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# **MISSOURI AGRICULTURE AND PUBLIC SERVICE: A 2005 PREVISION**

**Report of Seminar  
College of Agriculture  
and Extension Division  
University of Missouri-Columbia  
November 15-16, 1984**

**Special Report 319  
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The agricultural policy seminar held on the University of Missouri-Columbia campus November 15-16, 1984 was 12th in a series. All previous ones have been forward-looking but this year's was directed specifically to prospects 21 years into the future.

The program for the first day treated general prospects for agriculture and the rural community. The second day centered more on Missouri, and included issues in Missouri's government.

Running through the papers published here is a sensitivity bordering on resignation: how can the year 2005 be kept in mind when many farmers and agribusinesses are uncertain whether they will survive in 1985?

Moreover, participants were reminded often, predictions made in past years proved less than accurate. How can those made now for 2005 be trusted?

To that skepticism Professor Bullock replied that it is nevertheless necessary to arrive at the best estimate as to what lies ahead. Having done that, one's next step is to prepare for the future as foreseen and, where possible, to manage it.

This seminar, now named the Harold F. Breimyer Agricultural Policy Seminar, was funded from the Breimyer Seminar Fund, a part of the UMC Development Fund.

-- Robert J. Bevins

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MISSOURI AGRICULTURE AND PUBLIC SERVICE: A 2005 PREVISION

Report of Seminar on  
Agricultural Marketing and Policy  
College of Agriculture  
and  
Extension Division

University of Missouri

November 15-16, 1984  
Columbia, Missouri



MISSOURI'S AGRICULTURAL AND RURAL COMMUNITIES IN 2005:  
DEMOGRAPHIC, SOCIAL, AND POLITICAL ASPECTS

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Despite the presence of Kansas City and St. Louis, Missouri is largely a small town state. There are nearly 1,000 incorporated towns in the state, about 80 percent of which have a population of less than 2,500. About half have a population of less than 500.

At various times the viability of Missouri's smaller towns has been called into question as the farm economy around them has changed. But most have survived and many have even grown as non-farm sources of economic activity and income have been added, enabling many small-town Missourians to earn a living and stay in place.

In the process, long-time residents of many small towns have been joined by newcomers--people who have come from larger towns and cities. Between 1970 and 1980 more people moved to rural Missouri than moved out, causing the rural population to increase by 13 percent while the metropolitan population increased by less than 2 percent. This was a turnaround from the longstanding trend of cities' gaining population at the expense of rural areas.

During the 1970s both Kansas City and St. Louis lost a substantial population from within their city boundaries. St. Louis had a 28 percent reduction. But their suburbs continued to grow.

An upturn in the rural population had not been predicted back in the 1960s. The expectation then was that as farm numbers continued to decline, many farming communities would wither away. Since that time commercial farms have in fact continued to diminish in number, but many of the former full-time farmers have taken off-farm employment nearby. They curtailed their farming and became part-time operators. Other part-time farms came into being as city people returned to a rural area either to retire or to have a better place for raising their kids. The part-time farm became a place on which to live. Income from it supplemented the principal income, which was non-farm.

But urban people moved to rural areas not only to become part-time farmers. Many did so, surveys show, because they felt rural communities had not only fewer social problems but a lower cost of living (especially housing). Some who moved kept their urban job and commuted. Others were people who had earned a retirement income or were able to find employment in the expanding rural non-farm economy.

Because of this unexpected pattern of change in the 1970s, the relatively bleak outlook for rural communities as seen in the 1960s became somewhat rosier by 1980. As we now look ahead another 20 years, with fundamental changes occurring in the economy and with the recurrence of serious farm problems, we try to assess the prospects for Missouri's small communities. Is it reasonable to expect that the next 20 years will extend the trends of the 1970s, or will the turnaround turn around again and threaten the existence of some of Missouri's small communities?

#### Background

Virtually all the nearly 1,000 towns in Missouri today were in existence at the turn of the century. They had been formed during the 19th century as the frontier was settled. The 1900s brought to many of the towns a need to adjust to economic and technological changes taking place in the new century. In fact, for many the 20th century has meant a struggle for survival as the original economic and social need changed or even withered away.

All communities in Missouri started as small towns. They were formed to serve some need. Most originated and initially flourished as trade, market, and service centers for farmers, although a few originated as railroad towns, mining towns, or river towns. Some of the original small towns, because of a locational or natural resource advantage or just luck, grew to industrial or regional centers. Most of Missouri's first towns, though, have survived as relatively small towns. But a few did not make it. Mining ghost towns are an example.

In general, Missouri's small towns have exhibited a remarkable ability to adapt to the society changing around them. So they survive.

## Continuing to Survive, with Change

The past is a key to the future. In the case of rural communities, the experience of the past 100 years enables us to predict with little hesitation that nearly all Missouri's small towns will still be around by the year 2005. As in the past, they will change further, with the times.

We first review the ways rural communities have changed in the past--what they have changed from, and what they have changed to. To do that, we divide the experience during this century into two periods. The first, from 1900 to roughly 1950, was a period of general and diversified farms and of communities that were relatively self-sufficient agricultural service centers. The second period, from 1950 to 1984, has been a period of dramatic agricultural adjustment and a diversification of the rural economy across the country. During this period most small rural communities have lost services but have retained much of their population. Had the rural economy not diversified, many of the agricultural communities would probably have disappeared by now. Fewer farms would have translated into a need for fewer communities. But rural community residents have become more dependent on outside sources of income, and otherwise have kept their communities viable, even as they have obtained more of their services from larger towns.

Indicative of the latter trend is the amount of driving Missouri's farmers and small town residents do today in order to shop, go to school, go to work, go to a doctor. Missourians are now driving more miles than ever before despite the sharp increase in energy prices during the past decade, and farmers and small town people are among those who do so.

### General Farms, Comprehensive Rural Communities, 1900-50

Empty store buildings in many small towns of Missouri bear testimony to what these towns were and why.

In spite of some changes, until well after World War II Missouri farms were very similar to each other. They were the full-time businesses of the families who operated them. In 1910 their number was  $2\frac{1}{2}$  times the number of today.

Farms in the first half of our century were generally small and diverse. Each produced a lot of different commodities and no great quantity of any. Because they were general, those farms placed a wider range of demands for support on the community than do the more specialized farms of today.

Those general farms of early in the century showed little regional diversity, as contrasted with today's specialized farms. As illustration, in 1900 all but six counties had more than 20,000 acres of corn. Today fewer than half the counties have that much acreage of all row crops combined. Those now having large row crop acreage are concentrated in northern Missouri and in the Bootheel. In most of the other counties, where row crop acreage is small, part-time farms predominate and are mostly devoted to forage and livestock production.

Early in the century few small towns had a manufacturing plant--agriculture was "the industry." Serving the needs of many diversified farms was all the economic justification most small towns needed. Their service role was reflected in the many kinds of businesses found in small communities at the time -- businesses that have since disappeared. They were creameries, produce houses, implement dealers, feed stores, blacksmith shops, and others. Many of them were in the buildings that are now vacant.

Most of the cash flow of the smaller, general farms that surrounded each small town in the early 1900s flowed through that town. It did so both coming (purchase of inputs) and going (marketing of commodities). Most of these towns could be said to be truly agricultural. Agriculture generated most of the revenue that kept small town main streets going.

Not only the type of farming shaped those communities. What they had to offer was also influenced by slow and costly transportation. If something could not be obtained locally, rural residents often either went without, or ordered it from a mail order catalog. Schools were close to where people lived. Transportation goes far to explain why more small towns had high schools, doctors, pharmacies, clothing stores, and furniture dealers than can be found today. As transportation has improved, many of these facilities and services have consolidated into larger towns.

Because the agricultural communities were more complete then, service centers had a stronger "hold" on their residents. Economic and social interaction took place within the community. The

community was a focal point for much of peoples' lives. Whether by choice or not, peoples' options were generally limited to what the community had to offer.

#### Larger, Specialized Farms, Diversified Rural Economy, 1950-84

The rate of farm consolidation accelerated following World War II. Agricultural mechanization began in earnest and urban employment growth offered both higher income and shorter hours to former farmers and to farmers' sons and daughters. The rural and farm exodus was sufficiently dramatic that there was much discussion in the 1960s, as in earlier years, about the probable death of many small agricultural communities. A Presidential Commission on rural poverty entitled its report, "The People Left Behind," the implication being that those with an alternative were leaving rural areas and those remaining lacked options.

But while farms were becoming fewer, larger, and more specialized, other changes were affecting rural communities. Important among them were improvements in roads, which in turn influenced consolidation of services, notably schools, health care, and retailing. Nearly half Missouri's rural communities lost their high school through consolidation and more than 200 Missouri towns that had one or more physicians in 1950 had none by 1965. The overall trend toward consolidation and centralization of service was so pervasive that public investment and policy became oriented toward regional growth centers. Larger regional towns (growth centers) became the location of area vocational schools, regional planning commissions, councils of government, employment services, health clinics, and hospitals. The idea behind these policies was that smaller rural communities could no longer provide such specialized services efficiently, and that small town residents would have to rely on larger towns for their needs.

However, other trends underway produced some offsetting influences. A pattern of industrial relocation began in the 1950s and picked up momentum in the 1960s and 1970s. Mature industries, especially those that are more labor- and less technology-dependent, began moving from metropolitan to rural areas. Most visible in Missouri was a movement of the shoe industry from St. Louis to small towns in the Ozarks. This was parallel to a national relocation of the textile industry, from the urban Northeast to the rural South. The principal motivation appeared to be lower wage rates in rural areas. The magnitude of the trend was significant. During the 1960s manufacturing employment increased 31 percent in rural areas of the United States and only 15 percent in metropolitan areas. In the 1970s when the rate of growth in manufacturing employment slowed, rural areas continued to gain relative to urban areas. The transformation was sufficiently great that by the early 1980s manufacturing employment had become the largest source of rural income (farm and non-farm), accounting for about 20 percent of the total -- its income was more than three times greater than farm income.

But rural industrialization did not take place uniformly, either across rural America or here in Missouri. Nationally, the greatest increases in rural non-farm employment occurred in the more marginal agricultural areas, especially throughout the South. Missouri was no different. Much of the new industry located in the southern half of the state. Rural industry there not only provided a basis for continued existence of many small communities, but contributed to transforming agriculture in those areas as well. Many farms that might otherwise have gone out of existence because of inadequate income became part-time farms. In effect many marginal farms became part-time farms -- an alternative to the farmer's getting out of farming entirely. The increase in number of small, part-time farms in Missouri relative to larger farms has been dramatic. Today 77,000 of Missouri's 112,000 farms are small -- they sell less than \$20,000 of agricultural products per year. (However, retiring to small farms has been a factor too, as will be noted below.)

But not only industry has added to non-farm sources of rural income. During the 1960s Social Security and other retirement income added to the income of older people, even as the proportion of the population at retirement age was increasing. Rural areas have traditionally had a relatively high proportion of older people.

Retirement income increased as a proportion of total rural income. In fact, by 1980 transfer payments accounted for more than 20 percent of total consumer income in more than half of Missouri's rural counties. Many small towns now rely as much or more on Social Security and other forms of retirement income to keep their Main Street going than on the business of farmers.

The influx of urban retirees has been greater in southern than in northern Missouri.

Retirement has played a role in the high count of small farms in Missouri. Among all Missouri farms, about one out of three is a small farm operated by a person over age 55. It is

safe to assume that many of these farms would not be in existence were it not for retirement income.

Improvement in roads and transportation, discussed above, lets rural people drive to cities for shopping but also enables them to drive elsewhere for jobs even as it lets them keep their rural residence. Rural counties close to Missouri's metropolitan areas have had a significant population growth during the past decade. They are, for the most part, counties in which a sizable proportion of the labor force commutes to work outside the county. According to the 1980 Census, 25 percent or more of persons in the labor force of rural counties surrounding Kansas City, St. Louis, and Springfield work outside the county they live in.

Rural industrialization, retirement income, and commuting thus have contributed much to diversifying Missouri's rural economy over the past two decades. That diversification has enabled many small communities, once totally dependent on serving the needs of farmers, to survive and in many cases even to grow.

In the process rural communities have become something different from what they once were. I refer to internal community life. Formerly the social economic life of farmers and townspeople alike focused on the community. Today, relatively little does. The change has had centrifugal effect. The time and interests of residents tend to be divided among several communities -- among the places where they live, and where they work, shop, bank, send their kids to school. As I noted above, it follows that today's small communities have less hold on their residents. People continue to have an economic investment locally, but less social investment. That feature of community life could be a factor in future decisions to move to or remain in small towns -- perhaps an ambiguous one, as many persons have named "a greater opportunity to participate in community life" as a reason for having moved to a rural area.

#### Different Rural Economies, Different Communities

I have stressed that how small communities have fared in recent years is influenced by where they are located and how much they depend on commercial agriculture. This is supported by the attached map which shows population gains or losses for Missouri counties during the 1970s.

Generally, communities within 50 miles of metropolitan areas have grown because of a commuting population. Growth of small towns throughout southwest Missouri the past 15 years reflects, in part, the significant employment growth in Springfield. Some rural communities in the vicinity of the Lake of the Ozarks and Table Rock have grown dramatically as a result of retirees' moving there, development of families' second homes, and expanding tourism. In addition, these and most other parts of the Ozarks have benefitted from rural industrialization.

Conversely, counties with the best agricultural land, and therefore also the highest proportion of larger commercial farms, have remained more dependent on agriculture. They have not, as a group, experienced as much economic diversification. As a result, many of the small towns in those counties have continued to lose population. Young people often leave because of a lack of jobs and some businesses close for lack of sales.

In Missouri there is a clear association between rural economic diversification and the type of farming in an area. I called attention above to the fact that farms across the state were once similar but are not now. Larger commercial farms have become dominant in some areas, as small, part-time farms dominate others.

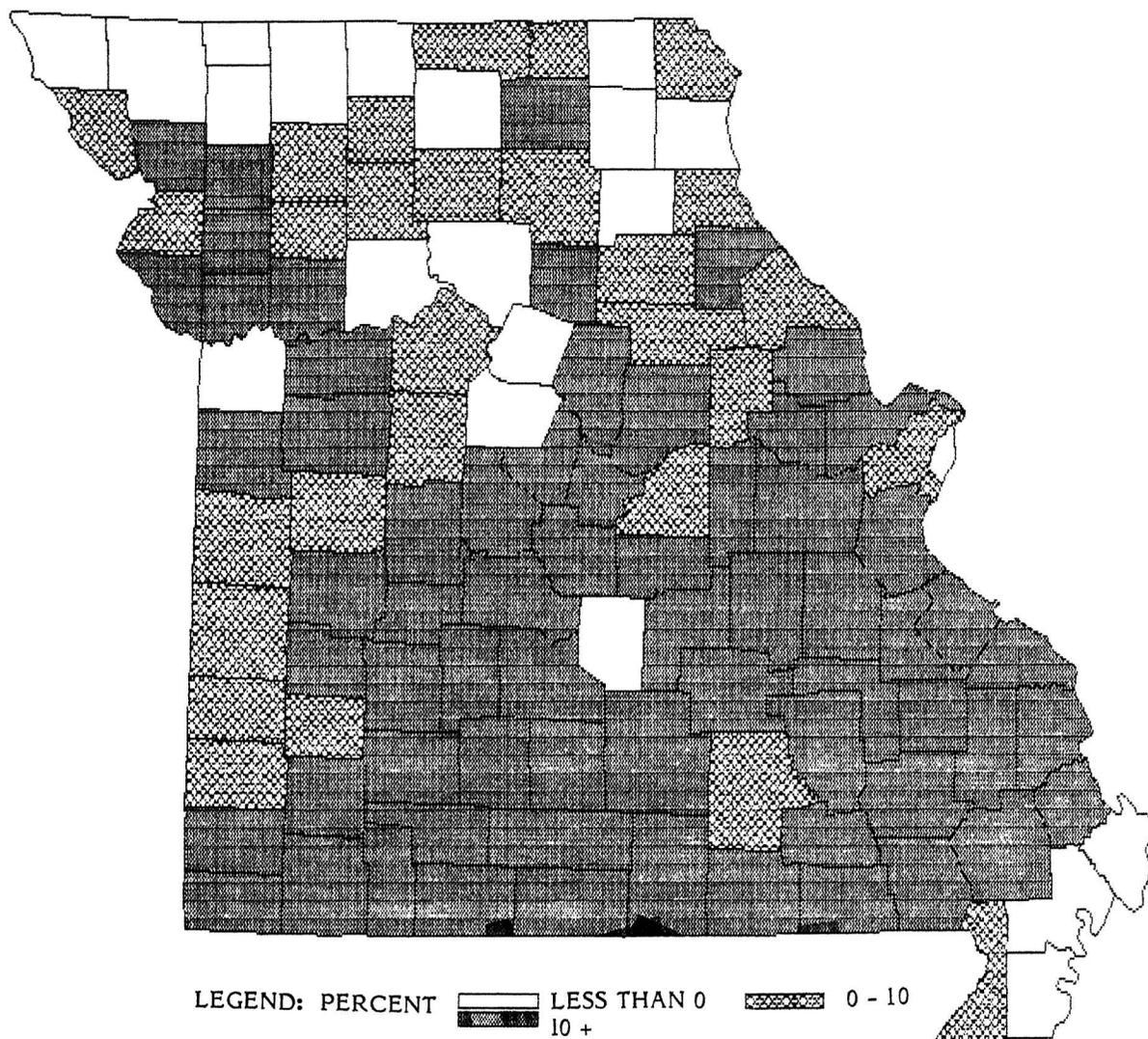
A comparison between the 20 counties with highest proportion of larger commercial farms and the 20 with the highest proportion of small, part-time farms is illustrative. Most of the former are in north Missouri and the Bootheel. Smaller-farm counties are in the east central Ozarks.

Between 1970 and 1980 the 20 large-farm counties averaged less than a one percent increase in population and less than a one percent increase in number of non-farm businesses. By contrast, the 20 counties most dominated by part-time farms had a 23 percent increase in population and a 26 percent increase in the number of non-farm businesses.

#### Implications for the Future

Contrary to conventional thinking which says farming "makes" the rural community, it appears that the opposite is often the case -- the continued existence of smaller farms seems largely dependent on the continued viability of the off-farm economic base. Should off-farm employment in part-time farm areas decline in the future, it is reasonable to expect that there would be a

## PERCENT CHANGE IN POPULATION, 1970-80



decline in small farms as well.

On the other hand, in areas where farms are larger, local communities remain generally more economically dependent on agriculture. In those places there has been less diversification of the local economy. Expectations are that continued farm consolidation, without a concomitant diversification in economic base, will continue to produce a downward community multiplier. That is, such communities will continue to decline in population and community based services. This has been happening for several decades in commercial farm areas.

Those smaller communities surrounded by farms that are already large and growing larger may be in a double jeopardy. They are not only experiencing the effects of fewer farms, but the very size of the farms contributes to a reduction in their business done in the closest community. Large farms have a big appetite for capital and production inputs and need more specialized and larger-volume markets. Consequently, their support requirements may exceed the capacity of agribusiness services in the nearest small towns.

It appears, therefore, that large farms are increasingly becoming associated with a large-farm agribusiness structure, many features of which are to be found in a multi-community or county region rather than being duplicated in each small farming community. Thus it could be a future irony that many small communities, in the midst of some of the more productive agricultural regions, may find themselves with few if any agribusinesses.

## What Can We Expect During the Next 20 Years?

The future of many Missouri small towns will continue to be influenced as much or more by what happens off the farm as by what happens on it. But it is difficult to talk in general about Missouri's small towns, as their present economic base and their prospects vary by location and surroundings.

In making predictions about their future it is therefore necessary to make assumptions about the prospects for retaining or increasing rural industry, and about whether commuters and retirees continue to find small town and rural life economically and socially attractive. It is more difficult to predict what will happen to these parts of the rural economic base than what will occur on commercial farms.

The future will certainly be influenced by the past. Hence, a few observations will follow about what is likely to happen to small town population; but as that prospect will be influenced by the quality of life small towns are able to provide, a final note will touch on new methods for providing services to rural and small town residents.

Population. It is fairly safe to predict that most of Missouri's small towns will still be in place 20 years from now. They have demonstrated a remarkable capacity to survive. But some will continue to increase in population and some will decrease. Some that have grown in recent years will be among those experiencing decline in the coming decade or two.

