

SUGAR BEET REPORT

By a Crop Scientist

On May 12, 1967, Spreckels Sugar Company began to produce sugar from Arizona grown sugar beets. This represents the end product of a new Arizona industry that came into existence in 1964 when the Secretary of Agriculture announced that Arizona would receive an allocation of 20,000 acres of sugar beets, starting with the 1966 crop year.

By John M. Nelson

Shortly after the acreage allocation was announced, Spreckels began the construction of a factory near Chandler to serve Arizona growers. This facility was dedicated in the spring of 1967. Prior to making commercial plantings, Spreckels' agricultural staff, in cooperation with University of Arizona Extension Agents, conducted tests throughout central Arizona to determine yield potential.

First Plantings Year Ago

Arizona's first commercial plantings were made in September 1966, in the Salt River Valley and surrounding areas by growers with Spreckels' contracts. The variety S-301H, a mono-germ non-bolting hybrid with curly top resistance, was used exclusively. Beets were planted as far west as Arlington and as far south as Eloy, with



HARVESTING BEET field near Higley. The harvester lifts the topped beets into a hopper and then discharges its load into a transport truck.

The author is stationed at the Mesa, Ariz., Branch Experiment Station, directing sugar beet investigations in various parts of Arizona.

Reference to sugar beets as a "new industry" refers only to the present phase. Sugar beets were grown in the Salt River Valley many years ago, in fact a sugar processing plant was built near Glendale, that project soon folding. Sugar beet seed production has long been an important Arizona agricultural enterprise.



TRANSPORT TRUCKS, waiting to unload freshly harvested beets at the factory at Chandler.

the greatest concentration of acreage near Chandler and in the west Phoenix area. Heavy rains during the planting period prevented some plantings and damaged others. This and other problems held the final acreage in central Arizona to over 9,000 acres.

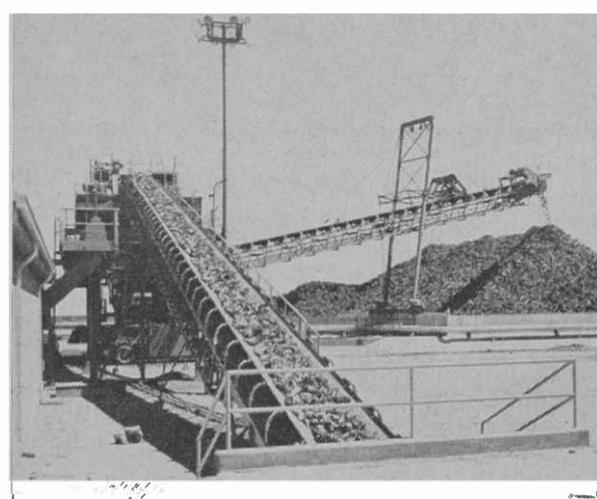
Early in 1967 Spreckels contracted with growers in the higher elevation areas of Willcox, Safford and Duncan for spring plantings. This increase in production was made feasible when the U. S. Department of Agriculture removed the restrictions on acreage for 1967.

Research conducted earlier by The University of Arizona Safford Experiment Station and Spreckels test plots indicated sugar beets were well adapted to these areas. Consequently nearly 4200 acres of beets were planted during March and April of 1967. Harvest at the higher elevations is scheduled to begin this October and continue into November. The beets will be transported by rail to the plant near Chandler for processing.

First Processing Season Brief

Harvest of the acreage in central Arizona began in early May and con-

AT THE FACTORY the transport trucks discharge their loads quickly by opening hinged side and tipping the truck body.



UNLOADED BEETS are cleaned, sampled and then taken by conveyer belt to the storage slab to await processing.

tinued until mid-July. The limited acreage will shorten the harvest period, which originally was expected to last 100 days. Yields indicate the crop may be expected to average about 17 tons of beets per acre, with a sugar content of 15.5 percent. As with most new crops, problems the first year have been numerous and have tended to keep yields down.

Although the sugar beet can be considered a new crop for the state, it is certainly not a new crop at The University of Arizona Agricultural Experiment Station at Mesa. Sugar beet research has been conducted intermittently at the Mesa Station since 1955, when two modern varieties were compared for root yield and sugar production. Other tests made since then have involved comparisons of varieties, planting dates, harvest dates, and nitrogen fertilizer rates.

More recently a study was conducted at Mesa to determine the growth pattern of sugar beets planted in the fall. A knowledge of the growth pattern made during the winter and spring is a considerable help in understanding the fertilizer and soil moisture requirements of the beet plant. For this study, seed of six varieties was planted in September 1965. All plots were sampled monthly from December to July to determine root and top growth.

