Changes are in store for cottonseed

The U.S. cottonseed industry must prepare for further, rapid industry consolidation, the increasing effects of biotechnology on the fats and oils industry and even more competition for markets during the 1990s, according to speakers at 1988 Oilseed Processing Clinic sponsored by the Mississippi Valley Oilseed Processors Association.

Further consolidation in the U.S. cottonseed industry will occur rapidly, Wayne Martin, president and general manager of the Plains Cooperative Oil Mill, told attendees. He said it could be comparable with recent changes in the U.S. soybean processing industry that has seen rapid consolidation of crushing activities.

Increasing use of whole cottonseed as dairy feed—current estimates are that 35% to 40% of U.S. production is sold for use as whole cottonseed feed—has reduced raw cottonseed supplies to crushing plants to the extent that crushing capacity exceeds supplies of cottonseed, Martin said. (See *Viewpoint*, beginning on page 735.)

Other changes foreshadowed in presentations at the clinic included the following:

• Cottonseed crushing mills someday may crush biotechnology-developed rapeseed/canola varieties tailored for the mid-South. Andrew M. Baum, vice president of operations for Calgene Inc., said his firm believes winter rapeseed/canola will be well-adapted to the mid-South, parts of Kansas, Oklahoma, Texas and the Pacific Northwest. Calgene, a leader among U.S. firms in biotechnology research relating to fats and oils, is developing varieties of rapeseed/canola for U.S. production. "Because of agronomic considerations and because an oilseed processing infrastructure is already in place, we have chosen to focus our activities in the mid-South," Baum said. "As part of this effort, we are funding rapeseed agronomy studies at several unversities, including the University of Missouri, University of Tennessee, Arkansas State University and Mississippi State University."

• Marketing will be even more important if the cottonseed oil industry is to preserve and expand its market share, Tom Wedegaertner told attendees. He is assistant director for research and education at the National Cottonseed Products Association (NCPA). "We have to become much more attuned to customer needs so that effective marketing and promotion programs can be developed," he said. "The competition from competing oilseed products has become fierce. The world is awash in vegetable oil." Domestic corn oil production has surpassed cottonseed oil production for the past three years, he said.

• Cottonseed oil producers no longer should expect their oil to sell at a premium relative to soybean oil. Milton Nevrenchen told cottonseed oil producers they shouldn't judge the value of their product by its price ratio with other oils, but whether the price they receive provides a fair return on their costs. Nevrenchen has accepted a new post with Lever Brothers commodity division after several years with C&T Refining Inc.

• Chester L. Miller, vice president for commodity purchasing at Frito-Lay Inc., noted his company's consumer taste tests have shown consumers no longer prefer products produced with cottonseed oil over products made with soybean oil. Frito-Lay for decades considered cottonseed oil as the standard by which to measure other oils, he noted, but if consumers can't notice any difference in product, that assumption may be revised.

• The spurt in South American oilseed production of the 1970s has permanently increased the world's arable acreage, Allen Ater, NCPA executive vice president, said. China and the USSR are expanding oilseed production as well, he noted. Once a nation has made the investment to clear land, build roads and provide the infrastructure for increased agricultural output, it will produce crops for variable costs if need be, he added. That means a permanent change in export market conditions.

Ater, however, said he has become more optimistic about the cottonseed industry than he was a few years ago for several reasons:

• There has been a worldwide explosion in demand for vegetable oils, but the effects have been partially hidden by the simultaneous growth in supply, meaning lower prices. Worldwide adoption of North American fast food habits has helped trigger the increased demand, he said.

• The overseas expansion of acreage and production is slowing and may be about over.

• U.S. market loan programs for cottonseed have stabilized cottonseed supplies.

• Consolidation taking place in the industry has been "moving the industry into stronger hands" that will permit more sophisticated marketing, according to Ater.

Daniel French of French Oil Mill Machinery Co. reviewed "Modern Prepress Solvent Extraction." While U.S. cottonseed processors favor direct solvent extraction, prepress solvent extraction is preferred elsewhere, he noted. Prepress is favored especially at oil mills that process a variety of raw materials, he said. Use of "expanders" to increase material density permits a unit to process a greater mass of material without having to use a larger extractor. Other improvements have permitted oilseed processors "to produce a higher quality product with as little as half the amount of steam previously required." He added that future changes may lie in alternative solvents or different extraction methods.

