

Contents

Summary	3
Introduction	4
Macroeconomic and Industrial Outlook	9
Starches and Sugars	12
Fats and Oils	17
Natural Fibers	24
Animal Products	27
Forest Products	30
Specialty Plant Products	32
Special Article	
Potential Niche Fuel Markets for Biodiesel and Their Effects on Agriculture	37
List of Tables	41

Coordinator

Lewrene Glaser

voice (202) 219-0091, fax (202) 219-0035, e-mail lkglaser@econ.ag.gov

Contributors

William Bryan Just, ERS
Linwood Hoffman, ERS
Ron Buckhalt, Alternative Agricultural Research and
Commercialization Center
Bruce Kinzel, Agricultural Research Service
David Torgerson, ERS
John McClelland, ERS, Office of Energy and New Uses
Allen Baker, ERS
Charles Plummer, ERS
Paul Tatarka, Agricultural Research Service
Lewrene Glaser, ERS

Irshad Ahmed, Booz-Allen & Hamilton, Inc.
Sandra Pyles, ERS
James Duffield, ERS, Office of Energy and New Uses
Anton Raneses, ERS
Leroy Watson, National Biodiesel Board
Craig Chase, Technical and Engineering Management
Steven McLaughlin, University of Arizona
Jacqueline Salsgiver, ERS
Peter Ince, Forest Service, Forest Products Laboratory
J. Michael Price, ERS

Statistical Support

Anton Raneses, (202) 219-0752

Charles Plummer, (202) 219-0717

Mae Dean Johnson, (202) 219-0506

Editor

Diane Decker

Graphics, Design, and Layout

Wynnice Pointer-Napper and Cythina A. Ray

Approved by the World Agricultural Outlook Board. Summary released August 27, 1996. The next summary of *Industrial Uses of Agricultural Materials Situation and Outlook Report* is scheduled for release in July 1997.

Summaries and text may be accessed electronically. Call ERS Customer Service, (202) 219-0515 for details.

Acknowledgments

This report was made possible through the active support of many people and organizations. Funding for this issue was received from USDA's Alternative Agricultural Research and Commercialization Corporation. Harry Parker, Professor of Chemical Engineering at Texas Tech University, and Donald Van Dyne, Professor of Economics at the University of Missouri, contributed time and expertise to this report.

Mention of private firms or products does not indicate endorsement by USDA. Printed on kenaf paper with soy ink.

Summary

Greater Planting Flexibility and Industrial Uses Provide More Market Opportunities for Agriculture

With U.S. farmers now facing few restrictions on what they can plant, industrial crops will need to stay competitive—economically and agronomically—with other crops to ensure their continued viability. Expanded planting flexibility is a hallmark of the recently passed Federal Agriculture Improvement and Reform Act of 1996 (1996 Act). The 1996 Act takes the United States to an almost fully market-oriented farm policy by eliminating annual supply control programs, instituting near full planting flexibility, and decoupling income support from production and market prices. The 1996 Act allows farmers greater freedom to respond to market incentives. Therefore, expected market returns and crop rotation needs or desires will become important factors as farmers evaluate commodities to produce in the future.

The 1996 Act also made USDA's Alternative Agricultural Research and Commercialization (AARC) Center a wholly owned government corporation. In addition, the Act amends Federal procurement policy to encourage Federal agencies to give procurement preference to environmentally friendly products produced by companies supported by the AARC Corporation.

Scientific developments from USDA's Agricultural Research Service are now posted on the Internet. Industry, the scientific community, and consumers can use this Internet service to target specific interests. More than 13,000 research project reports are available on the agency's Technology Transfer Automated Retrieval System.

The strong growth in U.S. gross domestic product in the second quarter of 1996 is expected to give way to more moderate growth for the rest of 1996 and 1997. Reflecting moderating growth, manufacturing output is expected to rise at an average annual rate of 3.5 to 4.5 percent through the end of 1997. As mature industries in a mature economic recovery, most of the industrial sectors using agricultural inputs will grow more slowly than manufacturing overall.

Industrial uses of corn are expected to total 622 million bushels in 1995/96 (September/August), down 18 percent from the previous year, mainly due to lower use for ethanol. Ethanol producers are in the midst of a financial squeeze, resulting from rapidly rising corn prices, only moderate gains in coproduct prices, and relatively stable ethanol prices. Several companies are manufacturing biode-

gradable loose-fill packaging materials from corn and wheat starch.

