

# Evaluation of Red and White Wheat Varieties in a Modified Relay Intercropping System

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## Objective

To evaluate disease incidence and agronomic performance of red and white wheat varieties in a Modified Relay Intercropping (MRI) System.

## Background

|                |                   |                     |                                 |
|----------------|-------------------|---------------------|---------------------------------|
| Cooperator:    | OSU Unger Farm    | Fertilizer:         | 26-104-120 applied fall 1997    |
| County:        | Crawford          |                     | 103 lbs/A nitrogen topdressed   |
| Soil Type:     | Blount            | Herbicide:          | 2,4-D amine (1 pt/A)            |
| Drainage:      | Non-systematic    |                     | Roundup Ultra (1 qt/A, July 31) |
| Tillage:       | No-till           | Planting Date (W):  | October 10, 1997                |
| Previous Crop: | Soybeans          | Planting Rate:      | 120 lbs/A                       |
| Soil Test:     | pH 6.9, P 31 ppm, | Interseed Date (S): | June 8, 1998                    |
|                | K 122 ppm         | Interseed Rate:     | 75 lbs/A                        |

## Methods

Wheat was planted in a 10-inch row spacing with a 20-inch tram line with a Great Plains 1500 drill. Soybeans were planted into the 10-inch row wheat with the same drill as used for wheat on 6/8/98. Wheat had completed flowering. Drill was on a 3-point hitch of the tractor for planting of soybeans into wheat. Experiment design was completely randomized with three replications of two white varieties (Pioneer P25W33 and P2737W) and two red varieties (Hopewell and X15).

## Results

**Table 1. Wheat Variety and Yield.**

| Variety  | Yield (bu/A) |
|----------|--------------|
| P25W33   | 80.7         |
| Hopewell | 79.6         |
| P2737W   | 72           |
| X15      | 66.4         |

F = 4.09 Not significant at P = 0.05 CV = 7.8%

## Summary and Notes

All wheat was heavily tillered in 1998. The white wheat, 25W33, was also slightly injured by 2,4-D application. Interseeding of soybeans damaged both white wheats due to the sprawling habit of the wheat. An estimated 10-20% loss of yield in white wheats occurred as a result of interseeding. Hopewell wheat was the least damaged by interseeding due to its non-spreading growth habit.

One of the issues associated with white wheat production is sprouting of the mature seeds in the head under damp environmental conditions. In 1998 conditions conducive to wheat sprouting (five inches of rain and 100% relative humidity for nearly five days) occurred with no accompanying sprouting of the white wheat.

Soybean yields were 42 bu/acre in the Hopewell wheat, 40 bu/acre in the X15 wheat, and 32 bu/acre in the two white wheats. This reduction in soybeans was due to poor final stand resulting from difficulty in interseeding into the sprawling white wheat.

In conclusion, the white wheats are competitive in yield and comparable in disease resistance to top red wheats. White wheat can be successfully grown in Crawford County with the same performance expectations as red wheat. However, a tendency towards sprawling growth for the white wheat varieties in this trial may limit their usefulness for interseeding soybeans.

**Table 2. Wheat Variety Disease and Agronomic Observations.**

| <b>Variety</b> | <b>Characteristics</b>   | <b>Comments</b>   |
|----------------|--|---|
| Hopewell       | <u>Height</u> - 38"<br><u>Diseases</u> - Light Stagnospora                       | Very uniform red wheat that has done well in Crawford County. Nice architecture for MRI.  |
| X15            | <u>Height</u> - 35"<br><u>Diseases</u> - Stagnospora, Rust, heavy Powdery Mildew | Aggressive early red wheat. Very susceptible to a number of diseases. If treated with a fungicide, may be a good wheat for MRI.   |
| Pioneer 25W33  | <u>Height</u> - 36"<br><u>Diseases</u> - Light Stagnospora                       | Aggressive bearded white wheat may have applicability in MRI systems. Sprouting seems not a significant problem as with other white wheats. May be sensitive to 2,4-D amine herbicide. Was only wheat damaged by herbicide application at Feeke's Growth Stage 5 in 1998. |
| Pioneer 2737W  | <u>Height</u> - 37"<br><u>Diseases</u> - Light Stagnospora                       | This white wheat has performed well in Crawford County over the last two years; however, it may be discontinued in future.  |

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