

# **A Summary of Modified Relay Intercropping Wheat and Soybean Yields, 1994-1999**

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## **Objective**

To evaluate yields of soybeans and wheat grown in a modified relay intercropping system over several years.

## **Background**

Location of Test: The Ohio State University, Unger Farm  
David Brewer Farm, Crawford County

Soil Type: Blount

Drainage: Non-systemic

Tillage: Conventional and no-till

Previous Crop: Soybeans

Planting Date: Wheat: October 5, 1998  
Soybeans: June 9, 1999 (into headed wheat)

Fertilizer: 27-69-90 (fall 1998) and 96 lbs Nitrogen/A (March 25, 1999)

Herbicide: 2,4-D amine (1 pt/A) (April 14, 1999)

Soil Test: Unger Farm: pH 6.9, P 31 ppm, K 122 ppm, CEC 15

Study Design: Completely randomized (4 yrs.), Paired treatments (1 yr.)

## **Methods**

To address the issues of farm profitability and environmental protection, a modified relay intercropping (MRI) system has been studied. In this system, soybeans are planted into wheat at or past the heading stage of growth. A modified relay intercropping system can effectively utilize farm labor, time, and equipment, while at the same time increasing farm net profit.

A Great Plains 15-foot drill was used to plant all wheat and soybeans with wheat. A 20-inch tramline was established to guide the planting of soybeans into wheat. For further details on the methods of MRI, contact the author.

## Results

**Table 1. Five-Year Average Yields in an MRI System.**

Year	Red Wheat Yields*	Soybean Yields*
1994	65 bu/acre	41 bu/acre
1995	72 bu/acre	27 bu/acre
1997	70 bu/acre	28 bu/acre
1998	73 bu/acre	41 bu/acre
1999	83 bu/acre	5 bu/acre
<b>Average</b>	73 bu/acre	28 bu/acre

\*Yields represent Grand Mean for the year over all treatments

## Summary

We now have five years of replicated research on the Modified Relay Intercropping system. Overall, the data are encouraging. However, soybean yields fell dramatically from a 33 bu/acre average over the previous four years to 5 bu/acre in 1999. These low yields can be attributed to both a very low total summer rainfall and poor rainfall distribution. Essentially no rain fell after August 13 at the plots. The total rainfall from June 1 to August 30 was five inches. MRI soybeans are delayed in maturity and thus require rainfall later in the season to finish development. Rainfall appears to follow a normal distribution. Thus, about every five years, a very dry year would be expected, and thus poor soybean yields in the MRI system.

Finally, when looking at gross revenue generated, the MRI system has been very favorable when compared to single crops of either 80-bushel wheat or 55-bushel soybeans. Using \$3 wheat and \$6 soybeans, the five-year average of the MRI system averaged \$387 gross revenue per acre. Eighty-bushel wheat would generate \$240 per acre (no straw sales), and 55-bushel soybeans would calculate to \$330 per acre.

For additional information, contact:

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