

# Managing overwintered sugarbeets

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Sugarbeet harvest in June is easier when "bolters" (seed stalks) are removed in May, leaving some leaves to maintain roots.

There were no significant differences in root or sugar yield in any of the trials due to the application of supplemental nitrogen, but there was a significant reduction in sucrose percentage in trial 4 (table 1). In three of the four tests, petiole nitrate levels remained constant or tended to rise, even in beets that did not receive the extra nitrogen. These results indicate that the soil nitrogen was sufficient to supply the needs of sugarbeet plants for growth during the late fall and winter and that additional fertilization was not necessary.

In two trials to determine the effects of removing seed stalks two to four weeks before a spring harvest, we used a rotary topper set about 12 inches above the plant crowns. The purpose was to leave numerous leaves to maintain the production of photosynthates for root maintenance and growth. Six-row plots were paired. One plot of each pair was randomly assigned for bolter removal and the other was left alone. These treatments were replicated six times at each location.

The removal of bolters by the procedures used in these trials had no effect on sugar production (table 2). These results contrast with those of other trials (not reported here), where all leaves, including those at the crown, were removed before harvest. In those cases, losses in sugar content did occur. It appears that the key to the removal of bolters before harvest is to make sure enough leaves remain to provide for the synthesis of sugar and thus maintain the sugar content of the beet roots.

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**T**ehama County is California's northernmost area of sugarbeet production. Sugarbeets previously were planted in the early spring and harvested in the fall of the same year. In 1978, however, it was decided to overwinter the crop in this area for harvest the following spring. This decision was based on improving the efficiency of the nearby processing plant by increasing the length of its run and on the 10-mile isolation of the Tehama County beet-growing area from other beet-growing areas. This isolation was considered sufficient to prevent the transfer of aphid-borne viruses from the overwintered beets to the early-spring-planted beets to the south.

Under the new cropping system, growers were concerned as to whether normal fertilizer practices would have to be modified. In particular, it was unclear whether more nitrogen would be needed to accommodate the extended period of growth over the winter.

An additional problem with changing the cultural system was that the overwin-

tered sugarbeet produced seed stalks (bolted) the following spring, and these sometimes were large enough to interfere with harvest. Thus, it also appeared useful to see if these stalks could be removed before harvest without adversely affecting sugar yield.

We conducted four field experiments to evaluate the effect of applying an additional 50 pounds of fertilizer nitrogen per acre in August to supplement the initial application of 50 to 100 pounds at planting or thinning. Plots receiving supplemental nitrogen were paired with other plots that received no additional fertilizer. Where supplemental fertilizer was applied, it was placed about 2 inches deep in the center of alternate furrows. Individual plots were six rows wide and 50 feet long and were replicated six times at each of the four locations. We collected petiole samples from representative plants at the time of the supplemental fertilizer application and subsequently from all plots at one- and two-month intervals to evaluate nitrogen uptake.

TABLE 1. Effect of additional nitrogen (N) on overwintered sugarbeet, Tehama County, 1978-83

Supplemental N		Roots	Percent sugar	Sugar yield	Petiole nitrate-N		
Date applied	Rate				Aug.	Sep.	Nov.
	lb/a	tons/a	%	cwt/a	ppm		
<b>Trial 1, harvest April 11, 1979</b>							
8/3/78	0	38.1	14.3	109.5	4,330	1,500	975
	50	39.5	14.6	115.5	4,330	2,880	1,100
<b>Trial 2, harvest May 18, 1979</b>							
8/3/78	0	45.4	14.1	127.4	1,350	4,750	4,320
	50	45.7	14.6	133.0	1,350	4,500	4,550
<b>Trial 3, harvest May 14, 1982</b>							
8/13/81	0	35.0	15.9	111.3	2,152	2,123	1,765
	50	36.1	15.4	111.2	2,152	3,632	1,988
<b>Trial 4, harvest June 13, 1983</b>							
8/18/82	0	40.9	15.8	129.3	577	673	1,313
	50	42.3	15.0**	127.0	577	847	1,681

\*\* Statistically significant difference.

TABLE 2. Effect of removing bolters above uppermost crown leaves before harvest, Tehama County, 1983-84

Bolters	Roots		Sucrose yield
	Yield	Sugar	
	tons/a	%	cwt/a
<b>Trial 1, harvest June 13, 1983</b>			
Not cut	39.4	15.2	119.7
Cut 5/22/83	39.5	15.7	123.9
LSD, 5%	ns	ns	ns
CV %	4.5	2.5	5.4
<b>Trial 2, harvest May 16, 1984</b>			
Not cut	38.5	17.3	133.2
Cut 5/1/84	39.0	17.0	132.6
LSD, 5%	ns	ns	ns
CV %	2.5	2.6	8.4
ns = not significant CV = coefficient of variation.			

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Hawk kites are used by some California pistachio growers to scare away birds that do millions of dollars in damage. Unfortunately, most birds ignore the kite as well as other control methods. (See page 5.)

