

Guidelines for Research on Fats and Oils in the United States Department of Agriculture

THE MOST IMPORTANT FACTOR in the United States fats and oils situation in the last two decades has been the phenomenal increase in production, attaining in recent years a level 75% above that of 20 years ago. Domestic use of fats and oils is now larger than before World War II, but the consumption rise has not been as great as the rise in production. The net effect of these trends has been to make large quantities of all major domestic fats, oils, and oilseeds available for export or as raw materials for new products. This means that there is opportunity and need to intensify research to aid in expanding export markets and in developing new, profitable products from fats and oils and thus to maintain adequate markets for prospective production.



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A balanced research program in this field recognizes a) that production of fats and oils is not responsive to demand, primarily because most fats are joint products or by-products; b) that, while fats tend to be in surplus, we expect an expanding market for the joint product of vegetable oil production, protein meals, because of increasing livestock production; c) that per capita consumption of total food fats is not likely to increase significantly but greater emphasis will be placed on the qualitative aspects of dietary fat; d) that expansion of export markets for fats and oils depends to a great extent upon price and our ability to meet quality characteristics preferred abroad; e) that expanding use of fats and oils as industrial raw materials depends upon our ability to produce from them superior products at competitive prices; f) that industrial operations using fats and oils as raw materials will be undertaken only when there is assurance of an adequate supply of uniform quality fats and oils at reasonably steady, attractive prices.

Of the three major outlets for fats and oils, the utilization of these products or their constituents as industrial raw materials offers the greatest promise of substantially larger volume use. A large potential market for fats and oils exists in meeting the needs of the paint, protective coatings, plastics, plasticizer, special lubricants, resins, detergents, and related industries. Because of the variety and rapidly growing demand for these products there is good opportunity for developing new products from agricultural oils and fats that have the special properties now demanded by those who consume them. Annual production of synthetic plastics exceeds a billion pounds and is growing steadily. By suitable chemical modification, the chief constituents of fats and oils can be converted to plasticizers, which may contribute not only flexibility but other desirable properties, such as heat and light stability and moisture resistance. Large quantities of additives are necessary for the 18 billion pounds of lubricants now consumed each year, and fats can be used for the preparation of some of these. Certain fatty derivatives improve wetting ability or oiliness. Those which contain sulfur, phosphorus, or chlorine improve load-carrying capacity; other derivatives increase resistance to corrosion or act as detergents or antioxidants. Fats can also serve as sources of intermediates for the preparations of synthetic lubricants and hydraulic fluids for special purposes.

PRIMARY EMPHASIS on the development of new industrial uses for fats and oils should not minimize the importance of research to improve food fats. It is now apparent that the nutritional and physiological aspects of edible fat and oil products must be taken into account in their manufacture. Research should continue to develop improved, specific, and sensitive analytical methods, to determine the relationships between the types of fat consumed and human health, and to establish specifications for the best edible fat and oil products. With specifications established, research can develop means to tailor fats and oils to required nutritional and physical properties.

Adequate, coordinated research programs, involving all aspects of the production, utilization, and marketing of fats and oils, pursued with these principles and opportunities in mind, can help the fats and oils segment of our agricultural economy contribute effectively to a balanced, progressive, and prosperous agriculture.

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