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SUGAR BEET PRODUCTION IN THE SACRAMENTO VALLEY

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UC Cooperative Extension

RANKING OF CALIFORNIA SUGAR BEET REGIONS IN 1966

Sacramento Valley - - Approximately 40% of acreage
San Joaquin Valley- - Approximately 25% of acreage
Imperial Valley - Approximately 20% of acreage
Coastal Area - Approximately 15% of acreage

RANKING OF CALIFORNIA LEADING SUGAR BEET COUNTIES

1966 Harvested Acreage

Imperial County	47,245
Yolo County	32,166
San Joaquin County	25,859
Solano County	23,442
Monterey County	16,711

RANKING OF LEADING SACRAMENTO VALLEY SUGAR BEET COUNTIES

1966 Harvested Acreage

Yolo County	32,166
San Joaquin County	25,859
Solano County	23,442
Colusa County	13,060
Sutter County	6,688
Sacramento County	4,913

*Sugar Beet Production in the Sacramento Valley

PRESENT STATUS OF THE CROP

The Sacramento Valley is California's largest sugar beet growing region. Forty percent of the states sugar beet acreage occurs in this area - consisting of 115,000 acres and representing an annual crop value of 34 million dollars (5-years average). Yolo County has the largest production in this region and is, in fact, the second largest sugar beet growing county in the state (Imperial County is first). San Joaquin and Solano Counties are also major sugar beet producing counties in the Sacramento Valley.

RECENT TREND IN ACREAGE, YIELD AND PRICES

The acreage of sugar beets in California showed a steady increase from 1946 to 1964. Since 1964, the acreage has steadily declined. However, there are some definite indications that there will be an increase in acreage in 1968. In 1964, the state sugar beet acreage was 357,000 and in 1967 it dropped to 211,000 acres!

Production of sugar per acre increased sharply from 1946 to the mid-50's and since then, has levelled off with considerable ups and downs. Although root tonnage showed a substantial increase from 1946 to the mid-50's and has remained fairly constant since - sucrose percentage in sugar beets has generally declined over these years. Much of the reason has to do with the effort to get maximum root tonnage. Maximum root tonnage necessitates sacrificing sugar content to at least some extent as is explained further on.

During the past ten years, prices to farmers showed a general increase up to 1962, then declined until 1965. Since 1967, prices have shown a steady increase.

*Material prepared for Bankers Farm-Management Short Course, Sacramento, California, February, 1968

Production Trend In California

Year	Harvested Acreage	Tons Per Acre
1963	305,084	20.4
1964	351,379	21.5
1965	300,409	19.4
1966	260,541	19.4
1967	211,000	20.0
1968	260,000 (Estimated)	-----

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California Sugar Beet Payments
(Total return to growers)

1957	$13.47	1963	$14.41
1958	$13.75	1964	$13.43
1959	$13.27	1965	$13.80
1960	$13.21	1966	$14.77
1961	$13.40	1967	$15.40
1962	$14.02	1968	$15.58

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CASH COSTS OF PRODUCTION
Typical Practices and Timing

Sugar beets are grown under two different management systems in the Sacramento Valley. One system is in the Delta area, where the crop is flat-planted and sprinkler or sub-irrigated, as contrasted to bed planting and furrow irrigation. The Delta grown sugar beets occur mainly in Solano, Sacramento, and San Joaquin Counties and are on soils high in organic matter.

The bed planting system is more typical of most irrigated crops in the Sacramento Valley. The following is a summary of the cash costs to produce sugar beets in the Dixon or Woodland areas and is taken from "Sample Costs of Production, Yolo County, 1967".

OPERATION	DATE	CASH COSTS
Preliminary tillage Plow, landplane, disc and springtooth	September to November	8.52
Seed bed List, fertilize, harrow, roll	February to May	7.68
Planting; Herbicide	February to May	9.50
Growing Costs Rolling, tine harrowing, mechanical thinning, hoe, cultivate, fertilize, irrigate, ditch, insect control	April to September	68.63
Miscellaneous Phone, pickup, insurance, labor management, charges, etc.		24.20
Harvest Digging, loading, hauling	September to November	53.00
		$171.53

The price of sugar beets, including the Sugar Act Payment, is approximately $15.40 for 1967 (at 15% sugar). This means a grower would need eleven tons production of sugar beets to cover cash costs.

KEY MANAGEMENT FACTORS FOR SUCCESSFUL PRODUCTION OF SUGAR BEETS

The key factors largely responsible for maximum sugar per acre are: (1) Proper attention to good planting and cultural practices - especially irrigation; (2) Planting early enough to insure five to six months of good growing weather; and (3) Proper nitrogen management. In addition, to obtain greatest economic returns, two additional factors should be given serious consideration: (1) Use of methods to eliminate costly hand labor, and (2) Avoidance of "over-wintering" when possible.

