

REPORT ON COMMERCIAL SUNFLOWERSEED PRODUCTION  
AND PROCESSING IN CALIFORNIA

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I would like to express my appreciation at being invited to this First International Sunflowerseed Conference. In looking over the list of topics to be discussed and the distinguished gentlemen that are here to present them, I am honored to be asked to participate.

To talk about California sunflowerseed production in a state as large as Texas is a little ridiculous. I've heard it said that Texas ranchers have vegetable gardens with more acres than our total California sunflower acreage.

Sunflowers for seed have been grown in California for the past 30 to 40 years, but have always remained a very minor crop, even in a state where a wide agricultural diversification exists. We have ranged from as low as 3,000 acres in the early 1930's to as high as 7,500 acres in the 1940's. Since 1951, the acreage has averaged approximately 6,000 acres. (Since 1951, no official statistics have been available.) This acreage in the most part is situated in Central California in the Northern San Joaquin Valley.

The majority of this production is in the Delta Region at the conflux of California's two greatest rivers, The San Joaquin and the Sacramento, most of it on a peat soil called Egbert Muck. In some instances, this land is so close to pure peat that it will actually ignite. Growers in this area must be very careful of fire as the burning peat is extremely difficult to extinguish.

Of interest, I think, is the method used in this Delta Area of controlling moisture available to crops. In this part of California virtually no rainfall ever occurs between May 1 and September 20. As a result, all crops must be irrigated. In the peat islands of the San Joaquin Delta Area, water is not applied to the surface of the soil as in most other areas, but rather is placed in large ditches perhaps a half mile or so apart and allowed to "sub-surface" irrigate the crops. What is, in fact, taking place is a controlled raising or lowering of the water table throughout the farm. In these peat soils the lateral movement of water is astonishing.

Since the early 1930's, we have been using two large-seeded sunflower varieties, Mammoth Russian Greystripe and Russian Black Manchurian. The Greystripe grows to a height of 10 to 12 feet and produces a white seed with a multiple grey stripe. The Black Manchurian grows to a height of 8 to 10 feet and produces a black seed with a white marking. (I have samples here of both of these seeds.) Up to 90% of these seeds will pass over a 20/64" round hole screen, with substantial numbers in some strains passing over a 30/64" round hole screen.

Until 1955, California produced approximately 71% Greystripe and 29% Black Manchurian. A major percentage of our Greystripe was, traditionally, shipped to East Coast Markets. In recent years, however, due to increased transcontinental freight costs and competition from imports, California has lost most of its eastern sales. Today the Western States consume most of California's sunflowerseed with Black Manchurian production exceeding the production of Greystripe.

California has a relatively long growing season, with planting commencing in early April and generally good drying weather free of frost until the middle of October.

Sunflowers are planted in 38 to 40 inch rows, approximately 15 inches apart in the row. Precision planters are used with a planting rate of about 3 pounds per acre. These plants will produce heads of an average 11 inch diameter, with many up to 13 to 14 inches. Large leaves and stalks with 1.5 to 2.5 inches in diameter necessitates considerable room for growth. Acreage yields in California are approximately 1,500 pounds per acre, but range upward to 2,800 pounds per acre. Fertilization practices vary, but applications of 50 units of Nitrogen and 50 units of Phosphorous have given good response and are becoming more common.

There are three major cultural problems, weeds, insects, and birds.

Harrowing after planting and cultivating has, until this year, been the only defense against what can often be a severe weed problem. This year, for the first time, tests are being made with pre-emergence and post-emergence weed killers, under the direction of the University of California Agricultural Extension Service. At present, no results are available from these tests. We are confident that from these tests will come a practical and successful method of chemical weed control in California sunflowers.

Perhaps the most serious threat to California sunflower is the Sunflower Moth. This insect, if uncontrolled, can damage as much as 70% of a seed crop. Though DDT is an effective material for control, we are unable to use it due to residue restrictions and drift problems. Non-residual insecticides are often used, although they are not entirely effective and must be applied more frequently. Field cleanliness seems to be of value in reducing harmful insect populations.

Blackbirds and Sparrows have caused the most severe bird damage. In the past few years, an increased population of Starlings have added to the bird problem. Carbide guns spaced around the fields have been used with fair results and is the only control against bird damage. On larger acreages, birds are less of a problem.

I think the most important development in the production of sunflower in California has been the start seed production firms have begun to make to improve the varieties we grow. Prior to 1957, very little serious work was done by seed firms to improve the genetic or physical purity of sunflower strains. Consequently, there has been a great deal of crossing between the types as well as multiple heads produced from crossing with the wild sunflower.

Recently, several California firms have commenced programs to clean up their sunflower lines. Roguing, selecting growing plots under isolation from wild types, etc., are now commonplace. Seed lines are being improved, but still lack uniformity in height, flowering date, maturity, seed size and seed color. Although Californians know they have made many improvements, one need only compare with some of the improved varieties of oil-seed types to see that much remains to be done.

Simultaneously, some cross plots using the Canadian S-37-388 as the receptive line have been made, but to date no desirable cross has been obtained, to my knowledge.

California production costs, in spite of above average yields, are high. Land values, real property taxes, and competition from other crops make it impossible for California growers to produce a sunflowerseed for oil. We have on occasion produced minor quantities of stock seed of oil seed varieties.

California sunflower is all sold either as edible seed for roasting or as bird seed.

Harvesting is done with large combine machines using a special, hydraulically controlled header. The seeds are all handled in bulk until processing is completed. Generally, moisture is below 12% when harvesting commences, but on occasion it will be higher. Almost no artificial drying is done, but bulk storage with aeration facilities keeps the seed in good condition even during our often warm days in November.

Cleaning and grading the sunflower is relatively simple. New equipment currently under consideration is desired for greater efficiency and cost savings rather than improved final quality.

In summary, it may seem that I am depreciating California's sunflowerseed production, seed quality,----the sunflowerseed industry generally. What I have tried to do is to report as objectively as possible.

The one thing I do not wish to do is to depreciate the efforts of those who have made great contributions to California sunflowerseed production.

Foremost among them is Dr. Paul Knowles, University of California at Davis, who has conducted important research over the years, and has advised and assisted all of us in California who have been interested in Sunflower seed. Dr. Murray Kinman of the United States Department of Agriculture has been a great help to those who are working toward improved varieties. And Dr. Eric Putt's scholarly material on sunflower genetics and plant breeding have, of course, been invaluable.

Again, it has been a great pleasure to be asked to report to the First International Sunflower Conference. And a greater pleasure to have an opportunity to listen to the other speakers on the program.

I'm looking forward to meeting and getting acquainted with as many of you as possible.

Thank you.

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