World congress attracts 700

More than 700 registrants from more than 40 nations participated in a world congress held Sept. 26–30, 1988, in Tokyo, under joint sponsorship of the International Society for Fat Research (ISF) and the Japan Oil Chemists' Society (JOCS).

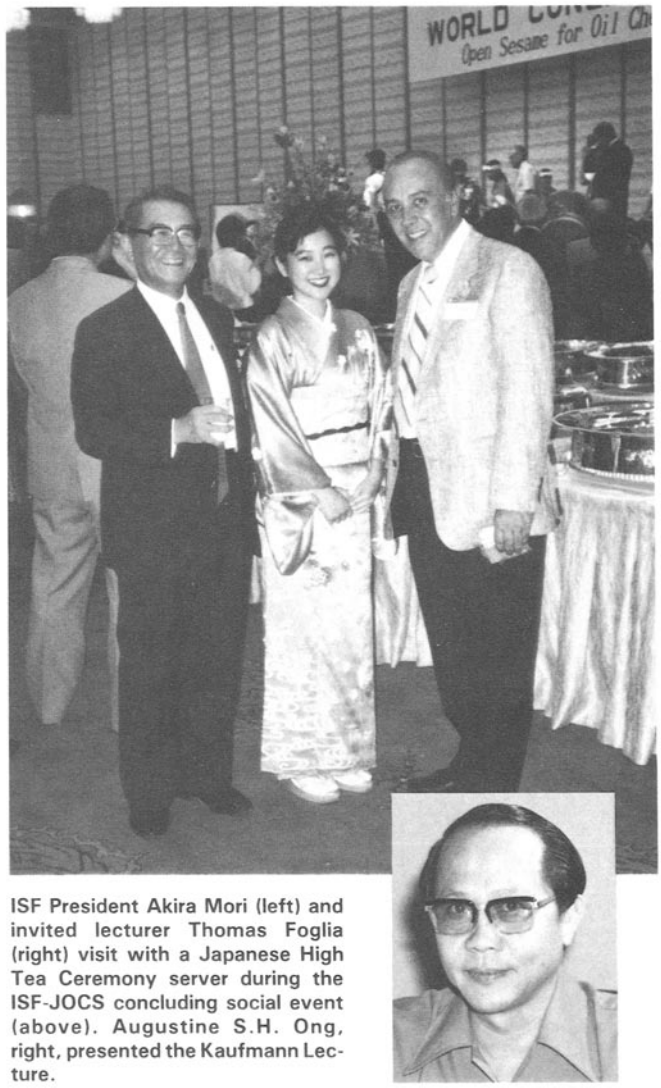
The program for this first ISF meeting in Japan included more than 280 technical presentations, three plant tours to major processing facilities in nearby Chiba, and a series of social events that provided first-time visitors to Japan with an introduction to Japanese culture and history. Sweden's Ragnar Ohlson, who serves as ISF secretary general along with P.A.T. Swoboda, said the attendance was higher than expected. He congratulated the organizing committee, headed by ISF President Akira Mori of Lion Corp., for the quality of the program and the number of registrants.

The Kaufmann Memorial lecture, given by Augustine S.H. Ong of the Palm Oil Research Institute of Malaysia, focused on "The Potential of Palm Oil in the World of Fats and Oils." Ong reviewed current edible uses for palm oil, then turned to future prospects. These included use of palm-derived methyl esters, tocopherols and tocotrienols in the pharmaceutical industry; use of palm and palm kernel oils as a milk-fat substitute in food formulations; and use of palm-derived materials as feedstocks to produce lubricants, synthetic fibers and other products.

There were four keynote plenary lectures. Yoshio Maruta, president of Kao Corp., said the increasing importance of research and development to long-term success means more vertical integration and more sharing of information at Kao. About 2,000 of Kao's 7,500 employees are involved in research and development, he said. Basic research and production technology specialists work together "with an objective of providing an atmosphere enabling development of key chemicals and key technologies," Maruta said.

