

SUGAR BEETS FOR ARIZONA

Can we grow sugar beets for sugar successfully in Arizona? With the Cuban sugar supply to the United States cut off, and the need for an additional high value cash crop to further diversify Arizona's agriculture, this question has been asked many times in the past year.

Previous Arizona Experiment Station tests (1949 to 1956) and some farmer experience in producing sugar beets for sugar, plus the fact that Arizona has been the main source of sugar beet seed in the United States for many years, indicated that there was little doubt that sugar beets are well adapted to our climate and soils. The development of hybrid sugar beet varieties and monogerm seed since these earlier sugar beet tests were made indicated the need for additional information.

4 Varieties Tried

Experimental plantings of sugar beets were made at two of the Branch Agricultural Experiment Stations in the fall of 1960. At the Mesa Station four varieties (two standard varieties, U.S. 56 and U.S. 75, plus two new hybrids, U.S. H2 and U.S. H3) were planted at three different dates, September 13, October 3 and October 25, and fertilized with 75, 150 and 225 pounds of nitrogen per acre. An overall application of 200 pounds per acre of 11-48-0 was made before planting and the additional nitrogen applied to the plots as side dressings after the beets had been thinned. Nitrogen applications were split on the first two planting dates.

In the experiment conducted at the Yuma Station, the same varieties were planted at one date, September 20. Previous sugar beet tests at Yuma had shown this to be the best planting time. Nitrogen fertilizer was applied at four levels, 25, 100, 200 and 275 pounds per acre. The broadcast preplanting application of nitrogen and phosphorus fertilizer was similar to the Mesa test, with additional amounts of nitrogen applied as

These tests were carried out by D. C. Aepli of the Mesa Branch Station; E. B. Jackson and D. F. McAlister of the Agronomy Department; and H. F. Kreizinger and T. C. Tucker of the Department of Agricultural Chemistry and Soils.

Mrs. Henry Brubaker, wife of a Pinal County Extension Agent, holds a huge beet grown at the Mesa Station.



side dressings at the first and second cultivations.

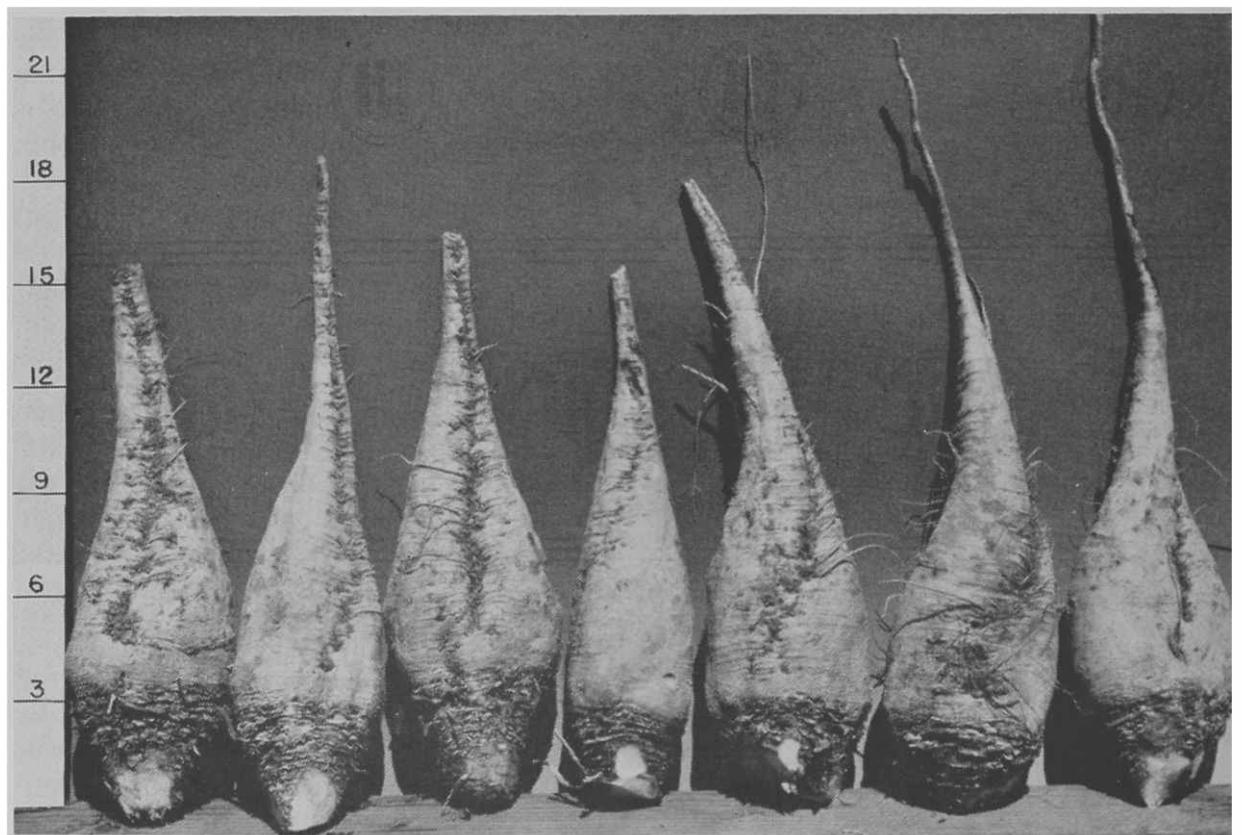
Both plantings were made on standard 40-inch lettuce beds, two rows of beets per bed. The seeds were planted in dry soil and the beds irrigated. A December frost killed a few of the seedlings from the October 25th seeding at the Mesa Station. Otherwise, the plants made excellent growth during the winter and spring months at both locations where adequate nitrogen fertilizer was applied. The sugar beets from the two tests were harvested in early June of 1961.