Overall, it would be surprising if the current 63 to 37 percent ratio of metropolitan to non-metropolitan population were to change much over the next two decades. But it is likely that a larger share of the rural population will be found in larger towns (over 2,500) and small cities. The basis for this expectation is that larger towns will be better able to provide services being demanded and that they will also continue to capture more of the production input and marketing business of commercial farms. Correspondingly, we expect that small towns, when taken together, will comprise a smaller proportion of the population. But some are more likely to lose than others.

Among small towns, the safest bets for continued growth are those within commuting range of metropolitan areas and those in the general vicinity of recreation and second home developments. Other small communities face a more uncertain future.

Generally, communities surrounded by commercial farms and remote from major sources of employment will likely continue to lose population unless something is added to the local economy. One idea receiving some attention as a possible source of off-farm employment is that of more value-added agriculture.

Although many communities have benefitted from relocation of labor-intensive industry, it is not clear how permanent that industry will be. A number of southern Missouri communities have lost their shoe factory during the past year and others will probably do so. This poses a threat not only to small towns that have become industry dependent, but raises the prospect of some loss of part-time farms as well. Communities most affected by a loss of rural industry would be those beyond effective commuting range of major employment centers.

The population of Missouri will continue to become older over the next two decades. Projections are that 20 percent of the population will be age 65 and over by early in the next century. Since many of these people will have grown up in rural areas they may be expected to have a preference for continuing to live there, or to return there. Whether they do or not will likely depend on the adequacy of services and the quality of life smaller communities will be able to offer.

The economic impact on small towns of retirees with their retirement incomes has been emphasized here. It should not be taken for granted, however, that future retirees will continue to find smaller communities and small farms attractive places to retire. Housing will surely continue to be cheaper in rural areas, but the quality and availability of services, especially health care, may influence residential choice in the future. Rural areas are generally disadvantaged with regard to health care, and little correction is underway.

Recent census data suggest that services may already be influencing residential choices of older people. Between 1975 and 1980 many smaller rural counties were experiencing an in-migration of persons 55-64 years old but an out-migration of those over 65. Only those counties having a larger town and therefore more extensive services avoided loss of the older group.

Community Services. If small communities are able to sustain a good quality of life they will probably continue to be attractive as a place to live. If not, they may lose people who move closer to where they work or where the services are.

Increased population has meant an increased demand for services but has not necessarily contributed much to financial capability to provide them. Additions made to the economic base of many small communities have not been of a kind that contributes much to their tax base and therefore their capacity to provide public services.

Residences add less to assessed valuation than businesses or industries do. Even the increased population in small communities across the Ozarks has not helped much. For example, mobile homes accounted for 37 percent of all new housing in rural Missouri during the 1970s. The percentage of mobile homes was even higher for the most rural counties. Furthermore, often new homes are built outside town or city limits -- outside their tax base.

During the next 20 years small towns will likely need to experiment with new methods for providing basic public services. One new direction being employed is the formation of special districts. There has, for example, been an important increase in the past five years in the number of special fire, ambulance, water, health, and housing districts. Another approach being tried involves sharing of services. Rural schools especially have been experimenting with this approach. There are currently rural schools that are sharing a shop teacher, a computer specialist, a driver's education program, and so on, as a way to add to the instructional program in a cost-effective way.

Yet another approach may be found in new computer and communications technology. In the past a problem in rural service delivery has been the cost of overcoming space. As suggested earlier, rural people have had to become accustomed to driving longer distances for both public and private services. However, as new technology has evolved the question is being raised often about substituting communication for transportation in providing some services. Education and health care seem to offer two good prospects for applying these ideas. In the past, schools have consolidated and forced more travel as a way of offering a wider curriculum more efficiently. Small school students might be able to take specialized courses via computer or telecommunications; this possibility is on the horizon as an alternative to further consolidation. Similar ideas such as a satellite system of health care also are in the trial stage.

The service-delivery problem for small communities is that they may not be able to do much of this on their own. Implementing various potential ways to provide services will require political support and technical assistance from regional and state organizations and institutions. But that will also require both greater public recognition of small town problems and a corresponding public commitment to addressing those problems. It may be expected, therefore, that the future will include greater public attention to how prominent a place small communities are to have in the life of the state.

PRODUCTION AGRICULTURE AND RURAL AMERICA IN 1995:  
Summary Comments

C. Edward Harshbarger, Economist  
Farm Credit Administration

I am pleased to share the highlights of the Farm Credit Administration's report on production agriculture and rural America.

Although our chief objective was to portray agriculture in 1995, our mission was actually considerably broader. For one thing, we realized that we needed first to assess a number of key factors that will influence the future direction of agriculture. We also felt that we should examine closely the capital and credit requirements of production agriculture, recognizing that any discussion of this subject should also include financially related services.

Finally, we felt that it was important to look at the trends in rural America and assess what is happening with respect to population shifts, employment opportunities, and the needs for special services.

Whenever one engages in a forecasting exercise, one danger must be avoided. It is the trap of letting current conditions color our attitudes about the future. Given the financial difficulties that currently exist in agriculture, any forecast that even hints at a rosy outlook is likely to be dismissed rather quickly. Nevertheless, conditions can change rapidly in agriculture, and we should at least acknowledge that the picture for 1995 could be somewhat brighter than most of us would be willing to accept today.

Domestic Economy, Agricultural Exports

Any discussion about the future profile of agriculture must start with an assessment of the external environment -- of those key variables that will determine not only the total number of players but also the distribution of those players by size of operation.

The two most important forces that will affect agriculture are the domestic economy and agricultural exports. Although exports have received a lot of attention in recent years, it is important to emphasize that the domestic economy is far more important to the welfare of the nation's farmers. In our view, the economy will likely experience steady but modest growth in the years ahead, with real GNP increasing about three percent per year, on the average.

Inflation should average five to six percent per year, but the key to holding inflation at this level will be a gradual reduction in Federal budget deficits. Interest rates will likely face some upward pressure in the next year or so as private credit demands clash with those in the public sector; but by the 1990s, rates could fall significantly if the deficits are brought under control. Some decline in the dollar is likely in the near term, but a major drop is not anticipated over the forecast period.

The picture for exports remains clouded by problems with debt and foreign exchange in several key countries. We look for a resumption in export growth in the years ahead, but at a slower rate than in the 1970s. Basically, the world needs our farm products, and it will need these products even more by 1995. Somehow, a way will be found to overcome some of today's barriers so that the larger sales can be realized and by 1995, foreign markets will be playing a larger role in agriculture than today.

Other external variables that will influence agriculture include resource availability, technology, and government policy. (It will not be possible to cover all these variables here.)

In the future, the key resource issues will likely center around the availability and quality of water, especially in the western half of the U.S.; soil erosion in the Midwest; deregulation of transportation; improved farm labor benefits, which will affect the South and West; and professional services to enhance farm management skills.

By 1995, most increases in production will result from applying more technology, not from adding more cropland. Technology will continue to be the key to improved productivity. Although several very promising technological breakthroughs are looming on the horizon, we do not anticipate that any major breakthrough will reach fruition by 1995.

The significance of government policy is that risk is increasingly being transferred from the public sector to farmers. This shift will cause continued volatility in price and income levels and will force farmers to evaluate other ways of insuring themselves against risk, including the use of commodity options. In essence, the public safety nets are being lowered, and this feature may have a lot to do with future asset values in agriculture.

In the past, government program benefits were often capitalized into higher land values. This may be a less common experience in the future.

#### Production Agriculture

The future profile of production agriculture can be summarized as follows. Farm numbers will decline gradually between now and 1995, from 2.4 million today to 2.1 million then. The number in the largest sales class (those with sales above \$500,000) will increase at an increasing rate, and by 1995 will represent six percent of all farms compared with just one percent currently. Thirty percent of the farms in 1995 will be Class II -- sales between \$100,000 and \$500,000. The number of small farms (less than \$100,000 sales) will decrease at a decreasing rate, but will still represent nearly two-thirds of all farms.

Realized net farm income is projected to reach \$55 to \$56 billion in 1995; however, in 1967 dollars, net farm income is expected to run \$8 to \$9 billion per year over the 11-year period, up from the \$7.5 billion level for 1981-1983, but below every year in the 1970s.

We look for red meat consumption to remain close to 1982 levels. Poultry consumption, though, will continue rising, and poultry exports could increase sharply.

We don't foresee any major production shifts occurring in the United States, although the relative importance of key enterprises in certain Farm Credit districts will change by 1995.

#### Capital and Service Requirements

The capital requirements in agriculture will continue to grow, but more slowly than in the 1970s. Assets are expected to increase about 6.5 percent per year, with non-real estate assets showing more strength than real estate assets.

Class I and Class II farms will become relatively more important by 1995, and will hold just over half of all assets (they had 43 percent in 1980). There will also be significant differences in asset growth among regions, with the strongest growth occurring in the Southeast, South, and Midwest, and the slowest growth in the Northeast and the West.

Many farmers have had serious problems with leverage recently, and we see little hope for improvement by 1995.

Total assets per farm will likely exceed \$1 million by 1995, and for the large farms the figure will be \$2.3 million. Debt is projected to reach \$465 billion by 1995, representing an average annual growth rate of 7.5 percent. (In the 1970s it was 12 percent.) Average farm debt will be about \$225,000, up from \$70,000 in 1980. Average debt for the large farms will be nearly \$750,000.

Proprietors' equities will rise about 6.5 percent per year.

The increase in leverage will continue to put pressure on liquidity and income.

The competitive environment for delivering credit to farmers will change markedly, reflecting deregulation. While the principal suppliers will remain the same, market shares will shift in favor of lenders who can segment the market, provide tailored packages of debt, equity and lease capital, and use computer technology effectively. The Farm Credit System, while it has some obvious market advantages, will face stiff competition in the years ahead, and we foresee the possibility of some loss of market share by 1995.

The competitive environment for other financial services will also be intense. We see tremendous growth potential in farmers' demand for compliance, advisory, and informational services by 1995. But actual demand will depend on the size of operation and the managerial sophistication of the operator.

Many vendors will emerge to meet these burgeoning demands, and not all will survive.

We feel that one key factor for the successful delivery of services in the future will be the emergence of the business counselor, a person who may be associated with the service firm or a person who works independently, serving as an intermediary between the service firm and the customer. The firms that structure the delivery of their services around the business counselor, and also design services to meet the needs of their customers within different market segments, will have the best chance of being successful. However, many other factors will also play a role.

#### Trends

Past trends in agriculture have profoundly affected rural America. Many persons would assume that the decline in farm numbers would automatically translate into dying communities. Although this outcome is certainly to be seen in some areas, the facts show that rural populations are growing and that some areas -- especially the larger towns and those areas near bigger cities -- are becoming important employment centers for many rural citizens.

The "return-to-the-country" movement will not be reversed by 1995. Thus, the demand for special services will continue to multiply. If intergovernmental aid from Federal and State sources diminishes as expected, rural communities will be challenged to develop other funding sources to provide the infrastructure capital that will be required in the future.

Some communities will rely on user fees and local taxes to generate the revenue, but others may try to "privatize" public capital to let special tax incentives come into play. Private lenders may also be expected to play a larger role in financing public projects in the future.

#### Summary

The trends in production agriculture are well established: a dual agriculture has emerged in which relatively few large farms account for most of the output and income. As a result, the bulk of the nation's farmers are increasingly searching to augment their incomes with off-farm employment. Those farmers who are trying to make their living from farming but are not large enough to be economically viable will continue to experience serious problems.

On the whole, agriculture must continue to plan for a difficult future. Although farm income will be increasing, the purchasing power of that income will be less than in any year during the 1970s. Our major hope for improvement -- agricultural exports -- will not be the panacea that we seek because of international debt problems in some countries, slow economic recoveries in others, and the continuation of a relatively strong dollar. Nevertheless, while the general picture for agriculture is not rosy, there will still be ample profit opportunities for innovative and progressive operators in the years ahead. Indeed, they will learn to manage risk for their personal profit.

The financial outlook for agriculture will not improve markedly by 1995, although total farm debt will not be growing as rapidly as it did during the 1970s. Still, the outstanding debt in agriculture is projected to reach \$465 billion in 1995 -- about double the current level. And because most of the farm debt will be concentrated in the larger farming operations, the pressures on borrowers and lenders alike will intensify in their environment.

Most agricultural lenders will have to change their business practices significantly if they want to remain competitive. Those institutions that tailor their debt and financial service packages to fit individual customer needs within each segment of the market will no doubt be the most successful in the years to come.

## OUR NATION AND ITS AGRICULTURE: THE WORLD SCENE IN THE YEAR 2005

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I have come this far in my professional career by not making forecasts. I am therefore a bit intimidated by the invitation to look forward to the year 2005. It involves less risk on my part because I will probably not be around to be reminded of how wrong I was. The other side of the coin is that it is too close for comfort. To give some idea of relative time distances, I am asked to look forward in time for a period no greater than the time that has passed since the assassination of John F. Kennedy. That was only yesterday. The challenge of trying to forecast what will happen in the next 21 years falls in what I call the twilight zone of economic history. It is too long a period for 1984 to be remembered vividly by the people who will live that long, but too short to excite the professional historians as early as 2005. Consequently, what I say is said with a good bit of reservation and with a standard error of estimation that will fall outside acceptable levels for most economic forecasting.

As I have prepared these notes I have been guided by one dominant fact that will set the stage for the remarks that follow. That is the unprecedented expansion in productivity in agriculture in the developed, industrialized nations. If anything should surprise us it is the fact that old, tired, war-torn western Europe is now self-sufficient in food grains and is exporting as our competitor. Germany lost approximately one-fourth of her area after the First World War as the partition that created the corridor allotted to Poland reduced the East Prussia area. That loss came out of grain surplus producing lands. Germany lost another one-fourth of her territory at the end of the Second World War. That rump of Germany was further reduced by the separation between East Germany and West Germany, in the creation of the Soviet Zone of occupation after 1945. The rump that remained after 1945, involving the French, British and American zones of West Germany, represented the rump of a rump of a rump. That intensively industrialized area today is almost 100 percent self-sufficient in foodgrains.

The UK wheat yield in 1984 for the entire country is estimated at an average of 98 bushels an acre. A sizeable number of farms in the East Midlands, from Cambridge east and north, were reporting 1984 wheat yields of 140 bushels an acre and above (The Economist, Sept. 8, 1984, p. 61). France has emerged as the second largest grain exporter in the world -- edging out Canada in 1984.

Looking across the Atlantic, the United States doubled its production of wheat and coarse grains between 1961-63 and 1981-83, and this doubling occurred from high level of output. In the same period the U.S. tripled its grain exports, also from a relatively high level.

These bits of evidence support the remarkable agricultural fact of recent decades, which has been the expanded productive capacity of the industrialized, developed countries. This must mean only one thing, and that is that industrially based inputs have become more important than agriculturally based inputs in accounting for further agricultural production advances. Among the economics fraternity there will be general agreement on this conclusion. It has played havoc with export markets. It is not the only disruptive factor but I believe it will have to be listed as the dominant one.

Closely related has been the unexpectedly strong position of the American dollar. This has been associated with a distressingly large American commodity trade deficit. We have long been accustomed to a healthy commodity trade surplus, especially in agriculture. As a consequence of the strong dollar and the related trade deficit, we now face an importing world of customers in which the real price of American grains has risen 75 percent since 1980 for the German buyer, in terms of the Marks he had to surrender in 1984. It has risen 100 percent, that is, it is twice as expensive, for those buying with Sterling in the UK and in other areas of the Sterling block. The price of U.S. grains has risen well over 100 percent since 1980 for those buying with French francs, or for the members of the franc block, which includes some important areas in Africa. Consequently, a sizeable fraction of the total customer world that we would like to think of as ours has seen the price of U.S. grains increase anywhere from 60 to 100 percent since 1980, without any appreciable change in price having occurred in the United States. We are only just becoming aware of the fact that our grains are being priced out of the world market.

## The Legislative Process

This deficiency in understanding is associated with an institutional defect that can only be characterized as a failure of the legislative process. The Congress has been unable to resolve key conflicts in economic policy. Some crucial aspects of policymaking have been left by default to the Supreme Court and the Federal Reserve Board. These have become in our time effective legislative instruments. One principal consequence has been that for two decades the fight against inflation has been lost by default in the Congress and in the Administration, leaving the Federal Reserve Board as the only viable agency left to fight it. It has to fight with the tools that it recognizes and has at its command. That is a limited range of tools.

In no reasonable sense can the Federal Reserve Board be said to be a tax levying authority. The Congress is. Inflation could have been fought by the tax route. It was not. This left it up to the Federal Reserve Board to use the only tool it had, which was the interest rate. A fight against inflation using the interest rate as a tool has one implicit consequence: the differential burden of the fight must be borne by those borrowers for whom the payout period has the longest time horizon. As a result, the burden is disproportionately shifted onto the agricultural sector, the heavy machinery manufacturing sector, the house building sector, and any other sector that must borrow long term. Any commitment of capital over a period of time in excess of three to five years means that repayment capacity extends beyond the range of effective economic forecasting. This abdication of responsibility by the Congress in shifting the burden of the anti-inflation fight onto the Federal Reserve Board is at the root of much of our difficulty today.

## The Export Market

If we take a closer look at our current export market prospects, we must begin with one remarkable fact. As recently as two or three years ago the European Common Market was producing more of certain types of grain than it could consume domestically, especially soft wheats and some feedgrains, and were exporting them onto the world market with the aid of a very substantial export subsidy. For example, to get barley into the world market in 1982 the Common Market was paying an export subsidy of over 80 dollars per ton. For wheat, the export subsidy was as high as 90 dollars a ton in some months. The price of U.S. corn (a competing feed grain) at Rotterdam at that time was about \$125 a ton. An export subsidy of \$80 to \$90 a ton to permit competition with a product that could be laid down in Rotterdam for under \$140 was a very expensive export subsidy. It was virtually eliminated in 1984 by the appreciation of the dollar which had repriced U.S. grains in the European market to a degree that enabled the EC to export in some months in 1984 with no export subsidy at all. This is almost unheard of in the history of the Common Market, and is dramatic evidence of what a strong dollar has done in pricing us out of world markets.

The declines in U.S. grain exports due to the appreciation of the dollar have not been evenly distributed over the market spectrum. In percentage terms they have probably been most extreme in Eastern Europe. U.S. agricultural exports to Eastern Europe in 1983 were valued at \$634 million; they had been worth one and a half billion dollars two years earlier (USDA, FATUS). Some idea of the significance of this market loss in relative terms is provided by the fact that the value of U.S. agricultural exports to Portugal in the first three quarters of fiscal 1984 exceeded the value of all agricultural exports to the six countries of Eastern Europe (USDA, FATUS, July-August 1984).

There are some brighter spots. One of them is East Asia, where U.S. agricultural exports to Japan, Korea, Taiwan, and Hong Kong have held up relatively well. U.S. exports of farm products to these four countries of Eastern Asia in 1984 were estimated to exceed our exports to all 17 countries of Western Europe, an area long considered our traditional grain export market. The East Asian market now supplants the whole of western Europe as a market for American agricultural exports. The long run significance of this crossover hardly needs emphasis in the midwest. The prospects for continued growth in that market are particularly good, for several interesting reasons. One is that much of the U.S. grain is used for livestock feed instead of food. A second characteristic is that most of that which is fed goes to pigs and chickens instead of beef animals. Since grain is a much larger component of total feed consumption for pigs and chickens than for ruminant (beef, milk) animals, this East Asian demand is for grains in which the United States has a clear cut comparative advantage, leading to a stable, predictable market.

A third moderating influence is that the dollar appreciation against the yen, the principal currency of the area, has been less than against the currencies of other major trading nations. In fact, the dollar has not particularly appreciated against the yen since 1980. Most of the

horror stories about the effect of the strong dollar on U.S. export trade are with reference to key western European currencies. The Japanese have been lucky or smart enough to have kept the dollar/yen exchange ratios in rather good balance. There is currently no sharp advantage to one side or the other in U.S.-Japan trading relations as a consequence of an over- or under-valued currency. The United States has often argued that the Japanese yen is not properly valued, but that reflects our particular point of view with respect to export potential.