Industrial vegetable oil markets reflect a varied picture of production and use. Tung oil is being produced in the United States for the first time since 1973. Crambe is again being grown in North Dakota after a year of no commercial production. Industrial rapeseed acreage in the Pacific Northwest is down from previous years. Glycerine markets remain tight, as demand continues to outpace supply. Biodiesel commercialization faces a number of regulatory and market challenges in the United States.

Approximately 37 million metric tons of paper and wood materials were recovered for recycling in 1994, providing a renewable source of inputs to manufacturers. Beside paper and paperboard products, other items made from recycled paper and wood include cellulose insulation, molded-pulp products, animal bedding, paper mulch, packaging cushioning material, and wallboard panels. Finding new markets for wastepaper and waste wood is essential to the growth of the recycling industry.

To meet environmental regulations of the last three decades, environmental remediation has developed into a multibillion dollar industry. The high cost of many traditional methods is causing many organizations to look to lower cost alternatives. Phytoremediation, the systematic use of plants to treat environmental contamination, is a potential low-cost technology that is being investigated for many remediation applications.

A special article examines possible biodiesel demand in three niche fuel markets the biodiesel industry has identified as likely candidates for commercialization—Federal fleets, mining, and marine/estuary areas. If a 20-percent biodiesel blend becomes a competitive alternative fuel in the coming years, these markets could demand as much as 100 million gallons of biodiesel. If soybean oil was the sole feedstock used to produce the biodiesel, these markets could account for an additional 770 million pounds of soybean oil. Results of an econometric-based simulation indicate the effect of this increase in demand on the U.S. soybean complex and net farm income would be small. Moreover, if biodiesel commercialization occurs, cheaper raw materials, such as waste cooking oil, may be the primary feedstocks.

1996 Farm Legislation Affects Industrial Crops And Products

Expanded planting flexibility is one of the hallmarks of the recently passed Federal Agriculture Improvement and Reform Act of 1996 (1996 Act). The 1996 Act also amends Federal procurement policy to give preference to environmentally friendly products produced by companies supported by USDA's Alternative Agricultural Research and Commercialization Corporation. Scientific developments from USDA's Agricultural Research Service are now available on the Internet.

1996 Act Makes Major Changes In Commodity Programs

Since the 1930's, agricultural legislation has been enacted to stabilize and boost farm income. Farm laws originally enacted in 1938 and 1949 are considered permanent legislation, because they do not have a specified termination date. However, since their original passage, these two laws have been amended with new farm legislation about every 4 to 5 years, temporarily setting agricultural policy and guiding farm production. One general result was to link production and marketing controls with price and income support for many important farm commodities, such as wheat, corn, cotton, rice, sugar, tobacco, and peanuts. During fiscal years 1989 through 1995, annual payments to farmers producing wheat, feed grains, cotton, and rice have totaled more than \$40 billion, averaging \$5.8 billion annually.

In 1995 and 1996, Congress considered farm legislation to replace the expiring Food, Agriculture, Conservation, and Trade Act of 1990 (1990 Act). The result was the Federal Agriculture Improvement and Reform Act of 1996, which was signed into law on April 4, 1996, and covers crop years 1996 through 2002. Title I of the 1996 Act provides set payments and a nonrecourse loan program with marketing loan provisions for wheat, feed grains, cotton, and rice. Soybeans and minor oilseeds (sunflower seed, canola, industrial rapeseed, safflower, flaxseed, and mustard seed) receive only the nonrecourse loan program with marketing loan provisions. One of the stated purposes of the 1996 Act is to improve the operation of the farm programs for milk, peanuts, and sugar.

The 1996 Act will likely become another landmark in U.S. agricultural policy. It takes a major step toward phasing out some aspects of commodity programs that have existed, in some form, since the 1930's. For example, it takes the United States to an almost fully market-oriented farm policy by eliminating annual supply control programs, instituting near full planting flexibility, and decoupling income support from production and market prices.

Dependence on market forces will generate economic efficiency gains and make the U.S. farm sector more competitive in the global marketplace. However, farm income may become more variable and, therefore, producers will have more responsibility for managing income risk, a previous

role of the Federal Government that is sharply reduced under the 1996 Act.

