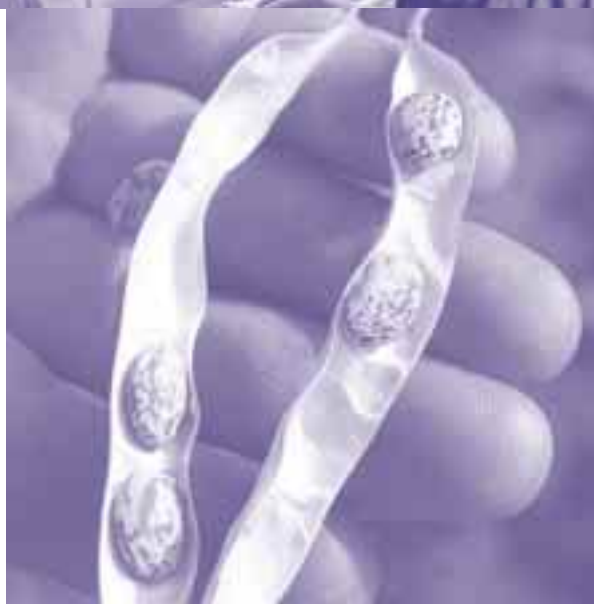
Keys to Agricultural Growth and Profitability

1998

This report summarizes the findings of a symposium held in Washington, DC on September 8 and 9, 1997



FARE

The Council on Food, Agricultural and Resource Economics
An Organization of Agricultural Economists

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1998

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Acknowledgements

This document and symposium were cosponsored by the Council on Food, Agricultural and Resource Economics (C-FARE); the Economic Research Service, USDA; the Cooperative State, Research, Education and Extension Service, USDA; the National Agricultural Statistical Service, USDA; and the Farm Foundation.

We are grateful to the following agricultural scientists who came to Washington, DC in September 1997 to discuss critical issues that will determine the future of US agriculture: **David Blandford**, OECD; **David Chicoine**, University of Illinois; **Mike Dicks**, Oklahoma State University; **Mark Drabenstott**, Kansas City Federal Reserve Bank; **Tim Galvin**, Foreign Agricultural Service, USDA; **Bob Giaquinta**, Dupont Agricultural Products; **Joe Glauber**, USDA; **Randy Green**, Senate Agriculture, Nutrition and Forestry Committee, US Congress; **Hal Harris**, Clemson University; **Chuck Hassebrook**, Center for Rural Affairs; **Wally Huffman**, Iowa State University; **Eluned Jones**, Virginia Polytechnic Institute and State University; **Bob Koopman**, Cooperative State Research, Education and Extension Service, USDA; **Ron Knutson**, Texas A&M University; **Stephanie Mercier**, Senate Agriculture, Nutrition and Forestry Committee, US Congress; **Susan Offutt**, Economic Research Service, USDA; **Mike Phillips**, National Research Council, National Academy of Sciences; **Parr Rosson**, Texas A&M University; **Dan Sumner**, University of California, Davis; **Bob Thompson**, Winrock International; **Kelley White**, Economic Research Service, USDA.

In addition, we would like to thank the individuals representing agribusiness, the executive and legislative branches of the federal government, academia, professional societies, and public interest groups who actively participated in this event. Many of their ideas are captured in this summary.

Executive Summary

Seldom has U.S. agriculture faced so many forces for change. But while some are being hotly debated, others are ignored. The U.S. research and education system continues to concentrate on raising farm productivity while emerging economic and social trends in agriculture receive little emphasis.

A C-FARE symposium brought together leaders from around the country to discuss four key economic and social forces that will determine the future of U.S. agriculture: 1) the new world trade order, 2) new roles for government, 3) new ways of doing business, and 4) expanding our knowledge. The main points raised in each session are described below.

The New World Trade Order

- The combination of population growth and rising income is expected to double global food consumption in the next 30 years. The United States is well positioned to increase exports to meet this demand, although it faces strong competition. The U.S. must work aggressively to expand access to foreign markets. Presidential fast-track authority to negotiate trade agreements and the lowering of trade barriers are important steps towards this end (Thompson, Sumner).
- Freer trade can expose some producers to increased risk from unexpected economic and political events (Rosson). The Asian financial crisis, just beginning at the time of the symposium, illustrates the risks associated with freer trade. However, we must guard against new protectionism. Most groups interested in slowing movement toward freer trade are typically beneficiaries of the status quo who simply want to avoid competition (Sumner).
- More must be done to educate producers and the public on the economic impact of international trade on U.S. agriculture (White, Rosson).
- The outlook for major commodities is mixed. The prices of wheat and corn are expected to fall in the short run but rise by 2001. Oilseed prices will sustain global production expansion. Beef prices will rise but productivity gains will hold down poultry and pork prices. Dairy prices will strengthen (Blandford).

New Roles for Government

- We must find the right level of government subsidy in risk management programs — too little and producers will not use them, too much and government costs could increase dramatically (Glauber).
- Efforts to introduce technologies to achieve a particular number and size distribution of farms are unlikely to succeed because powerful economic and social factors are in play. The most effective way to influence farm structure may be to directly subsidize small farmers in a way compatible with international trade rules (Offutt).
- Expanding environmental regulations should be accompanied by an increase in government services, particularly agricultural research (Dicks). Publicly funded research must be increased and in some cases redirected to environmental objectives. Research in agriculture-related biological sciences and information technology should be expanded. The public sector must bolster support for agricultural applications of biotechnology (Thompson).
- In the last two years, Congress has established a new revenue insurance program that subsidizes large farms. At the same time it has slashed subsidized beginning-farmer credit programs, one of the few remaining elements of federal policy committed to family farming. Concentration throughout the agricultural sector is growing (Hassebrook).

