

IMPACT OF FIELD ROLLING ON SOYBEAN PERFORMANCE

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A trial was conducted to determine the effect of timing of field rolling on soybean injury, stand, and yield. The trial was conducted on Heimdal loam soil with 3.4 percent organic matter. Experimental design was a randomized complete block with four replications. RG200RR was solid-seeded (7-inch rows) on May 27. A 3000-lb., 15-ft wide, 18-inch diameter, 3-point hitch-mounted Bison roller was used for field rolling during afternoons on a dry soil surface preemergence and during early emergence, cotyledon,

and first trifoliolate soybean growth stages (Table). The trial was harvested with a plot combine on October 1. Soybean plant injury increased as post-emergence rolling was delayed. Soybean stand, lodging, and yield were generally similar to the untreated check. Plant moisture status (time of day, soil moisture content), location of plants in ridges/furrows, presence of surface residue, speed of rolling, and other factors may also influence plant tolerance to rolling.



Soybean plant damage from rolling.

Table. Effect of timing of field rolling on soybean performance, Carrington, 2003.

Field Roll Timing		Soybean Stand		Plant Injury*		Plant	Seed	Compacted
Plant Stage	Date	1-2 WAT**	26-Sep	1-2 WAT	4 WAT	Lodge	Yield	Soil Layer***
		plants/ft ²		%		0-9	bu/A	inches
Untreated	n/a	31	34	0	0	1	29.2	7.8
PRE	2-Jun	29	32	1	2	1	30.9	7.9
≤ 50% Emergence	5-Jun	30	31	0	2	1	28.7	8.5
Cotyledon	11-Jun	38	37	6	5	1	29.1	8.0
1st Trifoliolate	20-Jun	36	24	14	12	1	30.8	8.6
MEAN		33	34	4	4	1	29.7	8.2
C.V. %		9	10	71	60	77	13	29
LSD 0.05		5	NS	5	2	NS	NS	NS

*Injury included bent, broken, or calloused stems.
 **Weeks after treatment.
 ***Penetrometer used to determine compacted layer measured from soil surface. Measured prior to harvest with soil at < field capacity.