

WILLCOX OVERWINTERING SEMI-TEST

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The primary objective of this test was to determine the feasibility and practicability of overwintering beets for supplementing an early spring campaign.

Theoretically, a crop planted between mid-April and early June should be of maximum potential prior to and during winter. Harvest could therefore begin anytime after February as weather permitted.

One commercial field was chosen in each area to represent average conditions for Kansas Settlement, Sunizona and Sierra Vista. Growth studies were taken in each field beginning in July and continuing into May. Harvest data was recorded for both harvest periods. Approximately five acres were kept after harvest for sampling and visual observations.

Southeastern Arizona had an extremely cold, record setting winter. The long, cold, wet winter interrupted the normal fall campaign and after several delays and hard freezes, harvest was abruptly postponed from early December until early March.

At least three samples were taken in each field for each date, and an average yield was recorded for every sampling date.

The top 3 to 5 inches of most sugarbeets were frozen several times after mid-December. This thawing and refreezing severely damaged one-fourth to one-third of the total beets in all fields.

When interpreting these data, it is extremely important that all factors be considered. An analogy to interpreting these data from the procedures and practices, may be somewhat as Mark Twain's Following the Equator: "One should be careful to get out of an experience only the wisdom that is in it, and stop there, least we be like the cat that sits down on a hot stove lid. She will never sit down on a hot stove lid again, and that's well; but also she will never sit down on a cold one anymore."

In summary, these plots were planted, fertilized and irrigated to be harvested in November. The varieties planted were an equal mix of Great Western's D-2 and Spreckels' S-239H in somewhat thin stands. Cold tolerance for S-239H is suspect. Considering approximately two-thirds of the beets survived the winter, there are positive potentials for future considerations.

Yield data from the growth studies are not totally consistent with the actual commercial yields for each field. This is possibly due to the best area of each field being chosen for the test area. Also, there was a tendency for frozen beets to be in their maximum rotten state during the warmer harvest in March. Although these rotten beets had quickly disappeared by April and were not visible in the field or in the growth samples, many were left in the field during the March commercial harvesting.

It is extremely important to notice that there was no significant differences between yields prior to the freeze (November and December) and three months later in March.

Year	Plant		GROWTH STUDIES									HARVEST YIELDS		
			Willcox			Sunizona			Sierra Vista			CT/A	% S	
			CT/A	% S	N	CT/A	% S	N	CT/A	% S	N			
1969	1/11-3/22	Sept. 1	31.5	12.5	2.6									
		Sept.19	33.6	11.7	3.0							17.0	12.0	
1971	2/15-4/10	Aug. 24	28.0	11.1	2.6									
		Sept.19	23.4	13.1	2.3							21.8	13.5	
1972	3/5 - 5/1	Aug. 23	21.7	13.2	2.0									
		Sept.12	24.5	13.1	1.7							25.3	13.3	
1973	3/1 - 4/12	Sept.19	19.7	13.3	2.1							17.0	15.4	
1974	3/2 - 4/27	Sept.12	18.3	12.0	2.7							18.8	12.3	
1975	2/22-4/19	Sept. 2	17.0	12.1	2.5							18.0	11.7	
1976	3/6 - 4/24	Aug. 31	15.9	11.6	2.4	13.9	12.2	1.7						
		Sept.14	16.6	11.9	2.2	11.9	11.9	1.7				17.8	13.5	
1977	2/19-3/29	Aug. 23	24.4	11.7	2.5	23.0	11.7	2.3	35.2	11.0	3.3			
		Sept.21	27.9	12.1	2.2	26.1	13.8	1.2	32.4	12.1	3.5	23.3	13.5	(1)
1978-	2/25-4/15	Sept.22	24.3	14.1	1.8	18.8	12.0	2.3	29.1	13.2	1.8	16.3	14.4	(1)
1979		Jan. 4	31.1	15.6	1.0	23.3	15.7	1.0	24.4	13.6	1.0			
		Jan. 22	32.7	14.4	3.0	20.4	16.0	1.0	31.8	15.5	1.5			
		Feb. 13	33.3	12.6	2.5	24.9	15.3	1.0	32.8	16.5	1.0	16.4	13.8	(2)

(1) Crop average at end of first harvest (December 10, 1978).