New Ways of Doing Business

- New corporate alliances and partnerships between seed, chemical and biotechnology companies can reduce risk, generate new capital, provide access to new markets, and improve return on investment. New tools, market mechanisms, and public institutions are needed to analyze and support the changing agricultural sector (Jones).
- Changes in the industry will require changes in how the public sector interacts and supports agriculture (Drabenstott). For example:

  As distinctions between farm and factory blur under greater industrialization, a single food regulator will be needed. A merger of responsibilities traditionally divided between the FDA and USDA could be considered.

  Closer monitoring of retail markets will be needed to assure consumers that market concentration is not raising food prices.

  Demand for market information will broaden, with greater emphasis on the global, rural and retail markets, while the value of traditional data on the major commodities will decrease.
- Caution is needed in assessing the potential value of food processing cooperatives. Some efforts have failed. Universities and private analysts are being pressured to develop favorable scenarios about cooperatives, but the feasibility studies are often shallow (Knutson).

Expanding Our Knowledge

- The continued success of our current agricultural R&D systems hinges on a diverse allocation of public and private resources, and linkage between types of R&D activities (Huffman).
- We need to know more about how information is acquired and used to understand how new technologies emerge. How do producers, for example, utilize competing sources of public and private sector information? What role should cooperative extension play (Huffman)?
- New knowledge does not come cheap. Obtaining data for sound economic analysis may be as costly as the field experiments used in other sciences. The common use of secondary data hides the cost of economic research. More resources for primary data collection are needed to enhance economic research (Sumner).
- Federal investment in research has been stagnant since 1976 while state and local spending continues to rise. Changes in private and public sector expenditure and in the proportion of federal and state spending have raised a series of questions about priorities that a group in Illinois is seeking to answer.

  The Illinois Council on Food and Agricultural Research (C-FAR) is a unique alliance of industry, academia, community leaders, producers and others formed to obtain funds for high-quality research. Last year, C-FAR secured an extra $9 million of state money for agricultural research (Chicoine).

Introduction

Seldom, if ever, in the history of the United States, have so many forces of change converged to influence the future direction of U.S. agriculture. Some of these forces are being hotly debated amid a mixture of facts, perceptions, and a lack of sound evidence. Others are being ignored. The U.S. research and education system continues to concentrate on enhancing productivity while emerging economic and social dimensions of these key forces have received little emphasis.

In September 1997, the Council on Food, Agricultural and Resource Economics (C-FARE) organized a symposium to bring together national and regional agricultural leaders to discuss the major economic and social changes affecting U.S. agriculture. The goals were to highlight critical issues, stimulate reasoned debate, encourage the development of a sound research and educational base to guide decisionmakers, and to highlight current programs designed to operate in this changing environment.

The highlights presented here are organized under four themes that represent major forces influencing the direction of U.S. agriculture. They are: 1) the new world trade order, 2) new roles for government, 3) new ways of doing business, and 4) expanding our knowledge. In addition, there were three special presentations including the keynote address presented by Robert L. Thompson, Winrock International; the luncheon address by R. Randall Green, Senate Agriculture, Nutrition and Forestry Committee, U.S. Congress; and the closing remarks by Daniel A. Sumner, University of California, Davis.

Many critical issues for the public and private sector are identified throughout the presentations. However, one common theme prevails — more public research and education are vital to the continued success of our agricultural system. Not only is more research needed, but some of it must be redirected to address the future changes in U.S. agriculture.

Keynote Presentation:

Robert L. Thompson, Winrock International

The combined effects of population and income growth are expected to double global food consumption in the next 30 years. While the United States is well-positioned to increase exports to meet this demand, other regions, such as South America, Central and Eastern Europe, and Canada, are likely to increase production and compete for a share of this expanded market. The United States must continue pursuing its goal of being the low-cost producer of bulk commodities and be responsive to the growing market for high-value crops and food products. Several public policy issues related to trade, research, consumers, education, and rural development will greatly influence our success in expanding production and increasing profitability over the next 20 years.

Trade: The United States must work aggressively to further expand access to foreign markets. To do this, the President needs fast-track authority to negotiate trade agreements with other countries. The fraction of the world's agricultural output that moves through international markets is expected to continue growing rapidly. This growth has been facilitated by multilateral trade agreements that reduce export subsidies, guarantee access for imports, and eliminate non-tariff trade barriers in an effort to link internal and world market prices. These first steps are important to expanding world trade in agricultural products and strengthening U.S. agriculture.

Research: Declining investments in public agricultural research is a great concern. The private sector will never invest enough in basic research, minor crops, or the development of crop characteristics with the potential for broad social benefits. High social payoffs from publicly-funded research have been consistently documented. Publicly-funded research must be increased, but also redirected. For example, the research agenda must recognize that environmental objectives are a real concern to the public. Environmental quality must be maintained and in some cases enhanced without compromising the United States' competitive advantage. Research in the biological sciences and information technology, as they relate to agriculture, should also be expanded. Agricultural applications of biotechnology are lagging behind medical applications. The public sector must encourage and support more agricultural biotechnology research. Information technology research and applications also have great potential to improve the productivity and competitiveness of U.S. agriculture.