One major change that will be of particular interest to individuals and businesses involved in industrial crop production is the planting flexibility provisions. Farmers planting minor oilseeds, alternative crops (such as sesame, plantago ovato, and triticale), and industrial crops (such as crambe, meadowfoam, kenaf, and milkweed) will be able to plant any amount of these crops without program restrictions.

New Production Flexibility Contracts

Production flexibility contracts (PFC) are the new method of providing payments to farms that produce wheat, feed grain, cotton, and rice. Deficiency payments, which fluctuated depending on market prices, are eliminated and replaced with PFC payments. PFC's provide set payments to program participants regardless of production levels or season-average farm prices. The total amount available for PFC payments is fixed in advance and declines gradually over the 7-year life of the 1996 Act. PFC payments are based on contract acreage and the farm-program-payment yield (similar to crop-acreage base and program yield under the 1990 Act and other previous farm bills). Annual acreage reduction programs, 0/85/92 and 50/85/92 programs, and the Farmer-Owned Reserve are not authorized for 1996 through 2002.

Any producer with an established crop-acreage base who had land enrolled in an annual acreage reduction program in at least 1 of the past 5 years, or who had land that was considered planted, was eligible to sign a PFC. Sign-up began May 20, 1996, and extended through August 1, 1996. However, there is an exception to this one-time sign-up. Acreage in Conservation Reserve Program contracts expiring after August 1 will be permitted to enter the program if these acres were part of a farmer's crop acreage base. Producers signing contracts have to comply with conservation, wetland, planting-flexibility, and land-use requirements. All PFC's, unless terminated earlier, will extend through the 2002 crop. As of August 20, 1996, 98.8 percent of estimated eligible acreage had been enrolled in PFC's.

For fiscal years 1996 through 2002, the 1996 Act allocates a total of \$35.6 billion for contract payments. An individual annual contract payment is calculated as the contract-

payment quantity (in bushels, pounds, or hundredweight) times the annual payment rate (dollars per bushel, pound, or hundredweight). Although the annual payment rates will not be known until after sign-up, they will be affected by total participating base acreage, program yields associated with that base acreage, and any adjustments made to the total payment amount based on deficiency-payment refunds or repayments, or terminated contracts. Annual contract payments will be made by September 30th each year.

Under the 1996 Act, producers may plant any commodity or crop on contract acreage (although there are restrictions on fruit and vegetable production) and still receive an annual payment. In general, fruits and vegetables cannot be produced on contract acreage, but if a history of fruit and vegetable cropping exists on contract acres, production may continue in some cases with a corresponding acre-by-acre drop in payments for that year. Haying or grazing on all contract acreage, including unlimited planting of alfalfa and other foliage, may occur at any time during the year without loss of an annual payment. Planting a crop is not required for payment eligibility. Farmers, however, must use contract acreage for some agricultural or related activity and not for nonagricultural commercial or industrial purposes.

The 1996 Act orients production agriculture to market returns by allowing farmers to respond to market incentives, instead of government programs. Expected market returns and rotational needs or desires will become major determining factors as producers evaluate commodities to produce in the future. Because producers will know what their PFC payments will be until 2002, they will have greater freedom to implement multiyear crop rotations and production plans. Therefore, industrial-crop returns must stay competitive, economically and agronomically, with other crops to provide farmers with production incentives. Marketing and contractual relationships and vertical coordination developed in recent years will be important, as producers secure markets for industrial crops and processors secure quality supplies.

Nonrecourse, marketing-assistance loans are available for each loan commodity (wheat, corn, barley, grain sorghum, oats, extra-long-staple cotton, upland cotton, rice, soybeans, sunflower seed, canola, industrial rapeseed, safflower, mustard seed, and flaxseed) for the 1996 through 2002 crops. The general loan provisions from the 1990 Act are continued under the 1996 Act. Producers can place eligible production under loan in return for receiving the commodity loan rate. Marketing loan provisions are not available for extra-long-staple cotton but are continued for wheat, feed grains, upland cotton, rice, soybeans, and minor oilseeds. Producers may repay nonrecourse, marketing-assistance loans at the lesser of the loan rate plus interest or the repayment rate, which may fall below the loan rate to minimize government stock holding and allow for competitive markets.