The object in sugar beet production is to obtain maximum sugar per acre - which represents a balance between attainment of maximum root tonnage and management for maximum sucrose accumulation. Management to bring about a slowdown in growth as harvest approaches, is necessary for the accumulation of sucrose in the root.

Key Management Factors:

1. Good planting and cultural practices. The highest yields of sugar beets are obtained on Class I and II soils in good physical condition, free from nematode infestation, and not heavily infested with weed seed. Seed beds should be carefully prepared, seeded and fertilized. Proper attention should be given to weed control, thinning and irrigation. Careful irrigation is often needed to obtain good stand and is a key to maintaining good growth in warm weather.

2. Plant early enough to insure at least six months of good growing weather. Seeding after June 1, will seldom allow an adequate period of good growing weather necessary for a profitable crop. Since the Yellow Virus has been an important problem in many years, the

tendency has been to plant late to escape the flights of aphids which carry the virus. With recent findings of systemic insecticides that give at least limited protection against the aphids, earlier planting is possible- March or April - that will insure at least six months of good growing weather before harvest.

Irrigation timing should be watched closely so that wilting of the sugar beet leaves will not occur - as this means lost growing time.

3. Proper nitrogen management. The accumulation of sugar in the roots is dependent on the plant running low in nitrogen and slowing down in growth several weeks before harvest. When adequate nitrogen is available to the plant right up to harvest time, vegetative growth and maximum root yield will result, but under these conditions, sugar will not accumulate to any appreciable extent in the roots. Hence, it is important in the initial fertilization to calculate the nitrogen application carefully - considering the residual nitrogen carry-over from the previous crop- so that the sugar beets will run low in nitrogen as harvest approaches. Nitrogen applications should never be made past mid-season.

4. Methods to eliminate hand labor. The increasing cost of hand labor has forced attention to the use of mechanical methods wherever possible in the growing of crops. Harvesting of sugar beets has been done mechanically for some time, but the development of methods to eliminate hand labor in thinning and weeding is more recent. Sugar beets can be grown profitably without hand labor if careful attention is given to procedures that will produce a uniform weed-free stand of seedlings. Such a stand may be left unthinned, or it can be thinned with a mechanical thinner. To produce a uniform stand, a precision planter should be used, with correct plates for the size of the seed. If less than good field emergence is expected, 8 to 10

seeds per foot should be planted and plans should be made for mechanical thinning later. If good emergence is expected, plant to a stand - drop 4 seeds per foot. This method is described in detail in a recent publication "Growing Sugar Beets Without Hand Labor", University of California Agricultural Extension Service Publication AXT-188. Pre-emergence weed control in the beds with a good soil incorporated herbicide, is a part of this method.

5. Avoidance of over-wintering when possible. From an economic standpoint, delaying the harvest of sugar beets until the following spring, results in tying up land that could otherwise be in use for another crop. Over-wintering also has the potential of providing a source of inoculation for the aphids in their spring flights and hence the infection of near by spring planted beets. Another disadvantage is the possibility in some years of not being able to dig the beets until late spring when bolting (seed stalk formation) has started. This can result in greatly reduced sugar and the necessity of an additional operation of chopping down the stalks before harvesting and perhaps seeding beet seed to become weeds in subsequent crops.

OUTLOOK

The future of sugar beet production in California depends upon a number of factors. Paramount perhaps, is the competitive position with other crops. The prices received by farmers for sugar beets over the years has shown little fluctuation as compared to the other crops. Sugar beet production has generally shown a modest, but steady profit over the years.

The announced price increase for 1968, plus the increased acreage of early plantings this year in the Imperial Valley, point to a probable state-wide acreage increase.

There is little doubt that increased yields could be obtained by many growers if more extensive use was

made of presently available technology. Also, future increases are assured as further technological developments are made. The development of Yellows resistant varieties is one of these developments just around the corner.

As it becomes possible for more farmers to avoid "overwintering", undoubtedly a larger sugar beet acreage will result.

MECHANIZATION

Mechanization of the sugar beet industry is now pretty well established. New progress will be mostly in improvements and refinements. There will also be more use of precision planting equipment and set-ups for chemical weed control.

It is now possible to eliminate hand labor in establishing a sugar beet stand due to the recent development of monogerm seed, precision planters, seed protectants, improved cultural methods, better tillage equipment and mechanical thinners. In growing beets without hand labor, weed control becomes very important and even though some effective herbicides are available for chemical control, they will not control heavy infestations. Sugar beets should not be grown on land heavily infested with weeds.

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