Consumers: Consumers drive the entire food system. In the United States and other high-income countries, consumers are demanding more processing, packaging, food safety, nutrition, labeling of production processes, and specialty products, like organic and vegetarian foods. The marketing system must be able to preserve the identity of smaller lots of more differentiated products as they move through national and international markets.

To maintain our competitive advantage, the public and private sectors must respond to these demands and recognize consumer concerns such as those related to food safety, natural resources and the environment, and animal welfare.

Education: Producers must be trained not only as scientists, but also as business managers. U.S. agriculture cannot continue to be profitable if producers continue to overpay for land. Similarly, consumers must clearly understand the health, nutrition, and safety attributes of their diets and food products.

Rural Development: Rural poverty continues as a concern in the U.S. and around the world. Poverty is concentrated among small full-time producers with little or no off-farm income. Commodity programs did little to boost their income. Increasing productivity can help, but it is not sufficient. Farm income must be augmented from non-farm sources through part-time or full-time employment outside of agriculture. Part of this can be in industries that supply inputs to producers or add value to raw farm products. Perhaps even more important are employment opportunities outside agriculture.

The United States is well-positioned to increase productivity and compete effectively in a greatly expanded global food market. To do so, however, we must strive to be the low-cost producer of bulk commodities and be responsive to changes in consumer preferences for high-value crops and food products. Trade and research policy will greatly influence our success, as will our ability to respond to consumer concerns and better educate producers. Rural poverty will likely continue unless efforts are made to increase off-farm employment and improve rural amenities.

Discussant:

T. Kelley White, Economic Research Service, USDA

This symposium focuses on the new environment in which U.S. agriculture finds itself as we prepare to enter the 21st century. This new environment is a consequence of several factors including the Uruguay Round of the GATT multilateral trade negotiations, the Federal Agriculture Improvement and Reform Act of 1996 (the FAIR Act, also commonly referred to as "Freedom to Farm"), the North American Free Trade Act (NAFTA), federal budget constraints, changing national attitudes and priorities, and the tremendous growth in the global demand for food products.

However, it is not only the new environment that will influence the success of U.S. agriculture, it is the way policymakers react to and think about these new forces. Innovative thinking, particularly in policymaking, is needed to develop appropriate policies and foster institutional changes necessary to exploit the opportunities of the next century.

For example, economic theory teaches that barriers to trade hurt the country that imposes them, yet many countries, including the U.S., have fought to maintain trade barriers.

Also, the impacts of NAFTA have been measured by changes in net trade even though economic theory suggests this is not a useful basis for judging trade agreements. It is vital that more resources be dedicated to enhance understanding of the economic impacts and consequences of trade. This point was recognized as one of the top-five priorities in C-FARE's *Economics Research and Education Priorities for an Efficient and Sustainable Food System (C-FARE, 1997).*

Another area where innovative thinking is needed is the new role of government. The role of government has clearly changed with the FAIR Act. But what does this change mean when taken in combination with trade liberalization and the globalization of food markets? Ed Shuh and others suggest that change will reduce the significance of national borders and thus the ability of national policy to direct the national economy. Perhaps international laws and institutions are becoming more important in maintaining economic order. Interestingly, as national interests are becoming less defined, local interests are taking on more importance. The topic is too broad to fully develop at this conference, but there is a need to consider how government should address emerging policy issues.

Luncheon Speaker: A View From the Hill

Robert Randall Green, Senate Agriculture, Nutrition and Forestry Committee, U.S. Congress

Relative to the last three farm bills, the FAIR Act did pretty well. The new law survived at least three early tests: an almost immediate threat from appropriators, a decline in grain prices, and a balanced-budget accord that was debated without any serious consideration of making more cuts in farm spending. It is still too early to tell whether the bill will increase the volatility of crop prices and farm income more than the former programs.

Currently, three bills are at various stages of Congressional consideration with important implications for agriculture.

The first is the reauthorization of the research statutes. The bill passed by the Senate puts nearly one billion dollars over five years in new mandatory funding into competitive research aimed at high-priority areas like natural resource conservation, biotechnology, precision agriculture and others. This provision reflects a view that few things are more important than renewing a commitment to expanded research.

Second, is fast-track trade legislation. It is easy to list the shortcomings of the fast-track process and indeed of the trade agreements it produces. But not many foreign governments will engage the U.S. in a serious negotiation if the fruits of the bargaining can be altered radically by Congress.

Third, is the highly controversial settlement between tobacco companies and state governments. There is nothing explicit about tobacco farmers in the existing settlement. However, Senator Lugar has expressed considerable interest in a "buyout" or transitional measure that would get USDA largely out of tobacco farming, but would recognize the equity built up in the program over many years and its importance to many small communities.

The FAIR Act does not mean an end of federal interest in agriculture. Rather, it means that the federal interest takes different forms. Environmental policy, derivatives regulation and tax law will likely have as much relevance to agriculture as agriculture policy. The available pool of public money and resources will need to increasingly move toward research and conservation, activities even more critical to agriculture's future than they have been to its past.