Minimum loan rates will be calculated as 85 percent of a moving average of the last 5 years' market prices, excluding years with highest and lowest prices, subject to maximums set equal to the 1995 loan rate. Corn and wheat loan rates may be further reduced based on stocks-to-use ratios. Sorghum, barley, and oats loan rates are set in relation to

the rate for corn, taking into account their feed value relative to corn. The rice loan rate is set at \$6.50 per hundredweight. Loan rate ranges have been set for several commodities: soybeans will range between \$4.92 to \$5.26 per bushel; minor oilseeds, between 8.7 and 9.3 cents per pound; and upland cotton, between 50 and 51.92 cents per pound. The loan rate for extra-long-staple cotton is subject to a maximum of 79.65 cents per pound.

The maximum a person can receive in PFC payments is \$40,000 per year, down from the previous limit of \$50,000. An individual's limit on payments from marketing-loan provisions, marketing-loan gains, or loan-deficiency payments continues at \$75,000.

NAP May Also Benefit Industrial Crop Producers

Another change implemented by the 1996 Act is that producers who receive farm program benefits are not required to obtain crop insurance, if the producer waives emergency crop loss assistance. For those crops not currently covered by crop insurance, USDA is instructed to continue to operate a noninsured crop disaster assistance program (NAP). USDA's Office of Risk Management offers crop insurance, including catastrophic coverage, for major field crops and many fruits and vegetables.

NAP will provide producers of noninsured crops with coverage equivalent to the catastrophic risk protection available to producers of major commodities, provided that an area-based yield trigger is first met. Industrial rapeseed (on a pilot basis) and flaxseed are currently the only industrial crops eligible for crop insurance. Research is underway examining the feasibility of insuring crambe, specialty canolas, and other noninsured crops. NAP is administered by USDA's Farm Service Agency (FSA) and funded by the Commodity Credit Corporation. NAP covers various fruits and vegetables, floriculture, ornamental nursery, Christmas tree crops, turfgrass sod, seed crops, aquaculture, and non-insured industrial crops.

NAP requires both an area trigger and an individual trigger for a producer to collect a payment. An area must have a yield loss of 35 percent, and may be defined, at the discretion of the State FSA director, as a county, a geographic area with at least 320,000 acres, or a geographic area with a crop value of at least \$80 million. To date, virtually all areas have been defined using the county definition. In addition to the area trigger, an individual producer must have a crop loss of at least 50 percent of the expected yield. NAP payments are based on established yields for the crop and an average market price or comparable coverage determined by the Secretary of Agriculture. For crop years 1996 through 1998, 60 percent of the average market price or comparable coverage is recoverable. For crop years 1999 through 2002, 55 percent of the average market price or comparable coverage is recoverable.

A third part of the 1996 Act that may be of interest to industrial crop producers and processors is the research title (Title VIII), which amends the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA). As amended by the 1996 Act, the purposes

of federally supported research, extension, and education are to increase and enhance competitiveness and productivity of U.S. agriculture, develop new uses and new products for agricultural commodities, aid with technology transfer, improve risk management in the U.S. agricultural industry, improve safe production and processing of food while maintaining a balance between yields and environmental soundness, support higher education, and maintain safe food supplies to meet human requirements. For example, Title VIII Section 806 relates to grants for research or the production and marketing of alcohol and industrial hydrocarbons from forest products and agricultural commodities. The 1996 Act extends authority for appropriations on agricultural research, extension, and education activities under NARETPA through fiscal 1997.

Government Encouraged To Buy AARC Products

The 1996 Act also made USDA's Alternative Agricultural Research and Commercialization (AARC) Center a wholly owned government corporation. In addition, there is language in the Act's rural development title amending Federal procurement policy to encourage Federal agencies to give procurement preference to environmentally friendly products produced by companies supported by the AARC Corporation.

The intent of the new procurement language is to give Federal procurement officials the latitude to establish set-asides and preferences for AARC Corporation-supported, environmentally preferable products. Some argue that since the Federal Government has taken an equity position in these companies, the American people are, in essence, stockholders. The quicker these companies can become profitable, the faster they can repay the Federal investment. Their repayments go into the AARC Corporation revolving fund to be reinvested in other companies, thereby continuing the process of creating new economic opportunities in rural communities, while protecting the environment. The procurement preference is not open-ended. The preference eligibility will expire 5 years after companies have repaid their investment to the AARC Corporation, or no longer than 10 years after companies receive support from the Corporation.