One measure of the significance of this East Asian market is that in 1984 it was expected to account for just under 30 percent of total American agricultural exports. Japan alone was forecast to account for just under 20 percent. It is not surprising that many of our grain marketing agencies and cooperatives in the Midwest are beginning to look west instead of south or east for export markets. The dividing line demarcating the East-West grainshed once went through central Montana. In the 1970s it moved east in Montana, and then into western North Dakota. We now have farmer-owned cooperatives in western Minnesota building sidings to handle 55-car unit train shipments to Portland. Somewhere west of Missouri, perhaps in western Kansas and in central Nebraska, there must be a dividing line west of which an increasing amount of grain is probably going to move to the Pacific in the future. When I look to the year 2005 one thing I think I see is a movement of this grainshed further east and south.

I turn now to a look at export market potentials in some of our most promising markets in the so-called LDCs, or less developed countries. Many people have looked at the forecasts of population increase in that part of the world and have concluded that population growth alone would guarantee an ever-expanding market. The well-publicized and uncontrolled population growth in the developing world was at the root of much of the inflation in American agricultural land prices in the 1970s. Several things have happened to cause us to reform our interpretation of those data in the last few years. For one thing, many of these newly independent countries are now experiencing very severe internal political and economic difficulties and have suddenly rediscovered the advantages of agricultural self-sufficiency. For some time in the 1970s this perception was postponed by the careless extension of credit by some of the largest credit agencies in the developed countries. The list includes many of the blue chip North American banks, Citicorp, Bank of America, Chase Manhattan, Manufacturers Hanover, Morgan Guaranty, Chemical Bank, Continental Illinois, and others. It turns out that, in effect, the private sector was financing a form of food aid without any control by Congress. Grain was delivered on the basis of credit, much of which would not be repaid. It would have been more direct and received a better screening if it had gone through the PL 480 process.

That segment of the export market potential has dried up. Many of the recipient countries and certainly many of the European and North American bankers that have been financing that trade will think twice before they repeat it. There is little prospect for renewal of grain trade on the scale that prevailed in the late 1970s on the basis of credit support that did not reflect good financial judgment.

There is another reason why the U.S. grain export potential to the developing countries may be less than we think it should be or could be. That is the growing realization that many of the grain imports have been used to support inefficient or corrupt governments. Some of the governments in question have fallen by their own weight of inefficiency. In other cases the degree of their inefficiency has become so apparent that it is now increasingly clear that international social policy is involved in a decision to continue grain exports that support governments in their persistent refusal to face up to the possibilities of reforming their internal agricultural policy. The leading example, of course, is the Soviet Union.

#### The Soviet Union

The Soviet Union in 1984/85 will account for 24 percent of total wheat and coarse grains moving in international trade, or 50 million out of a total of 206 million tons (USDA, FAS, FG-14-84, Nov. 1984). When one-fourth of total world trade in grains depends on one set of decision-makers sitting in one country we have a fragile market. It has been erratic in the past and I see no reason to doubt that this quality will continue. I also see no reason to expect that the world will ignore the fact that the import of 50 million tons of grain by the Soviet Union is a gigantic admission of the inadequacy of that nation's agricultural system. The opinion of world leaders will not influence the Soviets in their interpretation of that result, but within the time frame of the forecast horizon (2005) for this seminar it seems probable that people in the Soviet Union will see the folly of this dependence. The short crop in 1984 is estimated at 170 million tons. Waste and dockage are estimated at 19 million tons, and seed usage at 27 million tons.

Deducting waste and seed requirements from their 1984 crop leaves 124 million tons for domestic use. Total livestock feed use is estimated at 123 million tons (USDA, FAS, SG-13-84, Nov. 13, 1984). This means that the 50 million tons of grain imports is an amount equivalent in tonnage to total domestic food use.

At some point officials will arise in the Soviet Union who are aware of the inconsistencies of this position and will see the savings that could be accomplished by improved utilization, not to mention the potential for increased productivity. The possibilities are really formidable. Let us begin by assuming no increase in the relative levels of yields that the Soviets have experienced over the past decade. Assume that they will achieve half of the gains in livestock feeding efficiency already achieved by Hungary in modernizing livestock feeding enterprises. Assume that waste will be reduced to just half of the present level, which varies from 10 to 15 percent. Assume that, instead of seeding over 3 bushels per acre, seed use is cut to a bushel and a half an acre for wheat and barley, which is still well above the level achieved in Canada at similar latitudes. Make those assumptions and the grain saved would be equal to annual average Soviet grain imports of the last three years. In other words, by improvements in utilization alone, with no increase in output, the Soviets have a reasonable potential for eliminating grain imports at current levels of use. I regard the Russian market as fragile and a very weak base on which to build expectations regarding market expansion potentials for American grains.

### Socialist Agriculture, Family Farms

This throws in sharp focus a larger issue concerning the general efficiency of socialist agriculture. J. G. Patel, then Governor of the Central Bank of India, pointed out a few years ago that socialist agriculture is a device for disguising unemployment in socially acceptable ways (The Economist, India Survey, March 28, 1981, p. 47). It does so at the expense of a greatly impaired incentive structure and retarded personal income growth in the rural sector. But it is effective in disguising unemployment in socially acceptable ways. Western or capitalist agriculture can be characterized in the same sense as a device for disguising exploitative employment in socially acceptable ways. The exploitation of labor in agriculture is disguised through the device of a family-operated unit that makes it possible to exploit labor to a degree that would be intolerable if labor were organized under an industrial wage structure. At the expense of considerable personal sacrifice we have devised a very effective teaching instrument involving a structure of numerous relatively small farms that can fail, and that permit the exploitation of labor in socially acceptable ways.

This is a magnificent learning situation. There is no future more dim or more uninviting than a future involving business firms that cannot be permitted to fail. We are just about to cross the threshold into a world in which we have business firms that are so big or so vulnerable that we cannot permit them to fail. We could not permit Lockheed to fail, we could not permit Chrysler to fail, we could not permit Continental Illinois to fail. This is accepted in the industrial and financial world of today. What is not generally accepted is that we now have some agribusiness firms so big that they cannot be permitted to fail. We are about to lose the learning tool that was represented by a population of many small farms, collectively making important decisions but individually independent, and none so large that it would not be permitted to fail. More importantly, that failure could be accomplished at relatively low social cost. That is the strength of the capitalist system in agriculture. As soon as failure is prevented from occurring the very root of that strength is impaired.

It is distressing to hear many proposals for agricultural relief that would sell out the one great advantage that we have in family-farm type agriculture for what amounts figuratively to a mess of pottage. The stability achieved would be artificial and could be only sustained by continued capital movements from the nonfarm sector into the farm sector. But do the people who advocate a viable small farm sector really understand the economic issues? I am not encouraged by some of the meetings that I attend or some of the articles that I read. Many of the people who nominally support a structure of family-type farming do not really know why they support it or what good economic reasons can be named for supporting it. The argument is reduced to emotional terms and has no solid root in economic analysis. Because it has had no solid root in economic analysis, the argument offered by many people who would continue the support for that type of agriculture has been easy to demolish. Also, though, the people who have demolished the argument have themselves failed to think their way through the various issues involved and do not understand what would be destroyed if they destroy that system. So we have the real elements of a Greek tragedy, in that neither side understands the roots of the argument.

## Where To Get Technology, Farm Credit

In the business world today, many businessmen have persuaded themselves that it is cheaper to buy technology than to grow it. Many of our institutions of higher education--schools of business administration, law schools, institutes of engineering and agricultural colleges--have been turning out practitioners whose concept of the way to get rich quick is to buy a set of fast-growing or frontier technology, without much thought to the process by which that frontier technology was created. And this is reinforced by much that is being taught in our universities. Much of the time in business schools and in law schools is spent in teaching how to accomplish takeover bids, how to ward off takeover bids, and how to master leveraged financing. Teaching, in other words, how to practice economic brigandage. In too many cases, students are not being taught how to create wealth. They look upon wealth in the same way that the conquistadors looked upon it when they went into Central and South America and captured the gold and silver of the Incas and the Aztecs. Too much time is spent teaching people how to fight effectively over division of the spoils. Too little time is devoted to how to create wealth in the first place. For that reason I see some hazard ahead in agriculture because we too are training people in agriculture to do all of the things I mentioned: high leveraged financing, acquisition bids, how to buy technologies instead of grow them, whether to abandon the system that has produced a high level of agricultural technology almost without thought.

It is in this sense that I see a big challenge for our credit institutions. I refer specifically to the Farm Credit Service, which now has 60 percent of the total outstanding farm real estate debt held by institutions in the United States. An organization that holds 60 percent of the total of farm real estate credit in the United States can no longer behave as an ordinary business firm. It has to behave like a socially responsible arm of government, which in fact it will become if there is a severe crisis. Fifty years ago when we had a crisis (the 1930s) there was no question about who stood behind the farm credit system. There was no question about whose land it was when Land Banks foreclosed in the 1930s. There is a question today about whose land it is, and what backup support will be available in a real crisis, not just a few bankruptcies. Consequently, we have some big challenges ahead of us in trying to use credit institutions as change instruments to promote desirable directions of change. What is distressing is that some of the motivational goals that are adopted by these institutions--private sector and cooperative sector alike--concern increasing their market share with almost no thought to what consequence will result from that effort.

My nomination today for the greatest opportunity available to any credit institution in the United States is the opportunity available to the Farm Credit Service to pioneer innovative methods of equity financing. And if the Service does not pioneer in this way, the innovating will be done in the private sector, and at much higher social cost. The model provided by Ag Land Fund I, promoted in 1977 by Merrill Lynch and the Continental Illinois Bank, is very much before us today. The great challenge to the Farm Credit Service is to come up with its own version of an imaginative way of arranging a buy and lease back provision that does genuinely preserve the possibility that the option to buy by the farmer who lost his farm will be recognized. The big danger, of course, is that much of the equity financing that is being proposed in the private sector today is not true equity financing. It is promoted by firms that want a chance to have a cut in the price action that they anticipate will occur when farm land prices turn around and start up again. They are not particularly interested in a well financed agricultural system. They want a piece of the capital gain. That motive, I submit, is the wrong motive for promoting a system of agricultural equity financing. The Farm Credit Service would not be suspect of doing it for that motive and has a much better playing field in which to innovate. I see this as a tremendous opportunity.

Another potential that concerns me as I look down the obscure 21 years to 2005 is the possibility that we in agriculture will experience a phenomenon that is now convulsing the nonfarm sector. That has to do with the growth of what is called off-shore sourcing. This is a bit of jargon that describes the process by which domestic firms contract abroad for parts or complete assemblies and slip out from under the control of domestic institutions and especially labor unions. This is going on in many many fields. It is already very well developed in automotive and mechanical technology, in pharmaceuticals and drugs, and in other chemical fields, including fertilizers. I am suggesting to you that we stand before the door which is already open to a world in which off-shore sourcing will develop in the field of agriculture.

Agricultural research has now become so expensive in the United States that it is probably going to move offshore. We cannot afford much of the agricultural research we need at the prices which must be paid to get it done in the United States today. It seems almost certain to happen in biotechnology. When a few of the fertilizer plants now being built in Saudi Arabia and

elsewhere come on stream we are going to see a revolution in the fertilizer business.

I assume that the concern that now disturbs the auto workers or the steel workers will rapidly become the concern of the American agricultural establishment. I refer to the Deans and Directors of the Agricultural Universities and Experiment Stations, who will see their control over research resources slipping out from under them. It will certainly be cheaper to do this research abroad than it will be to do it at home. A number of foreign countries will have a well-trained corps of people to do it, many of them trained in the United States. They will have greater freedom in which to operate than will be possible in the United States. That freedom will come from less attention to environmental protection measures, from less attention to public health protection measures, from fewer reporting constraints, and from less attention to equal-opportunity hiring rules. For whatever reason, it will become more efficient to conduct agricultural research abroad than in the United States.

I see this as a possible outgrowth of the trends that will carry us into the 21st century. This may seem to be rather pessimistic. I do not regard it that way. I do feel, however, that effective optimism should be steely-eyed, cold-hearted, and bloody-minded. And so I have been trying to offer some effective optimism.

#### Concluding Notes

I conclude with some arbitrary observations. First, given the technology usable in the Soviet Union, it is very clear that the possibility of economic convergence among the great nations of the world is greatest between the United States and the Soviet Union. The USSR can buy almost literally all of the agricultural technology it needs off the shelf in the United States. The scale will be appropriate, the design will be appropriate, and the purpose to be served will be appropriate. If there are any two agricultural economies in the world that ought to try to work together, they are those of the Soviet Union and the United States. If any convergence in economic systems is possible within our present politicized world, it should be greatest in the agricultural sectors of these two countries. The technology is almost totally interchangeable.

Second, I am aware that our progress in the development of that technology is a result of the fact that we have distorted our investment in agricultural research by a concentration on technology that could be applied through the use of petrochemical tools. We have a petrochemical-based agricultural technology. This is especially pertinent for the grains including rice, for soybeans, and for cotton. I suggest picking up a typical farm paper, leafing through it, and mentally blanking out every page or part of a page that advertises a petrochemical technology. Blanking out those pages in fact would virtually wipe out the present farm press. It knows on which side its bread is oiled.

In this sense, the private sector extension system delivers information through agricultural journals far more effectively than is done in the public sector, but it is a biased delivery system. It gets its reward by delivering a certain type of technology that can attract a certain class of advertisers. By the same token it neglects other dimensions of technology. This biased delivery system in the private sector extension service has dictated the kind of technology that has received the most investment and command over resources in American agriculture. That is not necessarily the best mix of technology for the rest of the world, or even for the United States.

Third, we have adopted a number of policies in the United States that have had the indirect and sometimes unintended consequence of very heavily subsidizing a certain kind of agriculture. Specifically, the deduction of interest on debt in the reporting of income tax liability on Form 1040 is a major subsidy to large farms. As long as a form of business enterprise can be set up in a way that enables this deduction potential to be preserved for the individual investor, a biased flow of funds into agriculture is created. It is biased by the fact that capital can receive a higher rate of real return by entering in a form that will permit use of all the deductions possible in subtracting interest charges when computing tax liability. This is a very expensive form of subsidy, and it is only available to high income investors. In addition, we have permitted the rapid depreciation of capital. That was multiplied by some power function in the 1981 tax bill. It is strange that an Administration that claims that it is seeking to restore a market system and achieve a reduction of government interference in business has chosen as its principal instrument the manipulation of the tax rate structure. The result is a tax structure that gives an advantage to certain sources of capital investment.

In this regard I foresee another possibility that is beyond the scope of my assignment, but I think worth mentioning. Depreciation allowances have become so outrageously out of line with reality that we are virtually certain to have a commercial real estate price collapse within the next five years. We have a lot of commercial construction that is not justified by market

analysis or by the possibility of the economic use of space. It is primarily justified by the financial subsidy that can be gained through building under present depreciation allowances. To achieve maximum benefits, the properties must be sold within about half the life of the depreciated property. This means that somewhere between five and seven years after construction somebody has to take it off one's hands or the advantage to be obtained by the subsidy will be lost. Since much of this tax-induced construction occurred in the past three years, it will have to come on the market in a similar three year period. There is a high probability that we will have a commercial sector repetition of the agricultural sector land price collapse that we are now living through. It will have been created by the artificial stimulation growing out of accelerated depreciation adopted in the 1981 Reagan tax bill, and it will probably not be attributed to its source.

Fourth, and finally, we are still subsidizing the use of cheap water and cheap energy and these have been subsidies to large scale agriculture. In the Southern Great Plains we have the largest concentration of beef cattle feedlots in the United States, existing on a heavily subsidized economic base. This takes the form of cheap fuel in the form of underpriced natural gas; irrigation, using cheap water involving no extraction or severance tax for its withdrawal; and a very high writeoff of the capital equipment invested in feedlots and irrigation. It is frequently said that there is no subsidy to beef cattle. A good topic for a future seminar would be to enumerate the ways in which a certain structural form of the livestock industry is being very heavily subsidized. None of those subsidies is worth much to a family-type cattle feeder who does not have a net taxable income above about \$20,000 a year. As a result, the way in which we subsidize these firms has not only directed production to certain geographic areas but it has dictated the mix of size of farms involved in the feeding operation. Until we correct that we cannot really talk about a market economy in agriculture.

I would like to end on a bright note. The one I nominate for the brightest prospect I can think of between now and the year 2005 is the possibility that we can develop offshore sourcing to include the sale abroad of services to agriculture, in much the same way that the non-farm sector is replacing commodity exports with the sale of services. The management of agricultural research is still a sector in which the United States has a comparative advantage.

#### THE INDUSTRIAL CONNECTIONS OF AGRICULTURE

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Even though we at Cargill make a lot of statistical projections, we are uncomfortable about specific predictions of what will be happening 20 years from now. Examples of predictions that were wrong stick in one's memory. Here are three:

\*3M didn't see much of a future for a certain small company that made copying machines and it turned down the chance to buy it. The name of that no-longer-small company is Xerox.

\*Kodak saw no future for a camera that could produce a color print a minute after the shutter was snapped. The rest of that is familiar.

\*Cargill spent a lot of money to help develop a wonderful fiberglass hopper car. It was lighter, cheaper, more efficient and all that. By the time it was ready for mass production, the country was right in the middle of the biggest hopper car surplus in its history.

I guess my favorite prediction was made by the fellow who was running the U.S. Patent Office in the late 1870s. He suggested that the office be abolished at the end of his term because everything anyone could possibly need had already been invented.

Over the past 20 years, perhaps the most exciting industrial connection with agriculture has been in the area of research. From the field to the table nearly every aspect of agriculture has been enhanced by continuing improvements in insecticides, pesticides, feeds, fertilizers, hybrids. The list is long.

Twenty years from now agriculture no doubt will be benefiting from research going on today in microbiology, genetic engineering, the whole field of photosynthesis enhancement. But much of this research would not be possible -- perhaps not even necessary -- if it weren't for that equally important industrial connection, that of world agricultural trade.

My remarks relate to future world agricultural trade and the share of that trade the United States could and should have. I forego specific predictions, but instead will try to identify some factors that will most influence world trade in the next two decades.

Despite the current conditions in world trade, I am basically optimistic about the long term future for the U.S. farmer and the U.S. agricultural export industry. U.S. agriculture has been through bad times before and it has come back to build one of the remarkable success stories in our economy.

If the right policy choices are made, there is no reason why significant growth in world demand for grain and oilseeds cannot be resumed. And there is no reason why the United States cannot be the leader and prime beneficiary of that resurgence.

Our present circumstances are well known. We remember the heady days at the beginning of the 1980s when world grain trade peaked at 215 million tons. Then we saw trade drop over the past three years and the U.S. share of that trade decline sharply. World trade today is more on the order of 200 to 210 million tons and U.S. exports have fallen from their peak of 5.1 billion bushels to around 4.5 billion.

And I think we all know the major reasons for this turnaround.

- \*World recession and debt problems for major customers.
- \*The emergence of the strong dollar.
- \*Improved crops and stronger competition around the world.
- \*The infamous embargo that injured our reputation as a reliable supplier.

And to make the picture complete, our existing farm policies have proved to be too inflexible to deal with the rapidly changing market conditions.

Given all these circumstances, it's little wonder that we became only a residual supplier for the world's grain needs.

Any reasonable person might ask, "If things are such a mess, how can you be so optimistic?" That's a good question, but as Don Quixote said, nothing is impossible for the man who won't listen to reason.

With regard, first, to the long term outlook, it is expected that world population will grow by nearly one-third by the end of this century, to nearly 6 billion people. That's 250,000 births every day -- 1,750,000 every week, 90 million every year.

The overwhelming portion of that growth will be among developing nations, many of which will be unable to meet their food needs through domestic production. Existing food shortages are severe. Studies by the United Nations and other international agencies warn of impending food crises throughout vast portions of the African continent. Food production has dropped by more than 10 percent over the past decade, while food imports have more than doubled in volume and jumped five-fold in cost. Today, Africa imports almost half its grain requirements.

The number of severely hungry has risen to nearly 100 million of the continent's 500 million inhabitants, and every sign points to increased need in the years ahead. By the year 2000, Africa's population will increase by nearly two-thirds, to 850 million by some estimates. When that happens, its food import needs will be overwhelming.

I am not presenting these figures as some sort of Malthusian exercise. Nor do I want to sound crass and leave the impression that I view the impending African food situation as purely a marketing opportunity. For many African nations, a sizable amount of humanitarian food aid will remain unavoidable. My point is much simpler. The world's population is growing, and the number of mouths that must be fed will only increase, regardless of the economic, social, or political problems that inhibit world trade growth.