The New World Trade Order

Moderator, Stephanie Mercier, Senate Agriculture, Nutrition and Forestry Committee, U.S. Congress

David Blandford, Organization of Economic Cooperation and Development*

Based on information in the OECD Agriculture Outlook report (1997-2001), the following questions are answered: What are the prospects for world trade and prices for major OECD commodities (grains, oilseeds, and livestock products) to the year 2001? What are the critical factors influencing the market outlook?

Cereals. World prices for wheat and corn are expected to fall from record levels in 1995/1996 but to rise in nominal terms to 2001. Strong demand in the non-OECD region will outstrip the growth of supplies from OECD countries. Global cereal stocks will rebuild somewhat, but the ratio of stocks to use will remain below the average of the early 1990s. Lower stocks will likely mean greater year-to-year price variation than in the past. The United States and Canada have the potential to benefit the most from growing markets outside the OECD area.

Oilseeds. World prices of oilseeds will sustain global production expansion. Two thirds of the increase in production and consumption will be in developing countries. The world price of soybeans will approach U.S.$300 per ton by 2001. The rate of increase in trade in oilseeds is likely to exceed that of production. The Far East will become a net importer of oilmeals for the first time in history. There may be some value-added advantages to exporting oilseeds as livestock products rather than as raw materials for livestock production. Production and exports by Australia, Canada and the U.S. will expand in response to favorable market signals.

Meat. OECD exports to non-OECD countries will grow by 300 kilotons for pork and 500 kilotons for poultry. Most of the increase in beef exports will be to other OECD countries like Japan and Korea. The European Union will not be able to benefit from the growing non-OECD meat markets because of limits on subsidized exports. Higher feed costs are expected to slow growth in OECD meat output. Beef prices will rise but productivity gains will limit price strength for pork and poultry. In general, meat consumption in the OECD will likely stagnate and demand may shift even further away from beef. Progress with foot and mouth disease eradication will slowly lead to globalized beef markets and will increase competition among suppliers.

**OECD membership is composed of 29 countries drawn from Western Europe (22 countries, including Iceland and Turkey), North America (3 countries), and Asia (4 countries).*

Dairy. The world price for dairy products will become stronger as exports become less subsidized, surplus stocks are reduced and demand grows in Southeast Asia and Latin America. OECD milk production is expected to expand in countries not subject to production quotas. The United States will likely account for about 50 percent of the increase in the OECD countries. Milk production in non-OECD countries will grow twice as fast as in the OECD area, as increased demand triggers stronger prices. The Uruguay Round agreement of the GATT multilateral trade negotiations will affect trade flows, with particular benefits to countries in Oceania, especially for butter and cheese.

World Commodity Outlook. Economic and policy developments in non-OECD countries are becoming increasingly important for world agricultural trade and for OECD agriculture. Despite short-term setbacks due to the deteriorating economic situation in some Asian economies, OECD exports to non-OECD countries are expected to grow rapidly during the remaining years of this decade. Only those countries with market oriented production will benefit from export opportunities to non-OECD countries. Ongoing reform in agricultural and trade policies will be a key factor in improving international market prospects.

Parr Rosson, Texas A&M University

Agriculture is more dependent on trade than the rest of the U.S. economy. In 1996, exports accounted for 28 percent of farm cash receipts, compared to only 7 percent of GDP for the overall economy. Major shares of crops and increasing shares of meat are exported each year. Agricultural imports are also growing. Agricultural sectors most negatively affected by recent trade agreements are horticulture, cotton, sugar, oilseeds and dairy. These tend to have the most government protection and high labor intensity.

Several emerging trade issues are important for agriculture interests. First, import competition is depressing prices for some products. For example, watermelon prices fell after passage of the North American Free Trade Agreement (NAFTA). Some observers blamed the drop on NAFTA, but several forces were at work including the dramatic devaluation of the peso. More operational analysis of trade impacts is needed to adequately assess the economic and social impacts of freer trade.

Second, technical barriers to trade are clearly increasing in importance and may become more widely used as tariffs and quotas are reduced. The value of U.S. agricultural exports affected by technical barriers in 1995 was 2.3 billion dollars. Technical barriers to trade include sanitary and phytosanitary regulations (e.g., EU meat hormone), food safety and restrictive labeling (e.g., chemical residues), overly stringent environmental regulations, and labor standards which reduce efficiency.

Third, freer trade also exposes producers to greater risk from unexpected economic and political events. U.S. agriculture has the potential to gain significantly from expanded

international trade. However, public concerns and uncertainty about import competition, job losses, environmental impacts, and fast-track bargaining authority suggest that we need better measures of the costs and benefits of freer trade and more effective educational efforts to explain the impacts of trade expansion.

Discussant:

Tim Galvin, Foreign Agricultural Service, USDA

David Blandford described the outlook for cereals to the year 2001: demand will be strong, prices will rise, stocks will decrease, and year-to-year price variability will be greater. What he did not discuss was how an external shock to this system, like the droughts of 1983 and 1988, could affect the industry. By carrying lower stocks now than we did during the 1980's, the impacts on the industry could be more severe.

Parr Rosson explained the importance of international trade to agriculture. Farm cash receipts attributable to trade are high, and increasing shares of crops and meat are exported each year. Despite these facts, producers often do not fully recognize the importance of trade to their bottom line today and in the future. They sometimes fail to recognize that promoting international trade through multilateral trade agreements, such as the Uruguay round of the GATT or NAFTA, is the key to staying competitive in world food markets. Public concerns about the anticipated and unknown impacts of trade agreements are real, but so are the impacts of failing to aggressively promote international trade of U.S. agricultural products. As Rosson noted, producers, and the public, need to be educated on the important role of international trade. They need to know the facts; for example, that agricultural exports exceed imports by about 50 percent.

