Sesame Seed

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History of the Seed

Sesame seed is believed to be one of the oldest seeds to have been used as a condiment, as well as for the home-based production of oil. The English word sesame traces back to the Arabic word of simsim, the Coptis semsem and the early Egyptian word semsent. The earliest records mentioning the use of sesame seed as a spice come from the Assyrian myth which claims that the gods drank sesame wine the night before they created the earth. A more common name is Sesamum Indicum L. which clearly links the sesame seed to India. Sesame domestication began in Africa and, more particularly, in what is now known as Sudan. It traveled eastwards to Japan, leaving a clear trail in Egypt, India and China and westward to Latin America along with the slaves. China and India are today the largest producers of sesame seed. It is already known that some 5000 years ago, the Chinese were burning sesame as a source of light and used it to produce soot for their ink bloks.

Growing Areas and Harvesting

Sesame seed grows in tropical and sub-tropical areas with a dry and a rainy season. It requires a lot of water in order to grow and ripen and a dry season during the harvesting. It is an annual plant, growing on average between 50 to 250 cm high and is rich in flowers. It has numerous pods growing along its stem and these pods pop open (hence "open sesame") when the seeds are almost ripe. It normally grows at altitudes below 1250 metres above sea level, although some high altitude varieties have been cultivated. Germination of the sowed seed occurs best at temperatures between 25 and 27°C. Temperatures below 20°C will seriously slow the growth of the plant, while temperatures below 12°C will stop any growth at all. During the period of flowering, low temperatures or temperatures above 40°C will harm the growth of the seeds. This, in turn, will affect the oil level in the seeds. Ideal growing temperatures lie between 27 and 30°C. Even though the planted sesame seeds can resist a drought, they require some 500 to 650 mm of rainfall. Yields vary per region and variety but, on average, lie between 400-500 kilos per hectare. Harvesting is done by hand, with the plants being cut manually and dried in the field. They are then shaken so that the seeds fall out of the open pods. The harvesting period in the Northern Hemisphere is between October and December and, in the Southern Hemisphere, March. The largest producers in Asia are China and India; in Africa it is Sudan followed by Nigeria while, in Central America, it is Mexico and Guatemala.

Why use Sesame Seed?

Farmers like the crop because it can be harvested after 3 months, thereby allowing them to crop other products in tropical areas. The taste of sesame also helped the growth in the demand for the sesame seed. It has a typical nutty, slightly sweet flavour which can be further enhanced by roasting the seeds. Another reason for its ever growing popularity is the longevity of the seed. After long periods of storing, the germination rate of the seed remains very high. Probably the most important reason is that the oil itself is a very stable oil and has valuable uses which, until today, have not been fully recognised by the user/consumer. The presence of sesamin, sesaminol, sesamolinol, all being lignans, are only found in sesame seeds and have a remarkable antioxidant function. According to several studies, this could have a positive effect on cholesterol levels. Other studies claim that sesame seed could assist against the ageing of the human body due to the presence of niacin which, for example, cannot be found in soyabeans or rapeseed oil.

As an example, in South America, sesame oil is called the "Queen of Oils" due to its extraordinary cosmetic qualities, while Armenian Turks eat a liquid sesame seed product called "Matahina" which makes reference to the rejuvenation of mental and physical capacities one supposedly gets after drinking it. The seeds are also rich in linoleic acid, vitamin E and proteins, as well as calcium and, to some extent, vitamins A, B1 and B2. Since sesame oil has such a high level of unsaturated acids (85%), it is assumed that it has a reducing effect on plasma-cholesterol, as well as having a reducing effect on coronary heart disease. In comparison, sesame seed has more calcium than milk, cheese or nuts.

Finally, it must be mentioned that sesame seeds have a positive amino acid structure. There is a high level of methionine and a low level of lysine. This makes sesame an excellent protein complement to other plant proteins. It goes beyond the present scope of this article to go into the details of the scientific value of sesame seed or its oil. The value has always been recognised in the Near and Far East where sesame seed and sesame oil have always formed part of the local diet. There are a myriad of varieties of sesame seeds which may have more or less the same characteristics. These varieties can be found in the colour (varying from pure black seeds to white seeds), size, taste, resistance to certain pests, hardness of the seed and oil content. In India, there are already 52 different commonly known varieties.
Sesame seed has a thin skin which can be removed. There are several methods of doing this but the major advantage is to reduce the oxalic acid level of the seed which is mainly found in the skin. The skin also contains calcium, minerals and crude fibre. Hulled sesame seeds are most often used on top of hamburger buns.

Free Fatty Acid Composition of Sesame Seed

Palmitic **C16:0**
7 - 12%
Saturated

Stearic **C18:0**
3.5 - 6%
Saturated

Oleic **C18:1**
35 - 50%
Mono - unsaturated

Linoleic **C18:2**
35 - 50%
Poly-unsaturated

Linolenic **C18:3**
1% max
Poly-unsaturated

Arachic **C20:0**
1% max
Saturated

> C20:0
1% max

The Uses of Sesame Seed and Sesame Oil

Sesame seed is used mainly for human consumption on bread, bread sticks, cookies, health snacks (such as sesame bars), in prepared breakfasts (as an additive to cereal mixes) or on breakfast crackers. Several other products for human consumption are made from sesame seed

like Tahina (a paste made of ground, roasted sesame seeds), Halva (made of Tahina and sugar and, at random, one may add walnuts, pistachios, peanuts or cocoa, Humus (made from Tahina, chickpeas and sweet additives) and Chalbe (sesame mixed with lemon and honey). All of these products are strongly influenced by cultural and traditional habits in countries where sesame has been used for centuries. Sesame oil is also mainly used for human consumption but a small percentage is used in the soap, cosmetic and skin care industries. The market for sesame oil is mainly located in Asia and the Middle East where the use of domestically produced sesame oil has been a tradition for centuries. In 1998, the world production of sesame oil was slightly more than 715,000 MT (FAO statistics) but the exported volume totalled a mere 29,500 MT. This equals only slightly more than 4% of the world production of sesame oil being traded internationally.

Growth of the Sesame Market Worldwide

The total production of sesame seeds has grown by 57% since 1980 or 2.4% per year. This growth is mainly accounted for by Asia where China tripled its production from 225,000 MT to 725,000 in 2000. It is clear that the only area that has reduced its production is Central America, which lost half of its capacity. The FAO statistics show that the exports more than doubled to 525,000 MT in 2000, representing an increase of almost 5% per year. In these figures, large intra-regional trade is included, as is re-exports (as is the case in The Netherlands which imports much more than it uses). Nevertheless, the growth has been significant and reflects the increasing demand for sesame seed in non-producing countries.

The world import figures show an annual increase of more than 5% and the largest importers of sesame seed in the world are Japan and Korea who are responsible for 54% of all Asian imports and over one third of all world imports in1998. Europe and the 15 members of the European Union also saw their level of import more than triple in this period.

Future Expectations and Trends

It is expected that, due to the constant increase in fast and convenience foods on one side and the health concerns on the other, the consumption of sesame seed will grow. Furthermore, the rising wealth in countries such as China and Africa, will certainly increase the local demand for sesame products within these countries. Taking these aspects together, the general expectation lies at an annual growth of between 2 and 4%, which would be similar to the growth realised over the last 20 years. As long as there are still several advantages of sesame seed and its oil which have not been fully researched, the growth will be limited. Nevertheless, it is expected that through increased research in the health and medical capacities of sesame seeds, the knowledge and better use of these advantages will increase. Therefore, it is important for all of us to "open ourselves to sesame seed".