The AARC Corporation supports companies that have a variety of products now on the market, including absorbents; biocontrol agents and planting media; construction materials and composites; coatings and films; cosmetics; cleaning agents, solvents, detergents, and surfactants; degradable polymers; filler, yarn, and insulations; fuels; inks; lubricants; pharmaceutical and veterinary products; and paper and packaging. Interested persons should contact the AARC Corporation for a catalog of supported products and more information (phone 202-690-1633, fax 202-690-1655, e-mail rbuckhal@rus.usda.gov). This report is printed on kenaf paper supplied by KP Products, an Albuquerque, New Mexico company, in which the AARC Corporation has invested.

Secretary Glickman Tours Office Built With AARC Products

On April 24, 1996, Secretary of Agriculture Dan Glickman and Deputy Secretary Richard Rominger, along with Federal Environmental Executive Fran McPoland, toured the new Washington, DC, headquarters of the Natural Resource Defense Council (NRDC). NRDC is using many "green" products in its new offices.

Four construction products supported by the AARC Corporation were used at the NRDC headquarters at 1200 New York Avenue, NW:

- Nonload-bearing walls (*EnviroPanels*) and interior doors in the office were made from compressed wheat straw by Stramit U.S.A. in Perryton, Texas.
- Cabinets were fashioned from *PrimeBoard*, fiberboard made from 100-percent wheat straw with no noxious chemical additives, by PrimeBoard, Inc., of Wahpeton, North Dakota.
- The counter tops for computers and work stations were made from *Environ*, a composite material manufactured from soybean meal and waste newspaper. Environ looks like marble but can be handled like wood, and is produced by Phenix BioComposites in St. Peter, Minnesota.
- Strong, lightweight *Gridcore* panels for furniture and office partitions were manufactured using recycled paper or kenaf fibers by Gridcore Systems International of Long Beach, California.

Some 25 percent of the AARC Corporation's partners are involved in construction and the building-products industry. Other construction-related materials in the AARC Corporation portfolio that were not used in the NRDC office include:

- Load-bearing wall panels made from wheat straw by AgriBoard Industries of Fairfield, Iowa, and Coppell, Texas;
- A composite material made from recycled plastic and wheat straw for outdoor use in posts, railroad ties, decks, docks, window and door frames manufactured by XYMAX, Inc., of Mankato, Kansas;
- Lightweight, extended-life utility poles, constructed by joining tapered wood staves with veneer wraps, made by PoleTech, Inc., of North Branch, Minnesota; and
- An environmentally friendly concrete-form release agent made from crambe and/or industrial rapeseed oil by the Leahy-Wolf Company of Franklin Park, Illinois.

More Repayments Received

Although the AARC Corporation has been making investments for only 4 years, it has already begun to receive paybacks from six companies. The first paybacks came in 1995 from Leahy-Wolf and Natural Fibers of Ogallala, Nebraska, which manufactures pillows and comforters using milkweed floss and markets the products internationally.

Thus far in 1996, the AARC Corporation has received pay-backs from:

- BioPlus, Inc., of Ashburn, Georgia, which uses peanut hulls as the carrier base for crop protection materials and as flushable cat litter;
- Aquinas Technologies of St. Louis, Missouri, which produces and markets ethanol-based products made from corn, including a windshield washer fluid, *America's Solution*, that will soon be available nationwide;
- Innovative Biosystems of Moscow, Idaho, which uses crop residues to make potting mix; and
- Midwest Biofuels, a subsidiary of Interchem Environmental, Inc., of Overland Park, Kansas, which uses soybean methyl esters to make a variety of products including biodiesel and cleaning solvents.

In its first 4 years of funding, the AARC Corporation has invested \$28 million in projects in 32 States, and has leveraged \$112 million in private funds, creating over 5,000 jobs in rural communities.

ARS Technology Transfer Continues

Scientific developments from USDA's Agricultural Research Service (ARS) are now available on the Internet. More than 13,000 research project reports are available on the agency's Technology Transfer Automated Retrieval System (TEKTRAN) at <http://www.nal.usda.gov/ttic/tektran/tektran.html>. Industry, the scientific community, and consumers can use this Internet service to target specific interests. Projects can be searched by keywords, such as commodity type, potential industrial application, and scientific discipline. Entries of newly completed research projects submitted for publication are added to TEKTRAN on a biweekly basis.

