

# AGRICULTURAL OUTLOOK



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**Cover Photo:** Planting soybeans, Illinois. Grant Heilman, Grant Heilman Photography.

## 1997 Planting Intentions...U.S. Egg Industry...Ag Markets in Middle East & N. Africa...& USDA's Water Quality Program

### Soybean & Corn Planting Intentions Up

*Soybeans and corn* are the field crops showing the greatest jump from 1996 in planted acreage, while wheat and sorghum show the largest decline, according to USDA's March 1997 *Prospective Plantings* report. Soybean planting intentions in 1997 at 68.8 million acres are up 7 percent from last year's planted acreage. A significant increase in soybean acreage for 1997 had been widely anticipated, given tight supplies of U.S. soybeans and higher prices. Corn planting intentions are bolstered by prices that remain higher than in much of the 1990's. Total wheat planting intentions are down 8 percent; however, the recent runup in wheat prices, may push actual plantings above early-season intentions.

### U.S. Egg Production Crackling

*U.S. egg production* has grown every year since 1989 and is expected to reach nearly 79 billion in 1997. Some of the growth has been driven by a 46-percent increase in hatching eggs to supply an expanding broiler industry. Strong growth of egg use in processed food products has also provided an expanding outlet and has helped to slow the long-term decline in U.S. table-egg use per capita. Finally, phenomenal growth in U.S. egg exports in the past 3 years has resulted in an ever-increasing share of domestic production destined for foreign markets.

### USDA's Water Quality Program

*USDA's Water Quality Program (WQP)* promotes adoption of voluntary alternative management practices by farmers, in an effort to protect the nation's waters from agricultural chemicals and waste products. Out of experience with the WQP, established in 1990, and past USDA water quality programs, several lessons have emerged that provide important guidance for future programs. Among the lessons: cost-effectiveness is enhanced when program activities are targeted to watersheds where agriculture is the primary source of water quality impairment.



### Assessing Integrated Pest Management

*USDA's National Initiative* on Integrated Pest Management calls for a broad assessment that documents the economic, environmental, and public-health impacts of IPM adoption. Analysts face a number of challenges in developing assessments of the impacts of pesticide use and alternative pest management practices. First, gaps exist in the data needed to evaluate impacts in areas of potential concern. Second, analysts must determine which environmental and public-health impacts to assess, how to quantify improvements, and the weights to assign to different impacts. In addition, a unifying framework is needed to assess tradeoffs among economic, environmental, and public-health impacts of alternative pest management technologies.

### Strong Market in Middle East & North Africa

*U.S. farm exports* to the Middle East and North Africa grew by over a third from calendar year 1990 to 1996. Rising incomes, urbanization, strong population growth, and trade policy changes are likely to spur additional import growth,

particularly in livestock products, oilseeds, some feedstuffs, and high-value products. In 1996, U.S. agricultural shipments to the region tallied \$4.5 billion (7.5 percent of the U.S. ag total), just under the record \$4.6 billion of 1995.

### Insuring Limited-Resource Farms

*Recent changes in Federal* farm programs have focused attention on the need for U.S. farmers to manage risks of crop loss and price declines and to re-examine available risk management options. ERS research on the risk management needs of farmers with limited-resources indicates that these farmers tend not to purchase crop insurance nor to participate in current insurance-type programs operated by USDA.

The most likely factors in participation are the type and size of farmers' operations and their general reliance on off-farm sources of household income. Program changes and additions currently under study, especially coverage of additional crops and expanded outreach and educational efforts by USDA's Risk Management Agency, may prompt limited-resource farmers to make greater use of crop insurance and other risk management strategies.

### Contracting—A Business Option For Many Farmers

*Contracting has become* a common business practice on all sizes of farms, in all areas of the country. In 1993, contractual arrangements accounted for \$47 billion—almost one-third of the U.S. farm value of production. Producing under contract is an integral part of the production and marketing of livestock commodities, especially broilers, turkeys, eggs, and milk. Contracts for crops, especially fruits and vegetables, peanuts, and cotton, are also common. For farmers, contracts increase income stability and, depending on the arrangement, permit concentration of management efforts on a particular part of the production process. For processors, contracts enhance uniformity of products to suit consumers, which also lowers costs of processing, packing, and grading.

## Agricultural Economy



Gary Lucier

### Contracting— A Business Option for Many Farmers

Contracting has become a common business practice on farms of all sizes, producing a variety of commodities, and located in all areas of the country. In 1993, contractual arrangements accounted for \$47 billion—almost one-third of the value of U.S. farm production. Contracting is an integral part of the production and marketing of livestock commodities such as broilers, turkeys, eggs, and milk. Most sugar beets and sugarcane, as well as many fruits and vegetables, are also produced under contract.

Agricultural contracts are arrangements under which farmers agree to deliver products of a specified quality and quantity to a contractor for a specified price or fee. Contracts generally stipulate who owns the product, pays for specific inputs, and holds the risk of loss, and when product ownership passes from one party to another. How much control a contractor has over production decisions varies, depending on the type of contract. As legal documents, contracts are enforceable in a court of law.

Farmers and contractors may use contracts for a variety of reasons. By bypassing open—and uncertain—markets, contracting can reduce participants' exposure to risk. Processors, and ultimately consumers, increasingly demand a uniform product of standard quality. Contracts are one vehicle that food processors and marketers are using to respond to consumer preferences. Contracts provide direct feedback to farmers on market preferences, and reward producers who respond.

Agricultural contracts are generally classified as either marketing or production contracts. A *marketing contract* is an agreement between a farmer and a buyer that specifies quantity, quality, price, and timing of the product to be delivered by the farmer. Under a *production contract*, a farmer receives a predetermined fee for raising products of a specified quality and quantity, with the contractor providing inputs and retaining ownership of the commodity throughout the production process. Of the total value of agricultural output covered by contracts, USDA's 1993 Farm Costs and Returns Survey (FCRS) found that 37 percent was under production contracts while the balance was under marketing contracts.

Production contractors typically bear a large share of production and price risk and earn most of the net income from the commodity's sale. Views of production contract arrangements are not all positive. Some feel that the loss of entrepreneurial capacity is perhaps the largest disadvantage to the farmer. To ensure a uniform product, production contracts specify the production practices and the types of inputs used. Good management is still needed, however, and many contractors reward skillful managers with bonuses. The farmer remains the judge of whether the tradeoff of income stability and a confirmed market is a fair exchange for a certain loss of independence.

#### *Contract Use Varies By Farm Type & Size*

Traditionally, U.S. farmers sold independently produced livestock or crops in an open market to the highest bidder among local marketing or processing companies or their agents. Over the past 40 years, farmers have become less dependent on

this system of terminal markets and spot pricing to market their goods, and more reliant on agricultural contracts.

Contract-type arrangements are not new. As early as the 1920's, A&P, the chain retailer, developed a national buying organization to purchase fresh fruits and vegetables directly from farmers for its stores. Safeway and Kroger bought milk for their own processing plants directly from farmers or cooperatives before World War II. In the postwar period, many more chains became large enough to buy directly from farmers. The 1969 Census of Agriculture showed more than 156,400 farms, about 6 percent of all farms, using contracts for production or marketing of their agricultural commodities. By the 1993 FCRS, over 225,000, or nearly 11 percent of all farms, were using contracts.

Today, farms of all sizes and types are involved in contracting. Among livestock producers, poultry farms lead in use of contracts, with nearly 89 percent reporting use of contracts and about 86 percent of total production value produced under contract in 1993. Twenty-eight percent of dairy farms report use of contracts, representing 43 percent of the total value of milk production. Dairy farmers have long had verbal contracts with their processors or cooperatives, and most milk is produced under marketing orders, which set milk prices based on regionally determined formulas. Cattle and hog producers also reported use of contracts in 1993, although to a much lesser degree (about 11 percent of hog producers and less than 2 percent of cattle producers).

Some farmers are themselves contractors. For example, a farmer may contract with another farmer to complete a stage of production in the raising of livestock. The farmer, as contractor, can then specialize in a different stage of production, paying another producer to either provide young animals or finish the production cycle. Nearly 3,500 farms reported beef or hog production contracted out during 1993. These farms were predominantly livestock operations, where 85 percent of the \$623,000 average gross cash farm income came from livestock sales.



More than 40 percent of the 6,000 farms reporting livestock contracted out in 1993 had replacement breeding stock raised by another farm operation. Among the most common were dairy operations contracting for replacement heifers. Egg producers also often contract with other farms to raise layers.

While large commercial farms account for most of the value of products sold under contract, almost half of the 225,000 farms with marketing or production contracts in 1993 were small commercial farms (sales between \$50,000 and \$249,999). These smaller farms produced about 24 percent of total contract value of farm products.

The largest contract users among crop commodity farms are fruit and vegetable growers; 36 percent of farms specializing in the production of fruits or vegetables used some form of contracts in 1993, producing more than half the total value of production of fruits and vegetables. About 30 percent of the value of cotton production was also produced under contract. Other crop farms used contracts, although at much smaller rates. The largest of these is corn production, for which 13 percent of the total value of output was under contract.

Larger farms are more likely than other farms to use *production contracts*. Twenty-one percent of farms with production contracts had sales of \$500,000 or more. Large farms accounted for 69 percent of the value under production contracts.

On the 44,000 farms with production contracts in 1993, sales averaged \$485,000, but gross cash income for these farms averaged only \$149,200, reflecting the contract fees received by operators. Under production contracts, while sales reflect the full value of the product, farmers receive a predetermined fee, not a share of sales, for raising contracted products.

Three-quarters of farms with production contracts were producing livestock commodities, primarily poultry. Livestock farms accounted for more than 90 percent of the total value of products sold under production contracts.

Under *marketing contracts*, while the farmer receives all of the income generated by production, expenses for the business are usually higher than under production contracts because the farmer pays more of the expenses. Marketing contracts, found on 186,000 farms, were more common than production contracts. However, farms with marketing contracts had lower average sales (\$225,700).

Although farms of all sizes used marketing contracts, large farms (gross sales more than \$500,000) reported almost half of all marketings. Farms with gross sales of less than \$250,000 comprised 80 percent of the farms producing under marketing contracts, but accounted for only 33

percent of the total value of production. Seventy percent of farms using marketing contracts in 1993 were classified as crop farms (fruit and vegetables, 20 percent; corn, 11 percent; cotton, 3 percent; other crops, 36 percent). These crop farms accounted for 56 percent of the total value of commodities marketed under contract.

The mix of crop commodities comprising most of the value of marketing contracts for farms with the smallest contracts (less than \$100,000 marketed) included field corn, soybeans, peanuts, almonds, and wheat. Milk, cattle, and turkeys were the most often reported livestock commodities for a similar marketing contract size. Under the largest marketing contracts

## Marketing vs. Production Contracts

**Marketing contracts** refer to verbal or written agreements between a grower and a buyer—generally a food processing and/or marketing company—that set a price (or pricing mechanism) and determine an outlet for a specified quantity of a commodity before harvest or before the farmer markets the commodity. Most management decisions remain with the grower, who retains product ownership during the production process. The contractee assumes all risks of production, but shares price risk with the contractor.

Marketing contracts can take many forms, including:

- forward sales of a growing crop, where the contract provides for later delivery and establishes a price before delivery;
- price setting after delivery based on a formula that considers grade and yield; and
- pre-harvest pooling arrangements, in which the amount of payment received is determined by the net pool receipts for the quantity sold.

Since the farmer incurs the costs of production, the farmer retains the income generated from sale of the commodity.

**Production contracts** involve paying the farmer a fee for providing management, labor, facilities, and equipment, while assigning ownership of the product to the contractor. The contract specifies in detail the production inputs supplied by the contractor, which may be a processor, feed mill, or another farm operation or business. The contract also specifies the quality and quantity of the particular commodity. Because the contractor controls the amount produced and the production practices, the contractor often dominates the terms of the contract.

Advantages of production contracts for farmers include the sharing of production and marketing risks with the contractor and the availability of financing—either directly from the contractor or indirectly through other lenders who are more assured of loan repayment under this arrangement. Farms can have both marketing and production contracts.

## Agricultural Economy

(more than \$600,000 marketed), cotton, potatoes, strawberries, walnuts, grapes, onions, and tomatoes represented more than 95 percent of the value of crop commodities. The large-contract livestock commodities were predominantly milk, eggs, and cattle, with a marketed value nearly double that of crops marketed by the large-contract crop farms.

Beyond their importance as a source of income, marketing contracts usually provide for multiple payments, which may extend beyond one calendar year. In 1993, 40 percent of marketing contracts were structured to carry total compensation across calendar years. This is often helpful to farm operators in managing cash flow; many operations are not diversified and have only one commodity enterprise.

### *The Variety of Production Contracts*

In most production contract, the contractors pay directly for inputs, supply the inputs, or reimburse the producer for expenses required to grow the commodity under contract. The contrast between production contracts for broilers and those for processing vegetables illustrates some of the differences in contract terms, including the extent of production and managerial control the contractor holds, the size of fees paid to the farmer, the amount of inputs supplied by the contractor, and ownership of the commodity.

Broiler contracts are the most widely publicized livestock production contracts, although contracts have covered fed cattle and hogs for many years. Of the more than 32,000 farms with livestock production contracts in 1993, about 14,000 had single broiler contracts (one contract only). Broiler production was the primary activity of nearly all these farm businesses, with 40 percent having no additional farm enterprises. The total value of broilers raised on these single-contract farms varied considerably. Nearly one-third of the farms had contracts valued at \$300,000 or less during 1993, while 20 percent had contracts valued at \$600,000 or more.

While the specific contract terms vary from company to company, most broiler contracts designate the division of responsibility for providing inputs and compensating growers. The grower usually provides land and housing facilities, utilities, labor, and other operating functions, such as repairs and maintenance, manure disposal, and chicken-house cleaning. The contractor provides chicks, feed, veterinary supplies and services, management services or field personnel, and transportation. Either party pays for fuel and litter, or they share expenses, depending on the nature of the contract. In 1993, farmers provided, on average, 11 percent of the cash expenses on single-contract broiler operations.

Contractors usually own and operate hatcheries, feed mills, and/or processing facilities. The contractor may pay some fixed costs, such as insurance, or provide financing for capital purchases. Contractors make the most significant production decisions, including size and rotation of flocks, genetic characteristics of birds, specific feed ingredients, and the capacity of the chicken house. Broiler contracts usually provide three types of compensation for grower services: the base payment, an incentive or performance payment, and the disaster payment, which covers lost production from natural disasters.

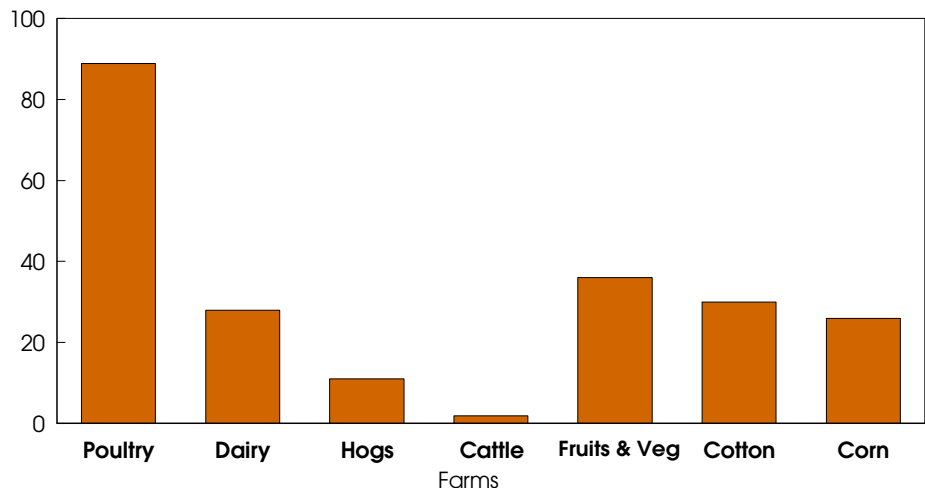
Total value of birds removed from the 14,000 single-contract broiler farms averaged \$445,400. The average annual fee received was \$53,500, or about 12 percent of the value of birds removed. This represents the 1993 amount received by growers for all types of compensation as stipulated in their particular contracts.