(2) Crop average at end of harvest (March 12, 1979).

1978-1979  
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Location	Harvest Dates	CT/A	% S	% N	Acres Harvested	
KANSAS SETTLEMENT Cont.No. 866-314	7/17/78	20.3	13.2	4.0	G.S.*	
	9/22	24.3	14.1	1.8	G.S.	
	12/5	32.0	14.6	4.0	19.0	End of Harvest #1--Data Composite from Comm.Hvst.
	1/22/79	32.7	14.4	3.0	G.S.	
	2/13	33.3	12.6	2.5	G.S.	
	3/7-3/11	20.4	12.8	4.0	72.0	End of Harvest #2--Data Composite from Comm.Hvst.
	4/11	31.0	12.8	4.0	G.S.	Comm. Hvst. Crop Avg: % S 13.3, CT/A 22.8
	5/3	30.3	10.3	4.0	G.S.	
SUNIZONA Cont.No. 866-324	9/22/78	18.8	12.0	2.3	G.S.	
	12/5	13.1	14.0	4.0	103.0	End of Harvest #1--Data Composite from Comm.Hvst.
	1/22/79	30.4	16.0	1.0	G.S.	
	2/13	24.9	15.3	1.0	G.S.	
	2/26-3/15	12.0	9.9	3.9	145.0	End of Harvest #2--Data Composite from Comm.Hvst.
	4/11	24.8	13.6	3.0	G.S.	Comm. Hvst. Crop Avg: % S 11.6, CT/A 12.7
5/3	23.1	13.0	4.0	G.S.		
SIERRA VISTA Cont.No. 865-202	7/17/78	18.1	12.1	4.0	G.S.	
	9/22	29.1	13.2	1.8	G.S.	
	11/16	18.3	13.9	3.0	127.0	End of Harvest--Data Composite from Comm.Hvst.
	1/22/79	31.8	15.5	1.5	G.S.	
	2/13	32.8	16.5	1.0	G.S.	
	-	-	-	-	-	No data on test field--all hvst'd during 1st hvst.
	4/11	25.0	12.2	3.7	G.S.	
	5/3	30.2	13.4	4.0	G.S.	

\* G.S. = Growth Study

Note: Purity Composite Data: Dec. 5 = 79-81.8%; Jan. 22 = 81.9%; Feb. 13 = 80.4%

MARANA - MAY HARVEST TEST

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Marana is an agricultural area approximately fifteen miles north of Tucson. Historically, it has been planted predominately in cotton and lettuce. Marana has experienced increasing urban pressures relative to water availability and housing; very similar to the Salt River Valley.

Spreckels and the University of Arizona conducted tests in Marana for the five years from 1964 through 1969. Fourteen hundred commercial acres were extensively spread over the area in 1969 (M-2). The crop schedule was a January-February planting with a July and August harvest. Interestingly, in all five years of testing and three years of commercial production, yields were poor (M-2).

Several probable reasons should be considered. Marana historically has had soft rot problems, obviously prevalent after warm weather and summer rains in July and August (average over 3 inches). Root knot nematodes, *Meloidogyne sp.* are present in some areas but tend to be most active during the summer months. Tests have indicated no significant growth occurs during the month of July and only moderately during the August rains. Tests further indicated beets receiving no supplemental nitrogen generally produced the highest sugar percentages. Summer rains, warm soil, available nitrogen and growing beets undoubtedly accounted for a reduction of sugar yields.

The cultivation of sugarbeets in the Marana area was apparently scheduled for factory needs, rather than agricultural efficiency and yields. Beets were needed to supplement the fall campaign and therefore grown accordingly.