Developing nations and new markets will not be the only source of potential growth. Consumers around the world also will continue to improve their diets. That means more red meat and poultry, more milk and eggs. That also means greater demand for feed grains and protein meal.

To look at one example of what that could mean for grain exporters, consider the implications of an improved Soviet diet for world agricultural demand. The average Soviet citizen consumes about half the beef and veal, two-thirds the pork, and about one-third the poultry consumed by the typical U.S. citizen.

What if those averages were to increase? Suppose that every citizen of the Soviet Union were given just one more pound of beef each year. To produce that additional 272 million pounds of beef, the Soviets would need another 25 to 35 million bushels of grain. Even small per-capita increases in meat consumption are very important for the agricultural marketplace.

We might also consider the implications for the export grain markets of a long-term program involving the change from cereals and vegetables to animal proteins in areas such as Africa. I will not attempt to tell you what all this means in terms of actual demand 20 years from now. My point is more basic. An enormous amount of untapped demand is out there. The challenge is to find a way to translate that demand into actual markets.

I am also confident that we have the means to produce sufficient quantities of food and feed to meet that growing demand. During the 1970s, we saw what the U.S. agricultural system could do when plugged into the world agricultural marketplace. We saw what our industry is capable of doing to meet global food needs.

Between 1972 and 1980, total world trade in wheat, coarse grains, and soybeans increased 90 million tons, or about 65 percent. Wheat exports rose about 40 percent and coarse grain shipments 75 percent, and soybean exports on a meal equivalent more than doubled.

There were many reasons for this growth -- a generally strong global economy, easily available credit, entry of major new customers into the market, decisions by some governments to improve their citizens' diets, crop problems in some major producing nations. When all these factors came together, U.S. farmers were thrust full-bore into the world agricultural marketplace. To their economic benefit, they proved capable of meeting the world's expanding demand for food and feed.

The export industry played a role in that growth as well. We built the most efficient grain elevators in the world. We expanded our transportation capabilities. Today, we have the capacity to export more than 7 billion bushels annually -- almost half again our current export levels. Clearly, there's no shortage of our productive capacity or our ability to deliver. And it is equally clear that the U.S. farmer is committed to exports as his source of economic growth.

But we know now that the 1980s are not going to repeat the 1970s. Many of the factors that led to the spectacular growth of that decade were one-time, and not likely to recur.

Today's worldwide economic problems will not go away overnight. Easy credit will not be available. Competition among exporters will remain intense. The process of marrying supply and demand will be tougher and more demanding. In other words, the 1980s are going to be a buyer's market, unlike the seller's market we saw in the 1970s. But it is my contention today that U.S. agriculture can prosper in that environment nonetheless.

I cannot tell you with any certainty exactly what the world agricultural marketplace will be like at the turn of the century. I can, however, describe the kinds of things that will influence our business. I now concentrate briefly on what I consider the most important factor in dealing with the changed agricultural marketplace of the future. That factor is a workable, flexible set of agricultural policies that leaves U.S. agriculture free to respond to changing market conditions.

I refer specifically to the development of farm programs and policies that move us away from governmental management of supply toward a market orientation. In my mind, the development of market-oriented farm policies will be one of the most important factors not only in contending with the marketplace of the 1980s but also in dealing with whatever changes occur in the world agricultural picture over the next two decades.

What do I mean by market-oriented policies? Let me give several examples.

First, the U.S. price-support loan program should be made flexible enough to ensure that the United States is always competitive in world markets. This could be accomplished through non-recourse loans set at, say, 70 percent of a moving average of recent world prices.

Second, a simplified, limited buffer-stock policy would assure domestic and foreign customers that this country is a reliable supplier of reasonably priced commodities.

Third, annual set-aside and acreage-reduction programs should be eliminated. Instead, a long-term paid diversion should be initiated to move some fragile lands now in cropping back into less-intensive, more soil-conserving uses.

And fourth, a focused program of income and adjustment aids should be developed to facilitate the transition to the more robust market demand this policy would stimulate. This program would replace the existing target-price and deficiency-payment systems, which have proven to be costly, ineffective, and counterproductive.

These sorts of policies will not be popular in all circles. The transition will not be painless. Supplies will increase, and prices will be lower. And some transitional assistance will be necessary as we wean ourselves from our reliance on the present policies.

But attempts to protect farm income through governmental supply management just have not produced the desired results. They have locked the U.S. farmer out of the world marketplace. They have given us record farm program costs and record dissatisfaction among an urban Congress and taxpayers.

Without some remedial action, not only will producers continue to see other suppliers meet world demand, but pressure for lower program costs also will grow. In all likelihood, that would mean strict controls on production and perhaps marketing. Given that sort of alternative, I am convinced that the U.S. farmer will reaffirm his commitment to the export market as his source of economic growth.

Just what could a shift to market-oriented policies mean to U.S. agricultural exports? I offer one estimate.

Abundant supplies priced at realistic levels will stimulate additional growth in world demand. A half-percent increase in the annual rate of growth in world grain use can mean a 5 to 8 percent annual increase in U.S. grain exports.

Look at that in terms of specific buyers. By 1990, exports to developing and centrally planned economies could grow by 50 percent. It also could cut projected competitive export growth in half. The result is the potential for U.S. grain exports to be 20 to 30 million tons higher annually by 1990 than under a continuation of current policies. That is 10 to 15 percent more grain exports than we, as the world's residual supplier, would otherwise see at that time.

That sort of growth puts the issue in its proper perspective. This is not a big-versus-little argument, or a Republican-versus-Democrat argument. It is a matter of what holds the most promise for rekindling a healthy, prosperous farm economy and building stronger export performance. To my way of thinking, it is not difficult to determine what holds the most promise for the entire agricultural sector. It is market-oriented policies.

Let me conclude by repeating my basic theme. It is impossible to pinpoint everything that will shape U.S. agriculture in the year 2005. But we can predict that the world's need for food will continue to grow, and we have ample evidence of the ability of producers worldwide to meet that growth.

Over the coming years, however, growth in demand is likely to be less spectacular than we have seen in the past. If the United States is to take the lead in regenerating that growth and profiting from it, changes in agricultural policies must be made. We must move toward market-oriented farm policies. If we do, we could see an additional 20 to 30 million tons of U.S. export sales by 1990, to the benefit of everyone involved in agriculture.

It will be much easier to predict what lies ahead in the next century once we see what 1985 farm legislation looks like. The legislative process is already underway informally, and Congressional action should begin shortly after the first of the year. If we can move toward market-oriented farm policies, we will be able to say confidently that the future for U.S. agriculture is much brighter than it was just one year before.

## POTENTIAL BREAKTHROUGHS WITHIN AGRICULTURE

BILLY N. DAY  
Professor of Animal Science, UMC

My topic deals with the application of emerging biotechnology to agriculture, and the potential it may hold for major advancements in world food production.

If present status is compared to dawn of a new day we get this free verse:

Sun is shining.  
What will come?  
Partly cloudy or partly sunny?  
Some say revolution.  
Some critics say claims of cure-all.  
Some advocates feel a long process.  
Pendulum of opinion swings wide--likely in between.  
Sufficient knowledge in some areas to know change will occur.  
Agriculture will be different in year 2005 due to biotechnology -- no question.  
Question is how much and in what specific areas.

I summarize my ideas in the following boiled-down outline.

1. The need for increased food production is real. Estimated requirements double by the year 2005.

The FAO indicates that three-fourths of new food production needed by the year 2000 must come from increased yields on currently cropped acreage.

Rewards from new technology can be great. And progress is being made. Biotechnology is exciting but although new genotypes would be important, revolutionary biotechnology is not essential for major advancements.

2. Biotechnology as presently discussed represents a scientific breakthrough. Progress in some areas has been gradual, such as tissue culture. That in some others has been dramatic, such as interspecies gene transfer. There is always an interaction effect (culture and genetic engineering).
3. How can improved technology be used to increase world food production? Primarily by --
  - a. improving the efficiency of production of desirable traits. There are many examples.
  - b. achieving better adaptation to environment. It is not economically or politically feasible to produce all food in a favorable environment, and then transport it throughout the world. It also difficult at present to alter environments. Hence the need to adapt food production to unfavorable environments.
  - c. developing experimental tools for studying basic mechanisms. We seek new approaches to solving old problems.
4. Techniques holding promise.
  - a. Cell and tissue culture -- with plants, animals, bacteria. Breakthroughs are possible/likely in:
    - (1) Regeneration of superior genotypes. In some species, getting whole plants from cells. Split embryos
    - (2) Somaclonal variation.

Genetic diversity  
Disease diversity  
Disease resistant sugar cane  
More dense tomatoes  
Animals?

(3) Fusion -- Protoplast

Monoclonal antibodies

Short-lived antibody fused immortal cancer cells in large quantities  
Diagnostic agent  
Animals -- chimeras

b. Basic technique of recombinant DNA

Move genes animals → plants  
plants → bacteria  
bacteria → plants

A tool for molecular understanding of living systems

Foreseeable breakthroughs -- molecular biology

(1) Microbial manipulation -- vaccines

Hormones, nitrogen fixation, rumen microflora

(2) Gene splicing -- molecular biology -- single gene -- new seedstock

(3) Alien genes

Antibiotic resistance in petunia cells

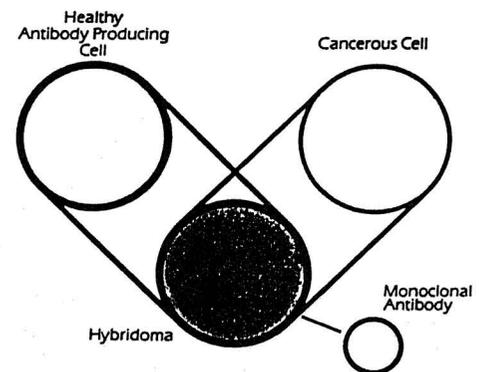
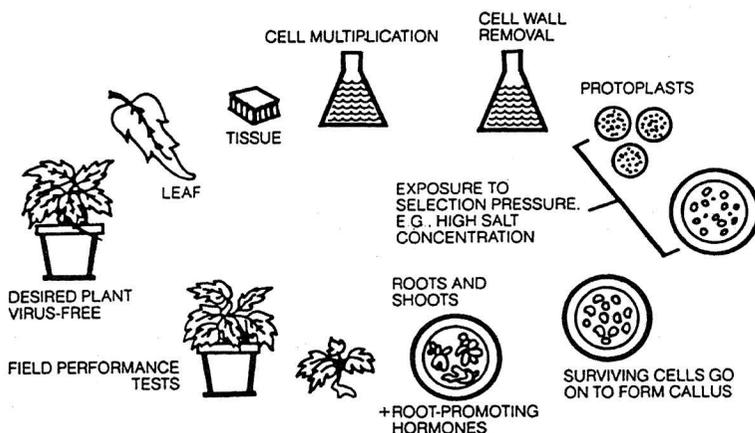
Resistance to round-up to tobacco

5. When? Questionnaires are being sent regarding evaluation of emerging technologies in corn.

Evaluation in animals --

Some progress being made  
Growth hormone  
Embryonic manipulation  
Embryo transfer  
Identicals  
Fusion  
Gene injection

6. There are clouds of confusion. Will there be interspecies transfer of genes in animals? Society will decide. But it is safe to say that emerging technologies will contribute in a major way to a different agriculture in 2005.



Record Yields, Average Yields, and Yield Losses Due to Diseases, Insects, and Unfavorable Physiochemical Environments for Major U.S. Crops (kilograms/hectare)

Crop	Record yield	Average yield	Average losses			
			Diseases	Insects	Unfavorable environment	
					Weeds	Other
Corn	19,300	4,600	750	691	511	12,700
Wheat	14,500	1,880	336	134	256	11,900
Soybeans	7,390	1,610	269	67	330	5,120
Sorghum	20,100	2,830	314	314	423	16,200
Oats	10,600	1,720	465	107	352	7,960
Barley	11,400	2,050	377	108	280	8,590
Potatoes	94,100	28,300	8,000	5,900	875	50,900
Sugar beets	121,000	42,600	6,700	6,700	3,700	61,300
Mean percentage of record yield		21.6	4.1	2.6	2.6	69.1

Adapted from J.S. Boyer, 1982.

Identification, Isolation  
and Replication of Genes

Development of cell culture techniques

Isolation of DNA

Cleave DNA into manageable fragments

Recombine DNA

Replicate recombinant DNA

Techniques for Transfer of Desirable Gene

Vectors from viruses

Transformation of cell culture lines by naked DNA

Microinjection of naked DNA

Embryonic Manipulation

Identical offspring

Chimeric offspring from fusion

Parthenogenetic development of females - lethal

Fuse parthenotes with normal - viable

Sperm injection

Gene injection

Mammalian embryonic nuclei injection

Adult nuclei not totipotent

Date of First Significant Contribution from Each Biotechnology  
to Yield, and Expected Contribution in the Year 2000

Biotechnology	Date of first significant contribution	Expected contribution to yield in 2000 (kg/ha)
Photosynthetic enhancement	1995	497
Cell or tissue culture	1990	195
Plant growth regulators	1994	988
Genetic engineering	a	a
Biological nitrogen fixation	1996	142

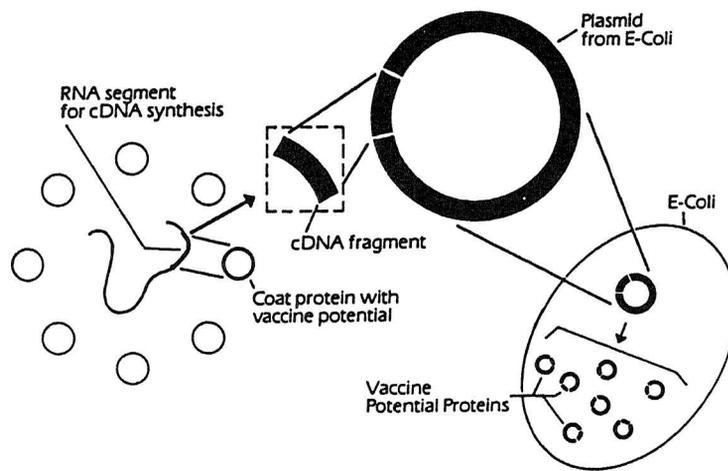
<sup>a</sup> This information was not specifically requested.

Adapted from K. M. Menz and C. F. Neumeyer, 1982

Percentage of Respondents Expecting Contribution to Maize Production from Each  
Biotechnology and the Most Likely Mechanism for That Contribution

Biotechnology	Respondents anticipating a contribution by 2000 (%)	Most likely mechanism for contribution
Photosynthetic enhancement	44	Selection for high CO <sub>2</sub> exchange within traditional breeding programs
Cell or tissue culture	70	Screening for disease stress resistance
Plant growth regulators	89	Increasing harvest index
Genetic engineering	80	Transfer of single gene trait characteristics
Biological nitrogen fixation	66	Nonnodular symbiotic relationship between free-living microbes and corn plant

Adapted from K. M. Menz and C. F. Neumeyer, 1982



Effect of Exogenous Growth Hormone on Lactational Performance of Dairy Cows

	Effects on milk production	
	Early lactation (wk 12)	Late lactation (wk 35)
Milk yield	+15%	+31%
Fat yield	+17%	+42%
Protein yield	+14%	+18%
Lactose yield	+21%	+35%

Intake of mixed diet decreased 16% during 10-day treatment period.

Adapted from Pel at al., 1983

## MISSOURI AGRICULTURE IN 2005

Rex R. Campbell  
Professor of Rural Sociology, UMC

Missouri's agriculture is a subset of national agriculture and it must be viewed in that context. At the same time it does have some unique features. I examine first some of the current trends, extrapolating them into the future.

The number of farms in Missouri reached a peak in 1935 when the depression forced many urban residents to return to the countryside to find food. The 1950s contained a massive movement from rural areas to cities. At its peak the state lost about two percent of its farms each year. The 1960s saw the development of a new trend: the growth in number of small farms. At the same time the number of middle sized farms continued to decline but the number of large scale farms also increased. Thus, we began to move toward what has come to be called a "dual agriculture." The latest Census of Agriculture (1982) confirmed that as of that date these trends were continuing.

The changes were not unique to Missouri. In fact, virtually every state has witnessed the development of a dual agriculture, at least to some extent. Missouri has differed from the other states of the midwest in that we have had a larger proportion of small farms (almost 80%) than most of the others. There now are about 9,000 farms out of the 112,000 total which have more than \$100,000 of annual sales of farm products. These 9,000 sell about one-half of all farm products.

Before attempting to look at the future of Missouri's agriculture, I think it would be fruitful to consider the national agricultural scene. I believe that the following steps would be necessary if the continuing decline in the number of middle sized family farms were to be reversed:

1. Changes in the income tax system, to inhibit the use of farms as tax shelters.
2. Changes in the structure of agribusiness so as to reduce the possibility that a few firms will dominate the market for a single commodity.
3. Reduction in the interest rate to a point that farm operators can afford to support the existing debt load.
4. Reduction in the strength of the dollar so as to make American farm products more competitive in world markets.
5. Changes in export policies to permit greater exports and at the same time to negotiate a reduction in the barriers to imports which currently exist in many countries.

Obviously, these major changes will occur slowly if at all.

We also need to recognize that:

1. Changes in agricultural technology will continue to be developed and adopted. Many of the predictions about the "biotechnological revolution" suggest that the rate of development may actually speed up. Innovations are likely to be adopted first by the larger operators, who will obtain the greatest advantages from them -- as has been the case in the past.
2. Consumer preferences for light foods such as white meats and fresh fruits and vegetables will continue to increase.
3. Government policy will continue to emphasize cheap food rather than the maintenance of a certain number of farm operators.
4. Major agricultural programs that would require a significant amount of money or new regulations are unlikely to be passed, at least in the near future.
5. Excess production capacity will remain for the foreseeable future, for most of the major commodities produced in Missouri.

Because of the above logic the present trend towards continuing reductions in middle sized farms is likely to continue throughout the time period under discussion.

## The Future

I will limit my remarks about the future of Missouri agriculture to the changes in number and types of farms. Missouri will continue to have a viable commercial agriculture, but it will be limited to a few areas of the state. It is my prediction that a large proportion of the commercial cropping will be done in about four areas (or possibly five). Only a limited number of commercial farms will be scattered in other smaller areas.

The total number of farms will continue to decline at a rate more rapid than in the recent past. The rate will probably be similar to that of the 1950s. In the immediate future, the decline is likely to be most rapid in the middle to large size categories, especially for the younger operators who expanded in the 1970s or 1980s.

The number of large commercial farms in Missouri in the year 2005 will be about 5,000. The number of small farms will depend more on off-farm employment and other conditions than on changes in agriculture. In total, the number of small farms is likely to show some decline as a result of declining employment opportunities in many rural communities. Even so, small farms are likely to be a growing proportion of the total, until by the year 2005 they will be about 90 percent of all Missouri farms.

The Corn Belt is likely to move north until it moves out of most of Missouri -- especially out of areas that are somewhat marginal to corn production because of erratic rainfall or unfavorable soil conditions. This trend will further depress the economic conditions of much of north Missouri.

The above comments are somewhat negative and depressing. I would like to end on a positive note by suggesting that in the year 2005 the agriculture of Missouri will be more diverse as farm operators move into alternate crops and enterprises to provide a large proportion of the fresh foods of the 5 million people who live in Missouri and the 30 million who reside within a few hours travel distance. The farm operators will enter into more direct marketing in order to capture a larger proportion of the consumer's dollar.

## RESPONSE

Ruby Green  
Ruby Green Seed House, Kirksville

The surest thing to be said at this seminar is that agriculture in the year 2005 will be different from that of today. It won't be the same. Twenty years are not a very long time. We could think we should be able to predict most trends for that period. But I say: don't bet your money on it.

Twenty years ago, in 1965, our business of buying, processing, and selling of fieldseeds -- we have done that for over 50 years and I speak from my business experience because that is all I have had -- had encountered a leveling out in trade in lespedeza. The processing plants that had been built 20 years before were either idle or really suffering.

In that same period bluegrass seed production had moved completely out of the state of Missouri, leaving equipment and plants setting idle -- fescue had come along.