Texas A&M University researchers reported that high-moisture (16%–18% moisture) cottonseed can be treated with propionic acid to retard free fatty acid development. Treatment levels of 0.5% propionic acid will return an estimated $3.12–$9.28 in increased oil value per ton of cottonseed treated. Usage at higher levels of propionic acid did not show any increased savings, according to the report presented by L.R. Watkins of Texas

A&M. However, he noted, the propionic acid treatment made the cottonseed linters unusable for traditional applications. EPA is considering a petition to permit such use but has not yet approved using propionic acid for this purpose.

Other papers presented during the two-day meeting included Lactation Responses to Fuzzy and Delinted Whole Cottonseed, by A.J. Kutches of O.H. Kruse Grain & Milling, William Chalupa of the University of Pennsylvania and John Trel of California Polytechnic University; Flavor Quality of Oilseed Products, by Kathleen A. Warner of the U.S. Department of Agriculture's (USDA) Northern Regional Research Center; Extruder Preparation of Oilseeds to Enhance Solvent Extraction, by L.R. Watkins of Texas A&M University; Supercritical Carbon Dioxide Extraction and Processing of Oilseeds, by John P. Friedrich and Gary R. List of USDA's Northern Regional Research Center; Development of Near Infrared Parameters for Cottonseed Meal Using Closed Population Techniques, by John P. Madacsi of USDA's Southern Regional Research Center; Research To Reduce or Eliminate Phytic Acid from Oilseeds, by Donna M. Gibon and Frederick W. Parrish of USDA's Southern Regional Research Center; Composition of Cottonseed Oils of Varying Quality, by Edith J. Conkerton and Dorselyn C. Chapital of USDA's Southern Regional Research Center; and The Effects of Growth Regulators on Cottonseed Physiology: Results from Field Tests, by Steven J. Stegink of USDA's Southern Regional Research Center.

Information on availability of reprints is available from Shirley Saucier, USDA Southern Regional Research Center, PO Box 19687, New Orleans, LA 70179, USA.

Alfa-Laval gets Soviet order

Alfa-Laval's Fats & Oils Division has received an order totaling $80 million to supply 10 margarine plants to the Soviet Union.

According to the company, this is one of the largest single orders for processing equipment in the international food industry, and it reflects the Soviet Union's aim to increase the supply and quality of its food products.

The contract calls for delivery of all 10 plants in 1989. It was signed in Moscow by Harry Faulkner, Alfa-Laval's chief executive officer, and General Director Konoplev of Technopromimport, Russia's foreign trade organization.

The plants each will include complete lines and equipment for processing rapeseed and other vegetable oils into packaged margarine. A total annual production of 600 million packs is expected.

The neutralizing system of each plant will be designed following Alfa-Laval's Multi-Mix principle. The deodorizing systems will be continuous, with deodorizers equipped with evaporative cooling trays. Margarine production lines will include systems for processing and mixing oil and milk solutions, continuous tempering and remelting, Gerstenberg chillers and crystallizers, and machines for thermoforming and pressing tubs and lids.

Automation for the plants will be supplied by SATT Control, a member of the Alfa-Laval Group.

Soy oil exports

U.S. soybean oil exports are expected to reach the one million metric ton (MT) mark during 1987/88, according to the U.S. Department of Agriculture (USDA). This figure is nearly double that for the previous year.

USDA said this is the highest soybean oil export level since 1979/80. The increase is due to exports fostered under the U.S. Export Enhancement Program (EEP).

International

Indonesia

Indonesia and The Netherlands are discussing financial terms for building a palm oil terminal on the Indonesian island of Batam, according to U.S. Department of Agriculture (USDA) reports. USDA said that once completed, the terminal will handle 2.1 million MT of crude oil for export. Construction on the project is slated to begin during 1988.

Mexico

Two new oilseed processing plants were scheduled to start up in Mexico in February and March; another plant was expected to double its capacity during that time.

Fabrica de Jabon "La Corona" has been building a plant to process soybeans, safflowerseed, sunflowerseed and rapeseed in the Industrial Park in Ciudad Obregon, Sonora. The plant's scheduled capacity is 500 metric tons (MT) per day. Fabrica de Jabon "La Corona" has its main offices and another processing facility in Mexico City where the company produces oils, shortenings and soaps.