Although most production contracts are for livestock commodities, 11,700 farms reported at least one crop production contract in 1993, and nearly half these farms had contracts for processing vegetables. Processing vegetables include snap beans, cabbage, sweet corn, cucumbers, lima beans, sweet peas, spinach, and tomatoes and are destined for canning, freezing, heating, or drying.

Under production contracts for processing vegetables, contractors usually pay only for seed and custom services such as harvesting or hauling. Contractors provided seed to nearly 80 percent of the farms with a single production contract for processing vegetables. Some operations received custom planting services, which included seed. Custom hauling (reported by 70 percent of contract producers of processing vegetables), and fertilizer and chemical applications (reported by 60 percent) were the other two inputs most often supplied.

### Nearly 90 Percent of Poultry Farms Use Contracts

Percent



Farms identified by the commodity that accounts for at least 50 percent of their total value of sales. Source: Farm Costs and Returns Survey, USDA, 1993.

The contractor usually stipulates the amount to be produced, along with detailed requirements regarding production practices, grading standards, and terms for compensating the grower. Growers, particularly in California and Washington, commonly negotiate through a bargaining association representing several producers.

ERS estimates the average total value of processing vegetables removed under contract at \$103,000. Fees received by producers during 1993 averaged \$72,400, which represented about 70 percent of the total value removed. Expenses provided by contractors averaged \$13,000. Most of the farms had other enterprises, making it difficult to partition operator expenses to vegetable production.

### ***A Cost-Benefit View Of Contracting***

Farmers use contracts to increase their income stability. Because most contractual arrangements reduce risks in comparison with traditional production or marketing channels, a contracting farmer's resulting income tends to be less variable over time. Farmers benefit by having a guaranteed market and price, as well as access to a wider range of production inputs and technological advances. They can also concentrate their management efforts on a particular part of the production process.

Processors use contracts because they need uniformity and predictability to suit consumers, but they also benefit from lower costs in processing, packing, and grading. The consumer can probably buy chicken or vegetables at a few cents per pound lower as a result of these savings from contracting arrangements by processors.

## **Data Sources**

Data for this report come from USDA's 1993 Farm Costs and Returns Survey (FCRS), an annual survey which collects information on farm income, expenses, and operator characteristics. USDA administers the survey each spring in the 48 contiguous states through personal enumeration. The sample size of the FCRS in 1993 was approximately 12,000 farms and ranches.

The target population of the FCRS is operators associated with farm businesses representing agricultural production across the U. S. A farm is an establishment that sold or would normally have sold at least \$1,000 of agricultural products during the year. Farms can be legally organized as proprietorships, partnerships, family corporations, nonfamily corporations, or cooperatives.

Data are collected from only one operator per farm, the one who makes most of the day-to-day management decisions. This one-farm/one-operator survey design yields good financial information for the farming business. However, it limits information about income and equity sharing when more than one operator is involved. Data on other stakeholders, such as contractors and share-rent landlords, who provide inputs to the farm and receive income from production, are also not included in the FCRS, except as reflected in other data on the farm business.

How the benefits and costs of contracting are distributed to the larger community has not been quantified. Consumers may see the concentration of control in production contracting leading to less competition and higher prices. Contracting may not necessarily lead to concentration of production on fewer farms—data show that farms of all sizes use contracts. It does, however, lead to concentration of decision-making and to less diversity in products and production practices. While diversity presents problems of its own, contracting that fosters product homogeneity makes agricultural communities more vulnerable to decisions made outside the community.

The trend toward contracting is part of a general shift in entrepreneurial functions within agriculture. Most concern about this shift centers on resource control in agriculture and the impact of those that control resources on producers, suppliers, price, and income at various stages of the production and marketing process.

Contracting, on the one hand, leads to the weakening of open-market price signals and a lessening of independence for the family farm. On the other hand, greater use of contracts could lead to more efficient production, less dependence on government assistance, and greater global competitiveness.

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## Commodity Briefs



Deere & Company

### Field Crops

## Farmers Signal Large Soybean Plantings

Soybean growers intend to plant the largest acreage since 1982, according to USDA's *Prospective Plantings* report for 1997, released on March 31, and corn producers are planning the largest acreage since 1985. The report provides the first indication of farmers' spring planting intentions for major field crops.

Among the field crops grown by surveyed farmers, soybean and corn show the greatest jump from 1996 planted acreage, while wheat and sorghum show the largest decline. Planting is underway in many regions, but it will not be completed nationwide for several months. Actual plantings could vary from planting intentions in the event of adverse weather or significant relative changes in prices of competing crops. For example, last year's wet spring delayed planting and led many midwestern farmers to switch from corn to other crops.

This is the second year of crop plantings under the 1996 Farm Act, which gives farmers much greater flexibility in responding to market prices. Unlike under earlier U.S. farm legislation, producers

participating in farm programs are no longer tied to base acreage requirements for specific program crops or restricted by annual acreage reduction program requirements.

The *Prospective Plantings* report indicates farmers intend to increase soybean acreage in 1997 to 68.8 million acres, up 7 percent from last year's planted acreage. A significant increase in soybean acreage for 1997 had been widely anticipated, given the tight supplies of U.S. soybeans—similar to the situation for corn a year ago. Robust demand, both domestic and foreign, have pushed U.S. soybean prices to the highest level in almost 9 years. Unlike wheat and corn, which have declined from the highs of last spring, soybean prices have remained buoyant. Total soybean use for 1996/97 is projected to be the highest on record, while the stocks-to-use ratio is projected to be the lowest since the 1972/73 crop year.

All but 3 of the 29 soybean producing states are anticipated to have greater soybean acreage in 1997, with the largest absolute increases in South Dakota, Nebraska, Iowa, and Minnesota. In addition, the Delta states of Arkansas, Mississippi, and Louisiana also showed a strong shift toward soybeans, largely at the expense of cotton. If these planting intentions are realized, 1997 would be the fifth straight year of rising U.S. soybean acreage.

Corn growers intend to plant 81.4 million acres in 1997, up 2.5 percent from 1996 planted acreage. Corn prices have declined significantly since last spring but remain higher than in much of the 1990's, because of relatively tight stocks.

Most Corn Belt states show an increase in planting intentions, with the exception of Iowa, Michigan, and Minnesota. In the eastern Corn Belt states of Indiana and Ohio, farmers intend to increase corn acreage after switching to soybeans in 1996 when excessive moisture caused planting delays last spring. Although returns from soybeans are currently more attractive than corn, producers in these states are shifting back to corn to maintain agronomically sound crop rotations. However, corn acreage in the southeastern U.S. is expected to decrease because of intentions to double-crop wheat and soybeans or to increase single-crop cotton and soybean plantings in 1997.

For other feed grains, decreased planting intentions for sorghum is the most noteworthy, with intended acreage down 18 percent from last year's planted acreage. In 1996, sorghum acreage had risen substantially in Kansas and Texas, taking over abandoned cotton or wheat ground or areas too dry for other crops. With recovery from last year's drought in the Southern Plains, much of this acreage appears to be shifting into soybeans and corn in Kansas, Nebraska, and Missouri, while cotton acreage is up in Texas.

### Soybeans Show Largest Increase from 1996 Planted Acreage

|               | 1996                |                    |                      | 1997                |
|---------------|---------------------|--------------------|----------------------|---------------------|
|               | Intended<br>acreage | Planted<br>acreage | Harvested<br>acreage | Intended<br>acreage |
| Million acres |                     |                    |                      |                     |
| Corn          | 79.9                | 79.5               | 73.1                 | 81.5                |
| Soybeans      | 62.5                | 64.2               | 63.4                 | 68.8                |
| Wheat         | 73.1                | 75.6               | 62.9                 | 69.2                |
| Sorghum       | 10.6                | 13.2               | 11.9                 | 10.9                |
| Barley        | 7.2                 | 7.2                | 6.8                  | 7.0                 |
| Oats          | 5.3                 | 4.7                | 2.7                  | 5.3                 |
| Rice          | 3.0                 | 2.8                | 2.8                  | 2.9                 |
| Cotton        | 15.2                | 14.7               | 12.8                 | 14.5                |

Source: USDA.

Economic Research Service, USDA



## Commodity Briefs

Barley intentions were slightly lower than last year's planted acreage. Actual plantings could fall further due to the prospect of spring flooding. Oats planting intentions show a 13-percent rise from 1996 planted acreage, as oat prices have been strong relative to other feed grains in recent months. Despite the increase, 1997 planting intentions would still be the second-lowest acreage on record seeded to oats in the U.S.

Total wheat planting intentions for crops harvested in 1997 (winter and spring acreage) are anticipated at 69.2 million acres, down 8 percent from 1996's planted acreage. Last spring's record-high wheat prices and tight exporter stocks caused several major world wheat producing countries to expand output during 1996/97. As a result, world wheat production rose to the second-highest level on record, and prices plunged.

Earlier this year, winter wheat plantings for 1997 harvest were forecast at 48.2 million acres, the lowest since 1978. Most states that had expanded winter wheat acreage in response to rising wheat prices in the fall of 1995 scaled back wheat plantings last fall. Nevertheless, the decline in harvested winter wheat acreage from 1996 to 1997 is not expected to be as severe as a year earlier, as crop conditions in the winter wheat producing states, particularly the Southern Plains, are improved from last year despite the mid-April freeze. In 1996, an unusually large portion of the crop was not harvested because of drought and winterkill.

The *Prospective Plantings* report shows spring wheat and durum planting intentions also down this year, as wheat prices sharply below 1996 have encouraged farmers to plant alternative crops such as soybeans, sunflower, flaxseed, and oats in the Northern Plains states. Wheat seedings may be further reduced if the severe winter in the Northern Plains results in flooding that excessively delays spring planting. On the other hand, the recent runup in prices could encourage increased plantings.

Cotton planting intentions are 14.5 million acres, 1 percent lower than last year's planted acreage. Intended cotton acreage in the Delta region is down, due largely to expected increases in soybean plantings. Texas producers intend to seed more cotton acreage in 1997, as the abundant rainfall received since last fall has greatly improved soil moisture conditions in most of the state following last year's drought.

U.S. rice producers intend to plant 2.88 million acres in 1997, up 2 percent from 1996, with long grain plantings indicated up 4 percent and medium grain down 4 percent. High prices and extremely tight long grain supplies account for the intended increase in plantings.

Producers in Louisiana, Mississippi, and Arkansas indicated they intend to plant more rice than last year. Expanded long grain acreage in Louisiana and Mississippi accounts for most of the intended growth in these three states. California, which grows predominantly medium grain rice, is expected to plant 4 percent less rice than in 1996. Flood damage and declining prices for California milled rice are behind the intended drop in California acreage.

Producers in Texas and Missouri, which each grow almost exclusively long grain rice, indicated area declines of 3 and 2 percent for 1997. Too much rain has severely delayed seeding in Texas, which

## U.S. Field Crops—Market Outlook

|          | Area       |           | Yield     | Output | Total supply | Domestic use            | Exports | Ending stocks | Farm price |
|----------|------------|-----------|-----------|--------|--------------|-------------------------|---------|---------------|------------|
|          | Planted    | Harvested |           |        |              |                         |         |               |            |
|          | Mil. acres |           | Bu/acre   |        |              | Mil. bu                 |         |               | \$/bu      |
| Wheat    |            |           |           |        |              |                         |         |               |            |
| 1995/96  | 69.1       | 60.9      | 35.8      | 2,183  | 2,757        | 1,140                   | 1,241   | 376           | 4.55       |
| 1996/97  | 75.6       | 62.9      | 36.3      | 2,282  | 2,748        | 1,302                   | 985     | 460           | 4.30-4.40  |
| Corn     |            |           |           |        |              |                         |         |               |            |
| 1995/96  | 71.2       | 65.0      | 113.5     | 7,374  | 8,948        | 6,294                   | 2,228   | 426           | 3.24       |
| 1996/97  | 79.5       | 73.1      | 127.1     | 9,293  | 9,729        | 6,995                   | 1,825   | 909           | 2.70-2.90  |
| Sorghum  |            |           |           |        |              |                         |         |               |            |
| 1995/96  | 9.5        | 8.3       | 55.6      | 460    | 532          | 316                     | 198     | 18            | 3.19       |
| 1996/97  | 13.2       | 11.9      | 67.5      | 803    | 821          | 550                     | 225     | 46            | 2.30-2.50  |
| Barley   |            |           |           |        |              |                         |         |               |            |
| 1995/96  | 6.7        | 6.3       | 57.3      | 360    | 513          | 351                     | 62      | 100           | 2.89       |
| 1996/97  | 7.2        | 6.8       | 58.5      | 397    | 531          | 407                     | 35      | 89            | 2.75-2.85  |
| Oats     |            |           |           |        |              |                         |         |               |            |
| 1995/96  | 6.3        | 3.0       | 54.7      | 162    | 343          | 275                     | 2       | 66            | 1.68       |
| 1996/97  | 4.7        | 2.7       | 57.8      | 155    | 322          | 245                     | 3       | 74            | 1.90-2.00  |
| Soybeans |            |           |           |        |              |                         |         |               |            |
| 1995/96  | 62.6       | 61.6      | 35.3      | 2,177  | 2,516        | 1,482                   | 851     | 183           | 6.77       |
| 1996/97  | 64.2       | 63.4      | 37.6      | 2,392  | 2,571        | 1,551                   | 895     | 125           | 7.10-7.50  |
| Rice     |            |           | Lbs./acre |        |              | Mil. cwt (rough equiv.) |         |               | \$/cwt     |
| 1995/96  | 3.12       | 3.09      | 5,621     | 173.9  | 212.6        | 104.5                   | 83.0    | 25.0          | 9.15       |
| 1996/97  | 2.82       | 2.80      | 6,121     | 171.3  | 206.9        | 104.7                   | 78.0    | 24.2          | 9.75-10.15 |
| Cotton   |            |           | Lbs./acre |        |              | Mil. bales              |         |               | c/lb.      |
| 1995/96  | 16.9       | 16.0      | 537       | 17.9   | 21.0         | 10.7                    | 7.7     | 2.6           | 75.4       |
| 1996/97  | 14.7       | 12.8      | 709       | 19.0   | 22.0         | 11.0                    | 7.0     | 4.0           | *          |

Based on April 11, 1997 World Agricultural Supply and Demand Estimates.

\*USDA is prohibited from publishing cotton price projections.

See table 17 for complete definition of terms.

Economic Research Service, USDA



## Commodity Briefs

### USDA's Crop Reporting Schedule for 1997

The collection and dissemination of current statistics on U.S. agriculture is the function of USDA's National Agricultural Statistics Service. Headquartered in Washington, D.C., NASS maintains a network of 45 field offices serving the 50 states through cooperative agreements with universities or state departments of agriculture. An annual calendar is prepared each December, indicating the date and hour of the coming year's data releases. The reports are released first in Washington, D.C. and are available electronically shortly (usually within minutes) after release.

USDA's crop reporting schedule encompasses forecasts made during the growing season, and estimates made after harvest, for major field crops at the state and national levels. Forecasts and estimates represent two distinct concepts.

**Forecasts** refer to an expected future occurrence, such as crop yields expected prior to actual harvest of the crop.

**Estimates** generally refer to an accomplished fact, such as crop yields after the crop is harvested.

State and national estimates are published in the monthly *Crop Production* report for planted acreage, harvested acreage, yield, and production. NASS conducts four major annual acreage surveys (independent of yield and production surveys). The prospective plantings survey in March provides early indications of what farmers intend to plant; the mid-year acreage survey, conducted in early June, is used to estimate spring-planted acreages and to forecast acreages for harvest; and two end-of-year acreage and production surveys are conducted after most of the small grains and field crops have been harvested.

**Field crop planting intentions** are assessed via survey—conducted during the first 2 weeks of March—and released in the *Prospective Plantings* report (March 31, 1997). About 55,000 randomly selected farm operators across the U.S. are questioned about their 1997 crop planting intentions. The survey results are intended to reflect grower planting intentions as of the survey period and give the first indication of potential plantings for 1997.

**Mid-year acreage estimates** will be made based on surveys conducted in June, when field crop acreages have been established or planting intentions are firm. These new estimates will be published in the *Acreage* report scheduled for release on June 30, 1997. Winter wheat is an exception, since seeding generally occurs during September-November of the preceding calendar year. The first forecast of winter wheat and rye planted area was released January 10, 1997, in the *Winter Wheat and Rye Seedings* report.