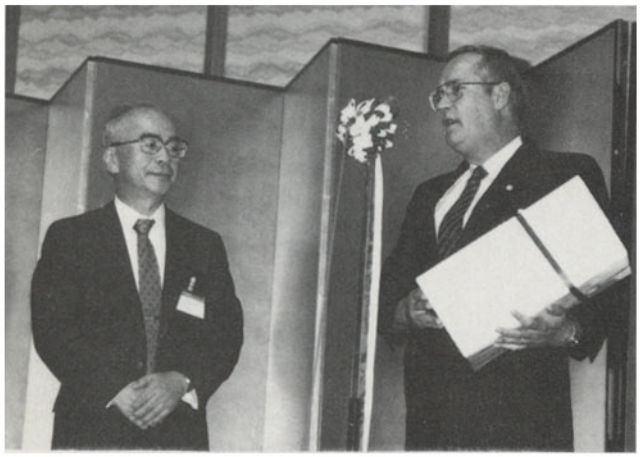
"The Safety of Oils and Fats" was the topic for the second plenary lecture, given by J. Nieuwenhuis of Unilever's Vlaardingen research laboratories. Noting that consumers obtain 60% of their fat intake from "invisible" fats—those contained in other foods such as meat, dairy products and grains—Nieuwenhuis said visible fats' safety record compares favorably with that of drinking water. There are three possible ways visible fats can become contaminated, he said—during the formulation process, through microbiological activity or through contamination from outside sources. Nieuwenhuis stressed that public perception of safety risk can become more important than the actual safety risk. "In view of this, quality assurance should have a high priority for all company boards in our industry," he said.

The third plenary lecture was "Dietary Culture and Food Industries in Japan," given by Katsuhiro Utada, president of Ajinomoto Co. Inc. of Japan. After discussing how Japanese dietary preferences developed in past centuries based on dietary needs, Utada noted that today, food manufacturers must react to what consumers/end users say they want. There is more competition and market orientation, he said.



ISF President Akira Mori (left) and invited lecturer Thomas Foglia (right) visit with a Japanese High Tea Ceremony server during the ISF-JOCS concluding social event (above). Augustine S.H. Ong, right, presented the Kaufmann Lecture.

"The Edible Oilseed Protein Situation" was the topic for the final plenary lecture, given by Walter J. Wolf of the USDA's Northern Regional Research Center. Wolf noted that U.S. use of oilseed proteins in food increased to 345,000 metric tons (MT) in 1985, up from 66,000–80,000 MT in 1967. Reviewing nutritional and technological advances in oilseed protein during recent years, he noted that even though usage has not expanded as fast as was predicted during the 1960s and 1970s, "it is reassuring that we have these reserves of oilseed protein available that ultimately may be used for direct human consumption when animal proteins become scarcer and more expensive."



AOCS President Tim Mounts (left, top photo) and JOCS President S. Hayano exchange toasts during an ISF-JOCS World Congress social event. In lower photo, Mounts presents a carved wooden duck as a gift from AOCS to JOCS.

Topic categories for technical presentations were: oils and fat resources; processing; biochemistry, nutrition and clinical aspects of lipids; industrial and edible oils and fats; chemistry of oils, fats and their derivatives; surfactants and surface chemistry; analysis of lipids; biotechnology; vegetable proteins; and a miscellaneous session. Internationally known specialists from Asia, Europe and North America gave invited presentations to begin each technical session.

Poster sessions were held two days, with reports on such diverse topics as the potential need to supplement long-term total parenteral nutrition with eicosapentaenoic acid, to the hydrogenation of fish oil using nickel catalysts.

The concluding day of the congress was devoted to field trips to three Japanese firms in Chiba. At Lion Corp., registrants saw a highly automated detergent/personal care product facility. Packing, storage and shipment of products are handled by computerized systems involving robotic devices. The six-year-old plant has a staff of 163 persons working three shifts, annually producing a total of 200,000 tons of powdered and liquid detergents, fabric softeners and personal care products. Employee facilities on the

148,000-square-meter site include two tennis courts, as well as a sports field for baseball, soccer and rugby.

At Miyoshi Oil & Fat Co Ltd., registrants saw a facility operated by an 80-person staff for fats and oils refining, as well as production of margarine, shortening and a powdered fat product. The facility can refine 11,000 tons of oils and fats a month, hydrogenate 5,000 tons a month, deodorize 8,000 tons a month and produce 8,000 tons of margarine/shortening annually, plus produce 800 tons of powdered fat a month. The Chiba facility is about 11 years old. Approximately 25% of the plant site is landscaped as park area, including several goldfish ponds.

During a tour of the Toyo Oil Mills facility in Chiba, one Eastern European participant noted two refining lines were labeled as having equipment from different manufacturers.

"Which one is better?" she asked.

The Toyo guide escorting her group thought a moment, then responded with a smile and the words, "Both better."

