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TOBACCO RECLAMATION AFTER HAIL DAMAGE

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SUMMARY

Percentage of trash was increased and quality and nicotine content of the leaf were lowered with increase in time between transplanting and cutting of damaged stalks. Plants cut to 6 in. had a greater yield potential than plants cut to 12 in.

I. INTRODUCTION

Hail storms are a major hazard in tobacco-producing areas of Queensland. Losses as high as 100% have been recorded. Pointer and Woltz (1956) reported that, as an alternative to replanting a hail-damaged tobacco crop, better results can be obtained by cutting the damaged stalks and allowing a sucker crop to develop. Pointer and Woltz further reported that when hail damage occurred within 3-5 weeks of transplanting, yield and quality were little affected by the cutting-back method of reclamation. Thereafter, a progressive decrease in yield and quality was observed. Perfanov and Gulubov (1959) showed that the height to which damaged plants are cut affects the leaf numbers on the reclaimed plants. Low cutting gave an increase in leaf number.

Trials were conducted at the Inglewood Research Station in southern Queensland in the 1961-62 and 1962-63 seasons to study the reclamation of hail-damaged tobacco.

II. METHODS AND MATERIALS

Hail damage was simulated by stripping all the leaves from the tobacco plants and then cutting the stalk at a prescribed height above ground level.

The treatments were applied at three periods after transplanting and at two heights above ground level:

- (a) Time after transplanting: A1, 7 weeks
 A2, 8 weeks
 A3, 9 weeks
- (b) Height above the ground: B1, 6 in.
 B2, 12 in.

The trial area was fertilized basally with 500 lb of tobacco fertilizer 220 (2:11:4:20) per acre. A further two fertilizer treatments were superimposed. These were applied as a side-dressing at the time of cutting.

- (c) Fertilizer side-dressing: S0, nil
 S1, 6 lb N/ac + 50 lb K₂O/ac

The treatments were arranged as a 3×2×2 factorial in three complete randomized blocks. Data collected included yield, quality and chemical analysis of the cured leaf. Quality was appraised by a method which allocates relative values to each grade. Quality is expressed in terms of average relative value (A.R.V.)

$$\text{A.R.V} = \frac{\text{Sum (Relative Value x Weight of Grade)}}{\text{Total Weight of Plot}}$$

III. RESULTS

Persistent rain in the 1961-62 season resulted in the death of a large proportion of the plants due to stem rot, due possibly to a species of *Phytophthora*. The height of cut was related to the severity of infection by stem rot. Plots cut to 6 in. lost 49% of the plants while those cut to 12 in. lost only 12% of the plants.

In the 1962-63 season, neither time of cutting nor fertilizer side-dressing gave any significant response in total yield.

Cutting the stalk at 6 in. above ground level resulted in a significantly higher yield than that from the 12 in. treatment.

Height of Cut	Total yield (lb/ac)
B1	1,616
B2	1,438
Necessary difference for significance (5%)	153

The percentage of trashy tobacco (ratio of unsaleable tobacco to total yield expressed as a percentage) was affected by time of cut and interaction (height of cut \times fertilizer side-dressing).

Time of Cut	Percentage Trash
A1	25.8
A2	26.5
A3	37.9
Necessary difference for significance (5%)	10.2

Height of Cut	Side-dressing	
	S0	S1
B1	37.1%	27.7%
B2	23.0%	32.4%
Necessary differences for significance (5%)	$\left\{ \begin{array}{l} \text{B} - 11.8\% \\ \text{S} - 11.8\% \end{array} \right.$	

Where no fertilizer was applied as a side-dressing, a higher percentage of trashy leaf resulted when the stalks were cut at 6 in.

Differences in quality were shown to exist for time of cut and interaction between height of cut \times fertilizer side-dressing:

Time of Cut	A.R.V.
A1	45.5
A2	44.7
A3	37.9
Necessary differences for significance	$\left\{ \begin{array}{l} (1\%) \quad 6.9 \\ (5\%) \quad 5.1 \end{array} \right.$

Height of Cut	Side-dressing	
	S0	S1
B1	38.8	44.0
B2	46.0	42.1
Necessary differences for significance(5%)	$\left\{ \begin{array}{l} \text{B} - 5.9 \\ \text{S} - 5.9 \end{array} \right.$	

In the absence of a fertilizer side-dressing, leaf quality was reduced when the stalks were cut at 6 in.

The chloride level of the cured leaf was not affected by the applied treatments.

A decrease in cured leaf nicotine content occurred when cutting was delayed beyond 7 weeks.

Time of Cut	Nicotine Percentage
A1	2.31
A2	1.60
A3	1.48
Necessary differences for significance	$\left\{ \begin{array}{l} (5\%) \quad 0.44 \\ (1\%) \quad 0.60 \end{array} \right.$

IV. DISCUSSION

The results indicate that the percentage of trash was increased, and the quality and nicotine content of the leaf were lowered, with an increasing time period between transplanting and treatment. These findings are in agreement with those of Pointer and Woltz (1956) and Sabanov (1963).

In commercial crops, a decrease in leaf quality and saleable yield could be expected from a reclaimed crop as the time period between transplanting and hail damage increases.

Plants cut to 6 in. had a greater yield potential than plants cut to 12 in. Although the percentage of trash was increased, and the quality reduced when plants were cut at the lower level, fertilizer side-dressing can overcome these adverse effects. Side-dressing may not be necessary if the basal application of fertilizer has been adequate.

The susceptibility to disease attack of plants cut at the lower level is, however, a factor that has to be considered when reclamation of hail-damaged commercial crops is attempted.

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