MARGARINE U.S. PER CAPITA CONSUMPTION MAY FALL THIS YEAR

Margarine, invented approximately 110 years ago in France as a response to a shortage of butter, today is a commodity staple around the globe with production during 1976 totaling more than 12.6 billion pounds, according to a report in *Oil World Weekly* this past June.

In the United States, margarine consumption during 1976 totaled 2.6 billion pounds, or about 12.2 pounds for every man, woman, and child in the United States, according to preliminary figures from the U.S. Department of Agriculture. That's enough margarine to provide a string of quarter-pound sticks stretching to the moon and back, with enough left to wrap around the equator several times.

Margarine sales in retail groceries topped $1 billion for the third straight year during 1976, according to the September 1977 issue of *Supermarketing* which contained that publication's 30th annual consumer expenditures study. The report showed margarine ranked among the top 20 food items in terms of dollar sales in grocery stores. The report indicated margarine sales topped $1.1 billion, about 2.8 percent below the previous year's dollar volume, mostly because of a 16.8 percent price decrease. The volume of margarine sold in 1976 was higher than in 1975, when U.S. consumption averaged 11.2 pounds per capita.

Supermarket shoppers approaching the margarine section of a grocery store face a bewildering array of choices: regular stick, whipped stick, liquid, or soft margarine in a tub; regular margarine or one with a specially formulated high polyunsaturate content; margarine with an 80% fat content, or the lower-fat spreads with 40% or 60% fat content. A shopper also can choose among different types of oils, either by looking for labels promoting specialty oils or by reading the fine print on the packaging that list all ingredients – including the source of the fat in the margarine.

To guide consumers in making their choices, margarine firms spent more than $34 million for advertising during 1976, according to one New York firm that compiles such figures. More than $30 million was for television time, about $1.7 million was for magazine ads, $1.3 million for radio time, $498,000 for newspaper space, and less than $10,000 for outdoor ads such as billboards.

A quarter-century ago, a shopper had few choices to make. Until March 23, 1950, when President Truman signed the Margarine Act of 1950, distribution and sale of margarine within the United States had been hindered by a variety of restrictive taxes and laws. The tale of the invention of margarine in France in 1869, its entry into American markets during the 1880s, and subsequent legal squabbles are reviewed in the book "The Story of Margarine," by S.F. Riepma, and in "Margarine: 100 Years of Technological and Legal Progress," by Stanley Miksta, the latter a talk presented to AOCS commemorating margarine's centennial [*JAOCS* 48:169A (April 1971)].

In 1949, a margarine shopper usually had to settle for a white, one-pound package of margarine with a tablet of artificial coloring that could be kneaded at home. Americans consumed about 5.8 pounds of margarine per capita in 1949 (at 31 cents a pound) and about 10.5 pounds of butter (at 73 cents a pound). Ten years later, Americans were consuming more margarine than butter – about 9.2 pounds of margarine (28 cents a pound) per capita annually to 7.9 pounds of butter (75 cents a pound). For 1976, preliminary USDA figures are 12.2 pounds of margarine (52.6 cents a pound) per capita, compared to 4.4 pounds of butter ($1.26 a pound). Combined annual per capita consumption of the two spreads has fluctuated between 16 and 17½ pounds during the past quarter-century. Rising population and per capita consumption have triggered a vast expansion in margarine production (862 million pounds in 1949, 2.6 billion pounds in 1976), while butter production, 1.6 billion pounds in 1949, was 935 million pounds in 1976.

Margarine traditionally has been priced lower than butter, but during late 1973 and part of 1974, falling butter prices and rising wholesale prices for fats and oils actually helped create a situation in which some more expensive margarine brands carried higher retail prices than did butter, the USDA Fats and Oils Situation of February 1977 noted.

"The Story of Margarine" reports that some persons in 1969 were anticipating a per capita margarine consumption of 1980 of 13 pounds. From 1970 through 1975, per capita consumtion advanced from 11.0 to 11.3 pounds. The jump to 12.2 pounds in 1976 has been attributed to a variety of factors: vegetable oils were more abundant and cheaper than they had been for a while, making margarine less expensive; the federal government promoted use of surplus peanut oil in margarine distributed for use in school lunch programs (about 85 million pounds worth), and 60% vegetable oil spreads were gaining consumer acceptance.

Per capita consumption in 1977 may be below 12 pounds. If there is a decrease of any size in total margarine production during 1977 from the 1976 level, it will be only the third such decrease since World War II. In 1946, production dropped 40 million pounds from 1945's 645 million pound level; in 1955 there was a 30 million pound drop from 1954's 1,364 million pounds. The expected decline this year may be as much as 100 million pounds off 1976 production. During the first seven months of 1977, fats and oils consumed in margarine totaled about 1,158 million pounds, according to census reports; during the same period in 1976, 1,229 million pounds were used.

Why the drop this year? Some observers believe that the relatively short supply of soybean stocks during the summer has meant higher prices for

soybean oil, the basic ingredient, and consequently higher prices for margarine. Consumers have been buying expensive capital items such as new cars and may be cutting corners in their food budgets. Another factor may be that extremely hot weather this summer curbed appetites, leading to a general slump in food consumption, particularly high-energy fats and oils products. Finally, there are some who believe Americans are reducing total fat and oil intakes for dietary health purposes.

