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Sweet Corn Topping Trial

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Abstract

Topping of sweet corn a few weeks before harvest is practiced in western Washington state and Nebraska to improve harvesting efficiency. Reports of east coast growers indicate topping may hasten earliness by 2 to 3 days, improve hand picking ease, reduce bird damage, and reduce wind lodging. Another potential advantage would be better spray coverage of the ear to prevent corn borer and earworm damage. Some drawbacks to the practice might include: reduction in ear size and flavor, malformed ears from lack of good pollination, sunburn of exposed ears (particularly late plantings), and additional costs. Generally, topping refers to removing the top of the corn plant just above the ear after pollen shed and pollination of the ear has occurred.

Keywords

Horticulture

Disciplines

Agricultural Science | Agriculture | Horticulture

Sweet Corn Topping Trial

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Introduction

Topping of sweet corn a few weeks before harvest is practiced in western Washington state and Nebraska to improve harvesting efficiency. Reports of east coast growers indicate topping may hasten earliness by 2 to 3 days, improve hand picking ease, reduce bird damage, and reduce wind lodging. Another potential advantage would be better spray coverage of the ear to prevent corn borer and earworm damage. Some drawbacks to the practice might include: reduction in ear size and flavor, malformed ears from lack of good pollination, sunburn of exposed ears (particularly late plantings), and additional costs. Generally, topping refers to removing the top of the corn plant just above the ear after pollen shed and pollination of the ear has occurred.

Our objective was to determine if topping early- and main-season sweet corn would offer the advantages stated above.

Materials and Methods

The trial consisted of a factorial arrangement of treatments in a randomized complete block design with four replications. Treatments consisted of two varieties (early and late), two topping levels (yes or no), and two planting dates (early and late). Each treatment plot consisted of three rows with data collection from the center row. Temptation (early season variety at 74-day maturity) and Providence (main season synergistic variety, 82-day maturity) were seeded April 26 and June 1. When silking was completed, evidenced by silk ends drying, the corn was topped with hand shears at a point one leaf above the ear. The corn was sprayed at initial silk with Capture

(bifenthrin) insecticide and every 4 to 5 days until silks dried. Irrigation was via overhead sprinkler and the scheduling based on soil tensiometer readings.

All marketable ears were harvested when kernels were large, yellow, and ears filled out. Ears were sorted into marketable and unmarketable, counted, weighed, and ear length, ear diameter, tipfill percentage, and kernel row number determined. Kernels were cut from the cob to determine moisture content. Unmarketable ears were those with sunburned husks, misshaped (missing kernels), ear length <5½ in., and bird damaged. Also, corn earworm and European corn borer damage to ear, husk, or ear shank was noted.

Results and Discussion

For the April 26 planting there was a significant interaction between variety and the topping treatment (Table 1). Topping increased marketable yield by 300 doz/acre for the Temptation variety while the response was the opposite for Providence. The positive topping response for Temptation can be explained partly by kernel moisture content, 75% for topped vs. 69% for not topped. The topped treatment was harvested July 14 and not topped July 18 showing a 4-day earliness advantage for topping. However, there was no actual earliness advantage as the corn was harvested too young as indicated by the higher kernel moisture content. The 30% culls were mostly the result of second ears. The topping treatments for Providence were harvested on the same day, July 31. Also, the kernel moisture content was identical indicating both topping treatments were at the same maturity stage. The reduction in marketable yield from topping Providence, 300 doz/acre less and 12% more culls, was the result of mostly sunburned husks and a few 'blank' ears (missing rows of kernels indicating poor pollination).

Only the Temptation variety was evaluated in the second planting (June 1) because a windstorm the night of July 31 blew down the Providence variety, which had not been topped. Both topping treatments were not affected by the wind storm with Temptation variety. Both topping treatments were harvested August 7

(68-day maturity) and the 67% kernel moisture content indicates they were at the same stage of maturity (Table 3). The only parameter affected by topping was to reduce the percentage of tipfill by 5%. This effect was not present in the April 26 planting.

Table 1. Topping and variety effect on early-planted (April 26) sweet corn marketable yield.

<u>Variety</u>	<u>Topped</u> ¹	<u>Mktable yield</u> (doz/acre)	<u>Cull</u> (%)	<u>Kernel water</u> (%)
Temptation	No	1505	30.1	68.8
	Yes	1800	30.4	74.5
Providence	No	1834	13.8	67.4
	Yes	1522	26.0	68.6
Significance ²		*	*	*
SE mean		294	9.5	2.0

¹Temptation topped on July 7 and harvested July 14, not topped harvested July 18. Providence topped July 20 and both treatments harvested July 31.

²*=comparison is different at the 5% level.

Table 2. Topping and variety effect on early-planted (April 26) sweet corn ear characteristics.

<u>Variety</u>	<u>Topped</u>	----- Ear Characteristics -----		
		<u>Length (in.)</u>	<u>Diameter (in.)</u>	<u>Tipfill (%)</u>
Temptation	No		1.8	98.8
	Yes	7.3	1.7	98.6
Providence	No		1.8	98.2
	Yes	8.3	1.8	92.2
Significance ¹		**	*	*
SE mean		0.22	.05	1.8

¹*, **=comparison is different at the 5% or 1% level, respectively.

Table 3. Topping effect on late planting (June 1) of Temptation yield and ear characteristics. Treatment topped on July 28 and harvest of both treatments on August 7.

<u>Topping</u>	<u>Marketable</u> (doz/acre)	<u>Cull</u> (%)	<u>Kernel Water</u> (%)	----- Ear Characteristics -----		
				<u>Length</u> (in.)	<u>Diameter</u> (in.)	<u>Tipfill</u> (%)
No	2110	15.9	67.2	7.4	1.8	98.4
Yes	1955	16.2	67.8	7.3	1.8	93.2
Significance ¹		NS	NS	NS	NS	**
SE mean						1.3

¹*=comparison is different at the 5% level.