Top Growth Came First

During the first 90 days after emergence, growth involved mostly the production of leaves. As a result, the beets had produced only three tons of roots per acre by December compared to 12 tons of tops. During December, January and February, root yields increased about two tons a month. At the same time the top portion of the plants did not grow appreciably. The greatest amount of beet growth took place during March, April and May. An increase of nearly

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From an Economist

By Robert A. Young

Commercial sugar was produced in Arizona last May for the first time since 1920 with the opening of a new sugar beet processing facility near Chandler. Over 9,000 acres of beets were planted in the fall of 1966 in the Salt River Valley area for harvest during May to July, 1967.

Three thousand additional acres were planted last spring in Graham and Cochise Counties for fall harvest. The processing company intends to increase its contracting in Arizona in future seasons to more than 20,000 acres.

Profitable production depends on the level of both income and expenses. This article concentrates on the income side of the picture, and describes some of the factors which influence the grower's returns from sugar beets, and indicates some probable future trends.

Grown By Agreement

Sugar beets, unlike most other crops, are produced under terms of a written contract between the grower and the processor. This agreement makes provision for the number of acres, the conditions of delivery, method and timing of payment, and a number of other details. Tonnage and sugar content of the beets are determined at the time of delivery.

The company's payment to the grower per unit of sugar produced is based on a specified share of the "net return" or "net selling price" of the refined sugar (amount received after deduction of certain selling costs and taxes). Representative values for converting sugar content of beets and net returns from sugar into price per ton of beets (based on the current contract) are given in the attached table.

Growers receive most of their receipts in an initial payment shortly after delivery, based on the company's expected production and sales patterns. Final settlement is made after all the sugar from the crop is sold.

Gets Direct Subsidy, Too

In addition to his share of the net proceeds, the grower also receives income in the form of direct government payments, on condition that he complies with provisions of the federal sugar program. Representative amounts of these payments per ton of beets (based on the amount of sugar produced) are shown in the lower portion of the table. (Beet tops also have some value as livestock feed. Present estimates are that this source may add \$10 per acre to grower income, although a market is not clearly established.)

Net proceeds per unit of sugar is affected primarily by federal sugar

policy as well as by economic factors. Its role will be discussed before the implications of the analysis for growers' income per acre are drawn.

Sugar Prices and Federal Policy

The general level of sugar prices is influenced by operations under provisions of the Federal Sugar Act. The present program evolved to meet the dual goals of preserving a domestic supply of sugar and also helping friendly nations in the face of abundant world supplies of sugar. A stable and favorable price level is maintained for suppliers through production controls on domestic production and quotas on sugar imports. Grower compliance is encouraged by the direct payment.

The Secretary of Agriculture determines the quantity of sugar to be marketed each year, this amount such as to result in prices which are "not excessive to consumers nor too low to protect the welfare of domestic producers." That imprecise phrase is given focus by the further provision in the legislation that the Secretary is to take into account the relationship between the price of raw (partially refined) sugar and the parity index (index of prices paid by farmers).

Selling prices for refined sugar are closely related to those of raw sugar. Therefore, refined sugar prices are typically stable, but exhibit a mild upward trend in response to increasing costs. Over the past 15 years increases permitted in raw sugar prices are almost exactly mirrored in refined sugar prices in the Pacific Coast marketing area on which Arizona sugar will mostly be sold.

The quota system thus effectively

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eight tons of roots per acre occurred in April. By July the beets had produced 30 tons of roots per acre and 40 tons of tops.

Need for information relative to the optimum row width and plant spacing for sugar beets in Arizona prompted a study at Mesa of these factors. Most of the experience with row widths for this crop in the Salt River Valley has been restricted to the 40-inch, double row beds which the local beet seed industry has used to obtain high plant populations. Also previous research at Mesa had been conducted on the 40-inch beds.

Using this as a basis, a test was designed to compare the standard 40-inch, double row vegetable bed with single row bed widths of 24 and 30 inches. Also included were in-the-row plant spacings of 6, 10 and 15

inches. Plots were sampled in April, June and July to determine root yield and sugar content.

40-Inch Beds Best

The first year's results of this test showed considerable differences in yields between row widths. Beets grown on the 40-inch, double row vegetable beds produced greater root yields than beets from either the 24 or 30 inch single row beds. Sugar content of the beets was also lower at the wider single row bed spacing of 30 inches. The advantage of the double row, 40-inch beds was greatest in July, when beets at this spacing yielded nearly 1300 pounds more sugar per acre than the widest bed spacing.

Thinning beets to 10 and 15 inches apart in the row resulted in greater root yields in April than thinning to 6 inches. Over 50 percent of the

beets grown at the 6-inch spacing were considered too small to be recovered by a commercial harvester had they been dug in April.

When the weight of these "un-marketable" roots was deducted, the advantage of the 10- and 15- inch spacings was increased to nearly five tons of roots per acre, equivalent to approximately 1100 pounds of sugar. The wider plant spacings were superior in yield to the 6-inch spacing at harvests in April and June but not in July.

This and other tests are being conducted at Mesa in the 1966-67 growing season for additional information to provide a better understanding of the principles of sugar beet production.