Meanwhile, growers in the Union de Ejidos de P/A Industrial R.I. have started their own processing facility for soybeans near Culiacan in the state of Sinaloa. The 300-MT-per-day plant contains both prepress and solvent extraction equipment purchased from the French Oil Mill Machinery Co.

French also is helping Aceites y Proteinas "El Calvario" in Tehuacan, Puebla, to double plant capacity to 600 MT. The addition was to be completed and on-line by March 1988.

Pakistan

The Pakistani government has waived the import duty and sales tax on soybean meal, according to USDA. Previously, only poultry feed manufacturers were exempt from paying a 20% duty and 12.5% sales tax if imports were solely used in their own operation. This restriction limited imports to small uneconomical lots. The removal of these taxes will facilitate commercial imports of soybean meal in sufficient quantities to lower average costs and make meal available to producers too small to import on their own, according to USDA.

Oil labeling

New York State Sen. Eugene Levy has introduced a bill to the New

York Senate that would require food manufacturers to disclose the presence of palm, coconut or palm kernel oil in their products.

The proposed legislation says: "The terms 'made with vegetable shortening,' 'made with vegetable oil,' or any other statements representing that a food product is made with vegetable oil or vegetable shortening shall not be used on food labels and in food advertisements for any food product which contains palm, coconut or palm kernel oil unless a prominent disclosure is made on such labels or in such advertisements that the product 'contains saturated fat."

According to Anita Phillips, a legislative aide for Levy, the senator sponsored the bill at the request of the Attorney General's consumer protection division. "What the bill will do is further define oils. It's somewhat deceptive labeling to say a product is all vegetable oil or shortening. It's deceiving consumers into thinking that they are eating unsaturated fats," she said.

The New York's Attorney General's office worked closely with the Center for Science in the Public Interest to develop the proposal for the legislation.

Solvent plant

The Chickasha Cotton Oil Co. of Fort Worth, Texas, has announced that it will install a 500-ton-per-day direct solvent extraction plant and miscella refinery at its Rio Grande Oil Mill facility in Harlingen, Texas. The solvent extraction plant is scheduled to be in operation in time for the next cottonseed harvest.

The equipment is being supplied by French Oil Mill Machinery Co.

Canola rights

Calgene has obtained the rights to produce and market Cascade, a winter variety of canola developed by the Idaho Research Foundation Inc. Under the agreement, Calgene will have exclusive rights to market the seed throughout all parts of the U.S. except the Pacific Northwest.

Calgene subsidiary Ameri-Can will sell the seed mainly in the mid-South region of the U.S. during 1988.

According to Andrew Baum, Calgene's vice president of operations, "Cascade is the first winter canola variety bred in and for the U.S., and strong yield test results show it is now ready for commercial introduction."

Cascade was developed by Dick Auld of the University of Idaho.

Fat substitutes

ARCO Chemical Co. has applied for a European patent on its esterified propoxylated glycerol (EPG) targeted for use as a non-caloric fat substitute.

EPG comes in liquid and solid forms and can be substituted for conventional oils on food products such as salad dressings, baked goods, spreads and ice cream, the company said.

According to ARCO, preliminary studies indicate that EPG is safe, non-caloric and effective as an oil and fat replacement. However, the company added, "Substantial research will be required to generate data for food additive approval."

EPG is made from propylene oxide.

The European patent, if granted, will cover the European Economic Community. Patent applications are pending in the U.S. and Canada.

Meanwhile in the U.S., the National Renderers Association (NRA) has formed a task force on low-calorie fat substitutes. The purpose of the task force is to determine what adverse effects low-calorie fat products may have on the rendering industry and to establish programs to minimize those effects.

According to Bill Prokop, NRA's staff liaison to the task force, NRA is particularly interested in olestra, a Procter & Gamble product, and Simplesse, a NutraSweet product.

Members of the committee include NRA members Fred Wintzer, Len Anderson, Ed Murakami and Larry Davis.

NIOP officers

Susan Tan Luo of Golden Coin Co. Inc. has been re-elected president of the National Institute of Oilseed Products (NIOP).

Other officers are Ron Fleming, Capital City Products Co., first vice president; Raymond R. Long of Stolt-Nielsen Inc., second vice president; and Grove E. Bryant, Petromark Inc., secretary-treasurer.