The third stop was Ajinomoto's Toyo Oil Mills. The operation includes two soybean-crushing facilities, a rapeseed-crushing facility and a refining area. The operation provides fats and oils to Ajinomoto's other affiliates for processing into end products. Nerve center of the 27-acre site is a centralized computer control room that monitors and controls operations throughout the complex.

Serving on the congress organizing committee with Mori were T. Ashahara, University of Tokyo; H. Fukuba, Shiouwa Women's University; I. Hara, Tosoh Corp.; S. Hayano, Institute of Vocational Training; T. Kaneda, Kohriyama Women's College; K. Sakurai, Nara National College of Technology; and R. Ohlson, P.A.T. Swoboda and B.W. Werdelmann, all representatives of ISF.

Oilseed outlook

The 1988/89 world oilseed crop, projected at nearly 201 million metric tons (MT), is down only 4% from the previous year despite a major shortfall in the U.S. soybean crop. U.S. Department of Agriculture (USDA) figures released in October indicate world soybean production in 1988/89 could fall to 93.75 million MT, down from the 1987/88 level of 102.88 million MT. The U.S. soybean crop is projected to decline to 40.86 million MT in 1988/89, from last year's 52.33 million MT. This decline, however, is nearly offset by projected increases in world production of cottonseed, sunflowerseed and peanuts.

"When you look at oilseed production around the world, the decline is not that sharp. World oilseed stocks had been pretty high. The bottom line is that the world market will be getting rid of surplus seed this year," according to Roger Hoskin, an analyst in USDA's Economic Research Service. "If there were a simultaneous shortfall in South America, then the situation would sour fast."

Brazilian and Argentine producers, however, are expected to increase production and exports in response to the U.S. shortfall. USDA estimates combined production in the two countries will reach 31 million MT. Exports of Brazilian and Argentine soybeans, soybean oil and soybean meal are expected to rise as U.S. exports decline this year. U.S. soybean exports may decline to 15.38 million MT, from 21.77 million MT in 1987/88; Brazilian and Argentine soybean exports could reach 7.1 million MT, an increase of 2.3 million MT. U.S. soybean meal exports are projected at 3.81 million MT, whereas combined Brazilian and Argentine meal exports are forecast at more than 14 million MT. Brazil and Argentina combined may export more than two million MT of soybean oil, compared with 610,000 MT for the U.S.

"Even though we've had a short crop, when we look at the world supply, the world's not even missing us. The shortfall is being made up elsewhere," according to Bill Lester, vice president of corporate relations for Ag Processing in Omaha, Nebraska. As production continues to increase in Latin America, the U.S. could become the off-year supplier of soybeans, he added.

Ever-increasing soybean oil imports from Argentina and Brazil, a result of drought and price, are a concern, according to Debbie Pumphrey. The USDA oilseed analyst said the U.S. imported about 68,000 MT of soybean oil between October 1987 and August 1988, compared with 7,000 MT for the same period last year. Most of the oil was imported in July and August as the drought worsened, and USDA estimates more than 90,000 MT of soybean oil will be imported in 1988/89. Because Brazilian and Argentine export policies favor meal and oil exports over seed, Pumphrey said, it is still cheaper to import the Latin American oil despite a high import tax for oil entering the U.S. Domestically, Pumphrey predicts there will be some rationing, particularly with meal. Soybean prices will average $7-9 per bushel through the year, up from last year's average of $6.15 per bushel.

Brazilian soybean plantings in the last quarter of 1988 were expected to expand by 10-20%, according to USDA. However, *Oil World* predicted area probably would not increase more than 10%, because the government was giving less financial support to soybeans and more encouragement for corn plantings. French growers, meanwhile, have scaled back winter rapeseed area 14-17%, according to USDA. An estimated 720,000 to 740,000 hectares will be sown for harvest in 1989, down from the 865,300 hectares planted in 1987 for 1988 harvest, USDA said. CETIOM, the French Technical Oilseed Institute, said double-zero rapeseed varieties will represent about 65% of French plantings in 1989/90, compared with 19% in 1988/89.

This year's drought nearly halved U.S. sunflowerseed production, according to a USDA *Farmline* report, noting sunflower acreage for the 1988 crop was about 1.8 million acres, 32% of the 1979 peak level. Total production in 1988/89 was estimated at 630,000 MT, about 550,000 MT less than last year, according to USDA.