New Roles for Government

Moderator — T. Kelley White, Economic Research Service, USDA

Joe Glauber, USDA

The FAIR Act had wide appeal in Congress because it promised to eliminate acreage reduction programs without having a negative impact on the budget, and provided for a short run increase in farm income. Questions remain about the impact of the FAIR Act on the volatility of farm income and prices. This uncertainty raises more questions about the future role of the government, particularly as it relates to risk management. Federal money once spent on farm programs may be spent on crop insurance, or other risk management tools.

The crop insurance programs have grown significantly since the programs were reformed in 1994 (P.L. 103-354). Program costs are currently about 1.8 billion dollars a year. About 70 crops are eligible for participation in crop insurance programs. In the near future, coverage will likely expand to include additional crops and several new crop insurance products. Crop insurance is becoming increasingly important to producers as they manage risk in the new environment created by the end of commodity programs and the beginning of the FAIR Act. It will be critical to determine the "optimal" level of government subsidization in risk management programs — too little and producers will not use them, too much and government costs could increase dramatically.

There may also be substantial pressure to shift funds previously spent on farm programs toward programs designed to benefit small farms or on new environmental programs that make use of the Environmental Benefits Index developed by USDA.

Susan E. Offutt, Economic Research Service, USDA

The linkages among agricultural research, the generation of new technology, and changes in farm structure have long been of interest to economists. Periodically, these relationships are the subject of politically-charged public debate. For example, in the 1970's the topic was development of the tomato harvester. More recently it has been over the growth in large-scale hog production systems. Political interest is aroused because of the assertion that public research supports the development of scale-biased technologies that lead to fewer and larger farms, and consequently push people off the land.

However, economic evidence gained from the study of aggregate sectoral behavior and from individual case studies of technology adoption supports the notion that off-farm employment opportunities (in the form of jobs in higher-wage manufacturing industries)

pulled labor off farms. The cost to hire on-farm labor escalated as a result, further raising its price relative to land, an abundant factor in the U.S., and thereby inducing the development of labor-saving, land-using technology. Conditions in the general economy as well as the factor endowment of the U.S. have determined parameters for structural change in the farm sector, and technology development has largely responded to these fundamentals.

A simple story about farm technology in the U.S. says that the public sector has historically focused on biological innovations, which tend to be scale-neutral, and the private sector has dominated mechanical technologies, which tend to show scale bias. Real life, however, is more complicated than the simple story would suggest.

First, it may be true that the public sector tends to concentrate on scale-neutral biological innovations, but, in some circumstances, there may be a synergistic relationship with complementary scale-biased technologies developed by the private sector. A prime example is the cotton harvester, which was developed by private interests but was dependent on an amenable cotton plant developed by the public sector. Second, the availability of a technological innovation may be a necessary, but not sufficient, condition for adoption. For example, a cotton harvester was available by the 1940's, but it was little used. Wide-spread adoption did not occur until powerful macroeconomic and social forces affected the economic environment, especially through influence on relative prices of land, labor, and capital that dictate adoption profitability.

Public research cannot guarantee any particular outcome in farm structure because of the mediation of powerful economic and social factors. "Reverse engineering," the attempt to introduce technologies to keep small farms viable, is not likely by itself to be successful because of the diverse nature of small farms. In the end, the most effective way to influence farm structure may be to adopt a variant of the European approach: simply transfer income to keep small farmers in operation in a way that is acceptable under liberalized trade rules.

Chuck Hassebrook, Center for Rural Affairs

We live in a time when wealthy interests are dominant. But there will be a reaction — a backlash. The effects will be felt in agriculture as elsewhere.

In the not too distant future, the wealthiest segments within agriculture will find it more difficult to advance their narrow interests in an increasingly inequitable industry and society. Fairness and equity will again become constraints on agricultural policy making.

Concentration is rampant in agriculture. Research suggests that the effects will be felt beyond the farm, particularly in the nation's agriculturally dependent communities. As wrote University of California Sociologist Dean MacCannell:

> "Everyone who has done careful research on farm size, residency of agricultural land owners and social conditions in the rural community finds the same relationship: As farm size and absentee ownership increase, social conditions in the local community deteriorate. We have found depressed median family incomes, high levels of poverty, low education

levels, social and economic inequality between ethnic groups, etc., associated with land and capital concentration in agriculture. Communities that are surrounded by farms that are larger than can be operated by a family unit have a bimodal income distribution with a few wealthy elites, a majority of poor laborers and virtually no middle class."

Within the last two years, Congress has established new capital gains and estate tax breaks that assist the wealthy in squeezing those of modest means out of agriculture. It has established a new revenue insurance program that subsidizes large farms without limits on benefits. In the meantime, it has slashed subsidized beginning farmer credit programs, one of the few remaining elements of federal policy committed to family farming.

This political shift extends beyond agriculture. As of 1992, the richest one percent of Americans held 42 percent of the nation's wealth, up from 22 percent in 1976. Polls show that most Americans believe that political power is too concentrated, that public policy is excessively tilted toward the wealthy and that society is becoming less fair.