In addition, information on licensable patents and patent applications can be accessed through TEKTRAN's link to the National Agricultural Library. Licensable patent information is updated each month and kept current by ARS' Office of Technology Transfer (OTT). Inventor addresses, and phone and fax numbers accompany each entry to expedite commercialization efforts of ARS-developed technology. A planned OTT home page is expected to offer a full range of technology transfer opportunities and services.

The agency's longstanding commitment to improving the commercial viability of biofuels continues. For example, two patent applications on technology developed by ARS scientists in Philadelphia, Pennsylvania, were filed recently that specifically address this issue. One invention involves enzymatic production of a fuel additive, using oilseed byproducts, that can be added directly to automotive fuels. A second invention uses inexpensive feedstocks, such as rendered fats and restaurant grease, to make biodiesel, as well as to produce fuel additives and lubricants.

ARS's technology transfer efforts continued in fiscal 1996, with the agency signing a number of Cooperative Research and Development Agreements (CRADA's) and licensing

agreements with U.S. firms. (CRADA's allow joint collaboration between government scientists and industry to develop particular discoveries.) For example, ARS scientists in Albany, California, have entered a CRADA with Tenneco Packaging Company, Inc., of Canandaigua, New York, on the development of biodegradable containers made from wheat starch. The technology also can be used to make a lightweight concrete-like product, which is of particular interest to the high-value ornamental brick and stone market.

Two other CRADA's signed in fiscal 1996 involve the development of composite materials from starch to make products such as fast-food packaging, cutlery, films, and plates. Scientists in Peoria, Illinois, are working with the Biotechnology Research and Development Corporation of Peoria and Tenneco Packaging, Inc., on an extruded starch-based sheeting technology to develop biodegradable alternatives to petroleum-derived plastics.

A variety of food and nonfood applications is being commercialized using a stable, nonseparable composition made from starch and oil. Known as Fantesk, it was developed and patented by ARS scientists in Peoria, Illinois. The Union Camp Corporation of Wayne, New Jersey, was granted an exclusive license to the technology to make environmentally friendly adhesives, glues, and coatings. Opta Food Ingredients of Bedford, Massachusetts, licensed the technology for a variety of food applications, such as fat replacements. Additional companies are working with Opta on sublicensing the technology to develop commercial products. The starch-oil combination also attracted the attention of Seedbiotics, Inc., of Caldwell, Idaho, which will use the technology to encapsulate fertilizers and biological pesticides and herbicides in compositions that can be used to coat seeds to reduce surface-level application of these compounds. Additional applications of the technology include pharmaceuticals, lubricants, and personal-care products.

In addition, Quincy Soybean Company of Quincy, Illinois, has applied for an exclusive license for an ARS-patented method for manufacturing 100-percent soy inks. Developed by ARS scientists in Peoria, Illinois, the 100-percent soy inks have characteristics that meet or exceed industry standards for product functionality and quality.

The textile industry is showing interest in an improved enzymatic retting process being developed by ARS scientists in Athens, Georgia, to make products from fiber flax. The technology would replace existing enzymatic treatments and dew-retting, which depends on microorganisms and weather conditions to separate flax's long bast fibers from the rest of the stem. The technology should allow textile companies to develop a more consistent product, with high strength and moisture-absorbance characteristics.

A Memorandum of Understanding for Technology Transfer between ARS and the State of Florida, which was signed in November 1995, began to bear fruit in fiscal 1996 with several activities benefiting both organizations. To assist Florida's new port inspection program, ARS notified Florida officials about a patented method developed in Albany, California, that uses imaging technology to inspect plant

materials. Florida officials are working with a business partner to develop a CRADA.

Likewise, Florida officials have assisted in efforts to commercialize a USDA pest-control technology, which uses global positioning systems to target pests, by locating businesses associated with the Kennedy Space Center. Four companies are currently evaluating the commercial potential of this new technology. Florida also forwarded an inquiry from a Fort Lauderdale company concerning the de-

velopment of a precision fertilizer-injection system. After further investigation, it was determined that this system could also be used to deliver biological pest control materials developed by ARS scientists in Mississippi and Texas. [1996 Act: William Bryan Just, ERS, and Linwood Hoffman, ERS, (202) 501-7103, lhoffman@econ.ag.gov. AARC Corporation: Ron Buckhalt, AARC Corporation, (202) 690-1633, rbuckhal@rus.usda.gov. ARS: Bruce Kinzel, ARS, (301) 504-6965, bmk@ars.usda.gov.]