The first forecast of harvested acreage of winter wheat will be published on May 12, 1997, in the May *Crop Production* report. Planted and harvested acreage of winter wheat is subject to revisions in the June *Acreage* report. The first forecasts of harvested acreage for spring wheat will be published on July 10, 1997, in the July *Crop Production* report.

Mid-year estimates of harvested acreage, also published in the *Acreage* report, are based on reported acreage of the earliest harvested crops, such as the small grains. For the later harvested crops, such as corn and soybeans, initial forecasts make normal allowances for abandonment and for diverting acres to other purposes. Forecasts of acreage for harvest are subject to monthly revision following the June survey, although they usually remain unchanged through the season. Current monthly acreage indications are obtained during the growing season from NASS's objective yield measurement program for corn, cotton, soybeans, and wheat, and from special surveys conducted for other crops when unusual weather or economic conditions could affect the acreage to be harvested.

**Yield forecasts** are adjusted to reflect changes that occur during the growing and harvest season. Objective yield surveys are conducted during the principal growing season for corn, cotton, soybeans, and wheat in selected states for each commodity. A forecast, on a given date, of prospective yield or production assumes that weather conditions and damage from insects, diseases, or other causes will be about normal (or the same as the average of previous years) during the remainder of the growing season. If any of these conditions change, the final estimate may differ significantly from the earlier forecast.

The first forecasts of yield and production will be published in the *Crop Production* report on May 9 for winter wheat; on July 10 for barley, oats, durum, and spring wheat; and on August 11 for the remaining field crops—corn, cotton, hay, oilseeds, peanuts, rice, sorghum, sugarcane, and sugar beets.

**Yearend estimates of acreage, yield, and production** for barley, durum, oats, rye, all wheat, and durum wheat will be published in the *Small Grains Annual Summary*, scheduled for release on September 30, 1997. For all remaining field crops, yearend estimates of acreage, yield, and production will be published in January 1998 in the *Crop Production Annual*.

In addition to its regularly scheduled reports on crop production, NASS issues two weekly reports. *Crop Progress*, released each Monday during the growing season (April–November), provides data on crop planting, selected maturity stages, harvesting progress, and overall condition of selected crops in major producing states. The crop progress data, summarized by crop and by state, are republished in *Weekly Weather and Crop Bulletin*, along with domestic and international weather summaries for major field crop growing regions.

**For more information** concerning NASS, and NASS reports and data products, visit the NASS home page on the World Wide Web at <http://www.usda.gov/nass>.

## World Commodity Market Outlook

|                           | Year    | Production <sup>1</sup> | Exports <sup>2</sup> | Consumption <sup>1,3</sup> | Carryover <sup>1</sup> |
|---------------------------|---------|-------------------------|----------------------|----------------------------|------------------------|
| <i>Million tons</i>       |         |                         |                      |                            |                        |
| Wheat                     | 1995/96 | 538.4                   | 109.2                | 552.3                      | 105.6                  |
|                           | 1996/97 | 581.6                   | 111.5                | 578.8                      | 118.3                  |
| Corn                      | 1995/96 | 515.7                   | 70.0                 | 545.6                      | 64.1                   |
|                           | 1996/97 | 584.8                   | 67.9                 | 573.4                      | 75.5                   |
| Barley                    | 1995/96 | 141.6                   | 12.2                 | 149.4                      | 19.0                   |
|                           | 1996/97 | 153.7                   | 14.9                 | 149.6                      | 23.0                   |
| Rice                      | 1995/96 | 371.6                   | 20.2                 | 370.5                      | 50.4                   |
|                           | 1996/97 | 376.9                   | 18.6                 | 376.0                      | 51.3                   |
| Oilseeds <sup>4</sup>     | 1995/96 | 256.6                   | 43.9                 | 216.7                      | 22.1                   |
|                           | 1996/97 | 259.5                   | 45.6                 | 216.9                      | 19.2                   |
| Soybeans <sup>4</sup>     | 1995/96 | 124.8                   | 31.7                 | 112.0                      | 17.3                   |
|                           | 1996/97 | 133.7                   | 34.7                 | 114.7                      | 15.9                   |
| Soybean meal <sup>4</sup> | 1995/96 | 89.9                    | 32.9                 | 88.7                       | 3.5                    |
|                           | 1996/97 | 90.8                    | 32.6                 | 91.0                       | 3.4                    |
| Soybean oil <sup>4</sup>  | 1995/96 | 20.1                    | 5.4                  | 19.7                       | 2.4                    |
|                           | 1996/97 | 20.4                    | 5.9                  | 20.4                       | 2.4                    |
| <i>Million bales</i>      |         |                         |                      |                            |                        |
| Cotton                    | 1995/96 | 92.2                    | 27.4                 | 85.4                       | 35.7                   |
|                           | 1996/97 | 88.1                    | 26.8                 | 86.6                       | 37.9                   |

1. Aggregate of local marketing years. 2. Wheat, July-June; coarse grains, October-September; cotton, August-July. Rice trade is for the second calendar year. All trade includes trade among countries of the former Soviet Union. All grain trade excludes intra-EU trade; oilseed and cotton trade include intra-EU trade. 3. Crush only for soybeans and oilseeds. 4. Brazil and Argentina adjusted to October-September.

Economic Research Service, USDA

accounts for about 11 percent of U.S. rice production and is typically the first state to plant and harvest rice. By April 14, just 6 percent of Texas acreage had been planted, compared with an average of 44 percent. Late-seeded rice can adversely impact yields.

Texas producers typically harvest a small second or "ratoon" crop from the stubble of the first crop if planting occurs by April 10, but a second crop is hard to produce from late-seeded rice. The delay in planting in Texas also means that no new-crop rice will likely be available for domestic or export markets until after

July, a critical factor given current low projections for 1996/97 long grain ending stocks.

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## Specialty Crops

### Slump in Potato Prices to Reduce Plantings

Low prices in the U.S. potato market are encouraging growers to plant fewer acres for fall harvest in 1997. Prices for sugar beets and dry edible beans—the likely substitute crops in many principal potato growing regions (e.g., Northern Plains and Lake States)—are relatively more favorable. Prospective planted areas of sugar beets and dry beans in the U.S. are each up 6 percent from last spring, with significant increases expected in several major potato producing states.

In addition, spring wheat planting intentions indicate growers in the Pacific Northwest may be shifting some potato acreage to wheat despite lower wheat prices compared with a year ago. Although the U.S. total is down, prospective spring wheat acreage is up 13 percent in Washington and 18 percent in Oregon.

The U.S. fall potato crop accounts for about 90 percent of annual production. The marketing season for fall potatoes is September to August, with most spuds sold from storage during November to August. More than 80 percent of last year's fall crop was produced in Idaho, Oregon, Washington, Colorado, North Dakota, Minnesota, and Wisconsin.

Brisk domestic and export demand for french fries has strengthened grower prices for fall potatoes in recent years. Growers responded to the sustained bullish market by increasing plantings of fall potatoes from 1.09 million acres in 1988 to 1.27 million in 1996. Favorable weather brought record yields, and in the fall of 1996 growers harvested a record crop of 452 million cwt.

Under the weight of large supplies, monthly grower prices have averaged 27 percent below last year's since September, with the sharpest declines in the fresh

## Commodity Briefs

market. During September-February 1996/97, fresh-market prices averaged \$4.13 a cwt, down 51 percent from a year earlier. Prices paid by processors averaged \$4.80 a cwt, down 8 percent, as contract prices with french fry manufacturers set in early 1996 limited the price decline in potatoes for processing.

The depressed market is likely to force down the upcoming fall-crop area by about 75,000 acres, or 6 percent. This would be similar to the 1992 decline, which followed another plunge in prices. The fall 1991 season-average price for potatoes was \$4.15, off nearly 25 percent from a year earlier. The low prices induced potato growers to cut back fall area by 4 percent in 1992.

During the 1996/97 marketing season, processors used 7 percent more potatoes than a year earlier through March. Nevertheless, fresh potato stocks remained over 23 percent higher in early April than a year earlier. On the other hand, strong export demand has managed to keep frozen potato stocks near year-earlier levels. During September to

February, frozen french fry exports surged 20 percent, with the strongest growth in Asia. Domestic demand for frozen potatoes appears to have plateaued in 1997, after a decade and a half in which consumption increased an average of more than 4 percent annually.

The price-depressing supply of U.S. potatoes has slowed imports of Canadian fresh potatoes, but not of frozen product. During September 1996 to February 1997, frozen potato imports from Canada averaged about 47 million pounds a month, up from 31 million a year earlier. In contrast, fresh potato imports (including seed) were down, averaging 59 million pounds a month during the period, compared with 92 million a year earlier.

In response to growers' concern about imports of potatoes from Canada, the U.S. International Trade Commission (ITC) has launched an investigation (due for completion in July) into the factors in the recent increase. The ITC will examine factors in the competitive positions of the U.S. and Canada during 1992 to 1996, including production costs and changes in

exchange rates. The ITC will investigate Canadian aid to its industry for construction of storage, water treatment, and processing facilities.

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## Livestock, Dairy & Poultry

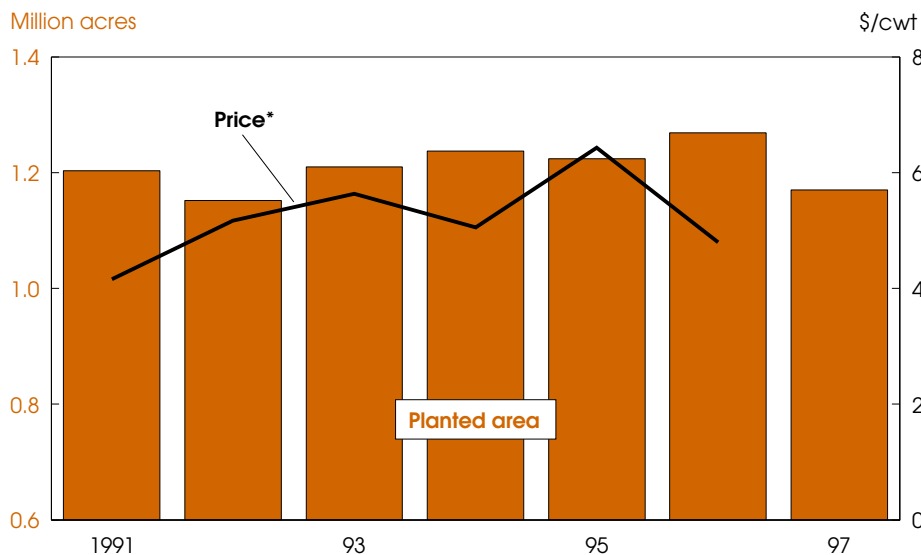
### Pork Outlook Clouded by Recent Trade Issues

Two trade issues are clouding the outlook for pork prices for the remainder of the year: the recent outbreak of foot and mouth disease (FMD) in Taiwan, which resulted in several countries banning imports of Taiwanese pork, and the dispute with the European Union (EU) over inspection harmonization issues, which led to suspension of trade on April 1.

USDA forecasts that the combined effects of the FMD outbreak in Taiwan and the veterinary equivalence dispute with the EU will be to significantly increase net U.S. pork exports, with shipments to Japan increasing and imports from the EU decreasing.

In the wake of the FMD outbreak, U.S. pork exports in 1997 are expected to increase almost 23 percent above the March 1997 forecast. Taiwan exports are almost exclusively destined for Japan, the largest U.S. pork customer. Taiwan had a 41-percent market share in 1996 and supplies about 17 percent of Japanese consumption. The largest increases in shipments of U.S. pork to Japan are likely to occur after the annual Japanese Safeguard mechanism (minimum price for imported pork) expires on June 30.

### Planted Area for Potatoes Is Expected Down in 1997



1997 forecast.

\*Season-average grower price for fall potatoes. 1997 forecast.

Economic Research Service, USDA

## Commodity Briefs

## U.S. Livestock and Poultry Products—Market Outlook

|           |      | Beginning<br>stocks | Production | Imports | Total<br>supply | Exports | Ending<br>stocks | Consumption |            | Primary<br>market<br>price |
|-----------|------|---------------------|------------|---------|-----------------|---------|------------------|-------------|------------|----------------------------|
|           |      |                     |            |         |                 |         |                  | Total       | Per capita |                            |
|           |      | Million lbs.        |            |         |                 |         |                  |             | Lbs.       | \$/cwt                     |
| Beef      | 1996 | 519                 | 25,525     | 2,073   | 28,117          | 1,877   | 377              | 25,863      | 67.7       | 65.21                      |
|           | 1997 | 377                 | 25,341     | 2,330   | 28,048          | 1,900   | 400              | 25,748      | 66.8       | 66-69                      |
| Pork      | 1996 | 396                 | 17,117     | 618     | 18,131          | 951     | 366              | 16,814      | 49.1       | 53.39                      |
|           | 1997 | 366                 | 17,192     | 564     | 18,122          | 1,365   | 380              | 16,377      | 47.4       | 55-58                      |
|           |      |                     |            |         |                 |         |                  |             |            | c/lb.                      |
| Broilers* | 1996 | 560                 | 26,124     | 0       | 26,684          | 4,420   | 641              | 21,622      | 70.8       | 61.2                       |
|           | 1997 | 641                 | 27,372     | 0       | 28,013          | 4,785   | 700              | 22,528      | 73.0       | 59-62                      |
| Turkeys   | 1996 | 271                 | 5,401      | 0       | 5,672           | 438     | 328              | 4,906       | 18.5       | 66.5                       |
|           | 1997 | 328                 | 5,533      | 0       | 5,861           | 467     | 350              | 5,044       | 18.8       | 64-68                      |
|           |      | Million doz.        |            |         |                 |         |                  |             |            | c/doz.                     |
| Eggs**    | 1996 | 11.2                | 6,358.3    | 5.4     | 6,374.9         | 253.1   | 8.5              | 5,251.4     | 237.3      | 88.2                       |
|           | 1997 | 8.5                 | 6,555.0    | 4.0     | 6,567.5         | 258.0   | 12.0             | 5,397.5     | 241.7      | 81-85                      |

Based on April 11, 1997 World Agricultural Supply and Demand Estimates.

\*Cold storage stocks previously classified as "other chicken" are now included with broiler stocks. \*\*Total consumption does not include eggs used for hatching. See tables 10 and 11 for complete definition of terms.

Economic Research Service, USDA

If the veterinary equivalency dispute with the EU continues, U.S. pork imports could fall by almost 7 percent. Decreases in imports from Denmark would likely impact the domestic U.S. market in the second and third quarters of 1997. During the second and third quarters, a large proportion of Danish shipments are pork ribs for the U.S. barbecue season. However, Denmark is expected to increase shipments of single-rib bellies (bellies with ribs still attached) to Japan during the period.

Based on the inventories, pig crops, and farrowing intentions reported in USDA's March *Hogs and Pigs* report, projected 1997 slaughter remains virtually unchanged. Pork production for all 1997 is projected to be up fractionally from 1996, due to slightly heavier weights. Hog prices are expected to average in the mid-\$50's per cwt in 1997, up about \$3 from 1996. The greatest strength is expected during the summer, when reduced imports and increased exports are expected to push prices above \$60 per cwt. As a

result, summer retail per capita consumption would be the lowest since 1986.

Retail composite pork prices are expected to rise 5-7 percent this year, following a 13-percent increase in 1996. The gap between the all-fresh retail beef price and the composite retail pork price is very narrow and is expected to moderate pork price gains as consumers will likely substitute beef for pork. Retail per capita pork consumption is expected to drop about 1.7 pounds from 1996, but late in the year beef supplies are expected to tighten, providing less competition for pork, and the beef-pork retail price gap will likely widen.

## Trade Constraints on Broiler Exports

U.S. broiler exports reached 4.4 billion pounds in 1996 and had been forecast to rise to 5.1 billion in 1997. So far in 1997, however, confusion over the collection of import duties and new import regulations have slowed U.S. exports to Russia and China, the two largest markets.

In 1996, exports to Russia and China accounted for 60 percent of all broiler shipments on a quantity basis. Exports of leg quarters to Russia have been slowed as Russian customs agents enforce collection of import duties. In the Chinese market, the Animal and Plant Quarantine Bureau (CAPQ) has stopped shipments of poultry products from importers who have not complied with new import regulations. The problem is not a food safety issue, since much of the confiscated product was later sold at auction. In addition, exports to the European Union were suspended on April 1 as a result of inspection harmonization disputes.

