Fats & Oils News

Spotlight on cottonseed oil

The oil portion of cottonseed was the primary topic for the Mississippi Valley Cottonseed Crushers' annual symposium held during January, with papers on oil use in fast-food restaurants, as an agricultural chemical carrier, in soaps and detergents and in other products.

Approximately 100 persons participated in the January meeting, held in New Orleans with cooperation of the USDA Southern Regional Research Center, located in that city.

William L. Baran of Chick-fil-A Inc. of Atlanta, Georgia, estimated the annual value of fats and oils used in the food service industry at more than $2 billion. He said more research is needed to determine service life for fats and oils used in fast-food restaurants. This would include studies on how different types of foods affect fats and oils, and whether the way those foods are prepared for cooking is a significant factor.

T. L. Steepy of ICI Americas Inc. discussed weed control using crop-oil concentrates containing vegetable oils.

Warner Linfield of the USDA Eastern Regional Research Center discussed the sources of raw materials used in various soap and detergents, including a discussion of the lime soap dispersing agents developed at the ERRC.

T. S. Shuler, president of the National Cottonseed Products Association, discussed possible technological change in the cottonseed industry. A new solvent or solvent system is needed that is safer, Shuler said, noting that during the past five years, losses from hexane explosions have resulted in more than $50 million in physical property damage and $300 million in liability losses. A revised solvent system could be less petroleum dependent, he said, as well as remove any toxic substances from meal. Second, he said development of glandless cottonseed—without gossypol—that is economically competitive with regular cotton varieties is needed. Third, genetic engineering or biotechnology might provide a cotton plant resistant to aflatoxin contamination, Shuler said. Biotechnology might also provide a higher oil content, higher seed yield, higher protein yield, increased lysine content and provide nonshattering seed coats, Shuler said.

Norm Witte of Central Soya Co. Inc. described the pace of automation in the processing phase of the industry. With relatively few new plants being built now because of economic considerations, Witte said automation will increase through improvements to existing plants. Single control systems for a specific application are found almost everywhere, Witte said, but whereas they formerly were pneumatic controls, now they are electronic. Single-loop controllers can be installed in many plants without requiring hiring additional expertise, he said. Automation of a full process is suitable for most plants, but requires some electrical engineering expertise to install and maintain. Microcomputer control of an entire plant should be considered only with a major revamping or expansion of an existing plant, he said.

Two speakers from Texas A&M's Food Protein Research and Development Center also participated. John T. Farnsworth described development of the center's computerized cottonseed oil mill model, which can be used to predict yields and composition for oil mill products. Larry Johnson described a computer model that provides economic analysis of milling cottonseed with high residual linters.

Marv Bagby, director of the Northern Agricultural Energy Center at the USDA's Northern Regional Research Center, described research done thus far on developing diesel fuel for farm equipment.

Oilseed samples sought

The edible oil authenticity project, jointly funded by the U.K. Ministry of Agriculture, Fisheries and Foods, the Federation of Oils, Seeds and Fats Associations (FOSFA) and by the British Manufacturing Industries Research Association (Leatherhead Food R A), was announced on page 896A of the December 1981 *JAOCS*.

The first oils investigated were palm, groundnut and sunflowerseed oils, some of the Food R A results on these three oils having been reported in the February 1983 *JAOCS* (Vol. 60, page 333).

The first stage of the work is now almost complete with the establishment of purity criteria for nine vegetable oils based on fatty acid composition, 2-position acid enrichment factors, carbon number triglyceride compositions and tocopherol concentrations. Altogether over 350 oil samples have been analyzed.

In the second stage of the project, which has just commenced, safflower-seed oil has been added to the list of oils and additional samples of the nine original oils are being analyzed in order to fill gaps in the geographical distribution of the available samples.

In addition, the applicability of several new methods of analysis are being examined, such as the measurement of methyl and dimethyl sterol concentrations.

With regard to the geographical distribution of oilseed samples, the project has been hampered by the nonavailability of certain oilseed types in the U.K., in particular U.S. cottonseed. In order to complete this important project, the Food R A would therefore greatly appreciate oilseed samples, especially safflower seeds and North American cottonseeds.

Anyone able to help in this respect should please send quantities of 500 g to 1 kg of normal, commercial grade seed samples, giving appropriate information about harvest, location and year. Samples should be addressed to: J. A. Turrell, Oil & Fats Section, Leatherhead Food R A, Randalls Road, Leatherhead, Surrey, U.K.

The pricing of vegetable oils

David Bartholomew, senior soybean analyst for Merrill Lynch Futures Inc., is a regular columnist for *JAOCS*. For the AOCS 1983 annual meeting in Chicago, he organized a symposium on vegetable-oil pricing—how prices are determined in volume trading. Specialists from different organizations each explained how his portion of the market functions. This article was prepared by Bartholomew on the basis of those talks.