Directors elected include the four officers as well as Milton F. Barr Jr. of Ranchers Cotton Oil, Edward J. Campbell of Archer Daniels Midland Co., Arthur K. House of Lou Ana Foods Inc., Ric Laurence of Wardcom Corp., Douglas Lu Ym of Lu Do & Lu Ym Corp., Albert F. Mogerley of Hudson Tank Terminals Corp., Donald Nelson of J.G. Boswell Co., Herbert Schleutker of Procter & Gamble Co., William W. Stanley of Stanley Brokerage Co., Robert E. Thomaier of Best Foods U.S., Rik J. Wijsenbeek of American Commodities Brokerage Co. and William Winecki of Palmco Inc.

Tallow update

U.S. lard production will increase, but edible tallow output will decline in 1987/88, according to U.S. Department of Agriculture (USDA) projections. Lard production is forecast at 900 million pounds, up from 804 million pounds in 1986/87; tallow output is set at 1,250 million pounds, down from 1,278 million pounds in 1986/87.

Large vegetable oil supplies plus government aid for vegetable oil exports will limit lard exports to about 108 million pounds despite some increase in demand, USDA said. Edible tallow exports are forecast at 40 million pounds this year, nearly a 20-million-pound drop from 1986/87.

Chemistry prize

The Fondation de la Maison de la Chimie, Paris, France, is seeking nominations for its 1989 prize honoring original work in chemistry benefiting mankind or nature. The 1989 prize has a value of 150,000 French francs.

Candidates must be nominated by a national, international or professional scientific organization or society. Entry forms and a report on the work of candidates must be submitted to the Secretariat, Prix de la Fondation de la Maison de la Chimie, 28 rue Saint-Dominique, 75007 Paris, France, by June 30, 1988. Entries will be judged by an international jury.

For more information, contact the Secretariat at the Paris address.

News briefs

A. Earl Easley has joined the French Oil Mill Machinery Co. as regional sales manager for mechanical and solvent extraction equipment. His territory includes Arkansas, Louisiana, Tennessee, Mississippi, Alabama, Georgia, Florida, North Carolina, South Carolina, Virginia, West Virginia and Maryland.

AOCS member **Michael Hein** has resigned as president and chief executive officer of SVO Enterprises in Columbus, Ohio, to open **Hein and Associates Inc.**, a consulting firm that will deal with fats, oils and their derivatives. The office is 1547 Guilford Ave., Columbus, Ohio 43221,.

AOCS member **Sheldon Natowsky** has been named manager of business development for **ChemLink Petroleum.**

Thomas H. Smouse, formerly manager of lipid sciences at **Ralston Purina Co.**, has been named manager of oil process research by **Archer Daniels Midland Co.**, for its Lakeview Technical Center, Decatur, Illinois. He also has held positions with Anderson Clayton Foods, Campbell Soup Co. and Nabisco. He served as president of AOCS in 1983.

Sandoz Crop Protection Corp., a subsidiary of **Sandoz Ltd.**, has announced it has genetically transformed corn plants by a method that involves direct uptake of recombinant DNA into corn protoplasts and subsequent growth of these protoplasts into plants. According to the company, such research may enable scientists to insert agronomically valuable genes into crops.

Laucks Testing Laboratories Inc. has been awarded a U.S. Environmental Protection Agency contract to determine inorganic priority pollutants. **J.M. Ownes** of that laboratory is one of AOCS' Approved Chemists.

William McMillan, director of information at the United Kingdom Atomic Energy Authority, has been appointed secretary-general of the **European Association of Fatty Acid Producing Companies (APAG).**

Cargill Inc. has finalized plans to construct a $40-million citric acid plant adjacent to its corn wet milling facility in Eddyville, Iowa. Construction is set to begin in June, with start-up by October 1989.

Errata

In the processing article published in the March 1988 issue of *JAOCS*, two numbers are incorrect in Table 1 on p. 312. In the third column (1C), total residual product (lb) should be 637, not 167. In the seventh column (2), the pumping energy (BTUs/1000 lb) should be 3 K, not 0.3 K.

Also on that page, the first full paragraph should read: The designs are all based on a capacity of 30,000 pph, 2.6 Torr vacuum, 1.3%–1.8% stripping steam, final heating under vacuum, 15–20 minutes deodorization time at 500 F and 30 minutes above 400 F, and a heat loss of about 15 F.