

2011

Timing of Land Rolling for Soybeans

David Rueber

Iowa State University, drueber@iastate.edu

John D. Holmes

Iowa State University, jdholmes@iastate.edu

Follow this and additional works at: http://lib.dr.iastate.edu/farms_reports



Part of the [Agricultural Science Commons](#), [Agriculture Commons](#), and the [Agronomy and Crop Sciences Commons](#)

Recommended Citation

Rueber, David and Holmes, John D., "Timing of Land Rolling for Soybeans" (2011). *Iowa State Research Farm Progress Reports*. 250.
http://lib.dr.iastate.edu/farms_reports/250

This report is brought to you for free and open access by Iowa State University Digital Repository. It has been accepted for inclusion in Iowa State Research Farm Progress Reports by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.

Timing of Land Rolling for Soybeans

Abstract

Rolling short stature crops with heavy, large diameter, gas pipes has become common in Canada. Although this technique was first utilized to push rocks into the ground to avoid combine damage and aid in harvesting lodged crops, producers in Iowa quickly learned that pushing corn root-balls flat at the time of planting can increase harvest efficiency. Typically fields are rolled shortly after planting. This study was actually two experiments—to evaluate only pre-plant rolling of corn and soybeans and to evaluate the response of emerged soybeans to rolling. The purpose of the first experiment was to determine plant and yield responses to rolling prior to planting. The second experiment evaluated plant and yield responses to rolling at four stages of soybean growth. This is the first year of a two-year study.

Keywords

RFR A1097

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Timing of Land Rolling for Soybeans

RFR-A1097

David Rueber, farm superintendent
John Holmes, ISU Extension field agronomist

Introduction

Rolling short stature crops with heavy, large diameter, gas pipes has become common in Canada. Although this technique was first utilized to push rocks into the ground to avoid combine damage and aid in harvesting lodged crops, producers in Iowa quickly learned that pushing corn root-balls flat at the time of planting can increase harvest efficiency. Typically fields are rolled shortly after planting. This study was actually two experiments—to evaluate only pre-plant rolling of corn and soybeans and to evaluate the response of emerged soybeans to rolling. The purpose of the first experiment was to determine plant and yield responses to rolling prior to planting. The second experiment evaluated plant and yield responses to rolling at four stages of soybean growth. This is the first year of a two-year study.

Materials and Methods

Pre-planting rolling. A field that had been planted to corn and soybeans in 2009 was chosen. The seed bed was prepared with fall chisel plowing and spring field cultivation. Rolling was done perpendicular to the direction rows with a 20 ft Degelman roller pulled by a John Deere 7410 tractor with single rear tires. Plots were 65 ft long, in each plot there were four sets of wheel tracks. Corn and soybean planting was done on April 29 with a John Deere 7100 planter with fluted coulters. Stand counts were taken between tire tracks on selected days from May 20 until May 28, when stand counts no longer increased. Yields were taken across the entire plot length.

Rolling after soybean planting. A second study was established using a randomized complete block design with four replications. The crop rotation was soybean following corn. The pre-plant seedbed was prepared with fall chisel plowing and spring field cultivation. Soybeans were planted at 157,000 seeds/acre in 30 in. rows on May 19. Rolling was done parallel to the rows with the tractor tires running between the rows with the same equipment mentioned above. Rolling was done on May 19, May 24, June 16, and June 29. Soybean stages were planted V1, V3, and V6, respectively.

Results and Discussion

Pre-planting rolling results. Pre-rolling increased early emergence (May 20) of corn and soybeans, but by May 28 there were no significant differences in final stands (Table 1). While taking stand counts, shallow planted seeds in the tractor tracks were noticed. There was no difference between rolled and unrolled plots in corn and soybeans yields. The four sets of wheel tracks across each plot may have negated any yield increase due to rolling.

Rolling after soybean planting results. Rolling before emergence up through stage V3 did not significantly reduce yields (Table 2). Rolling soybeans at stage V6 significantly reduced yields. Rolling at V3 visibly flattened plants, but by the next day they had straightened. Rolling at stage V6 also visibly flattened plants, plus it damaged plants (Figure 1). Although V6 rolled plants generally did not stand back up as well as V3 rolled plants, the new growth, either new branches or top growth, did stand up straight. At harvest time plants rolled at stage V6 were a little shorter.

It was noticed in the turn areas outside the plots that the outside edge of the roller acted as a rough knife and did considerable damage to plants when changing directions even at the V3 stage.

Acknowledgements

We wish to thank Gary Naeve, Custom Made Products, Humboldt, IA who provided the roller for use in this study. His support was sincerely appreciated.

Table 1. Stand (ppa) of corn and soybeans on pre-plant rolled corn ground.

Crop	Treatment	-----Date-----			
		<u>May 20</u>	<u>May 22</u>	<u>May 24</u>	<u>May 28</u>
Corn	Rolled	21,775a	28,453a	31,066	30,775
	Not rolled	20,033b	25,259b	26,130NS	29,614NS
Soybean	Rolled	73,164a	113,230	126,005	133,553
	Not rolled	64,454b	110,642NS	117,004NS	128,908NS

Table 2. Soybean yield (bushels/acre) for different timing of ground rolling.

<u>Treatment</u>	<u>Bushels/acre</u>
None	58.1a
Preemergence	57.1a
V1	58.3a
V3	55.7a
V6	49.4b

NS = not significantly different. Yields followed by the same letter are not statistically different ($P < .05$).



Figure 1. Lower portion of photo: soybeans rolled at V6 stage; upper portion of photo: unrolled soybeans.