

# Symposium:

## OILSEEDS — NEW FOODS FOR TOMORROW

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Chairman**

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## Effect of Heat and Frying on Sunflower Oil Stability

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### ABSTRACT

Sunflowers are one of the most important sources of vegetable oils in the world, second only to soybeans. Although in use throughout many parts of the world, sunflower seed are just now beginning to attract attention and use in the United States. Composition of the oil appears to be dependent on area of production. Sunflower oil from seed grown in northern US typically contains 70% linoleic acid. In contrast, oil from seed produced in the South generally contains 40-50% linoleic acid and is higher in monounsaturated fats. For most of the edible oil market, sunflower oil appears to have an advantage over most other vegetable oils. Lightly hydrogenated sunflower oil was compared with a cottonseed-corn oil mixture for frying potato chips. Organoleptic evaluation indicated that chips did not differ significantly. We also evaluated the useful life of various sunflower seed oils for deep-fat frying. Hydrogenated and unhydrogenated sunflower oils and a commercial shortening were used to deep-fry raw potatoes. A plot of the log of the Active Oxygen Method (AOM) values of the oils versus time gave a straight line, the slope of which reflects the oxidizability of the oil. Data indicated that lightly hydrogenated northern

sunflower oil was much less prone to oxidation after abuse than the commercial shortening and was useful for a longer time. The southern oil deteriorated faster than the northern sunflower oil, but the two oils were processed differently. Thus, in recent work, care was taken to process both northern and southern grown sunflower seed under identical conditions. Frying studies indicated that oil from southern grown seed was more stable than that from northern seed as would be expected from their fatty acid composition.

The sunflower, *Helianthus annuus*, is a native American wildflower which belongs to the largest family of flowering plants, the Compositae. It has been described by a Russian agronomist as a "heretofore little grown plant that raises its head to follow the sun across the sky" (1). Production of sunflowers, one of the most important sources of vegetable oils in the world, is now second only to soybeans. Sunflowers are widely grown in Argentina, the Soviet Union, and other eastern European countries (Table I) (2). They are still a minor crop in the United States, but production has rapidly increased in the Red River Valley of Minnesota and the Dakotas and considerable interest has been developing in other regions of the US especially in the Cotton Belt.

There are two distinct types of sunflowers: (a) oilseed