — plus ask questions of the researchers.

2. Thousands of research findings and the resulting recommendations distributed throughout the state by bulletins, guidesheets, news stories, radio programs and exhibits.

3. Many, many individual contacts in which farmers and their commodity groups and agricultural businessmen have brought their problems and questions to Station scientists, asking for research help. Many times these requests resulted in cooperative research efforts that solved problems and developed new industries.

4. The backup support provided to the teaching and extension programs. Without the research findings,



Some farmers were skeptical of how scientists could help them. But, the scientists solved problems and earned farmers' respect.

what could be taught in the classrooms about agriculture under Missouri conditions? What could extension agents take to the people? What would vocational-agriculture teachers use for up-to-date materials?

5. The local findings and contacts provided by the outlying centers throughout the state

Small steps lead to dramatic results

Research progress is usually measured in small increments, not massive leaps forward. However, during the past 10 years, increases in agricultural productivity have been dramatic. We have greatly increased production efficiency in our grain crops — soybeans, corn, wheat, grain sorghum; compared to 25 years ago, pork is

50 percent less fat; the shelf life of milk has been doubled; animal gains are pronounced; greatly improved forage varieties have been developed.

Agricultural research has been shown to give an annual return of between 30 and 50 percent. The rate varies with crop, location and program.

In 1983-84, Cordell Tindall, native Missourian and long-time editor of the *Missouri Ruralist*, prepared a report on the impact of College of Agriculture programs on Missouri agriculture. He wrote, "The technology provided by the research/extension system of the University of Missouri is everywhere, but its origin is somewhat lost in the mass of information that engulfs farm operators from commercial dealers, the farm press, friends and neighbors. Mr. Jonas (a Missouri farmer), for example, is pleased to have an impartial umpire monitoring the relative effectiveness of farm chemicals, such as herbicides and insecticides. It's easy to lose sight of the fact that retailers of these products get training that actually has research/extension origins."

An unbiased source

"What does the College say?" This was the question frequently asked as farmers made decisions on various varieties, breeds, fertilizers, feeds and equipment.

This simple question gives eloquent testimony to what the Missouri Agricultural Experiment Station has meant to Missourians over the years. Early on, some farmers were skeptical of how those scientists with their books and laboratories could be of help on the farm. But soon, these scientists earned farmers' respect by showing they could help solve problems. Farmers learned



Controlled grazing experiments, conducted at the North Missouri Center near Spickard, show that dividing large pastures into smaller plots can increase production.

they would get unbiased, straight-forward information interpreted in terms of "what's best for that individual farmer."

Station researchers have made recommendations only after trials have provided consistent results over several years. This conservative approach to making recommendations has sometimes resulted in criticism that Station research was behind the times. However, it is this very approach that has built the Station's reputation over time, and keeps farmers asking, "what does the College say?"

Some citizens are concerned about the safety of methods and products of today's science. Rightfully so. Cautious evaluation becomes even more important as the technology and products become more complex. Scientists now can produce new strains of virus and bacteria, new drugs, new insecticides and herbicides. Who is going to take the long-range view and put the public interest up front when evaluating these? While caution is important, it is just as important that new research not be

needlessly harassed and hampered. This could keep the public from benefiting from tremendously important new products and techniques.