Although drought caused most of this year's sunflowerseed decline, competition at home and abroad has caused most of the crop's waning, according to a USDA *Farmline* report. In the Dakotas and Minnesota, the major sunflower-growing areas, sunflowerseed must compete with spring wheat and barley which are government program crops. Gross payments to farmers for spring wheat and barley have increased 25-30% since 1979, due to crop loans and deficiency payments; at the same time, gross returns for sunflowerseed have fallen below 1979 levels.

Research funding

The U.S. Department of Agriculture (USDA) has awarded Michigan State University (MSU) a $1.3-million, five-year grant to establish a plant science center. The center will conduct basic research in the biochemistry and molecular biology of plant lipids and nonstructural carbohydrates.

The long-term goal of the project is to develop the knowledge to genetically manipulate crops to produce desired lipids and carbohydrates, John Ohlrogge said. Ohlrogge, associate professor of botany and plant pathology at MSU, will head the Center for Genetics and Biochemical Alteration of Plant Lipids and Starch.

According to Ohlrogge, program researchers will explore the potential of plant lipids and starches as sources of high-value compounds for use by industry in nonfood uses. Because many potentially valuable compounds exist in small amounts, or exist in plants not suited to large-scale production, researchers want to overcome the problem through gene transfer. Genes for relevant enzymes from undomesticated plant species could be inserted into crop species, Ohlrogge said, adding that this could create new markets for excess agricultural commodities. Ohlrogge also cited work being done on jojoba, meadowfoam, crambe and cuphea to produce commercially useful lipids.

Chris R. Somerville, Jack Preiss and Edward N. Tolbert, all of MSU, and researchers at USDA's Northern Regional Research Center in Peoria, Illinois, will work collaboratively. The center at MSU is part of the Plant Science Centers Program established by USDA, the Department of Energy and the National Science Foundation to fund three centers to encourage basic research and graduate and postdoctoral training in plant science. The other two centers will be at Arizona State University and Cornell University.

Meanwhile, President Reagan has approved planning funds for a national soybean research center, to be based at the University of Illinois in Urbana-Champaign. In late September, a U.S. House and Senate conference committee allocated $250,000 in start-up funds for the project; construction funds will be sought in the 1990 and 1991 federal budgets, Michael Bushman said. Bushman is an aide in the office of U.S. Representative Terry Bruce from Illinois. Eventually, legislators favoring the project hope to bring total funding for the project to $5 million, Bushman added.

According to Don Holt, director of the University of Illinois Agricultural Experiment Station, the research plans for the soybean center will be built around specific market goals in much the way a private firm would conduct research. "One aim is to work for product differentiation so soybeans and soybean products can fit niche markets," Holt said. "We'd like to genetically engineer soybeans for more diverse uses by industry." Because the university holds 80% of USDA's germplasm collection, it is an ideal site for the such genetic research, Holt said.

Canola research

Allelix Inc., Agriculture Canada and l'Universite Laval have agreed to work collaboratively to develop genetic engineering technology for canola. Under a grant from the Canadian National Research Council, the institutions have undertaken a three-year project to use molecular transformation to produce canola varieties with herbicide and fungal tolerance.

Researchers are particularly interested in developing varieties with tolerance to sclerotinia and blackleg, according to Nancy MacMillan, public relations coordinator for Allelix.

Guy Bellemare from l'Universite Laval will work on aspects of plant gene regulation, and Brian Miki from Agriculture Canada will work on microinjection techniques. All technological advances will be shared equally by Allelix, Agriculture Canada and l'Universite Laval, and Allelix will commercialize the results, MacMillan said. The total cost of the project is $4 million (Canadian).

Kraft purchased

Philip Morris Companies Inc. and Kraft Inc. in late October announced they had signed a merger agreement under which Philip Morris will buy Kraft for approximately $13.1 billion. Under the agreement, Philip Morris agreed to pay Kraft shareholders $106 per share, with plans to merge Kraft with General Foods Corp., a Philip Morris subsidiary.

Kraft Inc.'s Board of Directors earlier had rejected a $11-billion takeover bid made by Philip Morris based on a $90-per-share tender offer. At that time, Kraft proposed a restructuring, valued at $110 a share, to keep the company independent.

Philip Morris' acquisition of Kraft will make Philip Morris the world's largest consumer products company. The transaction will be the second-largest takeover in history.

China projects

Nisshin Oil Mills of Japan is undertaking a joint venture with Dalian Oil and Fat Industry General Factory and other firms to establish a soybean-crushing firm at Dalian, China. The new firm—Dalian Nisshin Oil Mills Ltd.—has 12 million dollars in capital supplied by Japanese and Chinese companies.