The variety of margarines now available reflects the variety of oils used in its manufacture. When first invented, margarine's prime ingredient was refined beef fat and the term oleomargarine, now nearly obsolete, was used for the new food. In the United States, cottonseed oil was formulated in margarines during the 1880s. As soybean acreage expanded in the 20th century and as soy oil technology improved, soybean oil became the dominant vegetable oil.

In 1976, 1,671 million pounds of soybean oil were used in margarine manufactured in the United States, USDA statistics show. Usage of other oils were as follows; corn oil, 217.6 million pounds; cottonseed oil, 50.8 million pounds; palm oil, 48.1 million pounds; safflower oil, 10.5 million pounds; and lard and edible tallow, 43.9 million pounds. Corn and safflower oil are used for premium, higher-priced margarines. A sunflower oil margarine, Promise, is at the test market stage.

Over-all, margarine production during 1976 required 2,090 million pounds of fats and oils. Total use of fats and oils in edible products totaled 10,823 million pounds, census report says, with margarine ranking behind salad and cooking oils (4,350 million pounds) and baking and frying fats (3,938 million pounds).

While the total amount of margarine consumed has been climbing during the 1960s and 1970s, the number of firms producing margarine has not. The standard reference work lists 34 different firms operating 56 plants. A 1977 list by the National Association of Margarine Manufacturers lists 27 firms and 55 plants. About a third of the present firms produce 100 million pounds or more a year and are large producers.

The increased production from approximately the same number of plants is attributable to newer, better, faster equipment. Tri-Clover Division of Ladish Co. engineered the computerized fully closed system at Land O'Lakes new facility in Hudson, Iowa.

Bran & Lubbe has designed proportional pumping systems that provide continuous, automatically controlled metering and proportioning of multi-ingredient liquids. These units use a common drive motor, and proportioning is done by adjusting the stroke length of each plunger in the positive displacement system.

Improvements in packaging equipment – and development of plastic tub containers that housewives may use as kitchen containers – have been a major development during the past decade. The German-developed Benhil equipment has become popular during this period. The firm's Mark 4 can print up to 200 one-pound bricks per minute from a rotary moulding drum with six moulding chambers activated by a single-fixed cam. Lynch Morpac's CTF unit uses positive displacement and is capable of operating at 3,000 pounds per hour, while a new model, the TFC-76, operates at 4,500 pounds per hour.

F.J. Massiello of J.H. Filbert Co. in Baltimore, Maryland, presented, a paper entitled "Changing Trends in Consumer Margarines" during the 1977 AOCS Annual Meeting. In that paper, Massiello estimated that stick margarine accounted for about 70% of the approximately two billion pounds of margarine sold in the United States during 1976; soft margarine packaged in tubs at 22%; diet imitation (40% fat) margarine at 2%; vegetable oil spreads (60% fat) at 5%; and liquid margarine at 1%.

Massiello said he thinks the 60% fat spreads will increase in popularity, especially if oil prices continue upward over the long-term. Health-conscious consumers also may prefer high unpolyunsaturate margarines, Massiello said. Liquid oil margarines require less natural gas in hydrogenation and thus offer a cost savings, he noted.

Health concerns may also increase demand for margarines with natural ingredients – unhydrogenated oils and natural flavors, he said, and for margarines without preservatives. Questions on the biological fate of *trans* fatty acids may encourage reduced *trans* isomer content, Massiello said.

Conceived initially as a substitute for butter, margarine during its first 100 years has become a staple commodity accepted on its own merits. The emphasis on recent years has been on marketing innovations ranging from new packaging to new formulations.

Supermarket shoppers in coming years are likely to have an even wider variety of margarine and margarine-type products offered to them. •

Softer oils being used

Some margarine manufacturers have begun using more liquid and softer oils than previously used in response to buyers' preference for high polyunsaturate margarines.

JAOCS sent brief questionnaires to 27 margarine manufacturers; replies were received from 11 of the 23 who produce consumer margarines. Five of the 11 specifically noted that they were using more liquid oils or softer oils because buyers prefer them. Using these oils lowers the proportion of partially hydrogenated oils that must be used.

Six firms reported introducing 60% fat content vegetable oil spreads during the past five years; two of those firms also have started producing a high-polyunsaturate margarine; and one has begun producing a liquid margarine. Four of the six said consumer response to the low fat spreads was about what had been anticipated, one said it was below expectations, while another said response had been far above expectations. One firm had begun marketing a 40% fat spread product but has withdrawn it from the market because of low sales; another has discontinued saf-content margarines because of the rising cost of that oil.

As might be expected, soybean and corn oils were the most widely used principal oils mentioned by those responding to the survey, with lard a distant third. Palm oil also was listed as an ingredient.

All 11 respondents were producing regular stick margarine, 10 were producing regular soft; six were producing polyunsaturate; five, diet imitation 60%; 4, premium soft; 3, diet imitation 40%; 2, high polyunsaturate, and one respondent reported producing whip stick and one reported producing liquid margarine.

What lies ahead?

One margarine executive commented, "We believe that the acceptance of some of these new items like the 60% spreads will follow the price of soybean oil pretty much because we notice that when they were first introduced we had soybean oil at the 30 to 40 cent levels, and this makes quite a difference as compared with the current 18 to 20 cent levels." He went on to say that the new spreads serve a purpose in giving buyers a wider selection among spreads.