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## Commodity Spotlight



United Egg Producers

## U.S. Egg Production on The Sunny Side In the 1990's

U.S. egg production is expected to reach 78.7 billion in 1997, having grown each year since 1989. Total U.S. egg production—for table use and for hatching—had remained fairly constant from 1960 to 1991, fluctuating between 62 and 70 billion eggs. Some of the growth has been driven by a 46-percent increase in hatching eggs to supply the expanding number of broilers produced each year (AO November 1996). Growth of egg use in processed food products has also provided an expanding outlet for egg producers and has helped to slow the long-term decline in U.S. table-egg use per capita.

Since 1980, USDA's National Agricultural Statistics Service has reported total U.S. egg production as two separate categories—table and hatching. While production of hatching eggs has shown steady growth since 1983, table-egg production has fluctuated between 59 and 63 billion eggs from 1980 through 1994. Relatively constant table-egg production levels coupled with a steadily rising consumer population reflects that per capita

consumption of eggs in the U.S. has been falling for most of the last 50 years. However, as with hatching-egg production, table-egg output has been growing since 1989, reaching an estimated 65 billion in 1996. Production is expected to reach 66.5 billion in 1997.

Production of eggs in the U.S. has changed dramatically over the years, both technologically and geographically. Formerly a minor activity on most farms, egg production has become a specialized activity conducted on relatively few farms.

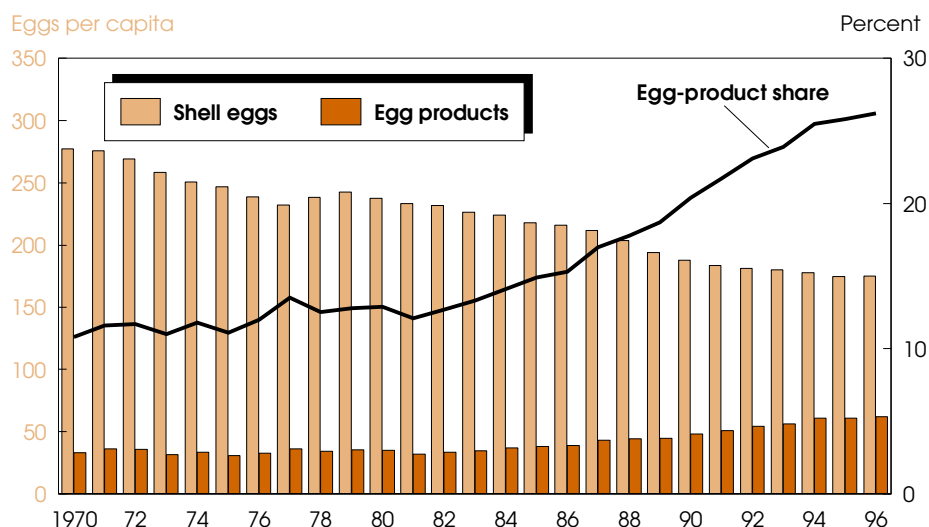
The number of commercial egg producing farms—i.e., farms with 3,000 or more egg-laying hens—has declined from more than 2,000 farms in the mid-1980's, to below 1,000 in the 1990's. With the concentration has come changes in the production environs of most table-egg-laying hens in the U.S. Individual nests in small brooding houses are no longer the norm; modern operations now house cages (6-7 birds per cage) in buildings with more than 100,000 birds. Such large operations often involve elaborate stacked cages with automated feeding, egg collection, and manure-removal processes. Production

complexes with 1-2 million birds housed on a single property is becoming increasingly common.

Geographical shifts in egg production have been just as dramatic. In 1939 Iowa, Ohio, Texas, Pennsylvania, and Illinois were the top five egg producing states, with California ranking 10th and producing less than half the number of eggs as Iowa. By 1960, California had become the leading egg producing state, with Iowa number two. Minnesota had moved up to third, with Pennsylvania and Texas still in the top five.

By 1970, southern states had become more important in egg production, driven partly by increased production of hatching eggs for the region's broiler industry. California still led in egg production, but Georgia, Arkansas, and North Carolina had entered the top five, with Texas falling to 8th, Iowa to 11th, Minnesota to 13th, and Ohio to 14th. In 1990, California was still the leading state for egg production, Indiana had risen to second (from seventh in 1970), and Pennsylvania and Georgia remained in the top five while Ohio regained its top-five spot.

### Growth in Egg-Product Use Slows Decline In Per Capita Egg Consumption



Shell-egg equivalent for egg products.

Economic Research Service, USDA

## Commodity Spotlight

The geographic dynamics of egg production have continued in the 1990's as producers, in an effort to lower costs, are perpetually confronted with the choice of locating closer to feed sources—e.g., Midwestern corn—or nearer to markets—e.g., California and the urban Northeast. In 1996, California and Ohio shared leadership—each producing about 6.5 billion eggs—and Indiana and Pennsylvania remained in the top five. Iowa regained its top-five status on the strength of new production facilities coming on-line to supply the egg-products industry, and thanks in part to investment by California egg marketers seeking additional sources of eggs for California consumers.

### ***Egg Consumption Patterns Changing***

Egg consumption has two components: shell eggs and egg products. Shell eggs are the eggs that can be purchased in cartons in the grocery store. Egg products are eggs that have been processed by egg breakers and are sold primarily to other food manufacturers in liquid or dried form. These eggs reach consumers as ingredients of processed foods—e.g., pasta, candy, baked goods, and cake mixes—or directly as liquid eggs in some grocery stores.

Between 1960 and 1979, total consumption of eggs and egg products declined from 321 eggs per capita to 278. The decline accelerated during the 1980's as egg consumption per capita dropped to 239 by 1989. During the 1990's, total egg consumption has fluctuated between 235 and 239 eggs per person, but has shown an upward trend since 1991. Increases in egg production are expected to continue, and per capita egg consumption is projected to surpass 240 in 1997.

A decline in per capita egg consumption over the last few decades reflects two very different and somewhat counterbalancing trends: a dominating, nearly constant decline in consumption of shell eggs, and a partially offsetting growth in consumption of egg products during the 1980's and 1990's.

Shell-egg consumption per capita was 292 eggs in 1960, declining to 175 by 1995. During the 1980's, per capita shell-egg consumption was declining an average of 5 eggs per year. Much of the decline was due to changing lifestyles (e.g., less time for breakfast preparation in the morning) and the perceived ill effects of the cholesterol intake associated with egg consumption.

In the early 1990's the rate of per-capita-consumption decline for shell eggs had slowed to about 2 eggs per year and is expected to slow even more. Last year saw a leveling off of the decline, as shell-egg consumption held steady at 175 and is projected to continue at that level in 1997 and to hold relatively constant in the next few years.

Consumption of egg products has been growing consistently since 1983, reaching 61 eggs per person by 1994. The growth period followed more than two decades of relatively constant consumption, remaining between 28 and 36 eggs per person from 1960 to 1983.

Egg-product consumption will continue to increase as consumers opt for more convenience foods and as any perception of potentially negative dietary attributes of eggs is lessened in processed products. However, stronger export sales and higher shell-egg prices since mid-1995 have slowed the growth in egg-product consumption in the last 2 years. Stronger growth in consumption is projected for 1997, with 65 eggs per capita expected to be consumed in product form.

### ***Exports Grow As Share of Use***

In the poultry export market, attention has focused mainly on the rapid growth in broiler exports. As a result, the phenomenal export growth experienced by the egg industry has been somewhat overlooked. Between 1990 and 1996, exports of shell eggs and egg products rose from 101 million dozen to 253 million dozen. This 150-percent increase would be considered remarkable in most other industries. As a result, egg exports' share of domestic production rose from 2 percent in 1990 to 5 percent in 1996. The value of these

exports also increased, but at a slightly slower rate, rising from \$99 million to \$206 million over the same period.

U.S. egg exports are divided into two main categories with a number of subcategories. The largest groupings are shell eggs and egg products. Shell-egg exports are divided further into eggs for hatching purposes and those for human consumption. Eggs exported for hatching in other countries are used to supply replacement birds for either laying or broiler flocks. From 1990 to 1996, the quantity of U.S. shell-egg exports for hatching fell 11 percent, while the value of these exports rose 6 percent. In 1996, over three-quarters of shell-egg exports for hatching went to countries in the Western Hemisphere, with Canada and Mexico accounting for almost 50 percent of the total.

The quantity of shell eggs exported for table consumption has expanded by over 50 percent in the 1990's, with most of the expansion occurring in 1993 and 1994. Much of this expansion was due to

### **U.S.-EU Meat Flap—Cracks in U.S. Egg Exports?**

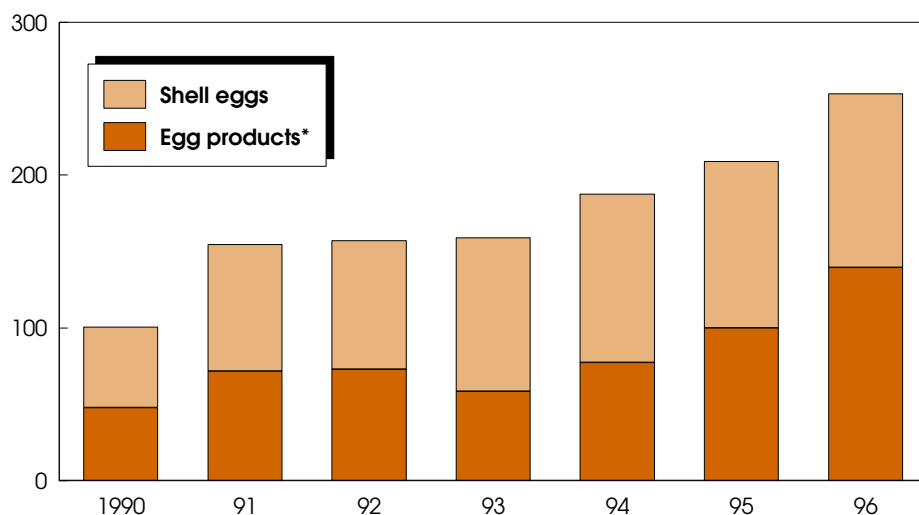
As of April 1, 1997, the U.S. had stopped issuing export certificates for all raw and further processed poultry products, processed egg products, and table eggs destined for the European Union (EU). The halt in trade is due to the failure of the U.S. and the EU to reach an agreement on mutual meat and poultry inspection methods as applied to trade between the two. Both sides are deadlocked on how to achieve veterinary equivalency with inspection systems and processing standards that are sometimes contradictory.

In 1996, the U.S. exported approximately \$69 million of poultry products to the EU. In terms of market share, the \$17 million in shell eggs and egg products exported to the EU represented 8 percent of total U.S. egg and egg-product exports.

## Commodity Spotlight

### Egg Products Boost U.S. Egg Exports in the 1990's

Million doz.



\*Shell-egg equivalent.

Economic Research Service, USDA

increases in funding of the Export Enhancement Program (EEP) for eggs, and most of this EEP funding was used to support egg exports to Middle Eastern markets.

Exports of shell eggs for consumption fell in 1995 when EEP funding declined. Then in 1996, exports rose as strong demand from Mexico, the European Union (EU), and Hong Kong more than offset lower exports to the Middle East. Hong Kong is by far the dominant U.S. market for shell eggs, accounting for over 60 percent of U.S. exports (quantity basis) in 1996.

The 1997 forecast is for continued growth of shell-egg exports, with increases in table-egg exports more than offsetting any declines in hatching-egg exports. The extent of export increases will depend on steady growth in exports to Canada, continued expansion in the Mexican economy, and the competitiveness of U.S. table eggs in the Hong Kong market.

### Egg-Product Exports Boom

While exports of both shell eggs and egg products have grown, export of egg products has been the fastest growing component of egg shipments. Between 1990 and 1996, exports of egg products rose 190 percent from the equivalent of 48 million dozen eggs to 139 million dozen. Growth in these exports has been especially strong the past 2 years, increasing 80 percent.

Most egg-product exports are utilized in bakery products and in further processed foods. Egg-product exports are reported in shell-egg equivalents to facilitate combining with shell-egg export figures, and to include the impact of all egg exports in domestic supply and utilization estimates. The conversion process takes the actual export quantity and estimates the number of eggs it takes to make one pound of each of the four major egg-product export

categories—dried egg albumin, non-dried egg albumin, other dried egg products, and other non-dried egg products.

The egg-product export market is very concentrated, with the top four exporters—the U.S., the EU, China, and Canada—accounting for 95 percent of sales volume in 1996. Japan, Mexico, and Canada were the three largest import markets for U.S. eggs in 1996 and have been for some time. However, in 1996 strong demand caused exports to the EU to jump by over 70 percent to 10 million dozen, making it the fourth-largest U.S. market. The export forecast for U.S. egg products is for continued growth in 1997, but at a much slower rate than in 1995 and 1996, as a fall in exports to the EU will likely offset much of the growth expected in exports to Japan and Mexico.

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### Upcoming Reports—USDA's Economic Research Service

The following reports will be issued electronically on dates and at times (ET) indicated.

#### May

- 13 Cotton & Wool Outlook (4 pm)\*\*
- Feed Outlook (4 pm)\*\*
- Oil Crops Outlook (4 pm)\*\*
- Rice Outlook (4 pm)\*\*
- Wheat Outlook (4 pm)\*\*
- 16 Livestock, Dairy & Poultry (12 noon)
- 20 Agricultural Outlook\*
- 23 U.S. Agricultural Trade Update
- 27 Newly Independent States & Baltics (previously Former Soviet Union)\*
- 29 Agricultural Exports\*

\*Release of summary, 3 pm.

\*\*Available electronically only.



## World Agriculture & Trade



Michael E. Kurtzig

### The Middle East & North Africa: A Robust Ag Market

U.S. farm exports to the Middle East and North Africa grew by over a third from calendar year 1990 to 1996. The region imports an estimated \$30 billion annually in agricultural products, with the U.S. share around 15 percent. In 1996, U.S. agricultural shipments to the region tallied \$4.5 billion (7.5 percent of the U.S. ag total), just under the record \$4.6 billion of 1995.

The region continues to be a large importer of U.S. grains and feedstuffs, including oilmeals, as well as high-value products such as cotton, tobacco, and hides and skins. Rising incomes, urbanization, strong population growth, and trade policy changes are likely to spur import growth, particularly in livestock products, oilseeds, some feedstuffs, and high-value products.

The major U.S. markets in the region are Egypt (\$1.3 billion in 1996), Turkey (\$637 million), Israel (\$617 million), and Saudi Arabia (\$551 million). Together they account for \$3.1 billion, or nearly 70 percent of U.S. sales to the region. In

1996, U.S. exports were between \$100 million and \$322 million to Algeria, Morocco, Jordan, Lebanon, United Arab Emirates, Yemen, and Tunisia. Exports were less than \$100 million each to Syria, Kuwait, Cyprus, Bahrain, Oman, and Qatar.

Current U.S. trade sanctions preclude commercial sales to Iran—a market of about \$3 billion for agricultural products. U.S. sales to Iraq have resumed under the United Nations' food-for-oil plan. As of early April, Iraq has purchased 100,000 tons of U.S. wheat. Prior to 1990, Iraq's food imports were at the \$2.5-billion level, with the U.S. a major supplier. In addition, the U.S. and some of the region's countries face a number of trade issues such as market access and compliance with the World Trade Organization (WTO), which continue under discussion.

The Middle East and North Africa is the major grain importing region in the world and will remain so for the foreseeable future. Coarse grain imports are the second largest in the world after Japan's, at about 17 million tons, and the region imports over one-fourth of the world's rice and wheat. Total grain imports approach 46 million tons. With the exception of Morocco, Turkey, and Iran, all of the region's countries import over half of their food supplies.

The U.S. is a major supplier of bulk commodities (e.g., coarse grains and wheat) to the region, accounting for 40 percent of its imports. While U.S. corn exports declined in 1996, sales have trended upward in the 1990's, primarily a result of increasing demand by the region's expanding poultry and livestock industries. Corn shipments rose to 7.7 million tons in 1995, after averaging 4.1 million tons from 1984 to 1989. The demand for soybean meal has also risen, particularly in Turkey and Saudi Arabia.