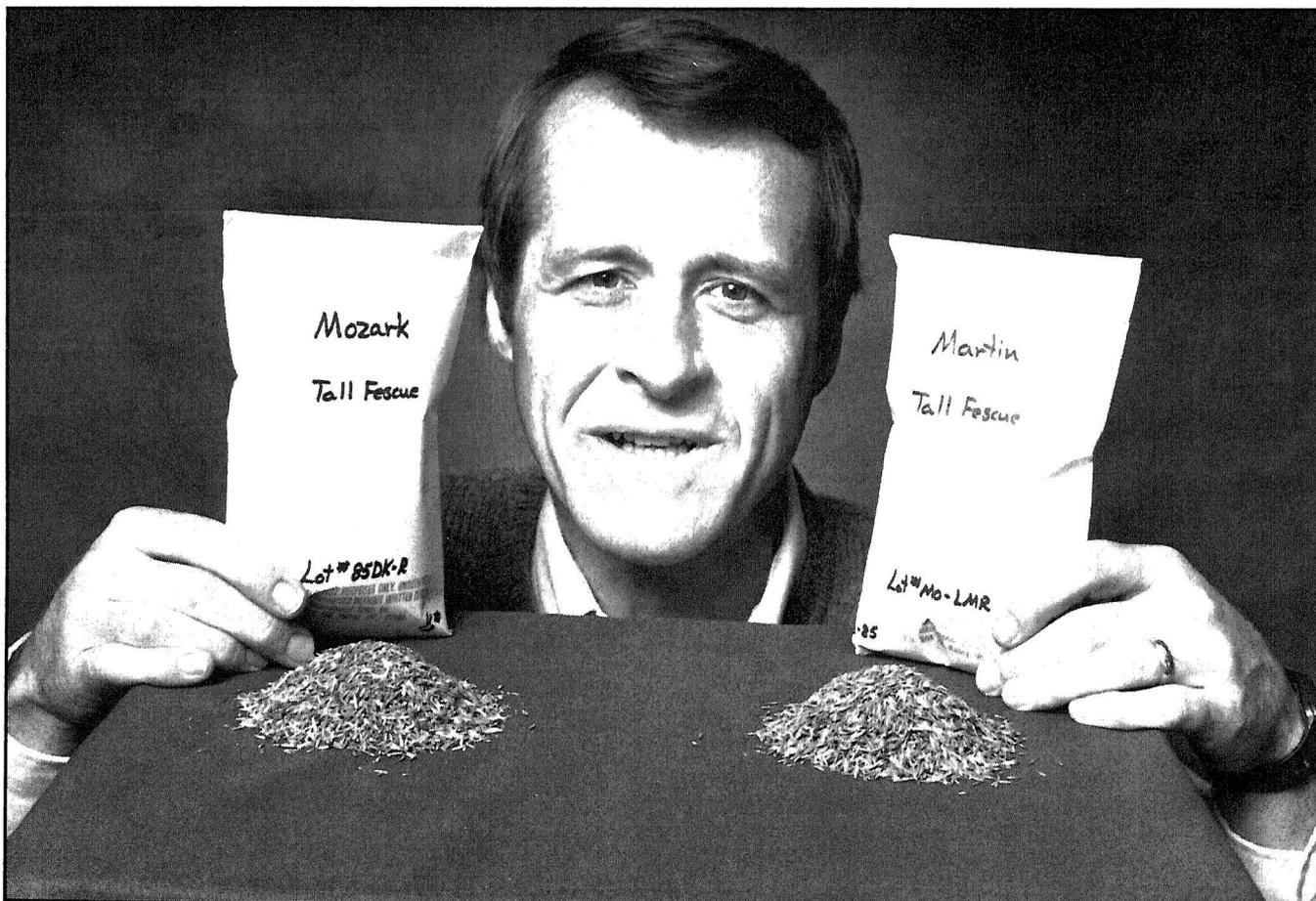
The Agricultural Experiment Station has many years of experience in filling this kind of public interest role — reporting unbiased findings and helping to put these findings into perspective.

Where we stand now

Missouri's agriculture, its economy, and its rural areas face dramatic changes. The *Missouri Opportunity 2000* report, requested by Gov. John Ashcroft, said this:

"By the year 2001, Missouri's structure will be significantly different. Recreation and tourism will be the primary industry in southern Missouri. Northern Missouri and the Bootheel will go through 15 years of dramatic transition."

"...the part-time/hobby farmer will continue to produce some grain and livestock, but his operations will not be profitable except in rare cases. The full-time



Dave Sleper, University of Missouri-Columbia plant breeder, developed the fungus-free tall fescues Mozark and Martin.



Sunflowers and amaranth are among the alternative crops Richard Mattas is researching at the Southwest Center near Mt. Vernon.

commercial farmer that remains will have to compete on a one-to-one basis with his counterparts in other states."

The *Rural Missouri* 1995 report, prepared in 1985, said this:

"To some the agricultural situation is described as economic chaos. To others it is best termed a technological transformation. Whatever the description, changes taking place will affect the way rural Missourians live and the quality of their life over the next decade."