Plans have been made to construct a soybean-crushing facility at Dalian Economical and Technical Developing Zone at a projected cost of 5 billion yen, with start-up targeted for October 1990. Annual crushing capacity is forecast to be 180,000 tons. Heilongjian Province will supply soybeans for the facility.

Meanwhile, Crown Iron Works Co. has announced it will furnish equipment for Cargill Inc.'s solvent-extraction plant and miscella refinery planned for Shandong Province, China.

The facility—Cargill's first complete extraction plant in China—will have the capacity to process 300 MT of cottonseed per day. Construction is slated to begin in late 1988, with start-up scheduled for late 1989. The plant will be in the alluvial plain of the Yellow River.

Coconut update

An industry-wide campaign, supported by the United Coconut Association of the Philippines (UCAP), is under way to upgrade the quality of copra in the Philippines. Prompting the campaign is concern over the presence of aflatoxin contamination in copra and in copra meal/pellets.

UCAP's antiaflatoxin committee has drawn up a revised copra classification standard which provides a premium for properly dried, kiln-dried and clean unadulterated copra with no addition of extraneous materials. According to *The Cocomunity* newsletter, Philippine oil mills have adopted and agreed to enforce the higher copra standards in their buying operations.

In a related development, San Miguel Corp.'s Coconut Oil Milling and Refining Operations—a major feed manufacturer in the Philippines—has launched an information campaign to aid in upgrading the quality of copra produced in the country. To provide incentives, the company is paying premiums for good quality copra.

In part, the efforts in the Philippines have been prompted by the prospect of stricter aflatoxin limits in the European Economic Community starting at the end of 1988. The new limits set acceptable aflatoxin levels in copra, palm kernel and meals derived from them at 50 parts per billion (ppb) for most trade, with products containing 50–200 ppb aflatoxin limited to use by recognized mixed feed manufacturers. Raw materials with more than 200 ppb aflatoxin levels will not be permitted.

In other coconut news, SACRA Ltd. of Costa Rica plans to begin exporting high-grade hybrid coconut seed in 1989 to other parts of Latin America and the Caribbean.

The firm noted that the hybrid coconuts, which unite the best characteristics of tall and dwarf varieties, are ideal for planting in Latin America, from Mexico to Peru. A company spokesman noted that the coconut palms not only can be raised as a profitable crop but also are effective shade trees for cocoa.

Meanwhile, the European Economic Community (EEC) is assisting India with a project to increase coconut productivity by encouraging coconut growers to adopt modern farm practices and to market coconut oil and other value-added products.

News briefs

The **Indonesian Agriculture Ministry** is seeking bids for the construction of six palm oil processing plants for Riau, Jambi, South Sumatra, West Kalimantan and East Kalimantan at an estimated total cost of $2.9 million dollars. Indonesia plans to have 1.3 million hectares of palm oil plantations by 1995, the government said.

Oriza Oil and Fats Chemical Co. of Japan will set up a rice bran-extraction plant in Burma in cooperation with **Mitsubishi Jukogyo Co., Kinsho Mataichi Corp.** and **Yoshino Seisakusho Co.** Oriza Yuka holds a patent on low-temperature extraction of rice bran in Japan, Korea, Taiwan and the U.S.

Japan's **Nisshin Oil Mills,** promoting a medical research and development program, is building an experimental facility to study infection. The research program will mainly cover neurology, ointment and tape pharmacy and diagnostic pharmacy.

The Leatherhead Food Research Association has appointed **Richard Cottrell** as manager of its science group. Cottrell previously served as science director for the British Nutrition Foundation. The association has begun a manufacturing advisory service, providing advice on factory design, equipment selection, energy management and control of manufacturing operations.

AOCS emeritus member **Vagn Jespersen** has been honored for 50 years of service with **A/S C.E. Basts Eftf.**, Copenhagen, Denmark. The company, founded as a candle-making plant in 1826, processes fats and oils products.

Novo has announced its enzymes business subsidiary, **Novo Industri Japan Ltd.**, will move in 1990 from Tokyo to the Makuhari Techno Garden now under construction in the Makuhari New Business District between Tokyo and the New Tokyo International Airport. In other business, Novo has established a new company—**Novo Industri of North America Inc. (NINA)**—in the U.S. **Harry H. Penner Jr.** has been named president of NINA.