Strong population and economic growth rates underpin relatively strong prospects for U.S. agricultural exports to the region. The Middle East and North African population—at 360 million—is growing at a rate of 2-3 percent per year. Annual growth in Gross Domestic Product (GDP) for the region is forecast at 3-4 percent in real terms to the year 2000, a result of

somewhat higher oil prices, increasing capital flows, growing world trade, and continued progress in economic adjustment programs (e.g., privatizing state-owned industries, including agriculture).

#### *Exports to Egypt At Record Levels*

In 1996, Egypt was the tenth-largest national market for U.S. agricultural products, at \$1.32 billion—down 9 percent from the 1995 record—by far the largest U.S. market in the region. U.S. agricultural exports to Egypt in 1995 marked the greatest expansion ever, from \$872 million in 1994 to \$1.45 billion.

The recent trade boom with Egypt reflects continued trade liberalization and privatization of its agricultural sector, partly related to Egypt's accession to the WTO in mid-1995. The 1995 rise represented a major jump in the U.S. market share of Egypt's agricultural imports from 30 percent in 1994 to 44 percent in 1995.

Egypt is primarily a bulk commodity market for the U.S., which has been Egypt's principal supplier of wheat for the last decade. From 1994 to 1996, imports of U.S. wheat averaged 5 million tons, about 80 percent of Egypt's import market and 16 percent of U.S. wheat exports. Simultaneously, the U.S. has dominated the corn market, and holds a major share of Egypt's soybean and soybean meal markets.

With the globalization of food technology and advertising, the Egyptian market for consumer-ready food products is growing rapidly. The percentage of two-income households is also rising, which should improve market prospects for high-value food products. The demand for consumer-ready products in this market of 64 million people could parallel the improvement in incomes that is expected to accompany the privatization process.

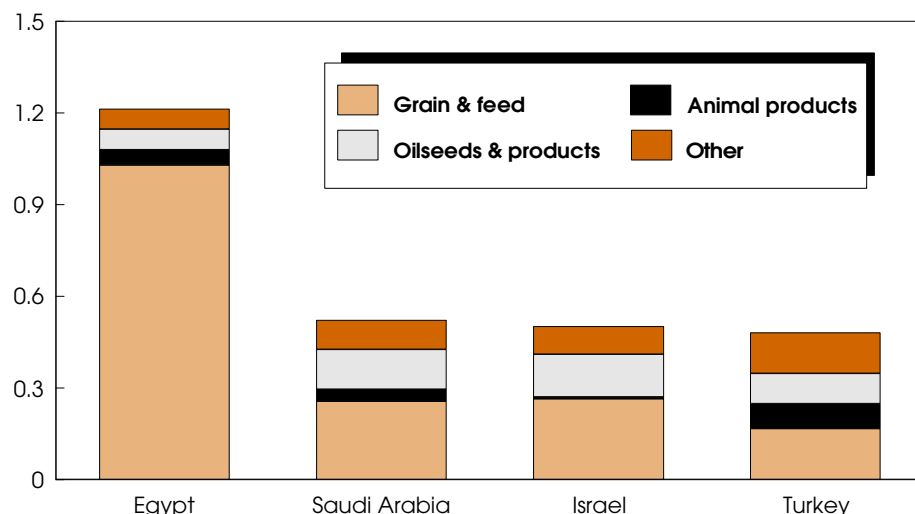
U.S. exports of consumer-ready agricultural products were about \$11.4 million in 1996. Top consumer-ready products include juice, prepared sauces and dressings, nuts, milk powder, corn chips and breakfast cereals, and butter. The U.S. market share for each of these is at least 19 percent. Exports of processed meat,



## World Agriculture & Trade

### Egypt Is the Largest U.S. Ag Market in the Region

\$ billion



1994-96 average. U.S. exports to the region averaged \$4.2 billion.

Economic Research Service, USDA

cheese, and prepared or preserved fruits amount to about 2 percent of market share. U.S. competitors in this market include European countries such as France, Germany, Italy, Switzerland, Greece, Holland, and Denmark, as well as South Africa.

Besides foreign competition, several obstacles constrain U.S. exports of other processed food products to Egypt. First, many high-value processed products are produced domestically (e.g., macaroni, french fries, chips, ketchup, biscuits, confections, juice, beer, and wine). Output of these products has increased significantly in recent years. Second, Egyptian consumers lack familiarity with many U.S. products.

In addition, although the government has abolished most import bans, it continues to protect producers in certain sectors. For example, Egypt has banned poultry imports since 1988 to protect and stimulate the domestic industry (AO March 1997). The ban—maintained in violation of WTO commitments—is scheduled to be lifted by 2000. Import bans on textiles will be lifted over an 8-year transition period in accordance with WTO provisions.

Early in 1996, the Egyptian government allowed cotton imports for the first time in many years from sources other than California and Arizona, the only producers that meet Egypt's phytosanitary requirements. While the amount was small (from Syria), it signals a shift in policy toward easing quarantine restrictions on imported cotton and acquiring low-cost substitutes for California-Arizona cotton.

The U.S. has been a principal cotton supplier to Egypt. In response to changes in Egyptian output, U.S. exports have fluctuated widely from a record 66,660 tons in 1992 to 4,125 tons in 1994 and 10,327 tons in 1996. If the market is opened completely, lower priced cotton could be imported. However, lower prices alone would not be a serious threat to U.S. market share—quality and reliability of supply are important motives for continuing interest in U.S. cotton.

### *Turkey's Trade Reform Pulls Up Ag Imports*

Turkey is one of the few countries in this region that was historically viewed as self-sufficient in agriculture (although at a high cost), with exportable surpluses. Agricultural imports have been historical-

ly small, with the exception of wheat—the result of an import substitution policy and strong border measures protecting the country's producers.

But recently Turkey has been importing significant quantities of basic agricultural products, including wheat, corn, sugar, rice, tallow, beef, hides and skins, as well as cattle for breeding and slaughter. The change is a result of a continued trade liberalization policy, a move towards privatization of the economy, including agriculture, and an increasing focus on development of the livestock sector.

Driven by rapid expansion of the textile sector and development of the country's poultry and livestock sector, U.S. agricultural exports to Turkey have moved up sharply from \$226 million in 1990 to a record \$637 million in 1996, 11 percent higher than 1995. The forecast of U.S. sales continues to be positive, with a strong showing early in 1997.

Turkey's textile industry continues to expand, and with a reduced cotton harvest in 1996, demand for certain types of imported cotton remains strong. Imports are projected at a record 250,000 tons in 1997, up 5 percent from last year. Up to the early 1980's, Turkey was a large net exporter of raw cotton, but sharply higher demand from domestic textile mills has made it a large net importer.

Like other countries in the region, Turkey does not produce enough feedstuffs to meet rising demand in its poultry and livestock sectors. Corn output has remained near the 2-million-ton level over the last decade, while consumption has been at the 2.4-million-ton level during most of the period, rising to 2.7 million in 1996. Rising imports, primarily from the U.S., have filled the gap. U.S. corn exports to Turkey have risen sevenfold over the last 5 years to a record 525,000 tons in 1996; value was up 79 percent to \$86 million. Turkey's total corn imports in 1996 were estimated at 739,000 tons.

Demand for soymeal and soybeans has also risen sharply, reflected in U.S. meal sales of 139,000 tons in 1996 (a nearly 10-fold increase over 1995), valued at \$38 million (a 15-fold increase). Turkey's soymeal imports are estimated at 250,000

## World Agriculture &amp; Trade

tons, with the U.S. share about 56 percent in 1996. Soymeal production, imports, and consumption have all tripled in the last decade. Increased production is almost entirely from imported beans, nearly 70 percent from the U.S. In 1996, U.S. soybean exports were 147,000 tons (\$41 million), up 31 percent from 1995.

In addition, demand is increasing for several other agricultural commodities, including hides and skins for Turkey's expanding leather industry, tallow for its soap industry, tobacco for its expanding cigarette output, and seeds to upgrade the genetic quality of a number of its crops. U.S. tobacco exports to Turkey have quadrupled in value and quintupled in volume over the last 6 years to nearly 16,000 tons at \$77 million in 1996.

In food consumption and marketing, Turkey is showing similarities with western nations—more health- and quality consciousness, with increased use of modern processing and storage techniques. The expansion of large supermarkets and distribution centers, combined with trade liberalization, has continued to diversify the Turkish diet, shifting it from grains to high-value commodities such as meat, fruits, and vegetables. Overall incomes have risen and the number of working women is growing rapidly, which implies increased demand for prepared foods. A large influx of tourists, numbering about 8.5 million in 1996, has created large demand and sophisticated tastes for higher quality food products.

The U.S. has made progress in exports of consumer-oriented agricultural products, which increased from \$1.5 million in 1991 to \$6.8 million in 1995 (they slipped to \$5.2 million in 1996). Dairy products, processed fruits and vegetables, fish, and poultry are among the leading items. Despite the relatively large increase, U.S. exports of consumer-oriented products remain minor in comparison with competitors' exports and with U.S. bulk exports. The European Union (EU), with the advantage of proximity and consumer familiarity with its products, is by far the leading supplier of consumer-ready food products to Turkey.

However, the consumer-ready food market holds bright prospects for the U.S. in the medium- to long term, for several reasons: 1) young Turkish consumers have a preference for western food products, particularly from the U.S.; 2) Turkey is a large market with growing purchasing power; 3) an increasing portion of the demand for imported consumer-ready products is generated by the growing tourist industry and hotel and restaurant trade; and, 4) Turkey is rapidly becoming an important trade conduit to regional markets in the Middle East and central Asia.

### ***Israeli Ag Sector Shrinks While Food Demand Rises***

U.S. agricultural exports to Israel continue to rise strongly, reflecting unprecedented sustained economic growth (GDP growth averaged 5-6 percent a year from 1990 to 1996). The Peace Process has opened new markets to Israel not only in the region, but also with nations that had previously shunned the country. Tourism has also increased.

In addition, the country's population—now 5.6 million—has grown dramatically in recent years with an influx of 700,000 Russian and Ethiopian immigrants. Combined with almost 2 million Palestinians in the Palestinian Authority, the Israel-Palestinian market has more than 7 million consumers. (However, there is a significant difference in buying power between the two populations. Israeli per capita income in 1996 was about \$15,000 annually, compared with about \$1,500 for Palestinians living in the West Bank and Gaza.)

To keep pace with demand, imports of all goods and services rose from \$24 billion in 1990 to over \$42 billion in 1996. Israel's agricultural imports rose to a record \$2 billion in 1995, up 14 percent from 1994 and continuing an upward trend of recent years.

While food demand grows, Israel's agricultural sector continues to shrink. In 1995, agriculture declined as a share of the nation's GDP, employment, and productive assets (investment goods). While agricultural employment has actually

grown, the sector has become increasingly dependent on foreign laborers. Also, agriculture's share of total exports continues to decline—agricultural exports once offset imports, but now imports exceed exports by 50 percent.

The U.S. has been Israel's principal supplier of agricultural products for many years, due in part to long-standing commitments to buy 1.6 million tons of U.S. grains and oilseeds each year. U.S. exports have been primarily bulk items, which still comprise three-fourths of agricultural exports to Israel. In 1996, U.S. agricultural exports were a record \$617 million, up 28 percent from 1995. Wheat, corn, barley, sorghum, and other feeds and products accounted for over half of the total value. In terms of volume, 1996 was a record year for U.S. bulk ag exports to Israel at 1.75 million tons, up only 2 percent from 1995 but 30 percent above 1990.

Until September 1995, the government required millers to source milling-quality wheat exclusively from the U.S., but trade liberalization under the GATT-Uruguay Round agreement means that possibly half of Israel's imports of milling wheat may come from non-U.S. sources. However, U.S. wheat exports in 1996 were a record 663,000 tons, up 11 percent from 1995, due to strong demand. Israel produces less than 200,000 tons of its annual milling wheat requirements (750,000 tons).

Before January 1996, soybeans were the only bulk product that had to be imported from the U.S. under a long-term commitment. However, with implementation of the Uruguay Round agreement, soybeans were freed from source limitations. Nevertheless, U.S. sales of oilseeds and other seeds to Israel reached a record \$158 million in 1996 (80 percent were soybeans), as higher prices for fish meal—a key ingredient in poultry diets—boosted demand for soybeans.

Other commodities registering large gains in 1996 were fruits and preparations, with U.S. sales rising 20 percent to over \$16 million. Volume grew 44 percent to 15,020 tons, a sixfold increase since 1990.

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The U.S. export value of nuts and preparations increased fivefold in the 1990's. The most spectacular rise has occurred in exports to Israel of vegetables and preparations, whose value has jumped 13-fold since 1990 to \$51 million in 1996.

With neither the water nor the land to grow grains and oilseeds sufficient to meet rising food demand, Israel is a stable export market for U.S. exporters, and shipments to the country will continue to be heavily bulk-product driven, with increased sales of high-value products.

### *Higher Feedstuff Exports To Saudi Arabia*

Saudi Arabia vies with Egypt as the largest single market for agriculture in the Middle East/North African region, with annual agricultural imports of more than \$4 billion. Over the past decade, the U.S. share of Saudi ag imports has consistently been around 10 percent.

With an annual growth rate of 3.5 percent, the population is forecast to reach 25 million by the turn of the century and double over the next 20 years. More than half of Saudi Arabia's population is under the age of 17. With a young population, increased influence of satellite TV, and rising education levels, food consumption patterns are ultimately expected to resemble more closely those of the West. Customers are demanding more variety in their diets, and the supply is coming from domestic production as well as imports.

In 1996, U.S. agricultural sales to Saudi Arabia continued strong at \$551 million, only 2 percent below the 1990 record. Significant increases have occurred in feedstuffs, particularly oil meal and corn as the country's dairy and meat sector has expanded. U.S. oil meal exports were a record \$100 million in 1996, up 84 percent from 1995; volume rose 33 percent to just under 357,000 tons. Since 1990, U.S. soybean meal exports have more than doubled and the value has risen by a factor of two and a half. U.S. sales of corn to Saudi Arabia also continue to trend upward. In 1996, while volume fell by 12 percent from the previous year, value rose by 18 percent to a record \$136 million.

### U.S. Ag Exports to the Region Have Risen by Over a Third in the 1990's

|                        | 1990       | 1995   | 1996   |
|------------------------|------------|--------|--------|
|                        | \$ million |        |        |
| Egypt                  | 693        | 1,447  | 1,319  |
| Turkey                 | 226        | 536    | 637    |
| Israel                 | 304        | 484    | 617    |
| Saudi Arabia           | 565        | 526    | 551    |
| Algeria                | 513        | 401    | 322    |
| Morocco                | 145        | 189    | 244    |
| Jordan                 | 185        | 168    | 165    |
| Lebanon                | 27         | 114    | 138    |
| United Arab Emirates   | 46         | 156    | 121    |
| Yemen                  | 57         | 133    | 115    |
| Tunisia                | 94         | 108    | 101    |
| Syria                  | 34         | 69     | 50     |
| Kuwait                 | 23         | 66     | 42     |
| Cyprus                 | 39         | 45     | 37     |
| Bahrain                | 7          | 22     | 18     |
| Oman                   | 8          | 14     | 14     |
| Qatar                  | 4          | 9      | 6      |
| Iraq                   | 329        | 0      | 3      |
| Iran                   | 2          | 136    | 0      |
| Libya                  | 0          | 0      | 0      |
| U.S. exports to region | 3,301      | 4,623  | 4,500  |
| U.S. exports to world  | 39,363     | 55,814 | 60,431 |

Economic Research Service, USDA

Overall demand for barley has risen, with imports estimated at 5 million tons in 1996 after a low of 2.9 million in 1995 when higher output reduced imports. However, the U.S. share has declined. A decade ago, U.S. barley sales were 2.4 million tons, but dropped to one-tenth that level last year as EU restitution payments made purchases from that source more attractive.

Saudi Arabia's general agricultural policy, according to its 6th Development Plan, is to achieve self-sufficiency while promoting agricultural production that does not require heavy reliance on water resources to achieve growth targets. For example, wheat output far exceeded domestic needs until the early 1990's, when producer subsidies were cut sharply to reduce budgetary outlays and to slow the depletion of ground water. Production dropped from 4.1 million tons in 1992 to 1.2 in 1996. Saudi policy is now to target production levels to meet domestic needs.