Station role for the future

Faced with these dramatic changes in the years ahead, it's important to study what the Missouri Agricultural Experiment Station can do to improve the future health and well-being of Missouri's agricultural industry, rural communities, statewide economic growth and the quality of life of its citizens. What can be done to enhance the resources and competitive advantages Missouri has?

Two current agriculture-related efforts have been designated "Eminence Programs" at the University of

Missouri. They receive special emphasis in order to achieve top-level quality and national reputation.

One effort is the Food for the 21st Century Program. It is a long-range program which emphasizes basic research on factors which influence plant and animal growth, food processing and preservation innovations and diet/health relationships. It deals in terms of genetic engineering, bio-technology and other sophisticated research methods. Food for the 21st Century will provide a flow of basic research findings for many years ahead. The exciting potential of these basic findings can be effectively harnessed and put into use by an invigorated applied research and development effort.

The other eminence effort is University Extension's Commercial Agriculture program. Its goal is to provide commercial farmers with fast, easy access to the latest technology and recommendations. Methods include:

1. Teams of specialists working with farmers to set program priorities.
2. Applied research demonstrations involving farmers and researchers.
3. High level seminars/workshops on financial management.

4. On-line agricultural intelligence network with access by computer and telecommunications.

Food for the 21st Century and Extension's Commercial Agriculture programs are making rapid progress. These efforts are already providing information and recommendations to Missouri agricultural enterprises.

Experiment station provides base

The Agricultural Experiment Station provides the research base for all College of Agriculture programs. This includes the two eminence programs described earlier and much more. The Station provides the re-



Research is finding new uses for the old crop crambe.

searchers, laboratories, experimental farms and outlying centers. It provides for the day-to-day efforts in variety development and testing, feed analysis and recommendations, economic evaluation of production methods and many more such continuing research tasks.

The basic needs and opportunities of the Agricultural Experiment Station have not received the attention that some other programs have. Thus the development of *Agricultural Research — A Competitive Edge*.

This proposal summarizes plans and needs as the Station begins its second century of service. This assessment of the Station's future is based on:

1. Findings of statewide panels that evaluated research needs of the major commodities produced in Missouri.

2. Committees which examined Missouri's strong points in terms of physical and people resources. Included were *Missouri Opportunity 2000* and *Rural Missouri 1995: Challenges and Issues*.

3. Numerous sessions with individuals, commodity groups and business and agency personnel.

New research thrusts identified

A Competitive Edge calls for strengthening efforts in on-going programs which provide the continuing flow of recommendations on solving problems faced by Missouri farmers, agribusinesses and consumers. In addition, new thrusts were identified in the areas of economic development, natural resources and development of technology appropriate to Missouri. Specific thrusts in each of these areas are described in the following paragraphs:

Economic development

Maximum use of Missouri's position as a population and transportation center for improved economic development of rural areas. Missouri has a major network of interstate highways, two major river systems and excellent airports. Research is needed to identify:

- Opportunities these resources provide.
- Methods for encouraging people to "get into the businesses" that will take advantage of these opportunities.

Development of new crops for Missouri's environment. The state's diverse soil and climatic conditions make it a good spot for identifying the adaptability and potential of new crops. The Missouri Opportunity 2000 Commission said, "A coordinated effort must exist between state government and universities to identify high-potential specialty crop areas and help coordinate the development of producer and processor/buyer involvement."

The need for localized research was highly evident at a recent national conference on new ideas for diversification and innovation in agriculture. Numerous speakers told conference participants to "check with your extension agent or your college of agriculture for variety and fertilizer recommendations for your area."

Ways to add value to Missouri's agricultural products by further processing and product development. Much Missouri produce is now sold as raw products. This is true also of U.S. exports. This means jobs for other countries who, in turn, send a high-value product back to us. How can value be added to Missouri produce by further processing, finishing and marketing? Why not have Missouri products that will compete with Danish hams, Polish sausages, Dutch and Swiss cheese?

Market strategies to boost farm income. One of the vexing problems over the years has been the prices received for farm products. Consumer wants and market needs keep changing. Research is needed to determine how farmers can identify special markets and market strategies, and prepare to take advantage of them. Forces outside the control of individual farmers, businessmen and communities must be reckoned with. Learning to "better read" these forces may be the most difficult but also the most fruitful task ahead.

