

ABSTRACT

Introduction

Weed competition can be a major deterrant on potential yield of sugarbeets. Both weed specie and weed density have their specificity. This study was designed to measure yield loss from varied weed infestation. Two weed species, velvetleaf (*Abutilon theophrasti* Medic.) and redroot pigweed (*Amaranthus retro flexus*), were manipulated, one at each of two test locations.

Materials And Methods

Two locations were selected for the study. Both fields, planted in April, had good stands with demanding weed pressure. Each site consisted of four replications of five varied weed densities (0,10,20,30, and 40 weeds per 100 ft.) on 30 inch rows.

The first location, on Lepley Farms, was established on June 7th. Sugarbeets were in the 6 to 8 leaf stage and the predominate weed, velvetleaf, was nearly 6 inches tall. Flags were used to mark 4-row plots, 30 ft. in length. Weeds needed to achieve given densities were staked and all other weeds were removed. The treatments were maintained until harvest.

A site for the second study was established on June 14th at the Thompson Farm. The prevailing weed, redroot pigweed had grown to an 8 inch average height and the sugarbeets had 8 to 10 leaves. With the exception of being 6-row plots, the Thompson location was handled identically as the previously described site until harvest.

The center four rows of Thompson's and center two rows at Lepley's were hand harvested on October 4th and 6th, respectively. Fifteen feet from each row were dug, cleaned, topped, counted and bagged for weighing. One sample from each plot was prepared and analyzed for sugar content. Sugarbeets smaller than two inches in diameter were excluded from all samples. Data for root yield and percent sugar were statistically analyzed using an RCB analysis.

Results And Discussion

Yield reductions have been found to be modified by weed species, density of infestation, spatial arrangements of crops and weeds, and the time and duration of weed competition. (1) Both the Thompson and Lepley locations showed significant yield reductions. Generally, there was a ton of yield loss for each 10 weed increment per 100 ft. of row. There was no significant change in percent sugar (Figures 1 and 2). Weed competition is usually most severe during the first few weeks of the crop-weed association, suggesting that the modifying effects of herbicides are most useful at this time. (1) Nearly a month elapsed between the time of crop emergence and test establishment and significant weed pressure occurred at both locations before the treatments were established. An earlier establishment would probably have increased the loss in tonnage at each weed density level.

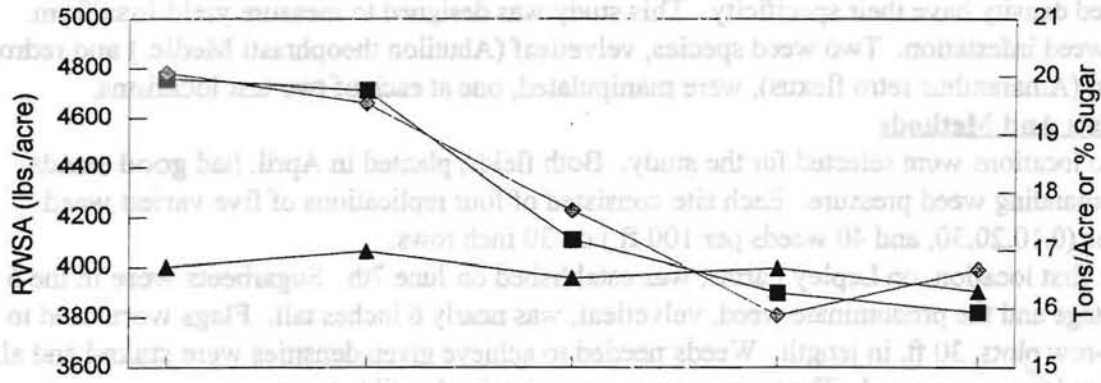
Literature Cited

(1.) Palm, C. E., W. W. Dykstra, G. R. Ferguson, R. Hansberry , W. J. Hayes Jr., L. W. Hazleton, J. G. Horsfall, E. F. Knipling, L. D. Leach, R. L. Lovvorn, and G. A. Swanson. 1971. Weed Control. National Academy Of Sciences, Washington D.C.. 32 pp.

(Figure 1)

Influence of Velvetleaf on Yield and Sugar Content

Lepley Farm, Bellevue, OH, 1994

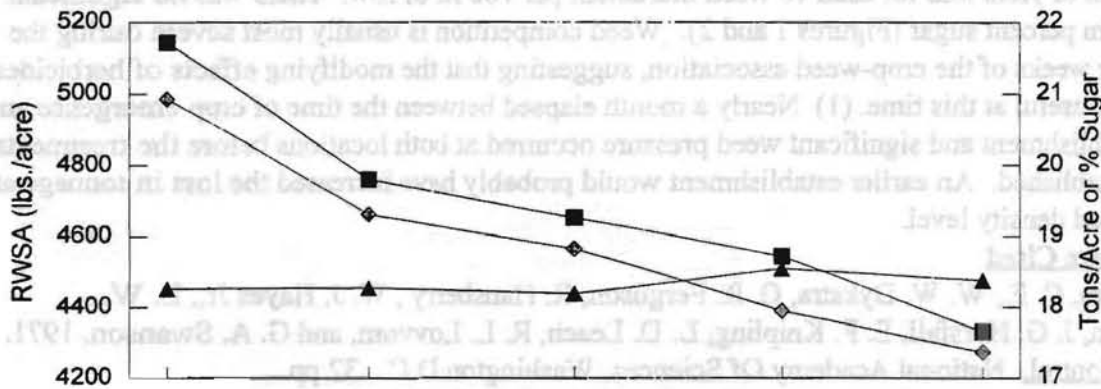


Weeds/100 Ft. of Row 0	0	10	20	30	40
■ RWSA (lbs./acre)	4,757	4,712	4,109	3,898	3,820
◆ Tons/Acre	20.06	19.54	17.69	15.89	16.67
▲ % Sugar	16.72	16.99	16.53	16.70	16.30

(Figure 2)

Influence of Redroot Pigweed on Yield and Sugar Content

Thompson Farm, Blissfield, MI, 1994



Weeds/100 Ft. of Row 0	0	10	20	30	40
■ RWSA (lbs./acre)	5,143	4,760	4,652	4,545	4,332
◆ Tons/Acre	20.93	19.31	18.83	17.95	17.37
▲ % Sugar	18.27	18.28	18.20	18.55	18.38