Saudi Arabia has achieved self-sufficiency in many other agricultural goods such as dates, eggs, fresh dairy products, and most vegetables. But the country is a significant importer of processed dairy products—powered milk, butter, cheese, ghee, and other milk products. U.S. exports of dairy products to Saudi Arabia were valued at \$11 million in 1996 and have grown ninefold since 1990.

The Saudi market for consumer-ready food products is increasing and becoming more diverse. Fifteen years ago there were few supermarkets and the number of fast-food restaurants was minimal. Today, there are about 230 large modern western-style supermarkets, hundreds of corner grocery stores, and most major American fast-food chains are well represented. The number of cold storage warehouses and food processing plants has increased significantly over the past 3 years, boosting the country's capacity to import larger quantities of high-value food products.

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The U.S. is a leading supplier of consumer-ready products to Saudi Arabia, exporting \$118 million in 1995. U.S. exports of poultry meat reached a record \$22.6 million in 1995 but declined somewhat in 1996 as domestic output rose. This trend is likely to continue as Saudi Arabia expands its poultry capacity. U.S. sales of nuts continue to rise, as well as sales of dried lentils, coffee, chocolate, beverages, and sugar and tropical products.

Competition for the Saudi market has increased. Many exporters, including the EU, Egypt, Thailand, China, India, Australia, and New Zealand, offer different forms of promotional assistance to importers such as subsidies and easy payment terms. But the U.S. share of consumer-ready food products has remained fairly steady at about 4 percent over the past 4 years, despite strong foreign competition and a significant increase in local production of food products.

### ***Favorable Outlook For U.S. Trade***

The large scale of the region's participation in the world grain market (25 percent of wheat and 19 percent each of coarse grain and rice imports) means that it will continue to be a pivotal force in global trade. Solid but not spectacular export gains are expected in 1997 for U.S. exports, as the region's expanding live-

stock and poultry sectors boost demand for feedstuffs, and as high-value products meet demand by a more affluent, urbanized society. Most countries in the region expect moderately strong economic growth in 1997.

In the coming years, the agricultural sectors in many countries are likely to shrink and to change in composition as trade liberalization and privatization continue to reduce government's role in agriculture. More sustainable use of scarce resources, especially water, will also force fundamental changes in the agricultural sectors in the region. Crop substitution—away from such water-intensive crops as rice and sugarcane and toward less water-demanding, higher priced crops such as fruits and vegetables—is a likely trend.

Weather continues to play a major role in the region's agricultural well-being. The region is heir to devastating droughts which have caused wide swings in grain production and therefore, imports. Limited arable area, continuing depletion of water resources, young and more urbanized populations with higher incomes, and growing tourism in many countries all forecast rising food demand which cannot be met with available local resources. Under such a scenario, and given the growth in the region's population and economies, U.S. agricultural exports will reflect continued strong demand for basic commodities and an increasingly sophisticated high-value market.

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### **May Releases—USDA's Agricultural Statistics Board**

The following reports are issued electronically at 3 p.m. (ET) unless otherwise indicated.

#### **May**

- 2 Dairy Products
- Egg Products
- Poultry Slaughter
- 5 Crop Progress (after 4 pm)
- 7 Broiler Hatchery
- 12 Cotton Ginnings, Annual  
(8:30 am)
- Crop Production (8:30 am)
- Crop Progress (after 4 pm)
- 14 Broiler Hatchery
- Potato Stocks
- Turkey Hatchery
- 15 Milk—Production, Disposition,  
& Income
- Milk Production
- 16 Cattle on Feed
- Farm Labor
- 19 Crop Progress (after 4 pm)
- 20 Cold Storage
- 21 Broiler Hatchery
- 22 Chickens & Eggs
- 23 Catfish Processing
- Livestock Slaughter
- 27 Crop Progress (after 4 pm)
- 28 Broiler Hatchery
- Peanut Stocks & Processing
- 30 Agricultural Prices



## Resources & Environment



### Toward a Broader Assessment of Integrated Pest Management

The USDA National Initiative on Integrated Pest Management calls for a broader assessment of IPM practices than has occurred in the past. Past efforts to evaluate IPM program impacts had generally focused on the cost and efficacy of IPM practices, and assessment of environmental impacts has often been limited to measuring changes in pesticide use. Broadening the assessment to document the economic, environmental, and public-health impacts adds further complexity.

The IPM Initiative, in operation since December 1994, aims at implementing the Administration's goal of applying IPM methods and technologies on 75 percent of the nation's cropland by the year 2000. This goal involves identifying, developing, and encouraging adoption of ecologically based pest management approaches that reduce dependence on synthetic pesticides and are more environmentally sustainable, but which are also economically viable for farmers and are compatible with producing an economical, safe, and plentiful food supply.

USDA's IPM Initiative is aimed at developing and implementing a strategic plan to achieve a two-pronged goal: IPM adoption and ecological risk reduction. A major focus of the IPM Initiative has been to redirect new and existing resources toward IPM research and implementation priorities that are identified through stakeholder involvement. Incorporating the input of IPM food and fiber producers, landscape managers, consumers, agribusiness, and environmental groups—to name a few stakeholders—helps ensure that IPM programs are consistent with the values and concerns of farmers, farm-related businesses, and the public.

#### *Forging a Consensus On Assessment Methods*

The goal of implementing IPM practices on 75 percent of crop acres has thrown the spotlight on defining and measuring the extent of IPM adoption in the U.S. The concomitant goal of reducing reliance on high-risk pesticides to garner environmental and public-health benefits demands new methods of measuring pesticide impacts. Ensuring that IPM practices and technologies are profitable for producers, and that they contribute to keeping American agriculture competitive in world markets, requires careful evaluation of economic impacts at both the farm and national level.

Developing the methods for measuring progress towards the IPM adoption and risk reduction goals is the challenge facing agricultural interest groups that include, among others, IPM practitioners; social, physical, and biological scientists; and environmentalists. While there is agreement on the need to better document the economic, environmental, and public health impacts of IPM adoption, a consensus has not yet been forged on the appropriate assessment method(s).

The sheer diversity of IPM systems used in the U.S. precludes adoption of a single approach to defining and assessing economic, environmental, and public-health impacts. However, several key elements must be addressed in any approach in order to measure progress toward achieving IPM adoption and risk reduction goals: developing site- and crop-specific definitions of IPM; selecting appropriate

environmental and public-health indicators; and integrating the different indicators into a common framework for comparing tradeoffs among IPM program objectives.

While IPM is defined in a number of ways, there is general agreement that it is a *systems* approach to pest management that combines a wide array of crop production practices with careful monitoring of pests and their natural enemies. IPM practices include use of resistant varieties, timing of planting, techniques of cultivation, biological controls, and judicious use of pesticides. IPM systems are designed to anticipate pests and prevent them from reaching economically damaging levels.

Developing a commodity- and location-specific definition of IPM is the first step in measuring the extent and degree of IPM adoption. The diversity of IPM systems is difficult to capture in a single

This article highlights some of the major issues discussed during the Third National Integrated Pest Management (IPM) Symposium/Workshop held in Washington, D. C. from February 27 to March 1, 1996. Attending the workshop were more than 600 participants from around the country, reflecting a wide array of disciplines and professional backgrounds. The Symposium/Workshop was co-sponsored by USDA's Cooperative State Research, Education, and Extension Service and Economic Research Service, along with the Extension and Experiment Station Committees on Organization and Policy and their IPM subcommittees.

In addition to the assessment of IPM impacts, the topics addressed included: involving IPM customers (farmers, agribusiness, consumers) in the design, implementation, and evaluation of IPM programs; analytical and data needs for pest management programs; working with customers to identify research and implementation priorities; and policies for promoting biological and reduced-risk alternatives.

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standardized definition or list of practices. Regional variation in geophysical characteristics, ecosystem function, and climate results in many unique agricultural areas. The variation in cropping systems (crop mix and practices) and institutions supporting agricultural production (e.g., research and extension, finance, agribusiness, transportation) adds to the complexity. Annual variation in weather and pest infestation levels can also influence the set of recommended IPM practices.

Ecosystem-specific IPM programs could contain recommended practices that differ significantly by crop, region, and pest problem. For example, IPM systems recommended for apple production in the Yakima Valley in Washington State are different from those in New York's Hudson Valley. IPM practices for insect control in vegetable crop production in Florida differ from the practices for weed control in Iowa corn.

There may be some overlap in recommended IPM practices—for instance, the use of scouting (systematic monitoring of pest infestation levels) and economic thresholds (levels of pest infestation above which economic damage takes place). But the core similarity across all IPM systems is a decision-making process that relies on the use of sound biological, physical, and economic data to make pest management decisions.

The adoption of IPM is not a discrete yes-no choice. Producers incorporate into their production practices, to varying degrees, some number of the potential IPM practices available. Thus, measuring IPM adoption is a matter of locating a producer's position along a continuum from none or basic, to advanced or intensive use of IPM practices specific to a particular ecosystem.

### ***Creating an Integrated Assessment***

Traditional crop production using agricultural chemicals has many economic, environmental, and public-health consequences—direct and indirect, harmful and beneficial. Potential beneficial consequences of the use of agricultural chemicals in crop production include higher yields, reduced production risks, and

## **An IPM Tool Box**

**Biological pest management** includes the use of pheromones, plant regulators, and microbial organisms—such as *Bacillus thuringiensis* (*Bt*)—beneficial organisms, and genetic resistance to insects, disease, and other pests.

**Cultural pest management** includes crop rotations, tillage, alternations in planting and harvesting dates, trap crops, sanitation procedures, irrigation techniques, fertilization, physical barriers, border sprays, cold air treatments, and habitat provision for natural enemies of crop pests.

**Areawide pest management systems** combine primarily biological and cultural methods of pest management to contain or suppress insect pest populations over large definable areas. This is in contrast to traditional IPM systems which are implemented on individual farms and ranches. Areawide pest management is implemented through partnerships with growers, commodity groups, and government agencies.

**Pesticide efficiency tools** include scouting and economic thresholds, expert systems, precision farming, and bioengineered herbicide tolerance.

increased crop options. Potentially harmful consequences include water quality impairment, loss of biodiversity, reduced populations of beneficial organisms, and health risks to farm workers. Assessing the economic, environmental, and public-health impacts of alternative pest management practices requires examining trade-offs across a range of potential effects.

Economists use a set of well-established methods to assess the impacts of IPM adoption on producer profitability. The primary method of estimating farm-level profitability is through calculating partial or enterprise budgets, which capture changes in prices and quantities of inputs and output resulting from the adoption of IPM methods. Farm budgets also are important inputs in more aggregate assessments of IPM impacts. For example, if the sample of farm budgets is large enough, estimates of changes in aggregate crop production levels and input demand can be calculated for a given region or for the country as a whole. This information in turn is used to analyze the distribution of benefits and costs of IPM adoption among producers and consumers, regions, and socioeconomic groups.

More difficult is the assessment of actual or potential environmental and public-health impacts associated with different

levels of IPM adoption. Many impacts of pesticide use occur off-farm and over time, making it difficult to link specific farm practices directly with environmental impacts. Thus, directly assessing the physical or biological impacts of changes in pesticide use is complex.

In developing comparative risk estimation and ranking methods for the environmental and public-health impacts of pesticide use and alternative pest management approaches, analysts face two challenges. First, gaps exist in the data needed to evaluate pesticide impacts in areas of potential concern to society. For example, much of the ecological effects data on pesticides come from single-species toxicity tests, but species or groups of species vary in their sensitivity to different pesticides. In addition, information on other important factors—persistence, pesticide formulation, weather, application methods, and use of safety precautions—all of which can be site- and time-specific, is often not available.

Second, analysts must determine which environmental and public-health impacts to assess, how to quantify or measure changes in impacts, and the weights to be assigned to different impacts (depending, for example, on their perceived relative importance). Potential areas to examine

## Resources & Environment

### Comparing Pesticide Risks

To facilitate comparing pesticide risks, several different research teams have developed multiple-attribute classification tools to help growers in making pesticide choices. Approaches range from relatively uncomplicated pesticide classification lists to more sophisticated software-based whole-farm planning systems. Following are three examples of such tools, presented at the recent IPM symposium/workshop.

**Red/Yellow/Green pesticide classification** schemes divide all pesticides registered for a particular crop into three categories. The use of pesticides coded "red" is prohibited for management systems designated as IPM, with some exceptions; pesticides coded as "yellow" can be used with caution and in association with other preventive measures; and pesticides labeled "green" can be used without restrictions.

**National Agricultural Pesticide Risk Analysis (NAPRA)**, developed by USDA's Natural Resources Conservation Service, is a field-level planning tool that allows growers to compare water quality risks resulting from various pesticides in different crop and tillage scenarios. Based on an environmental fate model, NAPRA quantifies relative environmental risks associated with pesticides in percolation, solution runoff, and erosion by generating climate-specific probabilities of off-site pesticide loadings and concentrations. This information, when coupled with pesticide toxicity data, provides a quantitative evaluation of the relative risks associated with different management options.

**PLANETOR 2**, developed by the Center for Farm Financial Management at the University of Minnesota, is a comprehensive environmental and economic farm-planning software program. Different modules evaluate impacts of reducing or changing pesticide, nitrogen, phosphorus, and manure applications; tillage systems; and crop rotations. Different management options are compared for impacts on soil erosion, nitrate leaching, phosphorus runoff, pesticide movement, as well as economic profitability.

include impacts on water quality, worker safety, and the welfare of aquatic, avian, and other beneficial organisms. Indicators of the effects of IPM efforts might be reduced pesticide runoff, decreased pesticide-related illness, increase in populations of beneficial organisms, and/or a shift to biological pesticides. The appropriate combination of impacts and weights may depend on the nature of the IPM system under evaluation and the priorities and interests of the stakeholders.

A unifying framework is needed to assess tradeoffs among economic, environmental, and public-health impacts of alternative pest management technologies. No one technology will be superior in all areas of assessment. A particular technology or practice may reduce damage


potential in one assessment category (e.g., water quality) but increase damage potential in another category (e.g., worker health). An additional concern is how benefits and costs of IPM adoption are distributed between producers and consumers, as well as among regions and socioeconomic groups.

Translating all impacts into a common unit makes comparison of tradeoffs between objectives easier. Using monetary values is convenient because the economic impacts of alternative production technologies on producers and consumers can be measured using market prices and well-established economic techniques.

Meaningful monetary values do not exist, however, for such environmental and public-health impacts as decreased biodiversity, impaired water quality, or diminished human reproductive capability. But resource economists have developed a set of techniques for estimating monetary values of nonmarket impacts which have been used to estimate a value for environmental and public-health impacts. If appropriate values can be determined for the nonmarket impacts, a benefit-cost framework can be used to assess tradeoffs between different objectives.

Achieving the Administration's goals of implementing IPM on 75 percent of U.S. cropland by the year 2000 and reducing environmental and public-health risks from pesticides will require a concerted effort by all IPM stakeholders. The returns on that effort have the potential to produce widely shared benefits for all sectors of society.

Given the diversity of agroecosystems, stakeholder priorities, and IPM systems in the U.S., finding an appropriate method to assess those shared benefits will be a challenge. But careful documentation of IPM's economic and environmental goals, including continued profitability for farmers and reduced risks to human health and the environment associated with pesticide use, is an essential step in enlisting producer and public support for IPM.

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### IPM: Issues, obstacles, and advantages

#### *Proceedings of the Third National IPM Symposium/Workshop: Broadening Support for 21st Century IPM*

A forthcoming publication from USDA's Economic Research Service  
 Watch for details in the June *Agricultural Outlook*.



## Farm & Rural Communities



USDA photo by Bob Nichols

### Limited-Resource Farmers: Their Risk Management Needs

The risks of crop loss and price declines have long been facts of life in agricultural production. Recent changes in Federal programs have focused attention on the need for U.S. farmers to manage these risks and to examine available risk management options more closely.

USDA's Economic Research Service (ERS) has been working with the Department's Risk Management Agency (RMA) to improve RMA's products and expand its outreach efforts aimed at limited-resource farmers. One RMA product, multi-peril crop insurance (MPCI), has been commonly used by farmers as a risk management tool. While MPCI is sold to farmers primarily by private insurance agents, RMA develops the policies and the underwriting terms, and provides subsidization and reinsurance. As a result, RMA has an interest in knowing how MPCI has been serving the needs of limited-resource farmers.