Beets of each variety and treatment were analyzed for sugar content through the courtesy of the Union Sugar Company, El Centro, California. The results from these tests were as follows:

H2 Hybrid Does Best

Of the four varieties, the hybrid U.S. H2 gave the best yield at both Mesa and Yuma. At Mesa, U.S. 75 and U.S. H3 were second best with U.S. 56 producing the lowest yields. The hybrid U.S. H3 gave the second highest yields at Yuma followed by the standard varieties U.S. 75 and U.S. 56. An undesirable number of plants produced seed stalks (bolting) in varieties U.S. H2 and U.S. 75 at Mesa from the first date of planting. Bolting was not a problem in the plots planted at the later dates at Mesa. In the Yuma tests the variety U.S. 56 bolted 20 per cent while there were only 3 to 5 per cent of plants showing seed stalk formation in the other varieties.

Yields from the September 13 and October 3 plantings were similar and considerably higher than obtained from the October 25 planting at Mesa. As mentioned earlier, some of the seedlings from the October 25 planting were killed by a December frost. The stand was not seriously reduced, however. The high yields of roots and sugar in the Yuma



ABOVE, SUGAR beets grown at Yuma. Scale measures inches in 3-inch readings. At right, ramrodding the Yuma trials were, left to right, D. F. McAlister, head of the University's agronomy department; E. B. Jackson, in charge of the tests, and Frank Pritchard, superintendent of the Yuma Branch Stations.



plantings confirmed the desirability of the September 20 planting date for that location.

Fertilizer Results Variable

In the Mesa test the highest yields were from the plots receiving 225 pounds of nitrogen per acre. At Yuma, the sugar beet yields were progressively higher for each addition of nitrogen to the highest rate applied, 275 pounds per acre. To the contrary, in a second fertilizer test at Yuma, the yields were essentially the same whether 25 or 275 pounds of nitrogen were applied. The variation in fertilizer response was undoubtedly a reflection of previous cropping and fertilizer practices.

The average calculated yield of the beet roots from all plots of the four varieties and all fertilizer treatments from the first two dates of planting at Mesa was 31 tons. These sugar beets had an

Two Other Factors Are Very Important

The accompanying article covers the agronomic aspects of sugar beets in Arizona. Two non-agronomic factors — one economic and one political — which can make or break an area's sugar beet industry are a government quota and a beet processing plant.

Farm Bureau surveys of irrigation farmers in Arizona indicate there would be sufficient acreage contracted to amply provide tonnage for a sugar processing plant, if a quota were permitted for Arizona growers.

