

Edible Fats Inventory at Record Level

Interchangeability of soybean and cottonseed oil becoming important factor in price-supply structure

SAN ANTONIO, TEX.—Production of fats from domestic materials has increased approximately 25% since 1945-46, and over 40% since prewar, according to R. M. Walsh, Agricultural Marketing Service, USDA. This together with recovery of production in other countries has overcome the world shortage of edible fats which existed during early postwar years. With petroleum derivatives replacing fats in some industrial uses, the U. S. now has a surplus over domestic needs, said Walsh at the annual meeting of the American Oil Chemists' Society here April 12 to 14.

Inventories have increased. A post war high of 2.8 billion pounds was reached last October, the beginning of the present crop marketing year. This may be compared with an average of 1.4 billion pounds which existed after the war when fats were in short world supply. A normal inventory, said Walsh, would lie somewhere between these two extremes.

Many factors have contributed to this situation. A high domestic production rate, rapid recovery in world production, and serious market inroads by synthetic materials are basic reasons for our present status. Government policies and programs have also added to the over-supply, with the result that the Government has acquired substantial stocks of cottonseed oil, linseed oil, and butter. And recent trends offer little promise of change in the high inventory position, emphasized Walsh.

Further increases in production are obviously not needed at the moment, but the objective of maintaining a parity of income remains. As a final result of these operations, financial losses to taxpayers are possible, but the holdings have a stabilizing influence over the market, and will tend to dampen violent price rises to consumers as we have witnessed in the past. Government stocks on April 1, including stocks purchased but not delivered, amounted to over a billion pounds of cottonseed oil, about 350 million pounds of butter, and over 300 million pounds of linseed oil.

Although exports of low-priced tallow and greases have been gaining, exports of edible oils have declined. Imports of fats, oils, and oil-bearing materials have been equivalent to about a billion pounds of fat per year. Such imports consist mainly of coconut oil and copra, castor beans and oil, palm oil, and olive oil.

The domestic market, and foreign

markets likewise, offer little promise of absorbing the large inventories of fats and oils that we have accumulated in the U. S., said Walsh. Domestic disappearance in the past three years, including disappearance of roughly a

considerations work hand-in-hand to shape the over-all picture. Of increasing importance technically is the solvent extraction of cottonseed. This process, although it isn't being used so extensively as in the soybean crushing industry, provides an incentive for the solution of many problems peculiar to cottonseed extraction, as well as enhanced oil yields.



Economic status of the fats and oils industry received a great deal of attention from foreign visitors at the AOCS meeting. Among them are: M. Sarwat Montassir (left) of Egypt's National Production Council; B. S. Kulkarni of Osmania University in India; and J. R. Clark-Riede of Sepratone Corp., Montreal

billion pounds of imported oils, has held steady at about 10.5 billion pounds, while production has been around 12.5 billion pounds. Domestic disappearance of fats and oils in food uses has increased about in line with population growth, but disappearance in industrial uses has declined, particularly in the manufacture of soap. With an abundant supply of certain inedible fats available, there is opportunity and need for chemical discovery to support new uses based on quality products, and for expansion of outlets in little used markets, concluded Walsh.

Interchangeability. "There seems to be little hope of reducing the surplus of edible fats through increased domestic consumption," stressed J. P. Hughes, Anderson, Clayton & Co. Unless price is again permitted to have some effect on supply, oil surpluses appear to be a continuing feature of our economy, especially since the per capita consumption of fats has tended to remain fairly constant over a number of years.

Actually, three factors affect the price and supply structure, explained Hughes. Economic, technological, and political

At the present time, says Hughes, we are witnessing an important technological factor—the growing interchangeability between soybean oil and cottonseed oil in the manufacture of consumer food fats—which has been accelerated by economic forces. During the past several months the price of crude soybean f.o.b. Midwest mills has risen from a discount of 3.75 cents per pound to a premium of $\frac{3}{8}$ cents per pound relative to crude cottonseed oil f.o.b. Mississippi Valley mills. This reversal is remarkable, inasmuch as crude cottonseed oil has for all practical purposes been priced fictitiously high because of supports.

Mainly because of government intervention through crop price supports, the net result of this interchangeability has been the accumulation of all surplus edible fats and oils in government stocks in the form of cottonseed oil and butter. The point to remember, said Hughes, is that the "surplus" has been one of fats and oils in general; we have had a surplus for several years, but the support programs have made it appear that cottonseed and butter in particular have been overproduced.

Acreage limitations on corn, cotton, and wheat may cause many farmers to increase plantings of soybeans, said Hughes. At 80% of parity support for the coming season, soybeans are still a very attractive cash crop, particularly when at planting time their price will be considerably more than the support price. Farmers have indicated they will plant an acreage to soybeans this spring which should produce 340 million bushels. We might reasonably expect that at least 240 million bushels will be crushed, to produce slightly more than 41,000 tank cars of refined oil. Informed trade opinions have estimated an acreage increase of some 3 to 4 million acres. More optimistic estimates even range as high as a 7 million increase, which if realized would be sufficient to make apparently surplus almost the entire cottonseed crop, supported at 75% of parity.

