UNIVERSITY OF SASKATCHEWAN

VEGETABLE CULTIVAR AND CULTURAL TRIALS 2002

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FUNDED BY:
AGRICULTURE DEVELOPMENT FUND

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Saskatchwan Agriculture and Food

Quality of Sequentially Planted Head Lettuce

Growers commonly report indicate problems with quality in head lettuce. In cultivar trials conducted by the University of Saskatchewan, over 50% of the crop was commonly graded as unmarketable. Problems with poor flavor, bolting and tip burn are often attributed to excessively high temperatures. Leaf drop caused by the fungal pathogen *Sclerotinia sclerotiorum* is also a problem for growers relying on heavy irrigation to get the crop through a period of excessive heat.

This trial evaluated quality of head lettuce crops transplanted at differing stages of a Saskatchewan growing season. It was expected that the quality of the earliest transplanted crop would be superior to crops grown during the heat of mid-summer. The potential to use fungicides to control leaf drop was also evaluated.

The cultivars 'El Dorado' and 'Lighthouse' were selected for testing as they produced the highest yields of marketable heads in previous cultivar trials. The trial was conducted using an overhead irrigation system on the University of Saskatchewan Vegetable Research Plots. This site features a heavy clay soil and is extensively infested with *Sclerotinia*. Three week old, greenhouse grown seedlings were transplanted into the field on May 17, June 14 or July 12. Half of the seedlings were treated with the fungicide Rovral (iprodione) as a root drench just prior to transplanting and again as a foliar treatment 5 days after transplanting. The fungicide treatments were timed to minimize opportunities for the *Sclerotinia* fungus to become established in the crop. The seedlings were spaced 25 cm apart in 4 m long rows with 75 cm between rows. The lettuce was harvested once it reached the desired head density. Heads were weighed and graded for marketability based on local market standards.

May, June and early July were exceptionally hot and dry in 2002, while from mid-July onwards conditions were considerably cooler, with significant rainfall. The two cultivars tested responded very similarly - the data for 'El Dorado' is presented in Table 1**.** The earliest planting was severely set back by hot, dry conditions at the time of transplanting. Consequently, the first planting was ready for harvest only 5 days earlier than the second planting. Problems with tip-burn and leaf drop caused by *Sclerotinia* combined to severely reduce marketable yields in the first two plantings. The fungicide treatments provided no control of leaf drop. Yields and quality of the third planting were excellent. Although the cool and moist growing conditions that prevailed during this period slowed crop development, they also appeared to eliminate problems with both tip-burn and leaf drop.

Conclusions - production of high quality head lettuce hinges on consistent and moderate growing conditions. As growing conditions in Saskatchewan are both variable and unpredictable, production of head lettuce is clearly risky. The absence of effective means for dealing with fungal diseases of this crop further increases the production risk. **Acceptable yields of high quality head lettuce can be achieved if stress resistant cultivars are planted in periods when cooler conditions will prevail. Extremely early (late April) and late (mid-August) transplanting dates might be worth considering.**

Table 1. Influence of transplanting date and fungicide treatments on yields and quality of 'El Dorado' head lettuce.

	Days from Transplanting to 50% harvest	% Culled Heads	Marketable Yield (kg/4 m row)	Average Head Weight (kg)
	1st Planting			
Control	69	76	2.4	0.64
Fungicide	68	72	3.6	0.82*
	2nd Planting			
Control	48	70	4.8	0.82
Fungicide	48	68	5.0	0.89
	3rd Planting			
Control	51	10	12.7	0.89
Fungicide	50	9	13.5	0.90

* Difference is statistically significant.