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Department of Agronomy

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PRODUCTION OF NO-TILLAGE BURLEY TOBACCO

J. M. Zeleznik and R. E. Phillips

BACKGROUND

In the early 1970's, researchers at the University of Kentucky produced burley tobacco by using no-tillage methods. These studies were abandoned a few years later due to poor growth, poor plant survival, and the lack of adequate weed control as the contributing factors. In 1984, the experimental production of no-tillage burley tobacco was reinitiated with the hopes that the newer herbicides would perform more effectively for no-tillage tobacco production. Burley producers could realize several potential advantages to no-tillage tobacco production if the yields produced by no-tillage were equal to or near those of conventional tillage. These potential advantages would include: the elimination of the need for plowing and disking a field in preparation for transplanting, reduced soil erosion, reduced soil water evaporation, cleaner cured tobacco, more flexibility in timing during transplanting and at harvest, and possibly lower production costs.

DISCUSSION

The experimental data collected over the last six years shows some promise. In conducting the experiments we followed the recommendations of the University of Kentucky's Agricultural Experiment Station for fertilization and cultural management practices for burley tobacco. The fertilizer applications of nitrogen and potash at the rates of 300 and 200 lbs/acre, respectively, were broadcast on the surface of all no-tillage and conventional tillage plots and were disked into the soil only on the conventional tillage plots. The conventional plots were sidedressed and were cultivated twice early in the growing season while the no-tillage plots received only the N sidedressing (applied on the surface). Weed control, on the whole has been good to very good, when the herbicide was correctly applied to kill the cover crop and at the proper time. This appears to be about 3 to 4 weeks prior to transplanting. A good initial kill is mandatory no matter what cover crop is being used. This spraying accomplishes two objectives at the same time. It not only kills the cover crop but also any early

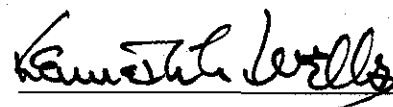
season weeds that have emerged. All experiments with the exception of 1985-2, were conducted on the University's Agricultural Experiment Station in Lexington, on a nearly level Maury silt loam soil. The 1985-2 experiment was located in Northern Kentucky on a Lowell silt loam soil with a slope of approximately 25 percent.

Transplant survival rates were more than acceptable since there was no need to reset plants that died after the initial transplanting (Table 1). Yields of no-tillage have not been significantly different than those of the conventional tillage (Figure 1). Quality of the no-tillage crop, as measured by the Federal grades, has not been significantly different from that of the conventional tillage tobacco in any year.

The following graph and table shows the results for the last six years. The year 1988 is not included because a hail and wind storm completely destroyed the crop just before topping.

CONCLUSIONS

- 1) No-tillage transplant survival was no different than that of the conventional tillage
- 2) Cured leaf yields of no-tillage were no different than that of the conventional tillage yields.
- 3) Leaf quality of the no-tillage tobacco was no different than that of the conventional tillage's leaf quality.



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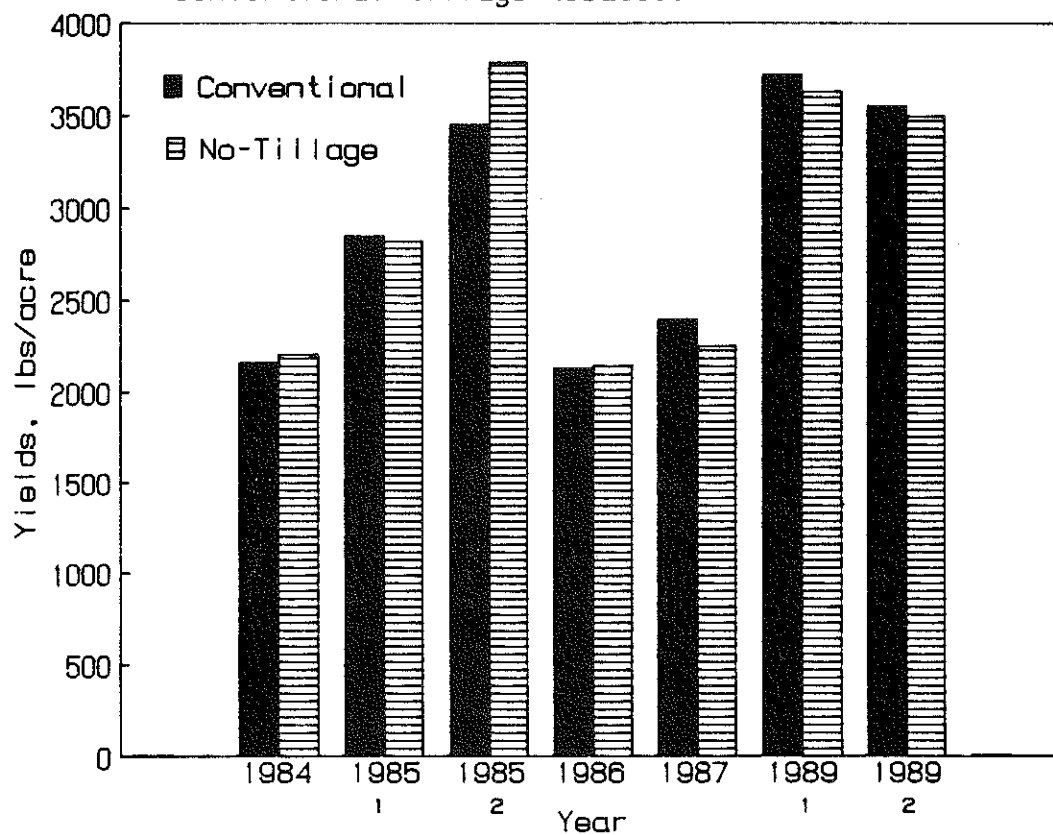
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Table 1. Summary of cover crops and percent transplant survival from 1984 to 1989.

Year	Cover crop	Transplant Survival(%)	
		Conventional	No-Tillage
1984	Bluegrass/ Fescue Sod	98a*	94a
1985(1)	Fescue	97a	99a
1985(2)	Wheat	98a	96a
1986	Wheat	99a	98a
1987	Wheat	86a	86a
1989(1)	Rye	98a	94a
1989(2)	Rye	99a	96a

* Percent transplant survival followed by the same letter is not significantly different at the 0.05 probability level tested within each year.

Fig. 1. Average cured leaf yields of no-tillage and conventional tillage tobacco.



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