9-1985

Evaluation of a Skip-Row Planting System or Plant Run-Over as Management Practices on Full Season Soybeans in Narrow Rows

Todd W. Pfeiffer
Univesity of Kentucky, tpfeiffe@uky.edu

Morris J. Bitzer
University of Kentucky

Jereme Orf
Univesity of Kentucky, jereme.orf@uky.edu

D. Pilcher
Univesity of Kentucky

UNIVERSITY OF KENTUCKY
COLLEGE OF AGRICULTURE
Lexington, Kentucky 40546

COOPERATIVE EXTENSION SERVICE

AGRONOMY NOTES

Vol. 18 No. 3, September 1985

Evaluation of a skip-row planting system or plant run-over as management practices on full season soybeans in narrow rows.

T. W. Pfeiffer, M. J. Bitzer, J. Orf and D. Pilcher

In recent years there has been an increased interest in narrow row and solid seeded soybeans in Kentucky. Soybeans seeded in narrow rows have an earlier canopy closure which allows a longer time for the soybean plants to intercept the maximum amount of sunlight. The shading effect which results from earlier canopy closure also aids in weed suppression. More farmers are now seeding full season soybeans in narrow rows or solid seeded stands; because cultivation is eliminated, however, some are hesitant to adopt narrow row production practices for fear of inadequate chemical weed control. With the recent increase in effective postemergence herbicides for weed control in soybeans, farmers now have several opportunities to achieve adequate weed control using only herbicides. The objective of this research was to evaluate the effect on soybean yields of leaving skip-rows for equipment passage or of plant damage from running over the soybeans at various stages. In narrow row systems postemergence herbicide application will result in plant damage to those plants run over during application.

Materials and Methods:

These experiments, conducted at Lexington, Kentucky, were planted on June 4, 1980 and June 8, 1981.

A) Plant run-over experiment

In this experiment the variety 'Elf' was planted in 15 row plots with a 9.5 inch spacing between rows. The effect of four run-over dates were compared to a check (not run-over) treatment. Two rows of the plot (rows 4 & 10) were run over with a tractor at the following growth stages: V2, V4, V2 plus V4, and V6. These growth stages describe the number of nodes above the cotyledonary node present on the soybean plant at that time. Using growth stages to determine the dates to run over the plots allowed the treatments to be applied at the same stage of plant development each year. Growth stages V2, V4, and V6 occurred 19, 28, and 36 and 16, 23, and 35 days after planting in 1980 and 1981, respectively. The center 11 rows were harvested individually. Seed yield of each row was measured and total plot yield calculated.

B) Skip-row experiment

The varieties Elf and 'Union' were planted in 13 row plots with a 14.25 inch spacing between rows. Rows number 5 and number 9 were not planted resulting in 28.5 inch skip rows. These skip-rows would allow for tractor travel in the same area every trip and thus prevent major damage to the plants during herbicide application. The skip-row treatment was compared to plots of each variety in which all rows were planted. The 1st and 13th rows were left as border rows and the interior rows were harvested individually. Seed yield of each row was measured and total plot yield was calculated. The two varieties were used to determine if there was a differential response to the skip row system between a conventional indeterminate variety, Union, and a semidwarf determinate variety, Elf, selected for performance in narrow row production systems.

Results and Discussion

Two year average yields for all treatments in the run-over experiment are shown in Table 1. None of the treatments which had plants run over at various growth stages yielded significantly more or less than the check plots which had no rows run-over. The individual rows which were run-over suffered plant damage and produced lower yields when compared to those rows that were not run-over (Figure 1). The later the developmental stage of the plants when run-over, the greater the reduction in yield in the run-over row. The combination of run-over at growth stages V2 and V4 showed the same yield reduction per row as run-over only at V4. The reduction in yield of the run-over rows was compensated for by increased yields of the rows adjacent to the run-over rows (Figure 1).

Yields of plots with the skip-row planting pattern were not significantly different than the yields of plots with the uniform planting pattern (Table 2). There was also no difference between varieties in their response to the skip-row planting pattern. The responses of rows adjacent to the skip-rows were similar to those seen in the run-over experiment. Rows adjacent to the skip-rows averaged 1.58 lbs/row while rows in the uniform pattern averaged 1.14 lbs/row.

Conclusion

Farmers planting soybeans in narrow rows or solid seeded stands can take advantage of postemergence herbicides for weed control. Neither running over rows in solid seedings nor leaving a skip-row in narrow row plantings reduced soybean yields when compared to uniform check plots. Either system is an acceptable management practice for growing full season soybeans in narrow rows.

Acknowledgement

This research was sponsored by a grant from the Kentucky Soybean Association.

Table 1. Effect of run-over time on soybean yields, 1980-81.

Plant Growth stage when run-over	Yield (bu/acre)	
Check (not run over)	48.5	N.S.
V2	48.2	
V4	48.5	
V2 plus V4	48.5	
V6	49.4	

N.S. - no yields are significantly different than the check (not run over)

Table 2. Yields of two soybean varieties in skip-row and uniform planting patterns, 1980-81.

Variety	Planting Pattern	Yield (bu/acre)	
Elf	Skip-row	48.5	N.S.
	Uniform	46.8	
Union	Skip-row	47.2	
	Uniform	46.7	

N.S. - no yields are significantly different.

Figure 1. Effect of run-over at various plant growth stages on soybean seed yield of individual rows.