Using data from USDA's Farm Costs and Returns Survey (FCRS) and from the

Census of Agriculture, which provide information on individual farms and on the principal operator of each farm, ERS identified characteristics of socially disadvantaged, small, and limited-opportunity farm operators. The two agencies also examined such farmers' interest in and use of various risk management programs, particularly Federal crop insurance. In both the Census and FCRS, the principal operator of a farm may be the owner, a tenant, or a hired manager.

Results of the research indicate that socially disadvantaged, small, and limited-opportunity operators tend not to purchase crop insurance nor to participate in insurance-type programs operated by USDA. This article traces the reasons behind lack of use of these risk management tools by limited-resource farmers.

#### *Who Are the Limited-Resource Farmers?*

Limited-resource farmers are defined by RMA as farm operators having less than \$20,000 in income from all sources in the previous 2 years. While not all socially disadvantaged and small farms fall into this income category, the term "limited resource" loosely refers to these types of farms as well as to limited-opportunity farm households.

A socially disadvantaged group is defined by the 1987 Equal Credit Opportunity Act as one whose members have been subjected to racial, ethnic, or other forms of prejudice because of their membership in the group. USDA defines women, African Americans, American Indians and Alaskan Natives (Native Americans), Asians and Pacific Islanders, and Hispanics as **socially disadvantaged groups**. Data presented on these groups were obtained from the 1992 Census of Agriculture.

Except for women, socially disadvantaged farmers tend to be concentrated in particular regions of the U.S. Approximately 90 percent of the 18,800 African American-operated farms are in the South. In two southern states—South Carolina and Mississippi—African American-operated farms account for 8-9 percent of all farms, compared with 1 percent of all farms nationwide. Most (81 percent) of the

8,300 American Indian-operated farms identified in the Census of Agriculture are west of the Mississippi River. North Carolina, however, has 600 American Indian operators, many of whom specialize in tobacco.

Of the 8,100 Asian/Pacific Islander-operated farms, most (79 percent) are in California and Hawaii, and most of the 21,000 Hispanic-operated farms (72 percent) are in California, Colorado, Florida, New Mexico, and Texas. The 1992 Census of Agriculture identifies about 145,000 farms (8 percent of all U.S. farms) with women as their principal operators, and these are distributed throughout the U.S.

Older operators are more common among farmers in certain socially disadvantaged groups than among the U.S. farm population in general. African American and female operators tend to be older, with at least 36 percent of each of these groups at least 65 years old, compared with 25 percent of all farm operators.

**Small, full-time farms** were also identified using 1992 Census of Agriculture data. The small, full-time farm designation is based on three criteria: sales of agricultural products were less than \$20,000; principal occupation of the operator was farmer or rancher; and the operator worked less than 50 days of the year off the farm. About 350,000 farms fit this definition. Financial data other than sales (e.g., off-farm income) cannot be used as a definitional criteria in the Census.

As with socially disadvantaged farmers, small farms are often associated with age. According to the Census, nearly 60 percent of the operators of small full-time farms were 65 years old or older in 1992.

**Limited-opportunity farm households** are defined by economic criteria, which include off-farm income and other related financial information. The data source for this definition is USDA's 1992 FCRS. Limited-opportunity farm households exhibit three characteristics: gross household income of less than \$20,000; farm sales of less than \$100,000; and farm asset value of less than \$150,000. In 1992, there were about 185,000 limited-



## Farm & Rural Communities

### Livestock Is the Key Commodity on Most Socially Disadvantaged and Small Farms

| Farm category           | Farm type* |      | Type of crop farm* |                     |                   |
|-------------------------|------------|------|--------------------|---------------------|-------------------|
|                         | Livestock  | Crop | Cash grains        | Vegetables & melons | Fruit & tree nuts |
| <i>Percent of farms</i> |            |      |                    |                     |                   |
| Socially disadvantaged  |            |      |                    |                     |                   |
| African American        | 58.6       | 41.4 | 13.3               | 3.7                 | 2.0               |
| Native American         | 70.7       | 29.3 | 8.8                | 1.3                 | 3.9               |
| Asian/Pacific Islander  | 15.9       | 84.1 | 4.5                | 14.6                | 16.6              |
| Hispanic                | 56.4       | 43.6 | 6.7                | 4.7                 | 15.3              |
| Women                   | 62.5       | 37.5 | 10.3               | 1.5                 | 6.2               |
| Small                   | 59.9       | 40.1 | 14.9               | 1.7                 | 4.4               |
| All U.S. farms          | 55.2       | 44.8 | 21.0               | 1.5                 | 4.6               |

\*At least 50 percent of a farm's total value of sales comes from the specified commodity.

Source: 1992 Census of Agriculture, U.S. Department of Commerce.

Economic Research Service, USDA

opportunity farm households in the U.S. (out of 2.1 million total farms). Although these farms were less geographically concentrated than the farms of socially disadvantaged groups, 60 percent were in the South.

### Livestock Dominates Production

Farms operated by members of socially disadvantaged groups and limited-opportunity households are more likely than farms in general to depend on livestock production. Although most socially disadvantaged farm operators harvest cropland, crops generally provide a smaller share of their farm income than livestock, a sector that government-sponsored insurance programs do not cover. Livestock for these operators frequently means beef cattle, which often have relatively flexible labor requirements that can combine well with an off-farm job or provide a supplement to retirement income.

More than 70 percent of farms operated by Native Americans obtained half or more of their total sales from livestock, as did more than 60 percent of farms operated by women and more than 50 percent of farms operated by both African Americans and Hispanics. Among limited-opportunity farms, crop sales accounted for only 30 percent of the gross farm income, compared with more than 40 percent for all farms.

An exception to the livestock "rule" are farms operated by Asians/Pacific Islanders. More than 80 percent of Asian/Pacific Islander farms derived at least half of total sales from crops. In addition, many of these farmers, as well as other socially disadvantaged groups who raise crops, concentrate on specialty crops such as fruits and vegetables. Although Federal insurance is available for most fruit and nut crops in selected areas, many vegetables, as well as livestock, are not yet covered by Federal insurance programs.

The types of crops harvested by socially disadvantaged farmers, and therefore the extent to which these farmers may be covered by crop insurance, depends to a great extent on where socially disadvantaged groups are geographically concentrated. Tobacco, for example, is grown primarily in the upper South, where many African American-operated farms are concentrated. Since tobacco is eligible for crop insurance, these socially disadvantaged farmers may be covered. According to the 1992 Census of Agriculture, tobacco accounts for half or more of total farm sales on nearly one-third of African American-operated farms in the RMA Raleigh service region (the east coast states from North Carolina to Maine).

Hay, on the other hand, associated with livestock farming, is the most commonly harvested crop on farms operated by

Native Americans and Hispanics. Almost all land farmed by Native Americans, most of which is used for grazing, is in RMA's Oklahoma City (Southern Plains) and Billings (Northern Plains) regions, where many large reservations are located. Almost half of all Hispanic-operated farms are also located in the Oklahoma City (Southern Plains) region, which includes traditional Hispanic farming and ranching areas in New Mexico and Texas.

RMA's Group Risk Plan (GRP) crop insurance for forage has so far been available only in selected counties in the Lake States and Northern Plains. RMA plans a significant expansion of GRP crop insurance for forage in 1998. GRP benefits are based on variations in county-level yields. An individual-yield forage policy is also widely available under the Federal crop insurance program. The RMA regional service offices have considerable discretion in deciding the types of forage covered under the individual-yield and GRP policies, although alfalfa and alfalfa mixes are the primary types covered in many areas.

Most Asian/Pacific Islander farms are in California and Hawaii, areas where significant acreage is planted to fruits and vegetables. According to the 1992 Census of Agriculture, nearly 60 percent of the Asian/Pacific Islander-operated farms in RMA's Sacramento region (California, Hawaii, Arizona, Nevada, and Utah) grew fruits, nuts, or berries.

The Sacramento region also contains about 20 percent of all Hispanic-operated farms, and slightly more than half of these farms grew fruits, nuts, or berries. Nearly half (48 percent) of these Hispanic farmers obtained most of their sales from fruit and tree nuts.

While farms operated by women are geographically distributed much like all U.S. farms, they obtained a smaller portion of their income from crop production than all farms. Just 63 percent of farms operated by women harvested some cropland, compared with 78 percent of all farms, and only 38 percent of female-operated farms obtained half or more of their sales from crops, compared with 45 percent of all farms.

## Farm &amp; Rural Communities

## The Menu of Crop Insurance Programs

Since the early 1980's, USDA has moved to make *multi-peril crop insurance* (MPCI) the primary form of disaster assistance for farmers. Crop insurance coverage has grown since then, despite the availability of ad hoc disaster assistance for specific emergencies legislated after crop losses from 1988-94. Following major reform in 1994, participation in the Federal crop insurance program has dramatically increased, covering about 70 percent of eligible acres.

Currently, coverage is available for all major field crops (e.g., corn, wheat, and soybeans) and some fruit, vegetable, and nut crops. Crop insurance is available for about 60 crops, though in some locations coverage is not available for all these crops, since climate and other factors dictate feasible production areas. RMA does not insure citrus in Alaska, for example, because citrus is not viable in that area. MPCI is sold primarily by private insurance agents, with USDA setting premium rates, subsidizing producer premiums, paying administrative costs, and providing reinsurance.

MPCI covers crop losses that result from natural perils such as drought, floods, hail, and high wind. The most popular form of MPCI is *actual production-history insurance*, under which coverage level is based on a farm's historical average yield. The farmer can purchase coverage at up to 75 percent of the farm's historical yield and up to 100 percent of the projected season-average price. For example, if a farmer has a 100-bushel average yield for corn and chooses a 65-percent coverage level, the yield guarantee would be 65 bushels per acre. If an insurable peril causes the farm's actual yield to drop below 65 bushels, MPCI will pay the difference between 65 bushels and the actual yield. If the actual yield is 50 bushels, the payment would be 15 bushels multiplied by the price election.

Another form of MPCI, which has been offered on a limited basis beginning in 1993, is the *Group Risk Plan* (GRP), with coverage based on the average county yield rather than the individual farm yield. A producer can purchase a guarantee based on the county yield, and if the county yield falls below the insured level, then the producer will receive a payment regardless of his or her individual farm yield.

A major change in MPCI occurred in October 1994 with enactment of the Federal Crop Insurance Reform Act, which made future outlays of ad hoc disaster assistance more

difficult to approve and introduced an additional form of MPCI, the *catastrophic (CAT) level of crop insurance*. CAT provides the option of a low-cost, basic level of yield protection (50 percent of average yield is covered at 60 percent of the expected price), with producers paying a processing fee instead of an insurance premium. The processing fee is \$50 per crop per county, and a producer's total cost cannot exceed \$600. The fee is waived for limited-resource farmers, defined as having less than \$20,000 in income from all sources in the previous 2 years.

In addition to CAT coverage, producers can purchase "*buy-up*" coverage, which is available at up to the 75-percent yield guarantee (based on the individual farm's historical yields) and 100 percent of the expected season-average price. "Buy-up" coverage requires a processing fee, plus a premium payment based on the yield risk associated with the policy. Farms in areas with greater annual yield fluctuations pay a higher premium than farms in areas where yields are more uniform.

A *Non-insured Assistance Program* (NAP) is provided at no cost for crops for which insurance is not offered. NAP coverage is similar to CAT coverage, but requires a 35-percent area loss before individual payments can be made. An area is defined as a county, a geographic parcel of at least 320,000 acres, or a parcel accounting for a crop value of at least \$80 million. Unlike MPCI, NAP is administered by USDA's Farm Service Agency. To be eligible for NAP, producers are required to sign up (reporting their acreage and past yields) before the beginning of the season.

In the spring of 1996, RMA introduced two new risk management products (AO October 1996) offering revenue insurance on a pilot basis for selected crops, adding a third product in spring 1997. These *revenue insurance policies* provide farmers with protection against low yields, low prices, or both. In contrast with simply a yield guarantee, as with MPCI, a producer's guarantee is for a level of revenue, which is the product of the farmer's historical yield and the expected harvest-time price. Indemnities are paid when the producer's actual yield, multiplied by the actual harvest-time price, falls below the guarantee. These new programs expand the types of risk protection available to producers, and allow producers additional options for helping them best manage the risk associated with their operations.

While crop production varies by region, the pattern of crops harvested on farms operated by socially disadvantaged operators often does not match the farms typical to a region. Cotton, for example, is more commonly harvested on African American-operated farms in RMA's

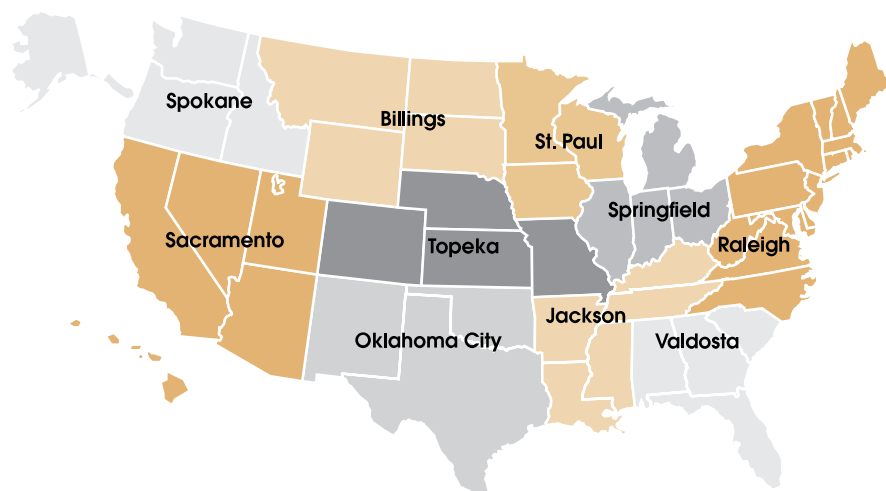
Jackson region (Arkansas, Louisiana, Mississippi, Tennessee, and Kentucky) than on all farms in that region.

In addition, African American-operated farms in this region were twice as likely as all farms to harvest vegetables. In the

Sacramento region, fruits and tree nuts account for more than half of sales on over 50 percent of the Asian/Pacific Islander farms, but on less than 40 percent of all farms.

## Farm & Rural Communities

### Risk Management Agency Service Regions



Although crop insurance is not currently available for many specialty crops (particularly vegetables), risk protection is available through the Non-insured Assistance Program. RMA is expanding the crop insurance program, adding new crops each year. At the request of RMA, ERS has completed feasibility studies on expanding crop insurance to 45 additional specialty crops (the program currently covers about 35 fruit, vegetable, nut, and specialty tree crops). In 1998, for example, RMA plans to begin offering coverage for pecans and sweet potatoes. So while some socially disadvantaged and limited opportunity farmers may currently be unable to obtain crop insurance coverage for their operations, the situation is changing.

### ***Farm Size, Income Can Affect Insurance Needs***

Farm size can be a factor in assessing the need for agricultural insurance. For many operators of small farms, farm income contributes little to the household's income. Off-farm income, such as wages and salaries earned from off-farm jobs held by farm household members, can sometimes offset low farm income and provide protection against agricultural risks. A lack of insurance for the farm enterprise may be less important to such households than for those more reliant on farm income.

Most U.S. farms—both full- and part-time enterprises—are small. More than 60 percent of the 1.9 million U.S. farms had annual sales of less than \$25,000, according to the 1992 Census of Agriculture. Farms operated by the socially disadvantaged, however, are even more likely to be small—70 percent or more of the farms operated by African Americans, Native Americans, Hispanics, and women sold less than \$25,000 in agricultural products in 1992.

Asian/Pacific Islander-operated farms were an exception. More than 50 percent of these farms had at least \$25,000 in sales, and more than 10 percent had

\$500,000 or more in sales. Just 2.4 percent of all U.S. farms had sales of \$500,000 or more.

Limited-opportunity farm households obtain, on average, virtually all their income from off-farm sources, according to the FCRS. For households with younger operators, the source is often off-farm work; for older operators, Social Security and other retirement income may be more important. Operators of these limited-opportunity farms may have taken off-farm work because their farms were too small to support the household, or they may be forced to farm on a small-scale because of the requirements of off-farm employment. In either case, farm income usually provides only a small portion of overall income.

