COMMERCIAL SUNFLOWER PRODUCTION AND PROCESSING IN CALIFORNIA

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Sunflowers have been grown commercially in California for more than forty years. The acreage has fluctuated greatly in that demand for the product has been comparatively slow in developing until after World War II. At that time the roasting trade experienced increased usage to the point where fairly large volumes were sold each year.

Historically, California produced about one-half million pounds of seed in 1919 and reached a high of about six million pounds before World War II. Since the war production has fluctuated between six and eight thousand acres annually.

Previous production figures show an average yield of about 800 pounds of clean seed per acre. Since 1950 production has increased to 1200 to 2000 pounds of clean seed per acre. This increase in yield has resulted from the switching of dryland to irrigated areas and the increased use of fertilizer.

The largest concentration of acreage is in the "Delta" region of California which includes Contra Costa, San Joaquin and Solano counties. Lesser acreages are grown in Glenn, Colusa, Sutter, Yuba, Stanislaus, Madera, Fresno, Kern and Kings counties.

Traditionally the varieties grown in California are Greystripe and Manchurian. Prior to the war a greater percentage of the acreage was devoted to Greystripe with a swing to predominantly Manchurian types after 1950. This change was brought about by the preference of the roasting trade for the Manchurian type of seed.

There are many substrains today of the Greystripe and Manchurian type. Since there has been no Foundation Seed Program behind the varieties, each processor has selected for the type he desires and maintains his own strains of the varieties. Thus, a gradual separation of types has emerged from each maintenance program.

Only in the last ten years has any concerted effort been made to improve on the varieties. This has included such things as selection for seed type, uniformity of maturity, introduction of rust resistance and hybridization in limited cases.

Plantings are made in rows average 36 - 40 inches apart with two feet between plants in rows. This has not given the highest yields but has given the highest grade out of large seed. There is a high correlation between head size and seed size thus processors have controlled spacing somewhat by premiums paid for large seed. Plantings are made from the

months of March to July depending upon the situation. In some areas they are grown as a second crop for the season following barley or wheat. These plantings are usually confined to the South San Joaquin Valley area. The largest plantings are made in the "Delta" area in April at about the same time corn is planted. These are usually irrigated by furrow or by sub-irrigation in the peat soils. Two irrigations are usually sufficient to make a crop.

Nitrogen fertilizer is used to get the best yields. Up to 100 pounds of actual N is applied at planting or as a sidedressing or split between planting and sidedressing.

Mechanical harvesting is practiced almost entirely now as opposed to previous methods of cutting the heads, laying them upright to dry and then threshing. A slightly modified grain combine can be used even on the very tall growing varieties.

Several problems are apparent to the grower of sunflowers. Because of the nature of the species it is hard to control weeds in the crop. Sprays are impractical and close cultivation can be practiced only when the plants are very small. Rust is a problem in certain years. The sunflower head moth can cause up to 100 percent damage in certain cases without spraying for control. High moisture and shattering are associated because of the long bloom and maturation period of the old varieties. Birds can be a problem in some cases both from the standpoint of eating the seed and from droppings on the seed.

Prices of seed have been increasing rather steadily to growers since the war. Typically, the grower received an average of $2.00 - $4.00 per hundred pounds for seed before the war. Today the average price would be in the vicinity of $9.00 per hundred. A typcial contract would be what they call a 10-8-5, that is, $10.00 for all seed over a 20/64 inch in size, $8.00 for seed between 20/64 and 18/64 and $5.00 for seed between 18/64 and 14/64.

Sunflower seed is handled in bulk either in steel boxes or bulk truck. Most plants use air lifts as a means of handling in the plant. Delivery is made to standard air and screen seed cleaners such as a clipper manufactured by A. T. Ferrell Co. Today's varieties are divided into four sizes according to screen. The jumbo size are those over 24/64-inch round screen. Large size consists of those over 20/64-inch round screen and thru a 24/64-inch round screen. Medium size is over an 18/64 and thru a 20/64 and small is over a 14/64 and thru an 18/64 screen.

Problem lots are cleaned by disc mills, gravity separators or roller mills. These mills take out such things as cocklebur or corn and insect damaged or immature seed.

The most serious storage problems are moisture and insect infestation. For safe processing and storage, moisture should not exceed 12 percent. If not allowed to dry sufficiently in the field, portions of the head come thru the combine and cause high moisture.

The Indian Meal moth is the most serious storage insect especially during warm months. Fumigation with such agents as methyl bromide is practiced.

By far the largest and most important market for California sunflower seed is the roasting trade. The large grades are roasted and salted in the shell and packed in cellophane packets for distribution to the retail trade. Major roasting trade jobber customers are located in California, the north central and northeastern states. The Manchurian type is normally used for the roasting trade business.

Greystripe seed is now mostly confined to the milling trade who supply seed to pet shops for birds and a small quantity to fur farms for feeding chinchillas.

The third market for California sunflower seed is the hulled seed trade. This is used as a confection, for sunflower meal and other uses thru health food store outlets. Varieties for hulling are of no consequence as long as the hull is heavy enough to be stripped in one section and not leave small sections of the hull attached. Recovery of hulled seed seldom exceeds 35 percent of the initial weight of the whole seed. Normally, hulling is done only at the time of shipping as cold storage must be used if hulled seed is to be held for any period of time.

The most pressing problem for the California sunflower seed industry is high cost of production due to high land values and competitive crops, competition from out-of-state production areas especially in the hulled sunflower, and need for varietal improvements. Varieties need to have increased ease of harvesting, resistance to rust and the sunflower head moth, improvement in seed colors, increased seed size and, of course, increased yield.

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