A little more recently, timothy has almost left Missouri. Yet at one time Missouri was considered one of the top timothy states in the United States and maybe the world.

And now, we still have fescue in the state but fescue plants are hurting. Believe me, I know about that.

All these changes came in periods of less than 20 years. These are the reasons why I say, don't bet your money on not having changes within the next 20 years. It is certain that there will be changes.

Twenty years ago poultry and egg production and processing accounted for most of the agricultural employment in Missouri. It is easy to say it's still here, it's just in bigger hands. That is partly true but not always is big more efficient. Some of the largest of the agricultural firms in the middle west have been having real difficulty in the last two or three

years. Just getting big isn't the answer. In fact, a British economist, E. F. Schumacher, wrote a book entitled, Small is Beautiful. I will not quote him here except to say that he does not believe in bigness at all.

How can we judge the theories expressed at this seminar? How do they relate to the practice of producing and processing foodstuffs? We have to ask ourselves a lot of questions if we are on the firing line in the business. Will we have insecticides and herbicides in 20 years or will they go the way of DDT? DDT was a sure thing when it came. Will excessive use of fertilizer pollute our water supply? We can think it possible.

A lot of work is being done in Pennsylvania on producing crops with no fertilizer, no herbicides, and no insecticides. In fact I visited a Rodale farm -- many of you have heard of it -- and when you get right down to brass tacks and the net returns were analyzed, they weren't too bad. Particularly the returns weren't too bad when compared with the risk that goes with the excessive cost of inputs in our present way of farming. Alvin Toffler in his book, The Third Wave, says the 20 year forecast in world food supply prepared by the Center for Futures Research at the University of Southern California names several key developments that are likely to slash rather than increase the need for artificial fertilizers. The chances are 9 out of 10 -- pretty close to a sure thing -- but by 1996 we will have cheap controlled-release fertilizers which will reduce the need for nitrogen fertilizer by 15 percent. That certainly will be a start toward the way we need to go. He adds that there is a substantial likelihood that new nitrogen-fixing grain will also be available by then. And he reports as virtually certain that new grain varieties that produce higher yields per acre on nonirrigated land -- he emphasizes the dryland aspect -- will have gains as high as 25 to 50 percent. That's a tremendous increase. Mr. Toffler's ideas are much in line with what several speakers at this seminar have said and Harold Breimyer wrote in the November Economic and Marketing Information.

I believe this is as good a place as any to share one sentence from the outside cover of a book by Lester R. Brown, Building a Sustainable Society: "We have not inherited the earth from our fathers, we are borrowing it from our children." We know that the embryo implant -- now widely used -- will improve our livestock production. There is so much like that -- we could go on and on.

I have to ask the question, which is a selfish one: "Will agriculture, both production and processing, be able to maintain the standard of living that we have now? We know that most of the world is clamoring to obtain even a semblance of our living standards. But our standards are being eroded, eroded daily by the unbelievable prices we are paying for production input. Perhaps there isn't anything we can do about it, but I wonder whether our production might be moving completely out of the country. I understand that Hawaiian sugar cane production is moving pretty rapidly to the Philippines, for instance.

I worry about hard-pressed farmers. I can't help but wonder whether we in danger of becoming a landlord-peasant type of agriculture. That's what most of the Third World is. I read in a recent issue of the Wall Street Journal, "We have given up the idea that people who work the land can afford to own it." Can you imagine a statement like that in the United States of America? We have given up the idea that the people who work the land can afford to own it. Are we going back to the feudal system?

I am not a pessimist by nature and I always thought there was a place for good management and hard work. But it is hard to see the light at the end of the tunnel right now, for most of us who are looking the farmer right in the face.

At a meeting of the Federal Land Bank in Kirksville, the main speaker was optimistic about agriculture in the long run, but pessimistic about the immediate future, I think that's the picture given at this seminar. Things are rough right now and I know we can't come to this meeting and have someone take us by the hand and say, "Take this step and that step." But we are undoubtedly going through some tremendous changes.

Agriculture will be here in 20 years because we have got to have foodstuffs, but will it be halfway prosperous? I feel sincerely that we can never get away from the human element in operating, regardless of the size of business, or the kind of business. I expect that good managers and people with a sense for change -- intuition is maybe a good word for it -- will still be here. I want to tell you something else. A little luck, a little of being in the right place at the right time, will surely be a big help. But mostly I guarantee that 2005 agriculture will be a lot different.

That all I have to say, but I end with something I read in Ann Landers. I loved it. It's a farmer's prayer: "As farmers and ranchers, dear God, give us the patience and the wisdom to understand why a pound of steak at \$1.80 is high but a 3-ounce cocktail at \$1.50 is acceptable. [My wife says you can't buy steak at \$1.80 now but I told her you can't buy a cocktail at \$1.50 either.] And, Lord, help me to understand why \$3.00 for a ticket for a movie is not bad, but \$3.50 for a bushel of wheat that makes 50 loaves of bread is considered unreasonable. And a 50 cent coke at a ballgame is okay but a 20 cent glass of milk for breakfast is inflationary. Cotton is too high at 65 cents a pound but a 20 dollar shirt is viewed at a bargain. And corn is too steep at 3 cents worth in a box of flakes, but the flakes are sold for 50 cents a serving. And also, Lord, help me to understand why I have to give an easement to the gas company so they can cross my property with their gas lines and before they get it installed the price of gas is doubled. And while you are at it, dear God, help me to understand the consumer, who drives by my field and raises his eyebrows when he sees me driving a \$30,000 tractor that he helped put together, so he could make money and drive down that right of way they took from me to build a road so he could go hunting and skiing. Thank you, God, for your past guidance. I hope you can help me make sense out of all of this. And please, God, send me some rain."

I know that we have to have 20 year projections. I know we have to go home and think about them and try to put some of them to work; but, so help me, right now it's hard to think past the day after tomorrow and whether I can meet the payroll in a month from now. I think this is true of farm operations. I think it is true in the agribusiness area today. We all need to find a way out.

#### RESPONSE

Morris Huelskoetter  
Vice President, Farm  
Credit Banks of St. Louis

My object is to present a few thoughts about how the picture described in previous papers will affect the individual farmer and individual lender.

A number of sources are available on projections to the future. I had a small part in the study Dr. Harshbarger reports here. Dr. Earl Heady of Iowa State has written a good article on farms in transition.

I am involved in managing farm credit. The situation now is the worst it has been in the 25 years of my experience. I agree with others that it is hard to look to 2005 when one doesn't know how he will get through 1985. As the saying goes, when you are up to your neck in alligators it is hard to remember your objective was to drain the swamp.

I am responding to a panel talking about 2005. We do indeed have to look ahead. We have to have processes in place. If we want a future we have to plan for it, we have to posture ourselves in a certain way, we have to manage the inevitable change rather than let it manage us. I agree with others than no one can predict the exact future but we can determine some probabilities.

Charles Erickson offered some optimism in that he was more confident than some of the other persons on this program that there will continue to be a strong world market. It is important to understand, and to hope, that the world will need our food and a way will be found to supply it. If our production capacity exceeds the size of our domestic markets and we do not have an export market, there is no need to concern ourselves with other matters such as the number and size of farms.

It is enlightening to have a projection that we can expect to export more in the future.

I am glad to learn from Dr. Day about biotechnology. It may be a mixed blessing. It could lead to producing more of what is already in surplus. But he said that the big reason for improving our agriculture is explained in terms of the world situation; and I believe too that we do not improve just for ourselves but to develop what is a blessing, our capacity to produce.

Rex Campbell covered some of the points that have been troubling me. I still do not have satisfactory answers. I raise two issues. When we have gone through periods somewhat similar to the present though not as severe, the question arises about farms and family farms. About whom are we talking when we talk about farmers? Small farmers? Large farmers? Is an 8,500 acre

spread that is farmed by a father and two sons a family farm? According to most definitions, the family must provide most of the labor for a farm to be called "family." But in Columbia, a business managed by a father and two sons would be called a family business even though it hired lots of workers.

When we talk about farmers in trouble, are we talking about farmers with a lot of debt, or young farmers, or old farmers, or underemployed farmers -- those not fully employed but they want full income -- or overmechanized farmers? Do we have a hang-up with "small" and "large"? Is small really beautiful, or is big bad? Or do we believe that smaller isn't necessarily beautiful and that bigger isn't necessarily better?

So as we look at policy down the road, until we define a little better who it is that we have in mind -- a commercial farmer, or a rural resident producing some agricultural product -- we will continue to have problems in addressing the fundamental issue. We can eliminate a large number of farmers by changing the Census definition, and not change the make-up of agriculture one iota. But would that make a difference as to how policy is designed, debated, and implemented? I think it probably would.

To me the matter of definition has been at issue as long as I've been actively involved in agriculture, and I still think it's something that's going to have to be addressed a little more clearly.

Another point is this: are we talking about agricultural policy, or are we talking about farm programs -- which might be a part of U. S. agricultural policy? The difference zeroes in on certain farmers more than others.

Years ago when I took a course in agricultural policy I thought that there was a U. S. agricultural policy. After having been out in the working world for a while I'm not convinced that is the case. I am not so sure we have a U. S. agricultural policy. We have farm programs and we have commodity programs but I am not sure we have what I would call a comprehensive agricultural policy. I do not have the answers as to what our policy should be but I do have a pretty firm belief that we need to keep our monetary and fiscal policies on a sound basis for any reasonable agricultural policy to work and to accomplish the objectives we set for it.

Now I would like to project into the future some of the ideas discussed here as they apply to farmers. It was said earlier that a lot of the seeds are already sown for what is going to take place by 2005. One viewpoint with which I take issue is a statement by Mr. Green, regretting the prospect that "in the future there will be more separation of owner and operator." I think some of this will occur through estate planning and intergeneration transfer. Brothers won't buy out sisters and a brother who went to the city won't get bought out. I can relate a little to this. I have two brothers and a sister. One brother stayed on the farm. At one time he would have tried to buy out the rest of us because he would have wanted full ownership. I doubt that philosophy or practice will continue. I think the change will be to the advantage of everyone. What is involved is the high capital cost of an operation of the size that is required.

Also, I look for renewed interest from time to time in investing in agriculture. Limited partnerships are an example. We have had proposals such as Consolidated Farms, that have stirred up a big storm and then have gone away. As time goes on, people will look for what is good in them rather than for what is bad. Farmers will become more accustomed to outside minority ownership of the farm business or possibly majority ownership of the fixed assets, and they will concentrate on the operation.

The article in the Wall Street Journal referred to at this seminar pertained to an operation in which the farmer did not own all the land, but only about a third of it. I think farmers will still want to own some of their land but I don't believe a major objective of the farmer will be to own all the land he is operating. The trend will be for him to own a smaller percent of the total so that he can use his capital in a different place.

I also believe that in the future farmers will need to be more concerned about a proper balancing in structure of their debt, between long term and short term. This principle has been advanced for many years but without much response. Assets and debts need to be realistically matched. Attention must be given to cash flow. And there has got to be discipline to keep a balance, because we might not have the inflation in real estate assets to bail out the short term debt as occurred in the 1970s.

All that is different in this thesis is that there will be less room for mistakes than in the past -- there may not be any recourse as we have had, such as government programs with emergency credit, and long term lenders' bailing out short termers.

In the future there will be continued emphasis, or maybe more emphasis, on efficiency and consistent profitability, rather than just growth for growth's sake, or speculation for real estate appreciation as we had in the 1970s. To me, careful and effective control of operating costs and emphasis on productivity will do much more to insure profitability than relying on swings in commodity prices. Another point for the future consistent with emphasis on cost control and profitability would be to depend more on earnings and profit in the farm business, so as to prepare for some of the volatility that could occur down the road.

We remember that during the 1970s, funding of assets through debt was a successful strategy because of a high inflation rate and low interest rate. But reversal of those rates contributed to the tremendously painful adjustment that is taking place in agriculture today.

I agree with those persons who say a more prudent use of debt will be called for in the future. Also, farmers must become better students and analysts of their own business. Too many farmers, in my opinion, still do not keep an adequate set of financial records, and even more importantly, many do not analyze or understand the data appropriately.

All the emphasis we have known for years about records, cash flow, and such reminds me of a quip among my colleagues. "Should we attend a session on "pursuit of excellence"? The answer came back, "First, you have got to get good!"

If we can be objective about agriculture's situation, we take pride in its achievements; but I believe one area in which we can improve is the business aspect. In the future farmers will have to draw up a clear financial management plan, and be self disciplined to make that plan work. With regard to lenders, the suppliers will remain the same but those who meet the needs of farmers most effectively will get the business in the future. From the standpoint of the Farm Credit Banks, we are trying to adjust somewhat to the future. We are going through a gradual reorganization, in order to meet the farmers' needs better in 1995 and 2005.

#### RESPONSE

Arlen Schwinke  
President, Missouri Dairy Association

If farmers having a gross farm income between \$100,000 and \$500,000 a year are an endangered species, as suggested at this seminar, I am endangered. My net worth is decreasing. I sometimes think I am living off my children's inheritance.

Five years ago the story was told about the farmer who inherited a million dollars. When asked what he was going to do with it, he said he was going to farm until it was all gone. Five years ago that story was funny. It doesn't bring even a smile today.

Let me begin by giving some of my background. I was one of those farm boys raised on a farm, whose father was dedicated to agriculture, and who were active in 4-H and FFA. I went to the University of Missouri, and got a degree in Extension Education. I worked for the extension service for about six years and then went back to the farm. I wanted to show those farmers with whom I was dealing -- who criticized all that booklearning -- that maybe we could make it with a little booklearning too. It was a good decision financially. Or I hope it proves to be that -- my net worth has gone down each year in the last five years.

I think our problem in agriculture is the relatively low prices that we receive for agricultural commodities. That point of view has not been expressed much at this seminar but I believe low prices are our real problem. Everything that we buy has gone up in price at an inflationary rate, but our agricultural products have not. You just cannot survive if that continues to happen.

Even with low inflation rates of four to five percent, if you were just breaking even last year at a 5 percent inflation in costs you are certain to slip backward. That's what is happening to us in agriculture. I agree that we could do a lot of things better than we are doing. But I think that if people in the business world would come in and try to manage a farm and make a

living on it they would learn something about how difficult it is to manage that business and show a profit.

Daryl Hobbs addresses the meaning of community. There are several communities in agriculture, but I guess the community that I relate to more than any other is the people who are full-time farmers. I would like to share a few thoughts about what I think to be necessary in order to change the agricultural profit picture. We have too much production to get the price we need for what we sell. We students were told in the beginning economics course that three factors in production are land, labor, and capital. It seems to me that we need a national agricultural policy that does not increase any one of those three. Let me elaborate. We certainly don't need land programs that bring more land into production; nor a water policy or grazing rental program that brings more land into production. We ought to have an agricultural policy that says we've got enough production and we don't need any more at this time. I don't know what we would do about the labor. I guess we need a climate out there so that people are fully employed and don't want to come back to the farm. I think that has really caused us problems in agriculture. I know of a number of people -- I can name you the names -- whose son-in-law was out of a job, and where a neighboring farm with a Grade A dairy barn -- as an example -- became available. The farm and a herd of cows were bought. They went into business. It was the general employment situation that affected agriculture in these cases. Maybe we could pass a law that requires paying a minimum wage in agriculture of \$5.00 an hour. That would probably solve the problem but I'm not ready for that.

I do believe we need to be careful that some of the solutions to problems are not worse than the problems themselves. There is still too much capital flowing into agriculture. My Mid-Am fieldman says that if every area of the country is like his, the reason for the surplus dairy production was FmHA's lending to farmers to go into the dairy business. In my area the FmHA put four or five farmers into dairying four or five years ago, but has now sold them out. It doesn't do anyone any good to get people into agriculture when there is an overproduction situation. Both the people already in the business, and the newcomers, are hurt if money is lent to produce a product for which there is no market.

Another comment: we talk a lot about a free market in agriculture. We say we want government out of agriculture. My conception of a free market is a market where supply and demand can work. Well, when I look at the beef cow-calf operation, as an example, I see no way in this world that supply and demand can work. Ask the people who have a beef cow herd. Why do they have that beef cow herd? In many cases it is a salvage operation. It is financed not by its income but by a tax deduction from other income. Lots of farm production is financed by the money farmers make in their off-farm jobs. Not very many of the farmers in my area are full-time farmers who depend just on farming for their living. It's hard for a full-time farmer to compete in such a situation. These circumstances are not what I think is meant by an open market where only supply and demand operate.

## WHAT 50 YEARS OF FARM PROGRAMS MAY FORETELL

Harold F. Breimyer  
Professor and Extension  
Economist Emeritus

Poets tell us that retirement brings golden years of serene reflection. I doubt I have become so contemplative. Yet I count it good fortune that my career spanned what may prove to be the most exciting period in our national history. The 60 years of my memory began with the raucous 1920s. They continued with the Great Depression and World War II. Then came the hopeful years of the Great Society followed by the quagmire of Vietnam, and more recently by OPEC inflation and monetarists' deflation, the last of which bears so harshly on agriculture.

During the 1930s I not only saw and felt the New Deal programs but took part in them. I stayed in government until 1966. And now I sense a major reversal in our national philosophies and a re-creation in part, though not fully, of the 1920s.

I sometimes think my career has been an arch. Its high point -- and our national high point -- was the years after World War II. It is down to about the same topographical level as where it began.

Manifestly, those 60 years were marked by dramatic developments in the relation of government to agriculture.

During years since 1933, when New Deal farm programs and my participation in them began, the federal government has never failed to influence materially the welfare of farmers and the rural community. The most aggressive commodity programs were compulsory acreage allotments -- voted in by farmers, to be sure, but compulsory once voted. Those have disappeared in all commodities except tobacco. How big a role government programs should play henceforth, and whether mandatory programs will once again be authorized in a 1985 farm bill, will be a center of legislative debate in the year soon to begin.

The idea of a cyclical swing back to where it all started surely fits the financial picture in farming today. The financial distress now found in much of the midwest resembles what my father and I knew in the 1920s, a dreadful situation that came to crisis in the early 1930s.

To repeat: if, knowing what I do now, I had the right to choose the time of my birth, I would choose the actual year, 1914.

After those 60 years, the question is properly raised. What did we learn about a national policy for agriculture? And what does the wisdom gleaned from the past suggest as to what lies ahead?

### Pragmatism versus Social Change

Before we think and reflect on farm programs of the past we would do well to consider what kind, or what mix, of social philosophies have underlain our farm policy -- and, for that matter, our economic policy generally. Here we encounter an enigma. Have we as a nation subscribed to social philosophy and designed our economic policies to fit, or have we been more pragmatic than philosophical? My answer is that we have been both.

When Thomas Jefferson wrote the Declaration of Independence he drew on French liberal thought to couch what in reality was a colonial insurrection in the lofty terms of the aspirations of mankind. Lest I seem disrespectful, I believe Americans subscribed to what he wrote and that we today still accept the doctrine. But when it came time for leaders of the new republic to draft a Constitution to replace the ineffectual Articles of Confederation, the authors could only write a preamble that was nondefinitive and a single sentence long. The drafters could not agree on philosophy. They confined their efforts to putting together something they thought would work. They were pragmatic.

When I joined USDA in the yeasty 1930s the question was asked over and over again: were we just trying to dig farmers out of their financial mud or were we architects of a new social order? Secretary Wallace favored the social order idea. He wanted to make the 20th century the Century of the Common Man. But when he, under pressure, fired Jerome Frank, he essentially answered the question in the negative. Frank wanted to make the countryside more egalitarian. Wallace said, sorry, but we will have to be pragmatic.

But the issue does not end there. For, you see, it is impossible to remove philosophical meaning from pragmatic actions. Every decision about acreage allotments or price supports realigns the power structure in agriculture in some way or other, and therefore restructures our agriculture in some manner and to some degree.

Our pragmatic farm programs have meaning in terms of what we seek as higher goals for farm families, the rural community, and indeed all society. And what we have in mind as to those goals will have much to do with the design of farm policy of the future.

#### Lessons We have Learned

What have we learned from 51 years of farm programs? I suggest that lessons have been seven in number.

First, we learned in the 1930s that farmers have the capacity to organize and administer acreage and commodity programs. When Secretary Wallace and his cohorts wrote legislation calling on committees of farmers to impose restrictions on their fellows and enforce compliance, I was skeptical. I need not have been.