Analysis of the impact on the local rural economy and quality of services as services become more regional rather than county in nature. What happens to health and education services as these rural communities change? Are there better ways to maintain roads and bridges? To use existing schools for other community services?

Analysis of factors affecting adoption of new technology. Information is needed to determine how new technology can be made readily useful for all producers — small, medium and large. Unless we are prepared to be early adopters, other countries — even other states — will gain the competitive advantages of using new technology.

Potential of computer programming as a management tool. Increasingly powerful computer programs, sometimes referred to as artificial intelligence, make it possible to study numerous "what if" situations, using different numbers, prices, yields, climate and markets. How can this tool be used effectively for Missouri situations?

Natural resources

Evaluation of the effect of agricultural practices on ground water quality. Many citizens are concerned about the long-term impact of water contamination.

Shallow wells in rural Missouri are of special concern. Research is needed to more clearly define agricultural practices that will limit the potential for ground-water contamination and help maintain water quality. One of the opportunities in Missouri's future is food and kindred products, according to the *Missouri Opportunity 2000* report. Such industries are dependent on high volumes of high-quality, easily accessible water. Missouri is generally recognized as having an abundance of good ground water and a surplus of surface water. We must do a better job of analyzing and understanding the importance of water as a factor in Missouri's quality of life, as an economic development resource and as an essential part of a healthy economic environment.

Role of forests and improved forest management on economic development and stream behavior. The extensive forests of Missouri represent the most underdeveloped resource in the state. In many cases, the returns from forests have been so low that trees have been cut or bulldozed, and the land used for other purposes. Research is needed to determine ways to improve the return from forest lands.

Chemistry of natural products that influence biological behavior. Plants and animals contain many natural products which have not yet been fully identified. Many of these are known to influence biological behavior. Facilities in the University of Missouri Animal Sciences Research Center and laboratories in the new agricultural Engineering building provide the equipment and pilot plants where these substances can be extracted and their chemistry determined. The information can be used to develop new products from commodities which now have limited use.

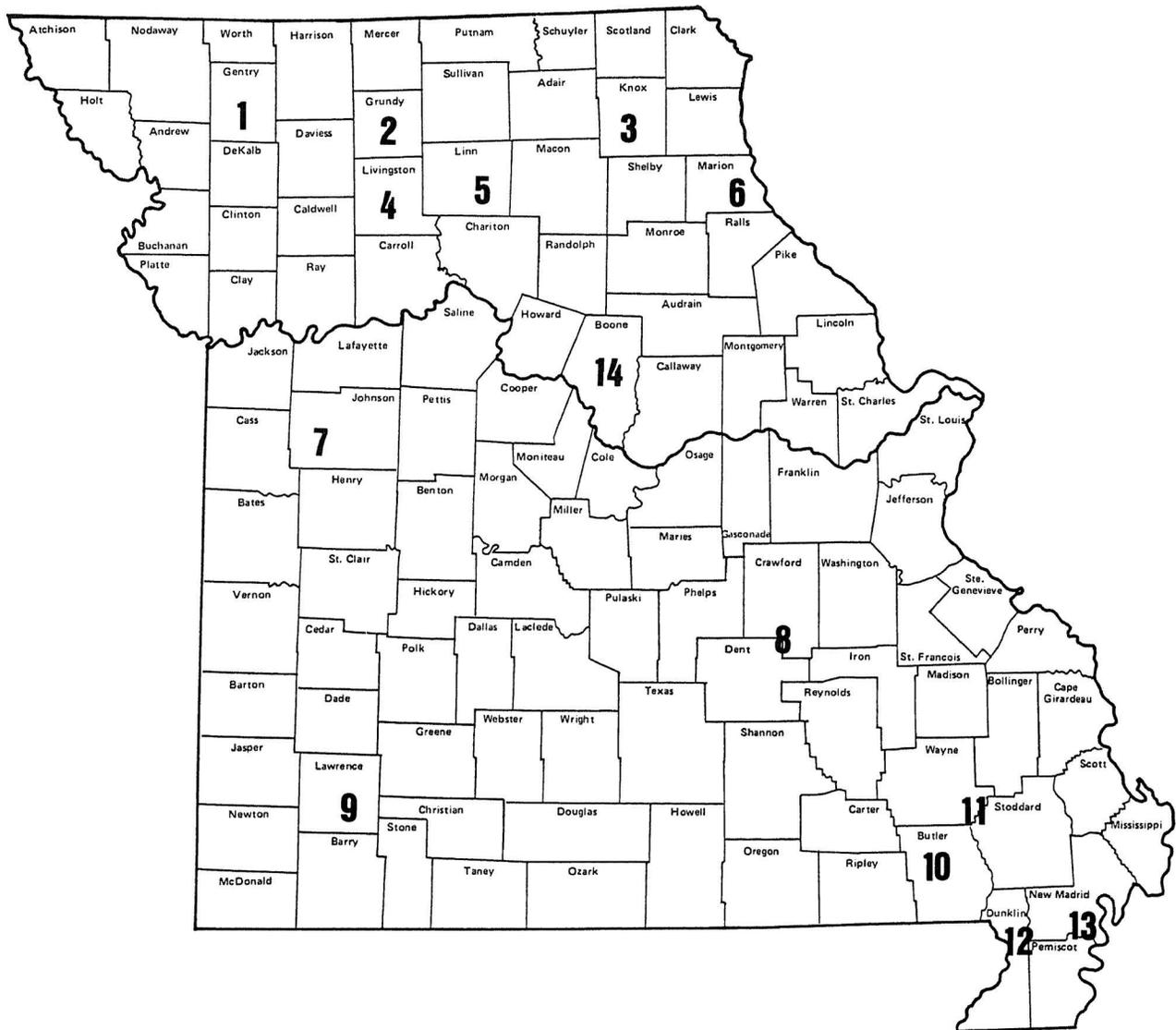
Development of technology appropriate for Missouri.