Many households with small farms actually lose money farming. It may be that some operators of small farms could be interested in agricultural insurance to protect their off-farm resources from farm losses. On the other hand, income from farming may be too limited for many of these operators to justify increased expenditures for crop insurance.

### ***What Limited-Opportunity Farmers Want***

RMA's marketing plans for limited-resource farmers, developed through its regional service offices, have focused on outreach tailored to individual areas and groups of producers. These marketing plans are aimed at increasing the number

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## Farm &amp; Rural Communities

of minority insurance agents and companies and ensuring inclusion of minority farmers in the activities of farm associations, the farm media, and extension agents. RMA has also conducted educational programs in partnership with established minority farmer organizations like the Federation of Southern Cooperatives, a grassroots organization in rural communities.

These educational efforts included about 60 Federation workshops on crop insurance reform for minority and low-income farmers during a 6-month period in early 1995. At the conclusion of each workshop, participants were given a questionnaire on their interest in alternative crop insurance products and their suggestions for improving the program's effectiveness. The 268 respondents, mainly African Americans, were asked to indicate changes in RMA programs that would be of most help to them. A small number of Native Americans and Hispanics farming in the Southeast and Texas were also among the respondents.

Several questions focused on the levels of subsidization and coverage preferred by respondents. Twenty-six percent of the respondents indicated that they would like to see the basic catastrophic (CAT) coverage available at a higher level than the current 50-percent yield/60-percent price coverage. Essentially, these respondents would like to see greater catastrophic protection offered at minimal (or no) charge.

In contrast, relatively few of the respondents indicated they would like to see changes in the "buy-up" coverage levels. Only 8 percent indicated a desire for "buy-up" coverage above the 75-percent yield guarantee level, and only 6 percent favored a higher premium subsidy at the buy-up coverage levels.

Respondents across all ethnic groups requested that RMA offer coverage for additional crops, as well as for livestock. African American respondents were most likely to indicate they would like to see crop insurance for vegetables, while Native Americans most often favored insurance for timber, and Hispanics most frequently indicated a need for insurance for such crops as pecans, hay, and watermelons. Several respondents indicated

## Current RMA Efforts to Assist Limited-Resource Farmers

RMA continues to develop new insurance products, many of which will help meet the needs of socially disadvantaged, small, and limited opportunity farmers. In 1998, RMA plans to make new pecan and sweet potato programs available. Further, a significant expansion of Group Risk Plan crop insurance for hay and forage production is anticipated. Research continues on insuring cabbage, cucumbers, melons, and other direct market crops. Other options mentioned by participants in crop insurance workshops—increasing the guarantee level of catastrophic crop insurance and offering insurance on livestock production—would require legislative changes and have major budgetary impacts.

Efforts to reach socially disadvantaged, small, and limited opportunity farmers need to include the private insurance companies and agents that sell crop insurance to farmers. RMA has proposed changes to its Standard Reinsurance Agreement with insurance companies that would increase incentives for selling crop insurance to small-scale farmers. RMA has also proposed that the companies collect and report data on participation in the crop insurance program by socially disadvantaged farmers.


RMA is also working with the Federation of Southern Cooperatives and the Intertribal Agriculture Council to identify minority insurance agents and companies that may be interested in marketing crop insurance. RMA's Valdosta regional service office will provide loss adjustment training for minorities identified by the Federation of Southern Cooperatives.

RMA's educational outreach programs continue to target minority farm operators. For example, RMA distributes information about risk management programs through the North American Precip Syndicate, a media placement service that provides access to rural Hispanic and African American audiences. Messages have covered crop insurance reform, sales closing dates, and NAP sign-up dates.

they would like to see protection from higher feed costs, which suggests they might be interested in revenue insurance coverage.

A number of respondents designated continued outreach and education efforts as a preferred policy change, particularly one-on-one assistance. Nine percent indicated they would like regular group update workshops and information sessions, while 16 percent noted the need for personal assistance in understanding sign-up procedures and program changes. The high percentage indicating a desire for individual assistance parallels findings by other USDA agencies—in particular, the Natural Resources Conservation Service—that personal assistance is helpful in reaching socially disadvantaged and limited-opportunity farmers.

Results of this survey, as well as ERS's identification of the characteristics of socially disadvantaged, small, and limited-opportunity farm operators, suggest that certain types of insurance products and outreach may be of particular assistance to these farmers. Program changes and additions currently under study, especially coverage of additional crops, may be most useful. At the same time, expanded outreach and educational efforts already underway at RMA may encourage socially disadvantaged and limited-opportunity farmers to make greater use of programs for which they are eligible.

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## Special Article



J. Norman Reid

## USDA's Water Quality Program: The Lessons Learned

USDA's Water Quality Program (WQP) promotes adoption of alternative management practices by farmers, in an effort to protect the nation's waters from agricultural chemicals and waste products. Established in 1990 under a Presidential initiative, the WQP builds upon past programs—such as the Model Implementation Program of the 1970's and the Rural Clean Water Program and Water Quality Special Projects of the 1980's—to reduce nonpoint-source pollution (pollution that enters waterways over a dispersed area). Farmers who voluntarily participate are provided education, technical assistance, and financial assistance for adopting alternative management practices.

Agricultural production often emits pollutants that affect the quality of water resources and impose costs on water users. In 1994 the Environmental Protection Agency reported that agriculture is the leading source of impairment in surveyed U.S. rivers and lakes, and a major source of impairment to estuaries. Agriculture is also an important source of contaminants in some aquifers. Major agricultural pollutants that have been found in water resources include sediment, nutrients, pesticides, salts (from irrigation) and pathogens (from animal waste).

The WQP has strived to: 1) determine the precise nature of the relationship between agricultural activities and water quality; and 2) develop and induce voluntary adoption of technically and economically effective agrichemical management and

agricultural production strategies that protect ground and surface water quality. Out of experience with these programs, 10 lessons have emerged for enhancing the probability that water quality programs will achieve goals in a cost-effective manner.

***Lesson 1: Cost-effectiveness is enhanced when program activities are targeted to watersheds where agriculture is the primary source of a water quality impairment, and to critical areas within watersheds.***

Maximizing program benefits depends on identifying those watersheds where changing farm management strategies will improve water quality, and where demand for water quality is highest. Watersheds with water quality problems differ greatly in the improvements that can be achieved through changes in agricultural management practices and in the economic benefits of these improvements. When agriculture is not the primary source of pollutants in an impaired watershed, the degree to which agricultural nonpoint-source pollution programs can improve water quality is limited. Point sources (e.g., factories), urban runoff, and even natural sources may predominate.

In some watersheds, the demand for water quality may be very low, due to small population, low economic activity, or an abundance of alternative, high-quality water resources. While water quality may be degraded from the standpoint of aquatic life, scarce program dollars are better spent by first concentrating on those watersheds where economic benefits from improvements are greatest.

Program cost-effectiveness is also enhanced when critical areas for priority treatment within watersheds are identified. Not all farms are the same, differing in topography, soils, management practices, and proximity to water resources. Identifying those critical areas that are likely to contribute disproportionately to a water quality problem greatly increases the effectiveness of assistance.

Identifying critical areas for treatment may be difficult because of the diffuse nature of nonpoint-source pollution. However, local personnel may be able to identify such areas based on knowledge of local production practices and resources. Models can also be used to identify critical areas based on their potential for contributing pollutants to water resources.

***Lesson 2: Voluntary programs are likely to be most successful when farmers recognize that agriculture contributes to severe local or on-farm pollution problems such as ground water impairment.***

One of the most important tasks of staff involved in WQP is to convince farmers that the water quality problems in the project are real, and that farmers are part of the solution. If farmers are motivated to alter production practices for reasons other than enhanced profits, the set of practices they might be willing to adopt is increased. Farmers who display some degree of stewardship or altruism toward the environment may even be willing to adopt practices that increase risk or decrease profits, as long as

the local environment will benefit and the farms remain financially viable.

***Lesson 3: Voluntary programs are likely to be successful when the programs' alternative practices generate higher long-term returns.***

The success of voluntary programs depends on whether farmers continue to use new practices after assistance ends—USDA assistance for new practices has typically extended only 1 to 5 years. The condition that remedial practices increase net returns as well as protect the environment limits the set of practices available to address a problem in any project area, and on any farm. The set of practices that fulfills this condition for any particular farmer is frequently unknown by program managers. Among the practices that protect water quality and have been shown to be economically attractive are conservation tillage, nutrient management, irrigation water management, and integrated pest management.

***Lesson 4: Programs with flexible financial assistance are more efficient than those with fixed rates and limited lists of supported practices.***

The availability of financial assistance is an important part of a successful voluntary program. Even when alternative management practices are profitable, constraints may prevent a farmer from adopting them. Such constraints include increased risk and inexperience with a particular practice, as well as other management factors. Financial assistance in the form of short-term incentive payments covers at least part of the risk of economic losses over the adjustment period, but as offered, does not extend over the long term.

A financial assistance program should be flexible in incentive levels and in the practices eligible for assistance. Ideally, the level of assistance for a practice should reflect the expected environmental benefits. This information is often lacking. An alternative strategy is to set rates at levels sufficient to ensure the adoption of practices believed necessary to meet project goals. This rate would vary among farmers. Cost-effectiveness is enhanced when differences in the financial and risk characteristics of farmers are considered when offering financial assistance. Determination of eligible practices needs to be made at the project level, with an oversight role at the national program level.

***Lesson 5: Project success is enhanced when education, technical assistance, and financial assistance are offered in a coordinated fashion.***

Projects that offer education, technical assistance, and financial assistance have the best chance of promoting alternative production practices. There are a number of constraints to the adoption of alternative management practices, and not all can be addressed by one type of assistance.

Education and technical assistance can inform producers about new and innovative practices, reduce the cost of obtaining infor-

mation about practices, and clarify what may be inconsistent and conflicting information about a new practice. Technical assistance also helps provide managerial skill that may be lacking, and enables the producer to handle increasingly complex practices. Financial assistance helps overcome a short planning horizon, allows the farmer to accept greater risk over the short run (during the learning phase), and provides an incentive to try a nontraditional practice.

Not all farmers require the full spectrum of assistance, but it should be made available since project staff cannot determine a priori what types of assistance will be needed. Even when regulations provide the impetus for adopting alternative management practices, education and technical assistance are needed to ensure proper use of the new practices.

***Lesson 6: Local research on the economic and physical performance of recommended practices can improve practice adoption.***

Farmers are often skeptical of practices that do not have a local history of use. This becomes a problem when new and innovative practices are promoted to address a local water quality problem. Where local experience is lacking, field testing and demonstrations of new practices should be implemented to investigate the local economic, environmental, and agronomic features of promoted practices.

***Lesson 7: Interaction with non-USDA agencies and with organizations and local businesses within a watershed is important.***

Involving local stakeholders has been a particular strength of WQP projects. Local environmental and resource entities such as soil and water conservation districts, drainage districts, irrigation districts, and natural resource districts may be operating in project areas. These special districts, as well as local business and environmental groups, may have some interest in water quality issues. Involving these stakeholders early in project planning can minimize future conflicts, and may bring in additional resources and expertise.

***Lesson 8: More attention to water quality monitoring and project evaluation can help determine the cost-effectiveness of alternative practices and assist in the development of targeting strategies.***

Ongoing performance evaluations should be an integral part of every project. Progress assessment can identify problem areas in time for corrective action, and improve targeting criteria for future projects. Water quality monitoring is the most defensible means for evaluating whether a water quality project achieves its goal. An effective monitoring program must establish a baseline of water quality conditions and be maintained long enough to account for lags in the movement of agricultural pollutants and natural fluctuations in weather.

An acceptable alternative to monitoring may be water quality modeling. A number of models have become available that can

## Special Article

## USDA Water Quality Program Components

**Demonstration projects**—multi-county educational and technical assistance efforts located in regions where agriculture is believed to affect water quality. Sixteen Demonstration Projects, started in 1990 and 1991, exist under WQP.

**Hydrologic Unit Area Projects**—projects in small watersheds with identified nonpoint-source water quality problems that provide education, technical assistance, and financial assistance to local landowners for applying alternative management and structural practices. Seventy-four HUA's, started in 1990 and 1991, exist under WQP.

**Water Quality Special Projects**—extended cost-share assistance under WQP to farmers and ranchers for installing approved water quality practices in small watersheds with identified agricultural nonpoint-source problems. WQSP's, started in 1990 and 1991, number 110.

**Water Quality Incentive Projects**—projects designed to achieve source reductions of nonpoint-source agricultural pollutants in small watersheds with identified water quality problems. Financial assistance is provided for the adoption of alternative management practices. WQIP projects, started in 1993-95, number 242.

**Priority Components Research**—grants award program supporting research on the scientific principles of good natural resource management. USDA's Agricultural Research Service has funded 62 research projects at 26 locations, while USDA's Cooperative State Research, Education, and Extension Service has awarded 245 competitively selected projects. Research grants have been awarded for studies involving the fate and transport of contaminants within surface and ground water systems, sampling and testing methods, management and remediation practices, and the economics of adoption.

**Management Systems Evaluation Areas**—farm-, field-, and watershed-level test sites for studying the environmental and economic performance of alternative management practices. The MSEA's have installed state-of-the-art field equipment to determine the effects of various crop management systems on water quality. Modified cropping systems specifically suited to soil, geology, climate, irrigation, nitrogen, and pesticide needs are being tested. Soil and water tests are providing valuable data concerning the fate and transport of agricultural chemicals within the environment. Five initial MSEA projects—in Iowa, Minnesota, Missouri, Nebraska, and Ohio—were established to study corn-soybean agriculture in the Midwest. Two additional projects—in Mississippi and North Carolina—have been started to study cotton and animal agriculture.

predict pollutant loadings at the watershed level. Models are useful when prolonged lags in observable water quality improvements are expected. In addition, models can be used to identify critical areas within watersheds and to establish project implementation goals. A drawback is that models must be carefully calibrated to local conditions.

In addition to water quality monitoring, an effective mechanism must be implemented for tracking changes in crop management in the project area. Such information enables interim assessments of whether program goals are being achieved, and where and what types of additional assistance might be needed. As with water quality, a land management baseline must be established. In order to properly evaluate what is happening in a watershed, it is also necessary to track management changes on those fields not receiving assistance.

### *Lesson 9: Water quality programs need a long-term focus.*

Adequate resources must be made available for an extended period of time to ensure successful completion of a project. The physical processes that connect on-field management changes to

downstream changes in water quality also may take years, and even decades. The adoption process, from first learning about a practice through implementation, can take years; while assistance is designed to speed up this process, overall progress can still be slow.

Water quality monitoring should be maintained beyond the time assistance ends, and realistic expectations should be set as to when observed improvements in water quality are likely. Adequate time must also be set aside for pre-implementation planning, including establishment of baselines and conducting field research on the performance characteristics of alternative practices. WQP projects were set up as 5-year projects. This period was found to be inadequate, and most projects have been extended for an additional 3 years.

### *Lesson 10: Voluntary programs are enhanced if backed by firm but flexible regulations.*

While regulations may be considered onerous by many in the farm community, regulations can play an important role in promoting alternative production practices without placing overly

burdensome costs on farmers. Voluntary approaches supported by regulatory authority may be the most effective means of reducing pollution from agricultural sources. Regulations clarify goals and provide impetus for farmers to search for alternatives that may in fact maintain or even enhance net returns. Farmers may even favor regulations that recognize the efforts of conscientious producers and punish "bad actors."

### ***Future Programs Build on Past Lessons***

The lessons of the WQP and past USDA water quality programs provide important guidance for future programs. The new Environmental Quality Incentive Program (EQIP) that was established in the Federal Agriculture Improvement and Reform Act of 1996 (Farm Act) will continue the course set by USDA's Water Quality Program. The 1996 Farm Act authorizes a multi-

year USDA commitment to provide education and technical and financial assistance in targeted watersheds to address water quality and other resource concerns. Many of the recommendations outlined above were incorporated in the enabling legislation, including targeting, increased and flexible financial assistance, a full range of education and technical and financial assistance, and an emphasis on evaluation and cost-effectiveness.

The experience and knowledge from the WQP will improve the performance of projects based on voluntary adoption of alternative management practices such as EQIP. While the voluntary approach probably cannot by itself achieve all national water quality objectives, it can be a valuable tool to state and Federal water quality protection programs.

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