The record has not been perfect but it has not been bad. Farmers can administer programs.

Following that positive note I add the negative that farmers -- some farmers, that is -- will ruin a good thing if they have a chance.

The worst instance is deliberate violation of contracts. Only a small minority are guilty but tobacco farmers found, for a while, that they could hide a tobacco patch in the corn field. Last year I publicly deplored the 10 percent rate of contract violations (nationally) in the PIK program. I stubbed my toe editorially when I understated the penalty assessed but I drew two morals. One is that a high rate of violation has a damaging public impact. The second is one my chief in the AAA preached, long ago, that programs should not be made too complicated. If we try to accommodate too many individual circumstances, the program machinery becomes hard to administer and invites violations.

But wilful misconduct is not the big problem. The really hard nut to crack in writing farm programs is that farmers will try to make the programs so attractive to themselves that the outcome will be ineffectual or actually negative. I have in mind writing acreage controls so loose that they are little more than a gesture. I have in mind also pushing support prices up to a level that endangers markets. I do not join the bargain-counter school of thought; I don't think we have to have a continuous fire sale in order to hold foreign markets. But the danger of overpricing is always with us.

That danger leads to an interesting irony in the making of farm policy, and my third lesson. That lesson is that farm interests are not privileged to write farm legislation in camera. I mean that farmers and their spokesmen cannot alone determine farm policy. I add that this is as it should be. To be sure, various interest groups within agriculture will checkmate each other to some extent, usually to positive net gain. But other political groups have at times spared farmers from their own excesses. As a current example, urban Congressmen may help nudge agriculture into a program farmers know to be needed, but are reluctant to grab hold of, namely, to attach a minimum soil protection requirement to commodity programs.

Having paid my respect to nonfarm interests I draw my fourth lesson from an opposite point of view. I think we have learned from recent experiences that farm groups are capable of warring among themselves to the point of political ineffectiveness. And whereas I defend the political role of nonfarmers in the paragraph above, I now express fears about going too far. In other words, consumers are justified in nibbling at the edge of the price support question and environmentalists cannot be scolded for wanting their bread to come from clean wheat. But if the recent trends continue farmers will lose much of their political control. They will lose it in Congress to committees other than those on agriculture, and they will lose it in the Executive Branch to the Office of Management and Budget.

In large measure they will lose it because agriculture cannot resolve its own internal conflicts.

As I will say in a moment, financial distress for many farmers is the number one feature of the present farm scene. It is interesting to speculate whether the intensity of the trouble will draw farmers together, or push them farther apart.

My fifth lesson follows from this last comment. We have learned the last few years that not only wars bring deflation in asset values. National economic policy can do so too.

Let me explain. About two years after the armistice that ended World War I, the price of farm commodities tumbled and the land market collapsed. My father was caught in the sudden farm depression. He had lost his buildings and feed in a fire and had big debts. I can empathize with farmers in difficulty today because I remember so vividly the emotional trauma felt in our family. I was myself scarred by the experience.

When World War II began all predictions were that two years after that conflict history would repeat itself. It did not, for reasons I will not go into. (I still take some pride in being one of the first economists, in USDA's outlook program, to predict inflation instead of deflation.)

We know now that crude, heavy handed government policy in our time can do what wise government policy during and after World War II forestalled. It can bring about a devastating deflation of asset values in agriculture. That is what is going on now.

I draw two morals. The first is that financial distress cannot be resolved by commodity policy. The second is that its origin in policy outside agriculture is only part of a general sensitivity felt in agriculture to policies outside its domain. It was the Federal Reserve Board, aided by the tax code, that induced an asset delation in agriculture resembling the one after World War I. And although the Fed's action is usually explained as intended to stop inflation, I agree with those economists who say a second purpose was to reweight the balance between savers and borrowers, in the former's favor. Inflation is favorable to borrowers. Deflation and high interest rates are attractive to lenders.

Increased sensitivity of agriculture to general economic policies is in fact my sixth lesson. Agriculture is more subject today than ever before to economic policies external to itself. I need not elaborate. Virtually every spokesman of the last couple of years has said the same thing. When we talk about the influences on agriculture we name tight money, high interest rates, high exchange value of the dollar, budget deficit, the tax code, the desperate financial plight of Third World countries, the EC's agricultural policy, and trade relationships with the Soviet Union, Japan, and Peoples Republic of China. The last-named comes in by virtue of China's objection to our textile import quota imposed on her. She says that if we won't buy more cotton and silks she won't buy our wheat.

I differ from some other economists only in that I do not lay all our economic ills at the feet of the budget deficit. Even though our fiscal performance has been irresponsible, balancing the budget would not bring all the blessings that are promised. Instead, I choose to emphasize the tax code. That code particularly contributes to the financial crisis in agriculture today. It will have even more to do with its outcome, for tax shelters will finance much of the buying out of farmers forced from their land.

Therein lies my seventh and last lesson learned in 60 years. It is the sensitivity of a modern industrial economy to the policies of central government. Put in opposite terms, we believed in the 1920s that government not only should not influence the economy but really had no capacity to do so. In the 1930s we learned that in an urban industrial economy government has enormous powers. We have used those powers ever since, and still are doing so. The powers are morally neutral; they can be used for good or for evil. And in an economy of huge government spending for defense and for income security, the most gripping of all powers is the power to tax -- and to excuse from taxes.

#### The Temper of our Time

My assignment for this paper is to predict. Actually, prediction is easy, if we know where we start from.

I suggested above that I am personally experiencing a reincarnation. I have completed my allotted 60 years beyond childhood and am being returned to an environment similar to that of my youth. In a great many respects the state of mind of the American people, the political ambience, is about the same today as it was in the 1920s. President Reagan ran on a pro-business, anti-government platform. So did Presidents Harding and Coolidge. In many respects President Reagan resembles President Coolidge. If James Baker, George Shultz, and Donald Regan pretty much run the government, they are only the modern equivalents of Andrew Mellon and Herbert Hoover.

Also a throwback, as I observed above, is the financial crisis in agriculture, which

resembles the price collapse of 1920-21 and then the final knock-out blow of the Great Depression of the 1930s.

Alongside those similarities between our time and the 1920s is the grand contradiction I have just noted, that although we may again preach minimum government, we have created a giant monster. We don't know how to tame it, and we use it much more arbitrarily and, in my judgment, more selectively and preferentially, than we are willing to admit.

I make one more comparison. The recent election suggests a single-party dominance in the Executive Branch about like that in the 1920s. The party is the same. The main difference is that the stronghold of the opposition Democratic party then was regional, the South. Now it is a combination of philosophical and ethnic.

When a single party gets the electoral votes, the policy-making contest shifts from inter-party to intra-party. The fights that will count the next few years are those between the highly conservative and the moderate wings of the Republican party. This is a natural and inevitable outcome. But unless we can predict the winner we cannot forecast what lies ahead in farm policy. The Republican moderates, whom newsmen call "pragmatists," will favor extending present programs. The more conservative wing of the party ("hard-liners") might actually strengthen the strictly commodity-price aspects of programs but would likely, in my judgment, abolish deficiency payments, minimize soil conservation, terminate all marketing orders, and force dissolution of rural electric cooperatives. A highly conservative government would give no financial aid whatever to farmers in financial distress, for the ultraconservative philosophy holds that family farmers are an anachronism.

I throw out these comments not to shock but to remind that political philosophies in our country, as everywhere, span the whole spectrum. Not knowing just what the complexion of the political leadership will be, we are hard pressed to forecast what lies ahead in agricultural matters.

#### A Few Guesses

I will nevertheless venture a few guesses. I will assume, as most people do, that we are not ready for radicalism and that the moderate (pragmatic) wing of the Republican party will remain in charge. If that assumption prove to be correct, I suggest the following as the most likely course of events.

I predict that relief of financial distress in agriculture will take legislative priority this winter. President Reagan virtually gave it that priority when he made his September 18 announcement extending FmHA loans and offering to guarantee private bank loans. In my judgment most at issue is not the FmHA postponement of obligations of its own borrowers, but rather the unprecedented guaranteeing of private loans. It will be instructive to learn whether the latter program will be substantial or only a gesture.

I wonder if Secretary Block knows what a bear he, or his successor, will have by the tail. One aspect of the situation is that if the farm economy does not improve and the government finds itself owning tens of thousands of farms, what policy will then be adopted for disposing of them? The structure-of-agriculture issue will come into full view. The farms could be sold under concessionary terms to operating farmers, or they could go to financial combines.

Secondly, we hear it said often that the farm programs of the last 50 years are antiquated and should be ended, or at least recast. As happens often, those who agree that a new direction should be taken cannot agree on what that direction ought to be. My hunch is that program opponents will mutually self-neutralize, that old programs will not be junked, and that the debate will be over particulars and not grand design.

Foremost among all issues will be the level of commodity price supports. Debates will turn on vulnerability of export markets to the support level we establish. On this topic economists are guilty of telling more than they know. We do not really know how sensitive markets are to our pricing policies. I have my own ideas, but no proofs.

The irony in the situation is that not our price supports but the high exchange value of the U. S. dollar has been the obstacle to exports lately.

My guess is that supports will be held moderately low and that direct payments from the federal Treasury will be used as an income supplement. To some extent deficiency payments serve

that function now. But if the principle of an income supplement be accepted, an argument arises at once over the terms or formula for dispensing it. In some quarters there is a clamor for making farm programs less "commodity oriented" and more "people oriented." If we want programs to strengthen the moderate sized owner-operated farm, direct Treasury payments can readily be used for that purpose. For my part, I doubt the political climate favors going that route. The idea of the family farm has long attracted more rhetoric than assistance.

Thirdly, soil conservation has moved to front and center and will be talked about a lot these next few years. My guess is that cross compliance will be built into the 1985 farm law. The move will be weak and timid but precedent-setting. Sentiment is strong that farmers ought not be eligible for price support on commodities produced at the cost of severe damage to soil.

But we are a decade or longer away from incorporating land use criteria in all acreage bases.

Fourth, effectiveness of production control will be a policy issue this coming year. Programs now on the books can be made effective only at the high cost illustrated by the 1983 PIK. Whether to return to mandatory acreage allotments will be debated loudly. The wheat situation invites going back to a mandatory all-farmer program. I timidly predict that mandatory acreage allotments will be authorized in the 1985 farm law.

Some other parts of farm programs need to be examined and modified. Crop insurance remains a flawed program. Therein lies a cue for my own preference. I have argued for years that there should be a single unified contract between the farmer and government. Land use, soil conservation practices, and protection against low yields and low prices would all be wrapped together. It would be a take-it or leave-it package. But we are a few light years away from taking so bold a step.

#### Summary

In summary, it seems to me that we have learned over the last 50 years that it is possible and probably even necessary for government to play a role in the economics of agriculture. We have learned too that farmers are capable of administering programs, within the boundaries set by law and executive order. I give no credence whatever to the idea that we will suddenly remove government entirely and let the "market," whatever that may be, work its magic blessings.

Farm policy these 50 years has been centrist on the political scale, because our governments have been centrist. If we were to swing to either political extreme, our farm policy would become ideological. Assuming that we remain centrist, farm policy will disappoint all ideological purists. It will be mixed, muddled, and above all pragmatic, because that is how a middle-of-the-road democratic government works.

There is another condition to all forecasts about farm policy. It is the continuing of a decentralized institutional structure of agriculture. If and when agriculture becomes dominated by giant units, our traditional farm programs will disappear.

My final note has two parts. One relates to commodity and acreage programs. Here my story, as surely is clear by now, is that if our government stays centrist we will essentially get more of the same.

Policy directed to the financial distress in agriculture is a different matter. Asset deflation and high real interest rates have put hundreds of thousands of farmers in peril, not primarily because of operating inefficiency but by virtue of national economic policy.

Fifty years of farm programs give us no clue to policy on behalf of those farmers because the first 45 years were years of asset inflation. Only the last five have been deflationary. We have no experience to draw on. For my part, I somehow doubt that we will tolerate a liquidation of farmers like that of the depression of the 1930s. But the fact remains that the most difficult problem to be faced in the immediate future lies outside the experience of the last 50 years.

THE CAPACITY OF THE STATE OF MISSOURI TO  
DEAL WITH ITS PROBLEMS THE NEXT 20 YEARS

Joe D. Holt  
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My role is to raise some questions about the capacity of the state to handle its problems the next 20 years. We begin with a package of Missouri legislation in which many of the laws were written in the early 1900s, a time sharply in contrast with the circumstances of today that range from launching satellites to dealing with medical-ethical problems in organ transplants.

In looking ahead I choose to touch on seven of the major problems of the state. First among these is tax income to the state of Missouri. It's too low to provide the level of services that are necessary. Second, the ability of the General Assembly and/or the Governor or any other duly constituted governmental body to raise taxes even if it wanted to, because of the Hancock amendment. Third, a part-time legislature, one House of which is cumbersome large and the other too small. Members of the General Assembly work very hard but they are underpaid and overworked for the time spent. Fourth, the lack of a comprehensive plan in the state for dealing with its problems. We are a crisis oriented government. We bounce from one crisis to another. Fifth, a dwindling farm population, which reduces the power base and political strength of agriculture. Sixth, the absence of an agricultural policy at the state level on a comprehensive long range basis. Seventh, too many local governments.

The state of Missouri gets the largest part of its income from the income tax and sales tax. Over the years the General Assembly has moved to rely more and more on the sales tax. At the same time it has begun to give away the sales tax authority. It gave the right to impose sales tax to cities, to counties, to mass transportation systems. As a consequence, if in the next few years the General Assembly should want to raise more money, it would face a situation where part of the state already has an extremely high sales tax. That will limit the state's ability to generate more revenue from sales tax.

If more money is sought to provide more services, perhaps it could come from the income tax. Let's look at that. The last tinkering with the income tax took place around 1970, following a strong direction from the Governor to "do something about the income tax!" The instruction was so strong that it ultimately brought a serious constitutional crisis, the removal of the President Pro-tem of the Missouri State Senate. That kind of direction, that kind of strength, to do something about the tax structure has not been repeated since. It is not likely to be repeated at any time in the foreseeable future.

The income tax is extremely complicated. The action I refer to took place only because of the hard work of a number of capable Senators and Representatives who really wanted to understand taxes. Also, the income tax is the kind of issue that does not generate the attention in the media -- the metropolitan and out-state newspapers -- that can help develop the strength that lets legislators get the job done.

So what will Missouri do for tax levies? Just now, we are relying on a lottery. In a couple of years we will know how much money a lottery will generate, if any. Many members of the General Assembly are wiping their brow in gratitude, because Missouri citizens have lifted off the back of the Assembly the onerous responsibility of raising taxes. I do not believe that is a correct assessment; I doubt the lottery will raise a lot of money. But many members of the Assembly are more confident.

It appears that the people of Missouri today have no inclination to give the General Assembly the power to spend by general tax increase. Some limited special purpose taxes may be possible of enactment. Soil and water conservation, some small education levies such as Proposition C -- these really create what I call a fantastic paradox. We do not have the kind of services that we need from state tax-supported institutions, but a few may have plenty of money. Contrast, for example, the Department of Mental Health, funded virtually entirely by general revenue of the state, which is daily turning people away from the institutions and cutting back programs, with the Department of Conservation as it collects interest and cuts coupons off the bonds generated by the tax income. What kind of future do we see for a Missouri with that kind of tax policy? Not a very good one.

Next, the problem of the Hancock Amendment. Mel Hancock was defeated in his bid for office but his legacy hangs on. He promoted a scam on the state that makes the Sting look mild by comparison. We could not raise taxes even if the General Assembly wanted to, without changing the

Constitution. The Hancock Amendment is the least understood change in our form of government in the United States since 1789, when another constitutional change came about at the national level. It removes from the duly elected officials of this state the simple power to tax and spend revenues. It's a substantive change in state government, a kind of change apparently in vogue all across the United States. A quick editorial: who is responsible for the Hancock Amendment? The legislature, for overspending, or the people, for over-reacting? The answer is, really, a little bit of both. The General Assembly, let us admit, does sometimes seem as though it wants to spend all pennies, nickels, dimes, and dollars it can get its hands on, maybe even before it raises the money. The General Assembly even has the audacity, at times, to trade off programs for dollars. Why, dollars for the University of Missouri might be swapped for dollars in the mental health program. "What a terrible political trick!" some people say. That political trading of monies from one program to another has been perceived by people in the state as evil. There has been opposition to spending for a few social programs, but perhaps the worst static has come from the General Assembly's raising its own and other state officials' salaries -- taken as evidence by people generally of the inability of the legislature to govern. Thus the action of the Hancock Amendment.

The Hancock Amendment is probably the single biggest roadblock to dealing with Missouri's problems over the next 20 years. It must be overcome in some manner.

The third problem is the over-large House of Representatives and I think too small Senate in Missouri. Let's contrast for a moment the United States Congress where each of 435 members of the House serves approximately one half million people. Add 100 members of the United States Senate, and you find that there is a Congressional legislator for about 420,000 people. In Missouri, there are 163 members in the House of Representative and 34 Senators. Each House member represents approximately 30,000 people and each Senator approximately 140,000. So the total of 197 averages as one for each 25,000 citizens. Which ratio is better, one for 25,000 or one for 420,000? There is no real clear answer to that.

But the large number of Missouri House members is depressing. Time after time a blue ribbon committee impaneled to study state government has urged a reduction in membership of the Missouri House from 163 to 80, 90, 100, or 120 -- 120 is the largest figure that has been recommended. What is involved in our reluctance to change is that we are holding to having county representatives. Nevertheless, we have one representative in a southern part of the state who represents parts of seven counties. There is scarcely any one-county representative anymore. But a count of 163 House members for 114 counties gives the appearance of one per county.

The legislators are close to the people. I suggest to you that a smaller House of Representatives would be much more desirable for the people. It would give better representation. It would give each member a broader point of view, thus enabling him or her to do a better job.

When I look at the Senate I conclude that it is a little too small. There has to be a balancing point, a clear balancing point that leads to something besides good-ole-boy politics from day to day. The Senate puts members a little too close to each other. It makes the crossing of party lines a little too easy. There is no party loyalty in the Missouri State Senate, past the day of organization. Not many years ago, in 1980, there was a case where party lines meant nothing in organization, as a result of allowing Republicans to vote on the open floor on who the President Pro-tem was going to be, rather than in the caucus of the majority Democratic party.

The general assembly is part time and underpaid. In today's active legislative agenda of dioxin, radiation, high technology, and electronic funds transfer, can we really expect a part time legislature to deal with day-to-day government? Can we conduct a government of a \$4 billion budget on a part time basis?

In the next 20 years we must cut back the size of the House and enlarge the Senate, making both full time and paying members for the time spent. Only in that way can we get a government that actually is responsive to the needs of people.

Now I turn to item five on my list. Crisis government. We bounce around like tubs on the ocean. We hit one crest and then sink to the bottom. We bounce from one crisis to another. Dioxin today, reassessment tomorrow; budgeting shortfalls one minute, and two weeks later we find that there is enough money in the pipeline that we are bouncing up against the Hancock lid on spending. Where are we in government? And how do we find out? There simply is no long range comprehensive plan. We address one problem when it comes up, and we think we have solved it. But we find we have created two more. Crisis government: the General Assembly will not determine tomorrow's legislative agenda. Crises will.

To understand how crazy the state operates, it is necessary to understand the scenario that goes on within the Senate and within the House. For example, the University of Missouri is not governed by a Chancellor here on campus, not by the President in University Hall, although each has certain responsibilities. It is not governed by the Board of Curators appointed by the Governor nor by a Board of Higher Education, members of which also are appointed by the Governor with the advice and consent of the Senate. It is not governed by the Governor, nor by the Senate. It is not governed by anybody. That is the problem. There is no place where the buck can really be said to stop. Therefore we bounce from crisis to crisis, because we do not have a connection between one problem that was solved yesterday and one that arises tomorrow. We cannot react to a farmers' crisis of a bankrupt grain elevator -- it cannot be resolved in the next day or two by the General Assembly. The crisis of a \$3 billion nuclear plant is not going to be resolved by the company's getting a part of its money back, nor by going to the General Assembly or to the Public Service Commission and getting the rate increases necessary to pass on to customers the cost of that plant, because legislative impediments are going to be raised. We deal with a crisis and we have no broad range plan to govern, because we can't see beyond the end of our nose and sometimes maybe not that far. We can't find the problem until it becomes a crisis, and then when we solve it, we go home to wait for the next one to arise.