1. Better management of forages to fully use their potential to produce nutrients. Many Missouri soils are best suited for growing forages. It is important that we have new concepts to evaluate the forage as it grows and find ways to best preserve its nutritive value.

2. Plant resistance to cold stress. In Missouri, plants often suffer cold stress at critical and uncertain times. Examples are apples, peaches and annual grains. Research can identify plants with resistance to cold and determine ways to make use of these cold-resistant plants in Missouri's production systems.

3. Animal stress under rapid weather change. While animals are quite adaptable to widely varying weather conditions, severe and rapid changes cause problems. Research can determine how adaptation oc-

Missouri Agricultural Experiment Station Farms & Centers



1. Hundley-Whaley Farm, 300 acres, Albany
2. North Missouri Center, 1,600 acres, Spickard
3. Greenley Center, 700 acres, Novelty
4. Timmons Farm, 320 acres, Wheeling
5. Forage Systems Research Center, 1200 acres, Linneus
6. Pennewell Farm, 657 acres, Palmyra
7. Powell Garden, 580 acres
8. Hugo Wurdack Farm, 1200 acres, Cook Station
9. Southwest Center, 890 acres, Mount Vernon
10. University Forest, 7,297 acres, Poplar Bluff
11. Gaylord Memorial Laboratory, Puxico
12. Roger Rhodes Agricultural Research Memorial, 104 acres, Clarkton
13. Delta Center, 944 acres, Portageville

14. Columbia area
 - Agricultural Experiment Station Research Park, 164 acres
 - Ashland Wildlife Area, 2210 acres
 - Bradford Agronomy Center, soils and field crops, 524 acres
 - Dairy Farm, 932 acres
 - Horticulture Farm, 312 acres
 - McCredie Claypan Research Field, 300 acres
 - Rocheford Farm
 - Schnabel Arboretum & Demonstration Woods, 108 acres
 - Sinclair Farm, foundation seed production, 198 acres
 - South Farms, 1,478 acres
 - Agricultural Engineering
 - Animal Sciences
 - Atmospheric Science
 - Biochemistry
 - Entomology
 - Livestock Testing Station



Research at locations throughout the state provide site and situation specific research.

curs and develop management systems that will improve the animals' ability to respond rapidly.

4. Systems for controlling animal and bird pests.

Animals and birds damage a variety of crops in Missouri. Examples are blackbirds in grain sorghum and deer on horticulture crops. Systems for repelling or controlling these pests are needed.

Concerns for outlying centers

There is continuing need to strengthen research at the Station's outlying centers throughout the state. These centers provide the locally adapted results for the different soil and climate conditions in Missouri. This is "site and situation specific" research.

