



# OFI Technical and Scientific Meeting

# Abstracts

## **New approaches for improving edible oil quality**

Prof Dr Selma Türkay, Istanbul Technical University,  
Chemical Engineering

Department; YABITED board member

In recent years, consumer interest in non-refined virgin oils has increased around the world. This is mainly based on the results of studies conducted on the health effects of the minor bioactive components of oils and fats. Consumers now believe that these kinds of oils have much more nutritional and health benefits compared to refined oils, and that fewer processed foods in the diet is the healthier option.

Almost all bioactive components are removed during conventional edible oil refining and processing methods. The 'minimal refining method' is a new approach to remove undesirable components from crude canola oils while preserving healthier minor components. Another way to preserve bioactive components in edible oils is to produce the oils by mechanical extraction. In order to increase the quality of pressed oils, ultrasound-assisted alcoholic pre-treatment of seeds before pressing is another new approach. This process helps to decrease the undesirable components of oils and to increase the quality, as well as the yield, of pressed oils. This presentation will focus on these subjects.

## **Developments in sunflower production and research in Turkey and globally and future trends in sunflower oil composition and applications**

Assoc Prof Dr Yalçın Kaya, Trakya University, Edirne,  
Turkey; President, International Sunflower Association,  
France

Sunflower is the most consumed and preferred oil in Turkey. The planted area is mainly located in the Trakya region, which is in the European part of Turkey. However, due to higher crop prices, planted areas have expanded to the Middle Anatolia and Cukurova regions as well.

The broomrape parasite and weeds are the main factors limiting sunflower production in Turkey. Therefore, sunflower growers prefer two types of seeds genetically resistant to broomrape hybrids or the Imidazolinone (IMI) herbicide resistant hybrid, which is non-GM. The Clearfield system is a genetic IMI type sunflower hybrid with post planting application. IMI herbicide is primarily effective both to control main weeds and the broomrape parasite and is used effectively both in Turkey and around the world.

Downy mildew disease is also a major problem, so hybrids addressing these three factors are popular both in Turkey and other producing countries.

Domestic sunflower production is insufficient to meet consumption in Turkey and the country is one of the main sunflower importers in the world.

Sunflower oil is mainly consumed in Turkey. However, sunflower researchers are modifying sunflower oil to high and mid-oleic types, which are suitable for frying and present as healthy oils. Oleic-type sunflower production is almost 80%-85% in the USA

and covers more than half of production in Argentina, France and Spain. However, it is just in its initial phase in Turkey and other Black Sea countries, which account for over 50% of world sunflower production.

Nowadays, almost all types of sunflower hybrids are oleic types, which produce healthy oils, usable and safe for frying and other purposes.

## **Sunflowerseed dehulling technology**

Carsten Petry, Product Manager Oil Milling & Biomass;  
Dirk Heinrich, Technology & Business Development Manager,  
Oil Milling & Biomass, Bühler AG, Switzerland

World sunflower production has experienced steady growth resulting from high demand for animal feed and vegetable oil. The markets require high value products with high yields of oil and protein in meal. Efficient dehulling systems assure a proper reduction of fibre content in meal and a reduction of oil losses. Bühler is able to provide different process technologies that can meet the requirement of the vegetable oil industry. An introduction to the various dehulling and separation systems will be presented. A comparison shows the expected product qualities.

## **Improving the yield of the soyabean oil extraction process by use of a microwave system**

M Ghazvehi, School of Chemical, Gas and Petroleum  
Engineering, Semnan University,  
Semnan, Iran

Soyabeans are a rich source of protein, lecithins and isoflavones. Due to the high cost and energy consumption of extractors, new extraction methods have been developed including pressure extraction. CO<sub>2</sub> use and extraction by compound extractors. Using the microwave process is another modern method in oil extraction, which leads to a considerable decrease in energy consumption. In this presentation, microwave performance in the soyabean oil extraction process is studied. Hexane is added to soya flakes that are subjected to microwaves with the same intensity and different times. The range and compounds of the extracted oil are measured.

## **Thin film evaporation and drying - An advanced technology for treatment of edible oils, fats and related products**

Dr Matthias Kaufmann, Sales Manager, Buss-SMS-  
Canzler GmbH, Germany

The processing of edible oils, fats and related products undergoes several steps in distillation and drying. Several technologies or apparatus are used for this purpose. As all products are of biological origin and mainly used for food and feed purposes, high quality demands are applicable for any treatment. Thin film evaporators and dryers have shown their advantage for treatment of sensitive and/or critical products. The technology will be introduced with examples of process and design for some applications.