Our farm population is declining. A loss of farmers' political power is associated with that decline. Agriculture in Missouri in the next 20 years is not going to be a strong political power. It will remain powerful as a producer, and in a real sense agriculture obviously feeds the world and through that position of food supplier it will remain potentially powerful. But it is now kept weak by its inadequate farm organizational laws and rules. Missouri, a major farm state, has never adopted a mechanism to legalize and make simple a strong farmers' union, a union resembling the UAW and the United Brotherhood of Electrical Workers.

A few years ago we had problems with cooperatives -- remember PFA? We encourage agriculture but we don't encourage agricultural unions. We don't do the things that would work to make agriculture strong in the next few years. Without unification the agricultural community will not survive its constant drouths, plagues, and export quotas -- or continued governmental indifference to the farmers' woes.

We must inquire whether the farmer or the farm community wants unification. The legislature -- the state government -- does not have any idea of an answer to that question today. Along with that, there is no real agricultural policy. I suggest you look closely sometime at chapter 261 in the revised statutes of Missouri, the chapter that creates a Department of Agriculture. Read it in combination with the next three or four chapters. The first part of 261 deals with the powers of the Director of Agriculture, and his responsibilities. Look at the responsibilities. The Director of Agriculture is ordered to supervise a state fair. That is his first and paramount duty, according to the statutes. If that is his first major task, how can he be a real policy maker for agriculture in Missouri? Later in that section he is directed to cooperate with the College of Agriculture of the University of Missouri. He is directed to publish pamphlets that do not duplicate those published by the United States Department of Agriculture for the benefit of agriculture. In other sections he is to establish certain marketing standards, to administer weights and measures, to regulate and grade grain under certain circumstances -- likewise feeds, fertilizers, lime, seeds, and so forth. He can quarantine sick animals. The whole thrust of our Department of Agriculture today is that of a regulator. It is not a policy maker. We need a strong policy maker position in that department if we are going to make agriculture a strong power broker. I think that must come. We need to strengthen the Department of Agriculture. The Director, from his vantage point, must look forward into Missouri's agriculture and address the problems that are facing us. Governor Bond is now talking with other Governors about water problems. How many farmers have deep wells and are digging into the water supply for the purpose of irrigation? What will happen to those wells in the next 20 years? Many forecasts are that they will be become dry not in 20 years but in 5 or 10 years. What kind of policy does the state of Missouri have on that? The answer is that it has no policy. There is a little regulation on some wells today, but no real policy. No real program.

The last legislature generated a Food for the 21st Century program, a good beginning. It is the kind of beginning that must be made in a comprehensive manner, to set forth a program for the 21st or even 22nd century.

Next, governmental units. How many does Missouri have? Not quite a million but we have a governmental unit for everything. We begin with our 114 counties, which range in population from less than 3,000 to over a million. We have some county structures that are streamlined but others that are still operating under 14th or 15th century concepts. We have hun reds of cities, towns, and villages, and then for the sake of repetition we have levy districts, drainage districts, road

districts, hospital districts, ambulance districts, fire protection districts, water districts, sewer districts, soil conservation districts; and I think I have missed a bunch of them. I think we made a unconscious choice, not being really comfortable with county governments to begin with. Whenever a need arose for a new service, instead of drawing up a comprehensive plan and putting that new service under an established part of the county government or state government, we created a new government. And so we made an unconscious choice to duplicate administration, duplicating the costs of doing business. It seems as though every time we had to have something new we created a new district. Each one has a single purpose, in most cases. But to meet tomorrow's challenges we will need a strong and unified means of carrying out all our governmental tasks. We will need a manager for all the services. We will need economy-of-scale, an efficiency that a proliferation of governmental units cannot achieve. Why, for example, do we need to have two or three buildings, one housing the police, one the fire department, and another the ambulance? So it is that when you dial 911, who knows how many times the call will be switched around in order to get a response? Police in one place, the fires in another, ambulances in another, and the hospitals in a fourth.

We simply will have to do something about the excessive number of governmental units. Otherwise our tax dollars are going to be fought over by departments of the state government, and by all the local governments and many special districts.

Missouri's capacity to meet its problems over the next 20 years? I have outlined some of the difficulties with Missouri's capacity. I think that until we address the issue of structure and organization in Missouri, we are going to have some real difficulty in meeting the problems that arise, dealing with them in any kind of comprehensive manner -- that is, doing more than trying to survive an immediate crisis.

But having given you all the bad points, let me end with the best points. The best point about Missouri's ability to meet its problems over the next 20 years, its best resources, consists of leaders such as those at this seminar, the members of the General Assembly, and everyone else across the state of Missouri. It's the people. Although I think there are problems of organization in our government, there are also some very great strengths in our citizens and also among the people in leadership roles in Missouri. I am confident we can find the direction for setting and meeting goals, for solving problems. Missouri can meet its problems.

## HARD POLITICAL CHOICES -- MISSOURI STYLE

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By definition political choices and problems are choices and problems of people. Viewing them here in that context amounts to a little different angle than is customary. It may have something to do with why a non-academic person (myself) was invited to be on the seminar program.

As political decisions are the topic, let's discuss politics.

Missouri's ship of state is headed for rough water, with several loose cannon on deck. When the pitching and rolling begins, even the smallest gun will have sufficient size and bulk to crush hapless individuals or groups who chance to be in the way. Consequently, a provision such as offered by this seminar may let us examine the out-of-control issues and assess whether discretion recommends trying to bring them under control or trying to get out of their way. That is what is attempted here, with the provisional caution that points covered are indicative but not all-encompassing. There may be others. There may be worse ones than are mentioned. There may even be a magic solution -- but don't count on it.

### Use of Land

Probably the biggest free-floating destructive force on deck in Missouri concerns the land itself and its use. Broadly sorted, there are three contesting sides on this point. Two of them align without agreeing, and the third controls. Land is viewed as a resource by both the agricultural and stewardship camps. However, at the extremes one views the resource as one to be maximally exploited while the other views it as one to be sealed under glass. The third group views land as merely something in which holes must be dug to build office complexes, shopping malls, or houses. Land is, in this third view, that which is under and around. The three views are, in short: land is raw material, land is priceless heritage, land is a bothersome necessity.

In our society, given dollar deification, the third perspective necessarily controls. Before jumping up to take issue with this reading of things consider how the legalism "highest and best use" is defined. (We disregard the question of how it should be defined. "Should," we are told, is for philosophers, preachers, and parents.) How is it defined? The only yardstick we have for weighing things one against another is money. If it is worth more it is better. To carry this to its ultimate end, perhaps by the turn of the century the entirety of Missouri will be paved or hold office buildings. Not really, of course, but the point is readily seen.

My friend Professor Robert Bevins, who teaches the appraisal courses here, takes strong issue with this. He teaches "highest and best" as the most profitable likely legal use, opening with "likely," and making "legal" an entry for restraints on profit maximization. He quite properly and sensibly talks growth curves, and can of course empirically demonstrate the curvature. As individuals, however, few of us are willing to cross the apex of our curve and traverse the downside -- or to admit doing so. Here again is the conflict between what should be and what is, or maybe between what actually is and what we say is.

In most of the geographic domain of Missouri, property rights are absolute -- or believed to be so. Never mind that no such thing exists. In most of the state any owner may do anything he chooses with the land he owns. A corollary to this is a cherished right to make a profit on or from land. This creates the push that makes a developmental view of land the controlling view. If we are to preserve sufficient land to produce the tobacco, pecans, -- not to mention corn and cattle -- and grapes that constitute Missouri agriculture, development will have to stop. We cannot keep plowing up pastures, seeding them to houses, and expect those houses to have no impact on farm output.

Subdivision of rural Missouri has been made possible and aided by public policy. Government loans have financed it. Tax policy has encouraged it. Public spending for infrastructure has made it feasible. If another thrust of public policy is to maintain a viable agricultural sector, one thrust or the other must give. The right to farm and the right to subdivide may well face a high noon shootout. To predict the outcome, think again how "highest and best" is defined.

### Who Will Pay?

My friend and colleague Eber Cude has a theory about payment, maybe a parable. Whenever we get completely finished with granting exemptions, free passes, and exceptions to taxes, he says,

some poor guy at the end of a narrow road somewhere in the Ozarks is going to get the tax bill for the entire state. Sometime within the span of years under consideration here today, Missouri will surely recognize and accept the impossibility of a free lunch. To pay less and get more is most attractive. However, it also necessitates that someone pay more and get less. There are limits to how far these trades can go.

We are not fond, in Missouri, of taxes or even semi-taxes such as user charges and fees. We are fond, however, of services. There is a reciprocal relationship between these, everyone realizes. Most of us simply want someone else to pay our share. Public spirited philanthropists are not that numerous.

Our tax system in Missouri is a mess. Most of us realize that. However, few of us are willing to deal with it. Each of us has in the back of his head a tiny voice whispering quietly that the tax mess is to his personal benefit. While we all might agree that something needs to be done, we are agile and we quickly run backward if proposed solutions threaten our advantage. It is possible to get general agreement in the abstract that Missouri's tax system needs a complete revision. It is not possible to achieve such a revision now, and will probably not be possible to do so in the next 20 years. Too many of our finest citizens would be placed at risk, ourselves included.

Look instead for more tinkering. The list of exemptions will grow, whether to sales, property, or income tax. The last is least susceptible since we hitched our tax wagon to the federal exemption scale. Of course, we could unhitch, but we won't. As exemptions grow, rates will necessarily increase to replace what is lost, or services will decline. This outcome will in turn bring more complaint and dissatisfaction, but not increased willingness to pay -- except by someone else. By 2005 we may rise above being at or near the lowest among all states in taxes paid. Don't look for much more elevation than that.

#### Cleaning Behind Ourselves

One thing we will have to do is deal with the tax limitation we wrote for ourselves. Though no one has raised the point yet, within 20 years we will learn how costly it is to carry out the Hancock Amendment. While it may seem the essence of democracy for the electorate to decide admission fees at the swimming pool, it is a costly luxury. (Even elections, including referendum elections, cost money -- legal advertising, ballot printing, counting, and all that.) Eventually we will learn how many thousands of dollars we will have spent statewide deciding what the price of school lunches should be and how much parking meters should charge.

What will probably bring us around on this is the tax refund. Sometime between now and 20 years hence it is highly likely that too much revenue will have been received and some will have to be refunded. The resulting outcome will be a multitude of checks to the order of everyone who paid state income tax. Before anyone rushes out to buy a new Rolls-Royce with his check, he should remember that the amount will be in proportion to income tax paid. This means most of the checks will be for less than the cost of check processing. Some taxpayers will get three or four cents, or, for a higher bracket person, seven or eight cents. The only checks of significant size will go to taxpayers who paid state income tax on a million dollars of earnings. One round of refund checks will doubtless trigger constitutional repair.

#### Economy vs. Environment

Hard political choice number four is tough. It's the one where we choose between feeding our kids without regard to the environment, and enabling them, later, to feed theirs. Putting the problem in those terms perhaps exaggerates a bit, but it is time the idea of finiteness of resources be addressed.

We have held the Daniel Boone mind-set for over 200 years. When we have made an environmental mess we move away from it. Trouble is, the frontiers are gone.

If we dirty a river to the point the fish die, it is not likely to cleanse itself. When Spring River fish caught in Oklahoma and Kansas have unacceptable amounts of southwest Missouri dioxin, we become aware of a situation perhaps beyond our ability to cope. If we deforest much of Missouri for maximum plowground, where will the cattle and people find shade? Providing alternative shade for people by air conditioning costs resources and money. Neither is boundless.

Sometime we must confront and deal with finiteness. As of yet we have not done so. We have still never admitted limits. It seems un-American to do so. Yet we must.

Our faith has been in technology. We accept by faith that technology will solve all problems. This allows us to give only passing notice to despoiling the air or land or water that must support our grandchildren. (They will, after all, be brighter than we, and better schooled.) We'll leave them the questions: they'll find the answers, we say. Unfortunately, even technology has limits.

### Storing People

On a much less esoteric plane, sometime early in the double-decade ahead we must deal with undesirable people and their housing. Missouri citizens keep demanding that more persons be locked up longer times for a growing number of offenses against society. Yet we solidly refuse to pay the cost of "corrections." And no neighborhood will accept a new prison. Taking a hard line on crime and criminals costs money, and we are not prepared to pay it.

But here we get an irony. Ultimately we will be caught with overbuilt prisons just as we are now with schools. As the baby boom bulge in population moves out of the prime crime years into middle age, we will eventually discover we have excess prison capacity. Probably we will also discover, as with schools, that we will be left to heat, cool, light, and guard space we do not use.

### Higher and Lower Education

Mentioning schools brings up a tough issue with which Missouri must deal very soon. Whom do we educate, how much, in what field, where, when? Lower and higher education probably have to be considered separately, if for no other reason than that they have two different client and finance bases. Each, though, regards itself as sacrosanct, thereby complicating political decisions.

"Often is heard a discouraging word" about schools -- but a broad and generalized word. Let anyone criticize schools in general and others will rally around shouting, "Amen." But let a particular school be criticized and people will turn on you, whether it's "our" elementary, "our" high school, "our" college, or "our" university.

The purpose of education is to teach people to think. (It is sometimes alleged that educationists do precious little of it themselves.) Some non-thinking now going on is about the reality of a dwindling potential clientele base. Neither higher nor lower education has yet faced up to it. A growth mentality is so ingrained as to be impossible to shed. Yet simple counting shows that growth days are gone.

In higher education in Missouri, we overordered and are consequently overstocked. Like merchants, we are having clearance sales here and there. It is tempting to make degrees easier to get. We have too many publicly funded institutions offering too many degrees in too many fields and too few customers. The likelihood of deciding to close any existing institution is very slim. Each has a solid base of support which may not be wide but is certainly deep. Defensive arguments will not be overridden easily.

Depth of the support base, however, does not extend to willingness to pay -- except in St. Joseph and Joplin and the junior college districts, where local cost-sharing may prove to be "top cards."

Hard painful decisions lie ahead in higher education. They will not be arrived at easily, nor readily accepted when made. The furor stirred by recent recommendations of the Coordinating Board is ample proof.

Lower education is somewhat of a different story. Despite claims of reformers, we probably do not have many too many districts and schools. We may well have too many course offerings, buildings, and teachers. Between now and 2005 we will likely reach the showdown on whether support for education necessarily embraces everything and everyone now under that general heading. We probably will decide that it doesn't.

To favor maximum education of children does not necessarily mean to support driver education, interscholastic volleyball, and Rose Parade appearances. It may not include support for availability of 40 to 60 different credit units. For many years we were able to extend the outer boundaries of lower education annually. Those years are gone. Movement of parameters is already in the opposite direction. Less is the wave of the future. Constriction will not come without pain. This will not be one hard political choice, but rather a series of ongoing choices each at least as painful as its predecessor. One year we will assign art instruction back to the

classroom teacher. The next we will close the least-clouted school building. Then we may split the library among classrooms.

Along with all this we'll have the new machines. After we have spent millions on computers, we will discover there are limits to the number of keypunch operators needed even in a technological society. We may become aware that in most cases, high tech is low pay. This realization may not come much before 2000.

#### Work

Now we put on top of the table the whole topic of work and hard political choices connected with it. Already we have backed away from an earlier conviction that government should become the employer of last resort. We now look to McDonald's and its counterparts as last resort employers. The fancy term is that we are shifting to a service economy. The phrase may appeal but some of the realities do not sound so pretty.

It is not possible for everyone to serve everyone else. Moreover, salary scales for service employment are low. "Service economy" sounds much better than "minimum wage," but in practice the differences are slight. Service-based employment will not generate the buying power needed to keep our economy going -- to buy the \$10,000 cars Detroit can make.

#### Crossing the Stream

The Chinese have the Year of the Lion, the Year of the Rat, and such things. Missouri has this year had the Year of the Bridge. Much publicity and attention have been given our ranking as second highest state in bridge deficiencies.

It is possible, to be sure, that publicists protest too much. One criterion of deficiency is width. Bridges less than 24 feet wide are deemed deficient, whatever their structural condition. (Skeptical local people have questioned the need for a bridge so wide on an 18-foot road.)

In any case, though, we have yet to face the reality that we probably have more bridges than we can afford. While upgrading some, we will have to eliminate others. This will bring screams of protest. For some bridges to be improved, other bridges must be abandoned. Choosing which bridge is in which category will probably occupy the next 20 years.

#### A Final Note

This litany of trouble does not cover all the potential ones. Political choices must be made daily. They are never easy and in 2005 we are likely to have just as many hard political choices as we have now. One point is worth remembering. Political decisions are the rough and tumble tradeoffs between competing interests we enjoy in Missouri. We have plenty of interests to engage in the democratic contests.

AGRICULTURAL RESEARCH AND EXTENSION --  
ISSUES IN THE FUTURE

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The need for research and extension in agriculture will continue to be as urgent as ever. The knowledge situation is like a balloon: as the body of knowledge grows and expands the size of the balloon, the perceived unknown area grows. Experience shows us that the solution of one problem raises several new ones. There also must be an organized effort to transmit the new knowledge and encourage its use.

One cannot speak with as much confidence about the future of the institutions that have played primary roles in agricultural research and extension--the Experiment Station and the Cooperative Extension Service. History is replete with examples of institutions that failed to adjust and were largely replaced by others to carry forward their functions. Each generation of the leaders of these institutions bears a responsibility to keep them in an adaptive mode. This is difficult because powerful forces are dedicated to maintaining the status quo.

Financing of research and extension, always very important, is related in the long run to type and effectiveness of programs. Both issues should be addressed simultaneously. I have chosen to discuss a few environmental factors largely political in nature that have implications for both funding and programming.

#### The Numbers Situation

The majority of the funds have come through the political processes and will continue to do so. Numbers are critical in the political game. Farmers continue to become a smaller share of the population, both in an absolute and a relative sense. There is increasing awareness that a small percent of the so-called farmers produce the majority of the food and fiber. Also, it is being recognized that the relative value added by farmers is decreasing as more supplying of inputs and more post-harvest operations are being performed by agribusiness. All of these conditions mean that farmers will have less political clout. There are examples of very small minority groups that exercise great political power, but farmers are not in that category nor will their situation improve. As specialization increases, U.S. farmers will have even less in common.

Another numbers factor will affect funding, although it is not at all related to research and extension. It is the number of students. Student numbers are the driving force for funds for higher education, and in the United States, research and extension are part of higher education.

Agricultural research and extension have been justified largely by the benefits provided to farmers. In reality, the main beneficiaries have always been consumers, agribusiness, and society at large. This fact of life must be taken into account in programming and in developing the necessary political support. I believe that a major reason "food for the 21st century" is selling is that it focuses on food, something everyone is interested in.

#### Competition

Competition in both research and extension will increase in both the public and private sectors. In the public sector more institutions will be brought into the picture through competitive grants programs and earmarked appropriations. The motivations are the politics of distribution (the motive for many) and belief in the benefits from competition (the motive for a few).

In the private sectors two types of research will grow. One is the intensification of in-house research to develop new marketable products. The second is the growth of private for-profit and not-for-profit research institutes and firms. These are being fueled at least in part by the drive to privatize government functions. While this Administration is pushing the concept, it was not the originator and a future change in Administration will not stop the drive.

Extension is facing competition from several directions. A number of business firms that sell products are also offering educational services both as a sales tool and as a means of differentiating their product and gaining a consumer franchise. An increasing number of firms are making a profit from selling marketing and management services. Most agribusiness firms have developed in-house training programs and if extension personnel are used at all it is in the role

of consultants.

Experience shows that the public sector does not compete well with the private sector, even if it should. The significance of this situation is the desirability of the public sector to concentrate on areas not covered by the private sector. They are many in number and of great importance. Examples include basic research, resource conservation in the broadest sense, the disadvantaged farmers, and so on. The big problem is that the traditional support groups have not supported such work. Such groups do continue to support a verification function, but this does not require a large program.

#### The Financial Situation

The state has traditionally been the largest single source of funds for agricultural research and extension. A strong base of state support is essential, not only because of what the dollars will buy but because they provide a base that makes it possible to use efficiently the funds obtained from many sources. Also, such funds are essential to insure attention to Missouri's specific problems.