Restructuring its catalysts and chemicals division, **Engelhard Corp.** has laid off 43 employees, including 23 chemists and chemical engineers in research and development and sales and marketing positions. More than 100 positions in the division have been eliminated, with many unfilled in anticipation of integrating **Harshaw/Filtrol** businesses, purchased from **KaiserTech** earlier in 1988.

Association promotes castor oil

The International Castor Oil Association (ICOA) is a worldwide organization composed of the major principals engaged in the castor oil industry. This includes the growing of castorseed and the production of oil and its derivatives, as well as by-product castor meal.

ICOA is headquartered in the New York metropolitan area. Members include seed and oil producers, processors, exporters, dealers and prime users of this unique vegetable oil.

ICOA is currently represented by more than 50 commercial organizations from such countries as Brazil, Canada, Costa Rica, Ecuador, France, West Germany, India, Japan, The Netherlands, Thailand, the United Kingdom and the U.S. Its constitution was adopted in 1957 and for the past 30 years, the organization has grown and expanded its activities.

The principal objectives are to promote the production, trade, technology and uses of castor oil and its derivatives. Expansion of the technological base has led to new products and product-use diversification involving a substantial increase in the movement of derivatives rather than the basic oil as a commodity product.

ICOA has established standard specification for all commercial grades of castor oil using analytical methods developed by the American Oil Chemists' Society (AOCS). The AOCS procedures were established as standards for oil color, free fatty acid content, hydroxyl value and a series of other chemical properties.

Also, methods for satisfactorily sampling bulk castor oil at the time of shipment and upon receipt have been developed and are being followed by a majority of surveyors and carriers of bulk castor oil. Proper heating procedures and handling of the oil during shipment have been recommended and adopted. In addition, ICOA has been instrumental in establishing uniform contracts for the international trading of castor oil.

A major program initiated by ICOA is to broaden the technology of castor oil in line with the use of renewable resources and worldwide expansion of the oleochemical industries. This past May, for the first time in the history of AOCS, a castor oil symposium was presented at the AOCS annual meeting held in Phoenix. The program included 12 presentations by authoritative researchers in the field of castor chemistry.

Papers in that symposium covered many of the new and diverse derivatives of castor oil synthesized for use in such applications as automotive products, cosmetic preparations, polyurethanes and industrial coatings. One talk focused on a UNIDO-supported project on the detoxification and deallergenation of castor meal. The resultant product is being evaluated as a nutrient for animal feed.

ICOA is planning another symposium for the AOCS annual meeting to be held in Baltimore in May 1990.

Meanwhile, ICOA is preparing two technical pamphlets for general distribution. The first pamphlet will outline and describe the basic chemistry of castor oil and its potential conversion to oleochemical derivatives. This basic review will act as a guide for those concerned with the conversion of the castor molecule to useful derivatives and their applications. The second pamphlet will cover the subject of castor meal recovered from the processing of castorseed. It will review the characteristics of the extracted meal and the new process, developed by Texas A&M under UNIDO support, to detoxify and deallergenate the meal for use as animal feed.

Currrent ICOA president is Frank C. Naughton, a past president of AOCS. Robert L. Vignolo serves as executive secretary for the association.

Castor: A 'unique' oil

One of the oldest vegetable oils in commercial use, castor oil is the only commercial natural oil with a double bond and a hydroxyl group in its 18-carbon triglyceride structure. Castor oil's chemical structure is of great interest because of the wide assortment of reactions it offers the oleochemical industry and the unique chemicals that can be derived from it, according to Frank C. Naughton, current president of the International Castor Oil Association.

Castor oil is obtained from seeds of the castor plant (*Ricinus communis*). As such, it is a renewable raw material resource and is fully biodegradable. Leading producers are China, India and Brazil. Castor plants are also grown in such countries as the U.S.S.R., Costa Rica, Ecuador, Pakistan, Thailand, the Philippines, Paraguay, Romania, Ethiopia, the Sudan, Tanzania and Mexico.

The current worldwide production of castorseed is approximately 1,000,000 metric tons per year. Still, it has attracted only a small amount of attention as an agronomic product in the vegetable oil field, Naughton said.

The primary use of castor oil is as a basic ingredient in the production of Nylon 11 (plastic and filament), sebacic acid (Nylon 6-10, plasticizers and jet engine lubricants), heavy-duty automotive and truck greases, coatings and inks, surfactants, polyurethanes and numerous oleochemical derivatives. It also is used for medicinal, pharmaceutical and cosmetic uses.