The centers also provide for nearby access and closer contact between researchers and those who put the research results to work. Surveys show that farmers are especially interested in results obtained within 50 miles of their homes. They feel those are findings they can readily use.

Some outlying facilities are off well-traveled roads

and not readily accessible. Some do not adequately represent the production area they serve. There may be opportunity to relocate some facilities to better serve needs. An option for some areas is to rent well-located fields from local farmers.

Equipment and facility needs

Just as farmers face an endless need to update and replace worn out machinery, so do researchers need new scientific instruments to keep up with the changing research technology. This new equipment has powerful capabilities, but it is expensive to buy and maintain.

Some of the Station's facilities are like the older barns on many Missouri farms. They aren't very useful unless they are remodeled extensively. Sometimes it's better to tear down and start over.

Research benefits rural and urban

The new thrusts just described clearly illustrate how Experiment Station research will provide benefits to both rural and urban Missourians. One example of new

directions in Station work is provided by the new Agricultural Engineering building on the UMC campus. One feature is the laboratory devoted to food engineering. Two departments, agricultural engineering and food science and nutrition, are working together to help keep the state's food processing industry competitive.

Safe food and healthy diets are a primary concern for consumers and producers alike. Perhaps no other subject areas has so many conflicting voices, self-proclaimed experts, fleeting fads and questionable claims. The subject of healthy foods and diets cries out for scientifically sound research interpreted in the best interests of all.

Still another example of new directions in Station research is the joint program with University of Missouri-Kansas City students at the Powell Gardens just east of Kansas City. This research/demonstration area of some 580 acres is proving to be extremely popular as both urban and rural residents seek to enjoy nature and its bountiful variety of trees, flowers and grasses.

The Station also has joint research programs with Lincoln University and there are additional opportunities for such programs with state universities.

Good support, facilities pay off

Investments in facilities and programs help attract top-quality faculty and students. The University of Missouri-Columbia plant biotechnology program was recently ranked first among more than 30 universities in national graduate fellowship competition.

"I think our involvement with the nationally acclaimed Food for the 21st Century program was a factor in helping us get the top ranking in this fellowship competition," said Doug Randall, professor of biochemistry. "Students we've attracted with these fellowships will work on basic research within the Food for 21st Century project.

On dedication of the new agricultural engineering building, Neil Meador, department chair, said, "With these facilities we will be able to attract the very best faculty and students. It's a terrific addition and will permit us to make important contributions to society."

First-rate facilities and faculty also attract research funds from public agencies and private firms.

Land-grant system for research

Perhaps the best way to appreciate the land-grant system of research, teaching and extension is to visit other countries. The land-grant system has been unique in the world in the way it ties together the critical functions of research, teaching and extension. In many countries, these three responsibilities lie with three separate

organizations. Often there is little coordination among them.

In many developing countries, the first steps to improving food production are:

- Develop a strong agricultural research program based on local conditions and needs.

- Improve coordination among research, teaching and extension. In many cases, extension services have little locally adapted technology to recommend because there has been no local research.

The need in Missouri

This experience in developing countries illustrates why it is so important to have a strong, aggressive Agricultural Experiment Station in Missouri. There is no better system for getting locally adapted research findings than the Experiment Station now in place. It has a strong base of talented faculty, facilities and working relationships with organizations, agencies and firms throughout the state. The critical need is for a level of support which allows the Station to maintain and upgrade its research facilities, attract talented researchers

Cooperation with other groups and agencies

The Missouri Agricultural Experiment Station has cooperative arrangements with many other organizations, agencies and firms by which the Station does research important to Missourians.

A few examples are:

- Missouri Pork Producers Association
- Missouri Cattlemen's Association
- Missouri Soybean Merchandising Council
- Missouri Corn Merchandising Council
- Missouri Restaurant Association
- Missouri Institute of Food Technologists
- Missouri Department of Agriculture
- Missouri Department of Natural Resources
- Missouri Department of Conservation
- Association of Missouri Dairy Organizations
- U.S. Soil Conservation Service
- Missouri Farmers Association
- Farmland Industries
- Monsanto
- Mobay
- Purina Mills, Inc.
- Ralston Purina
- Anheuser Busch

and tackle new problems as they arise.