The purchasing power of state support has eroded seriously over the last decade, due almost solely to the philosophies that have prevailed regarding taxation. Two philosophies regarding taxation and expenditures may be noted. One is that low taxes promote economic growth, which in turn yields increased revenue. This is clearly a myth because Missouri has been a low tax state for generations and we have experienced less growth than most. The second philosophy is embodied in the Hancock amendment which assumes that public expenditures are wasteful--even sinful.

The resulting situation has led to calls for eliminating fat and taking money from someone else. The fat should be eliminated but there is not enough of it to begin to solve the problem, and not a single state program is "flush" with money.

Missourians take some pride in being conservative but more pride in being pragmatic. They know there is no free meal. They have responded many times to vigorously presented plans to move the state ahead. Anyone's guess about the future is as good as mine. I do know that unless there is a change the future is dim.

#### Federal Funding Situation

Historically federal funds came through formulas that left wide discretion about use to the institution receiving them. Also, the system relieved the individual researcher and extension worker from having to seek funds. The practice has already changed and it will likely move farther in the direction of earmarked funds and competitive grants.

The importance of R&D is widely recognized at the federal level and the total R&D budget appears to be increasing, even in real terms. There will likely not be much of an increase, however, within the USDA, for reasons alluded to earlier. It is doubtful if the purchasing power of formula type funds will be maintained.

If the new funding methods are to be of benefit of agriculture, individual faculty members must become more active and effective grant seekers. They will have to seek from non-traditional sources, including the Department of Defense--which has the largest R&D budget. Perhaps the most serious consequence is that the grants shape programs. A program strongly shaped by grants may well not address the major societal needs, or problems and wishes of a state constituency. Strong administrative leadership will be required to help keep the ship on course.

#### County Funding Situation

County funds have been significant for extension. Much to the amazement of many persons these funds have increased steadily. I have always taken pride in this because tax dollars are very scarce at that level, and it is also at that level that benefits to individuals are most evident. There is no reason to expect the situation to change. County funds will likely continue to increase slowly; but there cannot be any major shifting of costs to the county level.

#### Industry Support

Industry can and does in places provide strong support for research. The entire University of Missouri, including the College of Agriculture, has been reluctant to become heavily involved with industry support. I have not been unhappy with the situation because a cost is attached. It is

time, however, that the matter be faced squarely.

Industry will provide real support only to research that helps achieve its profit goals. Industry will naturally want some proprietary rights to the information developed. This immediately raises some legal questions and more importantly, ethical questions for public institutions with strong egalitarian roots. A different concern is the fact that the support will skew program direction.

There is increased public interest in making research more productive. The federal government is relaxing some of its restraints on collaborative research by several firms. Innovative "centers" springing up around the country are trying a variety of collaborative industry-university cooperation models. We are seeing "class" universities develop plans for securing industry support and yet building safeguards that protect the integrity of the institution and the public interest. Every research university will have to give the matter consideration.

#### Private Funding

The University of Missouri is a latecomer in the pursuit of private funding. Substantial efforts are now underway and there will likely be considerable success. Such funds will never take the place of basic support, but they can provide a margin that permits excellence. In fact, there is evidence to suggest that those institutions with a strong base secure most of the gift funds. Few donors will give to save a sinking ship. While not detracting from the value of such funds, we must note that they are not a viable option as basic program support.

#### User Fees

Both the Experiment Station and Extension have long charged minimal fees for some services, but the subject of user fees has not really been addressed. It is being brought to the forefront by the funding shortage and the move to privatization mentioned earlier. The main reason it has not been addressed by the CES is that it runs completely contrary to the basic tenets of full and equal access with widely dispersed benefits.

General extension programs have demonstrated that user fees can generate large dollars. Making user fees a substantial part of the budget would radically change program content. Again, the general extension experience gives enlightenment. Programs offered are only those that the participants feel have some tangible payoff. It may be maintaining certification in the case of some professionals, learning a marketable skill, earning points for promotion, and so on. Programs where the benefits accrue to the larger community are not offered. It is obvious that programs are limited to participants having the ability to pay. Such programming philosophy is almost diametrically opposed to that extension has followed.

Extension programs that pay their way must be marketed vigorously. The basic concepts taught in business schools such as product differentiation, market segmentation, packaging, pricing, and promotion must be used. Again, this is a radical departure for extension.

Of course CES will charge only for some programs. This makes the task even harder as someone must decide which programs are free and which recover part of the cost--full-cost or cost-plus. Explaining the system will be difficult. Such matters can be resolved, but the solution is more difficult than saying, "Get a big chunk of the fund requirements with user fees".

#### Significance of the Environmental Factors

The factors discussed indicate a wide range of possible futures for agricultural research and extension in Missouri. At the extremes are a gradual demise or a greatly enhanced role. At least a favorable future can be fashioned from the options if there is a satisfactory level of state funding. The reason for adequate state funding has been given earlier but will be repeated. It is state funding that builds the base for securing and using funds from other sources. If there is to be a bright future, state funding must increase faster than the rate of inflation until a solid base is built. This is most unlikely to occur unless there is enhancement in state revenues.

Even an increase in state funding will not secure the future. We will never go back to the "good old days" when the administration obtained largely unrestricted federal and state funds for staff to carry on programs they deemed important. The most viable options are competitive grants, industry support, and user fees. Securing any or all of these requires that individual faculty members ascertain what the granters want and how it can be provided. Some entrepreneurship will be necessary--what some feel to be wasted effort.

The institutional environment also is important. Most funding agencies are concerned with institutional capacity as well as capacity of individual staffers. What are some of the things the institution does--in this case the College of Agriculture or the Extension Division?

The first thing is not to use cosmetics to hide the situation or try for quick fixes. It is using heavy cosmetics to let anyone think there is some alternative to satisfactory state funding. Organizations--public and private--in trouble usually reorganize. There are reasons for, and times for, organizational changes, but reorganization is not the answer for serious problems. New techniques such as computers should be brought on line and will enrich and increase effectiveness, but they are not the answer to any major problem.

In a more positive vein, one step would be to develop an understandable and creditable goal for agricultural research and extension. How about something like insuring a sustained supply of the food necessary for good health and happiness with the minimum use of non-renewable resources and to enable the agricultural industry of Missouri to be competitive with the rest of the country? I will not defend this particular goal but a goal needs to have broad appeal and be creditable. A goal such as helping Missouri farmers is too narrow and lacks creditability. After all, agricultural research and extension have been productive and effective for two-thirds of a century and one result just now is many fewer farmers and as many as ever with their back to the wall.

Research and extension institutions have been widely criticized for being slow to change. At least part of the rebuke is undeserved because changes have been greater than a casual look reveals. For example, soil fertility research has been underway since the Experiment Station started but the details of what is being done are very different now. Yet by their very nature institutions are slow to change.

One point often overlooked is that institutions change only as the people who make them up change. Many books have addressed bringing about institutional change. They basically boil down to encouraging the individuals to change. In our case it means getting individual faculty members to shift emphasis to higher priority problems and/or new methods of attack. Everyone knows in his heart that some things should be eliminated. Yet today any suggestion of dropping something is suspect because it arises in proposals for cutbacks to solve an immediate budget crisis. Assuming the present crisis is eliminated, there should be put in place a continuing process of self, peer, public, and administrative review for the purpose of keeping programs updated and on track with overall goals. The review should be separated as far as possible from the review necessary for promotion and salary adjustment. The programmatic review should be as unthreatening as possible.

It may appear that in earlier paragraphs I disparage obtaining funds through the entrepreneurial and marketing approaches. Such funds have one very positive feature--their program value is constantly determined in a market place. One knows very quickly whether users deem a particular program to be of value.

One of the most difficult problems that faculty and administrators will face will be to insure that there is continued support from basically unearmarked funds for long range and basic research and extension work on problems where there is essentially no short-run payoff for individuals and even operating government agencies. There are a host of matters in this category. Examples of interest to agricultural economists include public policy, structure of farming and agri-business, and minimizing the cost of commercial inputs.

The task will not be easy, for three reasons. There will be a tendency for a provider of funds for specific activities to try to get some institutional support to further his project. There will also be a tendency to gravitate to popular work as measured by the market place. Even of more importance is the fact some of the work will draw sharp and vocal criticism. For example, any recommendation that reduces the quantity of a purchased input will be criticized. Almost any public policy suggestion will irritate some well-established and vocal interest groups.

Wisdom should dictate that I stop at this point, but I feel compelled to make one additional comment. In our society no program or institution gets funds simply because it is good. Active support groups are essential. Agricultural research and extension have traditionally counted on farmers and their organizations to provide the political support. The support base needs to be broadened, for several reasons. One is the declining number of farmers, a second is inability of farmers to agree on what is needed, and a third is serious questioning by the commercial farmers about what agricultural research and extension will do for them now.

As indicated earlier, the benefits of agricultural research and extension are widely dispersed throughout society. In too many cases this fact has been handled apologetically because farmers

were supposed to be the beneficiaries. The facts should be widely heralded and active support from many groups solicited. This approach will be opposed by some in the agricultural community. Some individuals feel a strong proprietary interest in the agricultural institutions. A statement often made is, "Restrict your [public research] activities to purely agricultural matters (whatever that means) and we will get the funds you need." The actual experiences in Missouri and in other states show that this is simply not a valid proposition. Yet the sentiment exists and is just another of a number of political and institutional restraints that must be overcome if the Agricultural Experiment Station and Extension are to continue to be viable institutions in the 21st century.

I am an optimist. Any person who has devoted 40 years to education must be. Also, the Judeo-Christian values instilled into me from the earliest years lead me to believe that right ultimately prevails. The Agricultural Experiment Station and Extension have been "right," and with continuous adaptation (no revolution) they can be just as "right" for the 21st century.

#### SUMMARY COMMENTS

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Recently I opened a talk at a meeting in north Missouri with a statement, "Agriculture ain't what it used to be." A farmer in the back of the room said, "Thank God!" Anyone who has milked cows at five o'clock in the morning, scooped a load of manure on a wagon, or followed a mule behind a plow can appreciate why the farmer said he was thankful that agriculture isn't what it used to be.

Ruby Green notes that we can be sure that change will occur, and agriculture in the year 2005 will not be like it is today. He hit the nail on the head. There will be change. We are currently in the midst of change. Depending on one's perspective, change either creates exciting opportunities or is a frightening prospect. Ruby Green also noted, "We must anticipate change." Therefore, we must create institutions and organizations that are adaptive to change. It is also clear that we cannot anticipate the future with certainty. No one has a clear crystal ball. Since we can not anticipate the future with certainty, there will be mistakes.

One justification for addressing this seminar to the longer future, in the midst of the problems agriculture is experiencing now, is that today's problems arose in part from failure to anticipate the future well enough in the past. We can not separate the past from the present, nor the present from the future.

Some of the discussion during the sessions reflects the difficulty in focusing on the future at a time of pain and pressure in the short run. However, the strategy for survival must include positioning ourselves against the future.

I am surprised that speakers at this seminar were reluctant really to speculate on what U.S. agriculture will look like in the year 2005. I stick my neck out in paragraphs below, giving my ideas, even while knowing full well that I am going to be wrong. I hope I may be here in 2005 to compare my forecast with what will have happened.

Professor Daryl Hobbs discusses some of the trends that have taken place in rural Missouri. He points out that today's trends are a continuation of trends and forces that have been in play for the last 40 to 50 years. The changes that have taken place were made possible by technology -- the same technology that removed much of the drudgery from farming. It's the same technology that enabled U.S. farmers to become the most productive in the world. But that technology also set into play some forces for change in agriculture. Moreover, those forces are still at work. New technology made it possible for us to move resources out of agriculture into the production of other goods and services, thereby letting Americans enjoy one of the highest standards of living in the world. Depending upon how one looks at it, technology can be said to have enabled people to escape the drudgery of farm life, or to have forced farm families off the land.

Daryl Hobbs points out that communications technology will perhaps enable us to reduce some of the cost of space. This is an interesting dimension of what is happening in rural America today. There are costs associated with having people live in a rural setting. We as a society have for a long time subsidized these costs. We created REA and Rural Free Delivery of mail. In more recent years, we have subsidized the development of water systems and sewer systems in rural communities. We are now observing a downturn in subsidy to rural cost of living. People who are

wanting to live in rural communities will henceforth be expected to pay a higher proportion of the actual cost of living in those communities.

Edward Harshbarger, among the several speakers, says most about what the future might prove to be. I find myself in basic agreement with the conclusions of Project 1995. I agree that the trends the project envisages as of 1995 are very likely to continue into 2005.

Philip Raup points out that the growth bubble of U.S. agricultural exports in the 1970s was indeed a bubble. It was based on an unsound and overly liberal credit policy toward many developing countries. Looking back we see that those countries really were not in a financial position to borrow money. However, the significant impact those exports had on our agricultural economy points out how much our exports could grow if developing countries could become able to buy -- that is to say, if we were to make a concerted effort to help these countries develop.

Food demand expands most rapidly when countries move from an underdeveloped status toward economic development. The growth in exports to third-world countries in the 1970s, artificial in a sense, testified to the demand potential from those countries if we help them develop their economies.

It is always interesting to learn what Professor Billy Day and other scientists have to say about new technology that may emerge from science laboratories. Their research provides a basis for today's science fiction. But today's science fiction is tomorrow's technology. Dr. Day points out that growing world populations will bring an expanding food need. There's no doubt about that. However, technology will expand too. One speaker noted that to assume that new technology will solve all our problems is a cop-out. Perhaps it is. However, we have a long history suggesting that technology does continue to evolve. Whether it continues to expand at a sufficiently rapid pace to bail us out of all of our problems is another question.

Professor Day notes that biotechnology will be a net addition to the capacity of agriculture. We will have new technology that lets us produce more with less. He says that we can expect some major technological breakthroughs in the next 20 years.

I find one of Dr. Day's comments interesting: "We are doing this biotechnology research with the objective of improvement of agriculture." Improvement of agriculture -- that depends on one's perspective. The technology developed over the last 50 to 80 years has indeed improved agriculture. But consumers have been the major benefactor. They will be the major benefactor of new agricultural production technology in the future.

The kind of technological change we are developing for the good of agriculture will have the same kind of impact the other technologies had. It will put downward pressure on farm prices. It will also drive the cost of production down, which means we will spend a smaller proportion of our income on food and in total be better off. However, technology still to come will create the same kinds of changes we are seeing now, changes that mean we simply cannot support as many people on the land, producing our food supply and the products we sell in the world's markets, as we have in the past. That change is traumatic and painful for people caught in the change process.

Ruby Green offers insightful observations. He notes he feels so constrained by today's pressures that he has trouble looking into the future. He sets up a contradiction: we must forecast the future, but then he adds quickly, "Don't bet on it."

I suggest that we have no choice but to bet on our best estimates. In fact, some of the problems we see today came about because we didn't look hard enough into the future in times past. We simply have to bet on our best guesstimate of the future. But at the same time, we have to be flexible to be adaptive, a word Professor Brice Ratchford uses.

Ruby Green asks, "Are we in danger of moving to a landlord-peasant agriculture?" He has trouble accepting the suggestion that we have reached a point where the producer can no longer afford to own land. However, it is an economic fact of life that producers in many cases cannot afford to own land. Agricultural producers are beginning to recognize that they wear two hats -- one as an agricultural producer, and one as an investor. If they get the two hats mixed up, as many did during the 1970s, problems are created. We now see many good agricultural producers in financial trouble because they were not very good investors (i.e., they made an investment in land that could not pay for itself).

Separation of land ownership in agricultural production does not foretell a peasant-landlord agriculture in the United States as it did in other parts of the world. First of all, the kind of land ownership patterns we are likely to see will not be single ownership of massive land holdings. In many cases, the land will be owned by descendants of a retired or deceased farmer. There will be a non-farm investor here and there, maybe even some foreign investors if certain states modify their laws to permit that augmentation of the market. However, the bulk of the land will be owned by people with roots in agriculture.

Ruby Green observes also that good managers are people with a sense for change. That is very consistent with what we have been saying. People with a sense for change will survive. But then he adds quickly, and I think appropriately, "People with a sense for change and a little bit of luck." A little bit of luck never hurts. A little bit of luck sometimes gets defined as just simply being able to anticipate the future a little better than the other guy.

Morris Huelskoetter also foresees a separation of land ownership from agricultural production as we move into the future, a separation that can be viewed as a blessing. Farmers have traditionally "lived poor and died rich" because they spent all their life trying to pay off the farm in order to pass on a debt-free farm to the next generation. People are now saying, "Hey, that no longer makes sense. Why not live comfortably, and enjoy the fruits of our production along the way? Rather than land, we will pass a viable agricultural production business on to the next generation."

Agriculture in the year 2005. What will it look like? Speakers agree that simple projection of trend is a very poor way to predict the future. The fact is that there is no good way to predict the future. Another fact is that the "ostrich with its head in the sand" model is a lousy way to predict the future. I suggest that at a minimum, if we are going to project into the future we need to understand why we are where we are today. By understanding that process we will have a little better feeling for where we might be down the road. As I have already suggested, powerful forces were put into place as we began to develop technology for agriculture. Once rolling, that ball will continue to roll. Trends seen today began 40 to 50 years ago. Long term trends have not been altered very much. Technology that enables us to produce more with fewer people is continuing. That trend is reinforced with additional technology. One trend into the future is fairly clear: by the year 2005 we will perhaps see as few as 400,000 commercial agricultural production units in the United States that will probably produce 90 percent of the products. The number of rural residents will continue to be large. We may still have as many as two million families living in rural areas and in some cases calling themselves farmers. However, off-farm employment will provide their income.

There is a better understanding in Washington these days about the structure of agriculture and implications it has for agricultural policies, and the fact that our policies are not geared to the kind of structure we have now. I agree with Professor Harold Breimyer that we are not likely to see a major change in 1985 legislation. I tend to think that by 1989 we may see a drastic change in our farm policy. We may try to target income payments more directly to "deserving" farmers. That leads us to the question Harold Breimyer asks, "Who really is deserving?"

We are moving further into a high technology, high information agriculture. Because of these changes, we will likely see better coordination of production, consumption, and processing through contracts and other kinds of agreements between producers and processors and in some cases more vertical integration than in the past. The flow of inputs and outputs will bypass the local community. Agriculture will support fewer local elevators and local input suppliers than in the past. Moreover, agriculture will not support as many implement manufacturers as before. We may be down to one or two domestic manufacturers and some imports, much like what has occurred in the automobile industry.

As observed at this seminar, farm commodity markets have been internationalized. We function in international markets, whether we like it or not. Numerous benefits are associated with internationalization of markets; but change is involved too.

I comment in response to one question raised at this seminar: agricultural producers of the future will indeed make effective use of futures trading, options trading, and other mechanisms to manage risk. I acknowledge, as one observer pointed out, that 60 to 80 percent of farmers believe futures markets are "bad" and are manipulated by "outsiders." There is strong evidence to the contrary. Those markets work very effectively and provide farmers with opportunities to manage risk. Yes, these markets are complex. However, that feature indicates the kind of management skills that will be required to operate viable agricultural production units in the future.

It will become increasingly expensive to live in rural areas. As I mentioned before, we have subsidized people living in rural areas for many years. Future rural residents will be expected to pay for the luxury of living in those rural areas. There are economies of scale in providing public services and it is no accident that cities evolved in response to those economies.

Last of the topics at this seminar is the broader public policy issues in Missouri. I commend the speakers. It is the first time in the three years I have been in Missouri that I have heard speakers talk frankly and openly about the public issues facing the state. There appears to be a leadership gap in the state of Missouri when it comes to focusing public attention on public policy issues. This part of the seminar program is a step in the right direction.

I summarize that discussion with a familiar quotation from Pogo, "We have met the enemy, and they is us."

Depending on one's perspective, what I have been saying can be dismal and disheartening. It is not intended to be, because I do not think it is. The thing to keep in mind is that collectively we can alter the future. The first step in altering the future is to anticipate kinds of changes that are likely to occur, and then to develop systems and institutions that are adequate and adaptive to managing that change. In this process we have to keep in mind that mistakes will be made. Our objective will be to minimize the adverse impacts of those changes that we are not able to anticipate.

This seminar achieved the objective set for it, that of stimulating thinking about the future. Admittedly, problems in the short run are serious. I am confident we are going to solve those problems. There is a future. If we don't think about the future and start anticipating and positioning ourselves for it, the problems in 2005 will be more difficult than they need be.