Arizona's congressional delegation has supported proposed legislation giving new quotas to Southwestern states. Gov. Paul Fannin, Dean Harold E. Myers of this university, Floyd Smith who is chairman of the governor's sugar beet study committee, and Bill Davis, secretary of the Arizona Farm Bureau Federation, made a pro-sugar beet presentation to Congress early this year.

Early this fall Rep. W. R. Poage (Texas), vice-chairman of the House Agriculture Committee, introduced legislation designed to put new acreage into sugar beet production.

The Poage bill is a compromise between two viewpoints, that of Southwestern congressmen wanting the former Cuban sugar quota to go to the Southwest, and the viewpoint of the U. S. State Department that the large Cuban sugar quota be given to friendly sugar-producing countries.

The Poage bill would give 75 per cent of the normal expanded domestic sugar production, resulting from population increases, to new beet growers on new acreage. The other 25 per cent would go to domestic sugar cane producers.



DAVE AEPLI, veteran research worker and former superintendent at the Mesa Station, looks over the 1960-61 sugar beet plots at that station.

average sugar content of 15.6% which represented a sugar yield of 9,670 pounds per acre. In the Yuma tests, the calculated yields of sugar beets from the four varieties at all levels of nitrogen application was 29 tons per acre. The average sugar content of these beets was 18.6%, giving a sugar yield per acre of 10,780 pounds.

Results So Far Optimistic

While it is dangerous to draw conclusions from one year's data, the results from these tests support the conclusions from the previous tests. Sugar beets give excellent yields of good quality roots when grown in southern Arizona. Other tests are being made in Graham, Cochise and Yavapai counties with spring plantings. These and other tests will give further information on the potential of a sugar beet industry in Arizona.

Turner Heads U A Safford Station

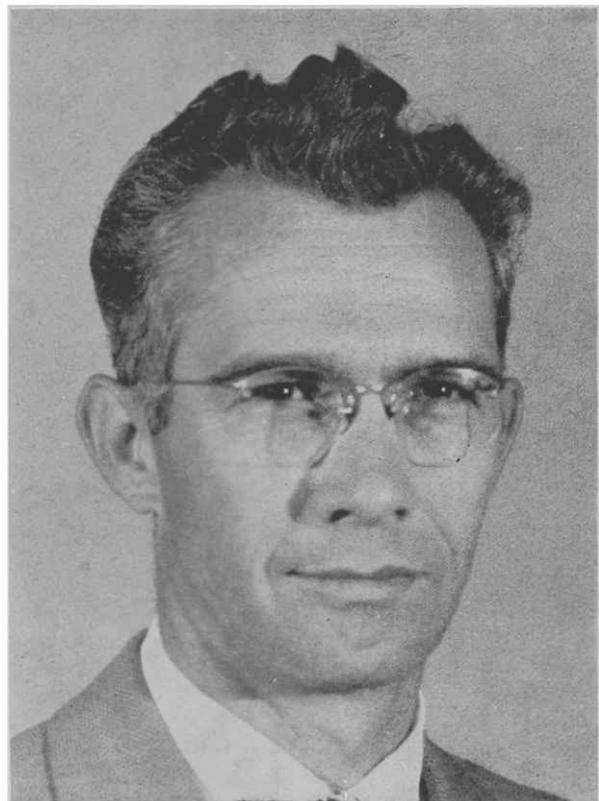
Dr. Fred Turner, a University of Arizona soils scientist for the last four years, became superintendent of the U of A Safford Experiment Station on July 1. This experiment station in Graham County is one of the branches of the

Agricultural Experiment Station in the College of Agriculture.

Investigations at the Safford Farm deal with salinity and alkali problems in soils and irrigation waters.

The Safford Farm, getting irrigation water from pumps and from the Gila River when available, grows cotton, safflower, small grains, alfalfa, bermudagrass, sorghum, pecans, sugar beets and castor beans. Investigations on these crops, and others, are conducted at the station by other U of A agricultural research scientists, also.

Turner was graduated from high school at Flagstaff, received his bachelor's degree from the University of Arizona, his master's at Washington State College and his Ph.D. at Michigan State University. He is a member of four professional societies in agronomy and soil science, and author of various technical papers dealing with soil management and soil chemistry.



DR. FRED TURNER



ROADSIDE VIEW of the Safford Branch Station with cotton plots in the foreground.