We are ripe for a backlash. When it comes, those involved in the shaping of agriculture policy will no longer simply be able to assert the interests of the wealthiest and most powerful segments of the industry.

Discussant:

Michael R. Dicks, Oklahoma State University

The role of government in the coming years will depend greatly on the general public's perception of the agricultural sector. In the past, the public view of agriculture was that of many small farms operated by virtuous farmers. As a consequence, when agriculture produced negative environmental impacts such as non-point source pollution, producers were offered cost-share assistance programs. Agriculture is losing this special treatment as the public now views the industry as made up of either part-time hobby farms with significant sources of off-farm income, or wealthy, corporate farms. Neither group is viewed as deserving of, or in need of, special treatment. This change has produced the growing regulatory response to agricultural sources of non-point source pollution.

This increase in environmental regulation should be accompanied by an increase in government services such as supply management (e.g., research, risk, credit, resource management, stock management) and demand enhancement. Research funding has remained stagnant over the last twenty years. Public stock and resource management has declined during the last decade and, thus, year-to-year volatility inherent to production agriculture can be expected to be more transparent in prices in the future.

Finally, policymakers and economists alike should resist the temptation to over-extend the ability of economics to provide useful policy information. The ability of tools like the Environmental Benefits Index, developed by USDA, to provide useful information on environmental quality is questionable. Nonetheless, research on improved measurement techniques needs to be initiated.

New Ways of Doing Business

Moderator — Michael J. Phillips, National Research Council, National Academy of Sciences

Eluned Jones, Virginia Polytechnic Institute and State University

Recent years have witnessed a myriad of new corporate alliances and partnerships between seed, chemical and biotechnology companies, and producer cooperatives. Strategic alliances can reduce risk, generate new capital, provide access to new markets, improve return on investment, improve the efficiency of flow scheduling and provide for more traceability of food product inputs and characteristics (e.g. bioengineered products). Some of the mergers and alliances can be explained as actions to capture economies of size and scale, but an increasing number are in response to a lack of clear economic signaling between segments of the market channel or across market levels.

The agricultural processing sector is facing many of the same social, political, and economic pressures that auto and textile manufacturers faced in the early 1980's. Economic signals — that is, the means of communication between industry sectors — are lagging in their ability to efficiently provide transparent and unbiased information. Culture, attitude and institutional performance and flexibility are increasingly likely to impact production costs and variability.

To succeed in this new environment, processors must incorporate industrial and process engineering concepts, and emphasize the logistics of physical product characteristics and information flow. Access to information, both public and private, is becoming increasingly important and will influence the location and balance of power in negotiations between buyers and sellers. A different corporate culture is emerging that will affect all aspects of agriculture.

As the new agricultural system emerges, greater focus is needed on the complementary role of public institutions. Institutional leaders must learn to effectively articulate complex problems and suggest solutions. Some solutions may require significant changes in existing institutions. Institutional leaders who fail to anticipate external changes and implement internal changes will perpetuate a set of obsolete institutional mechanisms and regulations.

New tools and market mechanisms are needed to analyze and support the changing agricultural sector and move toward a higher plane of debate.

Mark Drabenstott, Kansas City Federal Reserve Bank

U.S. agriculture is passing from a "government" era to a new "market" era. This new market era will be characterized by transparent market signals, risk-based decisions, a shift in focus from commodities to product, and a focus on consumer markets rather than Washington programs. These features of the new market era will create new opportunities. As producers respond to these opportunities, there will be corresponding shifts in the industry. And, as the structure of the industry continues to evolve, new public policy questions will emerge.

The passage of the FAIR Act marks a watershed passage to a new market era. This market era will have two important implications. First, it will result in an unvarnished focus on market realities. Second, it will launch a new quest for efficient ways to manage risk.

The shift to market opportunities is fortuitous because the potential for substantial new markets in the period ahead is good. The world food market is likely to continue growing at a significant rate of growth. While reaching to new markets abroad, producers will also extend efforts to capture a bigger slice of the U.S. food marketing bill. Recent initiatives of farm cooperatives offer good examples of this strategy. Finally, producers are pursuing more specialty niches, a strategy often marked by production and marketing contracts with processors.

As it responds to new market opportunities unfettered by the clutches of traditional commodity programs, U.S. agriculture's structure will undergo substantial changes. A sea of commodity production will give way to more and more islands of contract production. There may be more cooperatives born to capture added value. Production may shift substantially from one region to another. Overall, agriculture will probably be more concentrated, profitable, and offering a new set of linkages to the rural economy.

As agriculture shifts to a new way of doing business, four new policy issues are likely to emerge. First, the role of food regulators will be hotly debated. As the distinctions between farm and factory blur under a more industrialized structure, the need for a single food regulator will increase. A merger of responsibilities traditionally divided between the FDA and USDA could be considered.

Second, there will be greater need to monitor retail market outcomes. Traditionally, public policy has focused primarily on farm and commodity markets. As agriculture becomes more integrated, consumers will want assurances that growing market concentration is not lifting food prices.

Third, the public role in providing "market" information will be re-examined. The USDA has provided a panoply of market information on the assumption that such information leads to farm and rural prosperity. This assumption will be tested as agriculture moves to a new structure, leading to growing demand for global, retail, and rural information, while the need for traditional commodity market information decreases overall.