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A panel of five professionals in the business of merchandising oils and fats was assembled at the 1983 AOCS meeting to discuss "pricing vegetable oils and fats." They represented various segments of the industry: futures trading, cash brokerage, processing, refining and retail products and exporting and international trading.

In his opening remarks, panel chairman David Bartholomew of Merrill Lynch said, "Most of us in the marketing business do not have an oil chemist's understanding of the intricate differences between various fats and oils. But we do understand the fluctuations in supply of and demand for each of them. Therefore, we can respond to those factors with price modifications to such an extent that you decide to decrease the utilization of one and increase the utilization of another.

"Members of this panel will simply explain what they do in the course of their business. They are going to speak out of their experience to explain a certain point that may utilize some statement of economic theory, but only to the extent that it has practical application.

"This panel has no professors or theoreticians. You will have the opportunity to hear them explain what they do and how they do it in the daily saga of price determination for fats and oils."

Futures markets were described as a pricing or hedging mechanism rather than a source of supply. They allow various segments of the industry to establish primary price criteria for the products they have for sale or will need to procure. Futures prices can fluctuate in response to perceptions of supply and demand, which reflect weather, economics, politics, international events and many other factors. Jack Reed, who is international vice president of Archer Daniels Midland Co., called hedging "a temporary substitute for a cash market transaction to minimize the risk of an advance price fluctuation."

Speaking of the function of a futures trader, Dan Kelley of Kelly Commodities, Inc., described his experience, which dates all the way back to 1951, when trading in soybean oil began. He told of how the oils and fats industry can buy and sell as far forward as one year in futures transactions while still retaining flexibility to exit the market and reenter later, depending on changing conditions. Mr. Kelly also explained the ways in which a soybean processor uses futures in connection with cash commodity markets. "Look on the processor as having four independent departments. *One* buys cash beans, when available, and hedges them in Chicago bean futures. *Two* is purely a futures operation and buys bean futures against sales of oil and meal futures at a difference that historically is profitable. *Three* sells cash oil to users such as margarine manufacturers, exporters, etc., and buys oil futures. *Four* performs the same function in meal selling to feed manufacturers, exporters, etc., and covers meal futures. If you put it all together, you have cash beans at one end and cash products at the other. The futures, through pricing, connect raw product and end products though *produced and consumed at different times.*"

Mr. Reed provided details of how the processor calculates profit relationships between soybeans and products in what is known as "Board Crush":

Calculation (Aug. futures 5-4-83)		$/Bu soybean
Soybean meal revenue	$191.00 × .024	$4.5840
Soybean oil revenue	.1983 × 11	2.1813
Product revenue		$6.7653
Soybean cost	6.5225	6.5225
Board crush margin		$.2428

Usually executed in matched quantities, e.g.,

12 contracts soybean meal
9 contracts soybean oil
10 contracts soybeans
assumes 18% oil yield and 80% meal yield

Then he explained the additional calculation for a specific location, which would have slightly different prices than futures (this difference is known as the "basis"):

Assumptions:		$/Bu soybean
Soybean meal basis	− $1.00/ST × .024	− $.0240
Soybean oil basis	+ $ .0050/lb × 11	+ .0550
Soybean basis	− $ .04/bu	+ .0400
Basis contribution		+ .0710
Board crush contribution		+ .2428
Cash crush margin		.3138

With this introduction to the topic of "cash basis," it is best next to hear from a cash oils and fats broker. This is how Bill Simeral of W. M. Simeral & Co., explained it:

"The crusher, long the physical oil, sells the appropriate soybean-oil futures contract. If the oil prices fall, the cash (physical) oil is worth less, but the seller will have a commensurate amount of profit in the futures account. The new value of the oil is unchanged from the level the seller sold in the futures market. Conversely, if the market price rises, then the value of the cash oil is greater, but the futures account shows a commensurate amount of loss. The net value of the oil is unchanged. The seller is hedged, and has guaranteed his selling price, thereby protecting his profit margin—almost!

"There is a portion of the total price still at risk. That part is the "cash basis," and it cannot be hedged in the futures market. The cash basis is simply the premium or discount added or subtracted to the appropriate futures option price in order to establish the final cash price.

"The cash basis reflects the transportation value of a specific point to a specific buyer, as well as the local and regional supply/demand economics of soybean oil and other related commodities. The various bases change in response to overall supply and demand, but they also change in relation to each other. For instance, if a specific refiner's business increased sharply and he was unable to buy the additional oil from his usual supplier, he would seek to buy from his next most economical source.

"This increase in demand might cause that particular seller to increase the price of his oil by raising his cash basis in response to the increased demand. This single change could have a ripple effect on other cash oil bases as other buyers scramble to buy oil from other sources before

their bases go up. Given numerous refinery locations, and even more crusher locations, the possible interactions in the various basis markets can be quite complex. Add the recent deregulation of railroad freight rates to this situation, and it becomes even more complex.

