

SOYBEAN YIELD RESPONSE TO RESIDUAL FALL PARATILL TILLAGE ON A LEEPER SILTY CLAY LOAM SOIL

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ABSTRACT: A study was conducted in 2002 to evaluate soybean yield response to the residual effect of a fall under-the-row deep tillage (paratill-bed-roller) stale seedbed system on a Leeper silty clay loam soil. The bed-roller plots, which received an under-row deep tillage in the fall of 2000, were compared to continuous fall under-row deep tillage. Growing conditions were very favorable with above normal rainfall in May and July. However, no rainfall in August occurred until August 25. Yield data indicated a mean yield of 50.2 bu/ac with no difference between tillage systems. Preliminary results indicated deep under-row tillage may not be necessary every year.

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KEYWORDS: Soybean, tillage, paratill

MATERIALS AND METHODS: A field study was conducted in 2002 evaluating soybean growth and yield response to the residual effect of a fall under-the-row deep tillage (paratill-bed-roller stale seedbed) system. The bed-roller treatment which received an under-row deep tillage in the fall of 2000 was compared to the continuous fall under-the-row deep tillage system. The study was conducted as a randomized block design with eight replications. Plot size was 8 (30 inch) row by 200 ft.

Fertilizer (P and K) nutrients were applied based on soil test recommendations. Soil test results indicated a high level of P and medium K level. Potash (K₂O) at 250 lb/ac was applied broadcast to the soil surface over the entire area on 11/15/01. The bed-roller and fall paratill-bed-roller treatment were applied 11/05/01. The whole study was rebedded 3/05/02. Delta King DK 4868RR variety was planted no-till 4/23/02 with a seeding rate of 4 seed/ft row in 30 inch rows. A burndown application of Gramoxone Max (paraquat) + surfactant at 1 lb ai/ac + 0.5 pt/ac was applied to the no-tillage plots 4/18/02. Roundup (glyphoste) Ultra Max at 1.25 lb ai/ac was applied postemergence to the entire study on 6/04/02 and repeated at 0.75 lb ai/ac on 6/13/02.

The center 2 rows of each plot were harvested with a plant combine on 9/05/02. Yields were adjusted to 13% seed moisture. All data was subjected to statistical analysis and means were separated using Fisher's Protected LSD at the 5% significance level.

RESULTS AND DISCUSSION: Temperatures during the growing season were below normal in late April through mid May. Rainfall, however, was highly variable with above normal

rainfall in May and July followed by a 3 week dry period for August. The soybeans matured 8/29/02 with no maturity differences between treatments. The data indicated the fall bed-roller and fall paratill-bed-roller systems produced a mean yield of 50.2 bu/ac with no difference between systems (Table 1). Preliminary results indicate that deep under-row tillage may not be necessary every year.

COOPERATORS: None

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Table 1. Soybean yield response to tillage on a Leeper silty clay loam soil in 2002, Verona, MS.

Tillage system	Maturity height (in)	Yield bu/ac
Fall paratill-bed-roller 2000; fall bed-roller 2001	35	50.9
Fall paratill-bed-roller (2000 and 2001)	36	49.5
Mean	36	50.2
LSD (0.05)	NS	NS
% CV	8	1.2