Finally, there may be growing interest in considering the public role as "umpire" for production contracts. Such contracts will almost certainly become more common. While they are agreements between private parties, there may be value in providing aggregate information on contract terms. Whether such a survey would be provided by the public or by the private sector remains an open question.

Discussant:

Ronald D. Knutson, Texas A&M University

A word of caution is in order about the potential value of processing cooperatives. We could be making some serious mistakes. Some efforts have failed. The profit margins are very thin and rely greatly on volume. Universities and private analysts are being pressured to develop favorable scenarios about cooperatives, but the feasibility studies are often shallow.

There has been some discussion about the rate at which producers will adjust to changes in the industry. An earlier speaker suggested that producers are adjusting too slowly as indicated by low participation rates in the futures market. The futures market is not necessarily a good indicator of how producers are adjusting to risk associated with variable crop prices. A better measure may be the rate at which producers are diversifying and contracting.

The changing roles of public information is fascinating. Larger producers are relying increasingly on private sources of information, but they also have some interest in public information that substantiates the private information. Producers want more outlook information and market projections not only on commodities, but also on specific characteristics of commodities. This has the potential to greatly impact government reporting with the following being some of the questions that will be raised. How much of our public information super-structure is still relevant and/or necessary? How important is public information to the survival of moderate size farms who cannot afford private information? How important is public information to provide a check on private information? Should more public information be provided on retail prices?

Other policy issues likely to be important in this era include the nature of environmental regulation, equity between large and small producers, the role of agriculture within the land grant system, and the value of regional trade agreements. Environmental regulations will continue placing substantial demands on producers and it is likely that agriculture will be regulated as a point source of pollution. Policymakers may be forced to consider questions about equity as the difference between small and large producers increases and rural poverty persists. The land grant system needs to define the role of agriculture in its future. Public concerns about providing the President with fast-track negotiating authority may relate to concerns about the impacts of regional trading blocks on the position of the U.S. in the broader world economy. The real danger is that we are left out of the action by default. There is little opportunity to influence the outcome if you are not a player in the game.

Expanding Our Knowledge

Moderator — Robert Koopman, CSREES, USDA

Editor's note: For proprietary reasons Robert T. Giaquinta, Manager of Biotechnology for Dupont Agricultural Products asked that his comments not be included in this publication. The purpose of the planning committee in inviting Dr. Giaquinta was to suggest that perhaps university economists and government agencies are behind the curve of unfolding developments in the agribusiness sector. National boundaries and traditional structures of various sectors are becoming blurred; strategic alliances, innovative horizontal and vertical coordinating mechanisms are being created. Investment decisions that will affect the world food economy in 10 years, hence are being made today. Suffice it to say, that Dr. Giaquinta's presentation confirmed this suspicion.

David Chicoine, University of Illinois

Responsibility for the food and agriculture research and extension system is shared between private and public sectors. Private spending has tripled in real terms in the last 30 years and now represents about 45 percent of the total spending on agricultural research. Private spending is greatest in product development (45%) where the benefits of research and extension can be most easily captured, less in applied research (40%), and least in basic research (15%). In contrast, public research concentrates on basic (48%) and applied (45%) research, with significantly less spent on product development (15%).

About two-thirds of federal spending is within USDA and one-third goes to land grant universities through formula funds and competitive grants. However, in terms of total public (federal, state, local) spending, one-fourth is spent within USDA and three-fourths is spent at the land grant universities. Federal spending has been stagnant since 1976. Formula funds for land grant universities have declined, with some shift to competitive grants. State and local government spending continues to increase.

Changes in the relative contributions of private and public sector spending, and in the level of state vs. federal spending, raise many interesting questions about the future of the system. For example, what is the optimal level of federal spending to sustain and enhance international competitiveness? What structure of agriculture is most efficient and effective? How should priorities be set in an outcome based system? How can and/or should stakeholders be involved in setting research, education, and extension agendas? How do you measure accountability? Should research and extension be better integrated, and if so, how? A group in Illinois is working to address these and other questions.

The Illinois Council on Food and Agricultural Research (C-FAR), a coalition of more than 50 organizations and 100 individuals, was formed to address changes in the Illinois agricultural research system. C-FAR's mission is to secure additional resources to adequately fund relevant and high-quality research and related programs that lead to profitable, consumer-sensitive, and environmentally sound food and agricultural systems in Illinois and the nation. It has created an on-going mechanism for involvement in the research system by a diverse group of stakeholders. In 1995, C-FAR successfully promoted legislation to increase state spending on agricultural research. In FY1998, $9 million were appropriated for research that meets C-FAR objectives.

Better integration of stakeholders into the process has had a number of impacts. There is a growing sense of ownership, caring, and understanding among the public and policymakers about the importance and value of agricultural research. Accountability is, in many ways, inherent in the process of stakeholder involvement. Scientists and researchers have expressed concerns, however, about the C-FAR process because some feel it meddles with the scientific process of investigation. As a result, tension among C-FAR members and researchers is visible, but so far it is manageable and perhaps even healthy. In some ways the tension has increased respect and communication across disciplines, interest groups, and the public and private sector.