As research becomes increasingly complex, it also becomes more expensive in terms of personnel and facilities. A certain level of concentration, or mass, of scientists and facilities is needed in order to have all the essential research resources readily available. This is why "research parks" have become established adjacent to some major universities.

To use research dollars wisely, it's important to emphasize a major research capability which can then work with many groups and agencies within Missouri on mutual research problems. The Station fills a key role in helping numerous Missouri groups, agencies and firms do research needed in their operations. (See box on page 13 for examples).

The future

There will be many additional voices quoting research findings in the future. Some of these findings will be scientifically sound and applicable to Missouri situations. Others will not. Missourians will continue to ask the question, "what does the College say?" It will be

more important than ever to have a well-documented, unbiased approach to doing research and interpreting the findings. Missouri citizens want and deserve an Experiment Station which will be ready to respond, "this is what our research shows."

Research, experimentation, innovation and modernization will provide a competitive edge for Missouri's future.

Hatch was a visionary

Congressman William Hatch had a vision of the benefits from discoveries of scientific investigations. No doubt he would marvel at the gains that have been made. It is only in relatively recent years that even the well-developed countries have not had to worry much about food security. History indicates that the struggle for ample food supplies, while sometimes dormant, never ends.

Missouri leaders of today can show the vision of congressman Hatch by supporting Agricultural Research — A Competitive Edge. It can mean much to present and future generations of Missourians.



WHEREAS, since the early eighteenth century, American agriculture has played a vital role in the progress of the Federal Republic; and

WHEREAS, soon after this nation's act was implemented, it became apparent that research and information was needed to provide and support the nation's farming industry;

WHEREAS, in 1887, this research arm was established in the form of agricultural experiment stations, largely through the efforts and support of William Henry Hatch, Congressman from Hannibal, Missouri; and

WHEREAS, in the one hundred years which have followed since that time, the agricultural experiment stations system of the United States has continued to play a key role in the success of American agriculture by providing the technology which has made the farm production system the most effective in the world; and

WHEREAS, the State of Missouri accepted the University of Missouri Board of Regents' recommendation to establish the Missouri Agricultural Experiment Station in 1887; and

WHEREAS, on February 4, 1987, the University of Missouri-Columbia College of Agriculture and Agricultural Experiment Station will kick off the William Henry Hatch Centennial at the A Day Barbecue; and

WHEREAS, during the Hatch Centennial observance, Missourians from all walks of life will be given a unique opportunity to recognize the many invaluable contributions which agricultural experiment stations have made to promote the growth and progress of agriculture in this state and throughout the nation;

NOW, THEREFORE, BE IT RESOLVED that we, the members of the Missouri Senate, Eighty-fourth General Assembly, hereby proudly join the University of Missouri College of Agriculture and Agricultural Experiment Station in observing the Hatch Centennial, with the hope that the Missouri Agricultural Experiment Station and the experiment station systems of the United States will continue to provide the research base for an effective agriculture based on science and technology for the next one hundred years; and

BE IT FURTHER RESOLVED that the Secretary of the Senate be instructed to prepare a properly inscribed copy of this resolution for the University of Missouri College of Agriculture.

Offered by Senators Lybster and Merrell

STATE OF MISSOURI:
CITY OF JEFFERSON:
SENATE CHAMBER

I, John E. Scott, President Pro Tem of the Senate, do hereby certify the above and foregoing to be a full, true and complete copy of Senate Resolution No. 46, passed and adopted on January 27, 1987, as fully as the same appears of record.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Senate of the State of Missouri this 27th day of January, A.D. 1987.



John E. Scott
PRESIDENT PRO TEM
24TH GENERAL ASSEMBLY

The Missouri Senate showed its support for Experiment Station research with the adoption of Resolution No. 46.

Research key to a competitive Missouri

“Significant investments in selected university research programs will enhance the visibility and attractiveness of Missouri as a productive location for new and emerging companies. Strong research will also benefit existing industries. Whenever possible, existing strengths should be enhanced and cooperative agreements between universities and industries should be encouraged. Without strong and visible research activity, Missouri will be at a disadvantage.”

... From report of Missouri Opportunity 2000 Commission

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