SUGAR BEET REPORT
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 "unmarketable" 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.
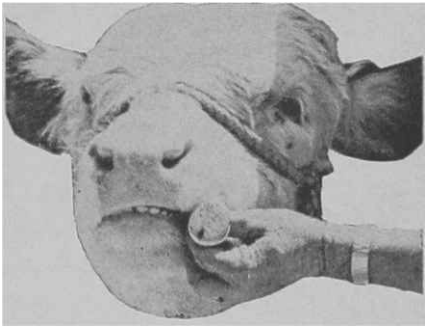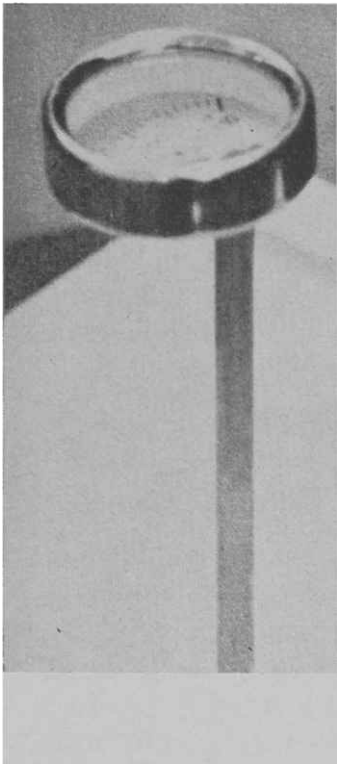
New Animal Thermometer Has Many Advantages

Dr. Raymond E. Watts of The University of Arizona's Animal Pathology Department has collaborated in development of an entirely new kind of animal thermometer. The new device already is being marketed by a New Jersey company.

The Lamb-Watts Biothermom has a circular face the size of a half dollar. This face has a recording dial. The face is attached to a four inch stem of non-rusting metal which encloses a sensing coil.

The new thermometer has several features which make it preferable to the old style glass thermometer. First of all, it is non-breakable — an important feature when taking oral or rectal temperature of a nervous animal.

Because the sensing coil is of bi-metal construction, temperatures are recorded by the dial much more rapidly than with the old glass thermometers. Also, the dial is easier to read — important in a dusty corral or a dark shed or other structure — than the old type of thermometer.

Likewise, the Lamb-Watts Biother-mom is easy to clean and does not require "shaking down" or resetting.

For the dairyman, livestock inspector or rancher who wishes to check large numbers of animals, the ease of reading, rapid recording and quick resetting make the new device very attractive.

LEFT TO RIGHT, view of the new thermometer, Dr. Watts holding it to show comparative size, and oral application of the instrument.

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insulates the domestic market from effects of surpluses in the world market, and eliminates downside risk in sugar prices. However, when a world sugar shortage occurs, such as in 1963, the price of raw sugar in the United States must rise to bid scarce supplies away from other countries. The sugar producer in this country has a chance of sharing in such price increases, although past experience indicates such cases are relatively rare and of short duration.

Outlook Looks Favorable

Growers can expect a somewhat more favorable net income situation in the coming season than in the one just completed. The processor is offering more favorable contract terms in two respects. The amount paid per ton of beets will be increased somewhat and the processor will next season pay a hauling allowance of 3¢ per ton per mile for up to 50 miles from delivery points. Also, a small increase in net selling price may occur if recent upward trends in the costs of farm production continue as expected.

Arizona beet producers can antici-pate sharing a somewhat larger net selling price than some other western growers, due to the favorable location of the factory at Chandler relative to markets. Since the rated factory capacity exceeds the current consumption of sugar in Arizona, this advantage may be partially reduced when the plant operates at capacity, as pricing policy is adjusted to permit penetration of more distant markets. Average net selling price for sugar produced in Arizona in 1967 is expected to exceed $8.25 per hundredweight.

Experience with the initial Arizona plantings and with the somewhat similar production conditions in California suggests that, on the average, Arizona producers can expect to obtain yields ranging from 18 to 22 tons of beets per acre with 14 to 15 percent sugar content. Taking the midpoints of these ranges (20 tons of beets at 14½ percent sugar) and assuming a net selling price of at least $8.25 per hundredweight, and adding government payments indicates an average expected income of about $13.25 per ton of beets or $265 per acre (exclusive of sales of tops) for the 1968 crop.

Rates of Processor and Government Payments Per Ton of Sugar Beets, Arizona, 1967-68

| (Dols. per Cwt. of Sugar) | Percent Sugar in Beets | | |
	14%	15% (Dols.)	16%
A. Processor Payments[a]			
Net Return from Sale of Sugar			
7.50	9.34	10.19	11.02
8.00	10.24	11.15	12.06
8.50	11.14	12.12	13.09
9.00	11.84	12.87	13.89
B. Government Payments[b]	2.00	2.14	2.28

[a] Courtesy of Spreckels Sugar Company.

[b] Value may vary somewhat depending on actual rate of sugar recovery in factory. Also, the payments are slightly reduced in steps for production in excess of 7,000 hundredweight of sugar (roughly 2,700 tons of beets).

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