Discussant:

Wallace Huffman, Iowa State University

The structure of the U.S. agricultural research and development (R&D) system can be characterized as a series of inter-linked layers. The public and private sector play different roles at each layer of the system. For example, university and public research dominate basic research where the benefits, or profits, cannot be captured from the research product's production and distribution (pure public goods). Other research, such as that related to technology development, results in a product, process, or biological material that can be protected by a patent. Patents and other intellectual property rights provide incentives for the private sector to undertake certain types of R&D. The continued success of our current agricultural R&D system hinges on a diverse allocation of public and private resources, and simultaneous linkages between layers or types of R&D activities.

The Illinois Council on Food and Agricultural Research (C-FAR), described by Dr. Chicoine, is an interesting organizational structure for obtaining new interest group support for agricultural research in Illinois. This framework may result in a larger share of local public goods being produced from state-funded agricultural research.

Dr. Giaquinta's description of Dupont's research activities shows a fascinating mix of products and new public/private sector partnerships designed to explore the potential of biotechnology. Dupont's major commitment to R&D has been facilitated by strengthened intellectual property rights, and advances in the biological and information sciences.

To gain a better understanding of the adoption and use of new technologies, we need to know more about information usage and acquisition. As we look to the future of the agricultural R&D system, we should increase efforts to understand how decisions about information acquisition are made by different clientele groups. How do producers, for example, make decisions about competing sources of public and private sector information? How do they choose between active and passive modes of information acquisition? What role should cooperative extension take in the new information age?

Closing Remarks

Daniel A. Sumner, University of California, Davis

The title of this meeting, "Keys to Agricultural Growth and Profitability in a Post-Subsidy World" is both provocative and presumptuous. It implies that the government is, or soon will be, no longer directly subsidizing agriculture. For some crops and agricultural products this is true, but for others it is not. When the current legislation (the FAIR Act) expires in 2002, the government may redefine its role in agriculture once again. Direct subsidies are likely to continue and subsidy through trade barriers have continued.

Dr. Robert Thompson set exactly the right tone for this meeting. International markets for food and food products are expected to continue to grow rapidly well into the next century. The U.S. will have to compete aggressively to supply this growing global market and will continue to face competition for the U.S. market.

Parr Rosson discussed the need for better measures of the impacts of freer trade on U.S. industries. This is clearly an important issue, however, we should be careful of new protectionism. Most groups interested in slowing movement toward freer trade are typically beneficiaries of the status quo who simply want to avoid competition. The Uruguay Round Agreement was not perfect but, if we could simply continue to reduce subsidies and tariffs on the Uruguay Round path, we could largely reach free trade by the year 2015.

Mark Drabenstott repeated confidently a common assertion that the reform of farm programs would hurt small producers and result in increased farm size. But, I would argue that this is, at least, an open question. We do not have solid information on the influence of government programs on farm structure. For example, a recent California study of dairy farms is analyzing a number of external forces and their influence on the size and distribution of farms. Preliminary results suggest that it is difficult to make a convincing case that heavy government involvement in the dairy industry has led to either smaller or larger farms.

Ron Knutson made two particularly good points that run counter to popular opinion among agricultural economists. First, producer participation in the futures market is not a good indicator of their success in managing risk. Producers are adopting other risk management tools and techniques rather than futures markets. Second, producers should be cautious about expanding their activities to include food processing. There is no reason to assume that a successful producer will also be a successful processor. Processing activities may take them out of their area of expertise for too little reward.

Technology is similar to market innovations. Clearly not all technologies are worth adopting and some early adopters fail. Further, we must keep in mind a broad view of agricultural technologies to include information technology. New knowledge does not come cheap, even in economics. For example, data development for sound economic analysis may

be as costly as the field experiments used in other sciences. The common use of secondary data hides the cost of economic research and short-changes the individual and the profession. If we are serious about economic research, we need to secure more resources for primary data collection.

Randy Greene mentioned three 1997/98 legislative issues that highlight the contribution of agricultural economists to public policy: the research title, fast-track authority, and the potential tobacco legislation and settlement. On the first topic, policymakers have access to the literature on rate-of-return analysis done by economists. C-FARE and others have provided this to inform the policy debate on the value of agricultural research. However, we have communicated the value of social science research less effectively. It is more difficult to show that improvements in public policy can be traced to economics research. The benefits are likely to be large, yet little is known about them.

On the second issue, economists have provided substantial evidence to help policymakers and others understand potential impacts and tradeoffs associated with international trade agreements. But, from the discussion and questions raised here today, clearly economists can and should do more to assist in this type of analysis. Third, Randy Greene discussed the potential implications of tobacco legislation for tobacco producers. The agricultural economics profession has already provided useful analysis and information to policymakers about the implications of eliminating quota programs on producers. This analysis will contribute to better legislation.

We made progress at this symposium in assessing important policy issues for agriculture as we move into the next century. However, it is also evident that more investment is needed for policy research to get better answers for important policy questions.

The Council on Food, Agricultural and Resource Economics

An Organization of Agricultural Economists

C-FARE was created in 1993 to strengthen the national presence of the agricultural economics profession and to enhance its effectiveness. C-FARE is actively working to:

- Prioritize and publicize key economic issues within the research, extension, and resident instruction agendas;
- Help agricultural economists contribute more effectively to public and private sector decisions;
- Establish linkages with organizations and institutions for the benefit of the entire profession;
- Work with other disciplines on issues of mutual concern.

In pursuit of these goals, C-FARE will continue to conduct priority setting exercises for input into funding processes, develop non-partisan issue papers to enhance the policy dialogue, and hold policy briefings on key economic issues.

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