Present indications also point to a sizable increase of some 5000 tank cars in lard production next season as a result of the extremely favorable corn-hog price ratio. We may be faced with a prospective addition of some 5000 to 9000 tank cars of fats and oils to our present surplus position next season, despite the cutback in cotton production, warned Hughes.

Sesame Seed. There has been much activity in the U. S. during the last several years on breeding of an indelible strain of sesame seed, reported J. W. Dunning of V. D. Anderson Co. Results of this work indicate that sesame may soon become another vegetable seed crop that can be grown and harvested under more or less standard conditions.

Prepressing tests with sesame seed in the Anderson Co.'s pilot plant indicate that drying of the seed to between 3 and 4% moisture is satisfactory for prepressing. At these moisture contents, said Dunning, prepress cakes containing 8 to 12% oil content were produced at capacities equivalent to 40 to 45 tons of seed per day per Super Duo Expeller. Upon granulating, conditioning, and flaking of the prepress cake, standard solvent extraction procedures could be employed to obtain sesame meals of 0.5% residual oil. Experimental data indicated that a solvent unit capable of processing 100 tons of soybeans in 24 hours, could process the flaked cake from 180 tons of sesame seed. On the basis of this work, one plant has been installed and will soon initiate operations, said Dunning. The plant has a rated capacity of 40 tons of seed per day. Dunning estimated that perhaps 130 tons of seed were processed last year on an experimental basis, and processing this year may amount to 25,000 tons.

Bench scale tests have been conducted to evaluate the filtration-extraction proc-

ess for use with sesame seed, reported A. V. Graci, Southern Utilization Laboratory, USDA. (This process has recently been placed in commercial operation at Greenwood, Miss., for processing of cottonseed.) Preparation variables were investigated: the effect of seed moisture on the rolling operation; the particle size range to which the seed should be reduced for efficient oil removal; cooking time; cooking temperature; moisture content during cooking; and final moisture content of cooked

and crisped material. Graci said they also studied various extraction variables including slurry time, solvent to prepared material ratio, extraction temperature, and filter cake thickness. These variables were related to extractability (residual lipides) and filtration rate (mass velocity). Graci concluded that extraction efficiencies of approximately 99% (residual lipids 1.0 to 1.5%) could be obtained at high mass velocities needed for economically feasible plant capacities.

Antibiotics Give Growth Gains In Undernourished Children

ATLANTIC CITY.—What may be the first definite statement on the effects of antibiotics given orally for long periods of time to children was presented by Nevin S. Scrimshaw of the Institute of Nutrition of Central America and Panama. INCAP is an international research institute sponsored by the countries of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama and administered by the Pan American Sanitary Bureau, Regional Office for the Americans of the World Health Organization.

Dr. Scrimshaw reported, at the recent meeting here of the Federation of American Societies for Experimental Biology, on the results of one 18-month and two nine-month trials in which Mayan Indian children were fed 50-milligrams levels of Aureomycin or penicillin daily.

The children, between the ages of seven and 12 years, live in five different highland villages in rural Guatemala. The diet of these children is made up principally of corn, eaten as tortillas, and a small quantity of beans. It is deficient in most of the nutritional factors for which minimum requirements have been established, but especially in vitamin A, riboflavin, and quality protein. All of the children are greatly retarded in skeletal growth and development by U. S. standards.

These children were fed Aureomycin, penicillin, or penicillin with 20 micrograms of vitamin B₁₂. In two villages no significant growth response was observed following 24 months of administration of either penicillin or penicillin with added vitamin B₁₂. However, administration of Aureomycin for 18 months in one village and nine months in two villages resulted in significant increases in rate of gain in height and in two of the three villages, also in weight. It is concluded that under the conditions prevailing in these children Aureomycin produced consistent increase in statural growth,

sometimes accompanied by an increased rate of weight gain.

Dr. Scrimshaw was anxious to point out that although there was a growth stimulating effect from the Aureomycin supplementation, this is no indication that there would be any similar effect on children fed adequate diets. The Mayan Indian children are three to four years behind U. S. children of comparable age in height, weight, and bone maturation and have been subsisting on diets averaging less than 10 grams of animal protein and less than 25% of National Research Council recommendation for vitamin A. They are also heavily infested with intestinal parasites and subject to frequent intercurrent infections. Only under these conditions is it possible to say that the administration of Aureomycin results in growth stimulation. At no time have adverse hematological or clinical effects been observed in these trials.

The experiments in Guatemala are continuing, and including similar investigations of the effect of vitamin B₁₂ feeding to both school and pre-school children under these conditions.

Antibiotics Spare B Vitamins. New evidence for the theory that the addition of antibiotic growth stimulants increase intestinal synthesis of vitamins was presented by Harold E. Schendel of the University of Illinois. He reported that growth studies on rats indicate that oral administration of penicillin and Aureomycin resulted in a sparing action on thiamine, whether the B vitamin was administered orally or by subcutaneous injection.

Parenteral administration of the antibiotic terramycin also resulted in significant growth responses and an increase in the intestinal microflora.

Tracer studies with radiothiamine also indicated that penicillin increased the synthesis of the B vitamin.