"The majority of trades in the cash market are basis trades. The final price is fixed later. For instance, a typical trade would be expressed as follows: 600,000 lb of crude soybean oil for scattered July shipment. The cash basis is 50 points (a point is 1/100 of a cent per lb) over the July CBOT futures option, FOB Danville, IL. Final pricing to be done later at the buyer's option, but prior to shipment or expiration of the July option. Normally, most other details would be covered by the National Soybean Processor's Association trading rules."

Mr. Simeral also explained how other factors have an effect on cash basis. These are: competing oils and fats, transportation changes, export demand for oils and oilseeds and meals, weather, processor profit margins and crop size and farmer selling attitude.

Cash basis is also an important consideration in the function of the refiner and manufacturer of finished products. This was explained by David Melendy who is General Manager of the Buying Division of Lever Brothers Co., who described it this way:

"Cash price is a combination of futures price and basis price. To illustrate: The Western basis (oil that can only move west) is −50 July futures. He buys the basis and then gives up his long futures to the crusher (who is short). Say the futures are 19 cents, his cash price is, therefore, 19 less 50 points or 18½ cents. In this illustration, July oil that could only go west, because of the crusher's location with respect to the railroads that served him, was worth ½ cent less than the respective futures month. How does the refiner know this? He discovered this by following the trading that was occurring in this marketplace. No one company has the power to fix price, even in its own locale. Therefore, it is the marketplace, with its many buyers and sellers, that 'discovers' price. Thus, the refiner's price discovery function is opposite that of the crusher, since the refiner's interest is in bidding crude oil prices down while crushers try to offer crude oil prices higher.

"There are no organized futures market for basis contracts, but crushers are often willing to sell forward months, which can be as far forward as a year. We can buy the basis and buy the futures to finish pricing at any time, either before or after our basis transaction, depending on the trading policy at the time.

"The refiner has another set of markets to do battle with before he can record a profit or loss and that is to sell in the wholesale market. Eventually, the same thing occurs in the wholesale market as in the crude market. Namely, the physical oil is bought on a basis with the pricing done via futures; or when buyers are keeping shorter inventories, on a spot (cash) basis. Whatever the means, the market forces are the same—location, timeliness, and retail demand all impinge on the refiner's profitability."

The international system of pricing oils and fats is similar to the domestic situation in the U.S. Soybean-oil futures are widely accepted as the norm. From this, the trade applies premiums and discounts determined by similar criteria. Mr. Peter von Eschen, trader for Cargill Inc., elaborated on the world market dynamics:

"World oil per capita disappearance has increased from 8.83 kg to 10.70 kg in 1981, approximately 21%. A truly amazing performance.

"Soybean production in diverse areas has been spectacular. The United States, already the world's larger grower of soybeans, doubled its production in just nine years, going from 1,127,100 Bu (30,669,000 MT) in 1970 to 2,267,901 Bu (61,712,000 MT) in 1979.

"Approximately 2.5 million tonnes of Malaysian palm oil were exported during the October/September year 1981-82. This was only 300,000 tonnes short of the combined soybean oil exports of Brazil, Argentina, Spain, EEC, and the U.S., and represented about 1/3 of total world exports of all vegetable oils."

Mr. von Eschen also told of ways in which government can intervene in the trade of oils and fats. This can have a serious impact on both futures price and cash basis.

"Trade barriers and incentives become involved and probably act to distort what would be a 'normal' price. For example, Brazil and Argentina, through a complex system of taxes, encourage the processing of soybeans in the home country and the export of the products, including soybean oil. Some have alleged that this is a form of export subsidy. Originally, Spain imported soybean oil as a low cost oil for those who couldn't afford olive oil. Later, an oil-processing industry was established, crushing primarily soybeans from the U.S. and Brazil. Soybean oil became a threat to the olive-oil industry. At the present time, the interior price of soybean oil is officially fixed at a level nearly double that of world levels, though still cheaper than olive oil. However, the quantity of oil that may be sold within the country is severely limited. Over 80% of the Spanish production must be exported. In Greece, too, the situation is similar, only there virtually all domestically produced soybean oil must leave the country. The EEC has a 10% import duty on vegetable-oil imports to protect the European processor. India fixes internal prices.

"Credit can be an important sales tool and at the same time assist a country to obtain some badly needed edible oil when it might not otherwise be able to do so. Pakistan and Bangladesh are important beneficiaries but Mexico, Costa Rica, El Salvador, Somalia, Zambia, Yugoslavia and Egypt are other examples."

Perhaps one of the things that was most surprising to those who attended this seminar was that each of the five panel members spoke of supply and demand factors and other basic fundamental situations. The futures trader, the cash broker, the processor, the refiner and the international exporter each provided ample evidence of their expertise in these matters and the necessity to maintain vigilant surveillance of such developments.

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