

Stand Loss and Weed Interference Affect Soft Red Winter Wheat Yield

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Winter wheat stand loss due to winterkill can be a serious problem for Missouri wheat growers. Environmental conditions delaying crop establishment in the fall, in conjunction with abnormally cold winter temperatures, standing ice on winter wheat fields, or poor snow cover may increase winter wheat stand loss. A visual reduction in winter wheat stand in the spring often leads to questions from growers concerning whether to keep the wheat crop or to establish another crop such as corn, soybeans, or grain sorghum. Furthermore, questions arise as to the impact of the reduced wheat stand on weed-crop interference. Therefore, research was conducted to quantify the affect of stand loss and winter annual weed interference on soft red winter wheat yield.

Materials and Methods:

Field studies were conducted in the 2001-2002 winter wheat growing season at both the Bradford Research and Extension Center and the Greenley Research Center. The experimental design was a randomized complete block split-plot arrangement where main plots were either weed-free or weedy and the sub-plots were stand losses of 0, 20, 40, 60, 80, and 100%. Two winter wheat varieties were selected. Ernie was established at the Greenley Center whereas; Roane was established at the Bradford Center. Winter wheat yield was quantified at physiological maturity and adjusted to 13% moisture.

Results and Discussion:

Roane yield decreased as % stand loss increased in both the weedy and weed-free treatments at the Bradford Research and Extension Center in 2002 (Figure 1). In addition, when averaged across all stand loss treatments the weed-free yield was 38% greater than the weedy yield. At Greenley, winter annual weed interference did not affect Ernie yield, however, stand loss greater than 40% significantly decreased yield (Figure 2). Differences in winter annual weed interference on wheat yield may be caused by weed population and weed species present. At Bradford henbit (*Lamium amplexicaule* L.) was the predominant weed species (~100 plants per ft.²) whereas, at Greenley little barley (*Hordeum pusillum* Nutt.) was dominant (~3 plants per ft.²).

Preliminary data indicates that both stand loss and winter annual weed interference may decrease winter wheat yield. Therefore, spring assessment of stand loss, weed species, and weed population is critical in order to maximize winter wheat yield as well as to decide whether establishing a new crop is warranted.

***Low yield at the Bradford Center was due to a hail event that occurred at hard dough.**

Figure 1. Effect of % Stand Loss and Weed Interference on Roane Yield at the Bradford Research and Extension Center in 2002.

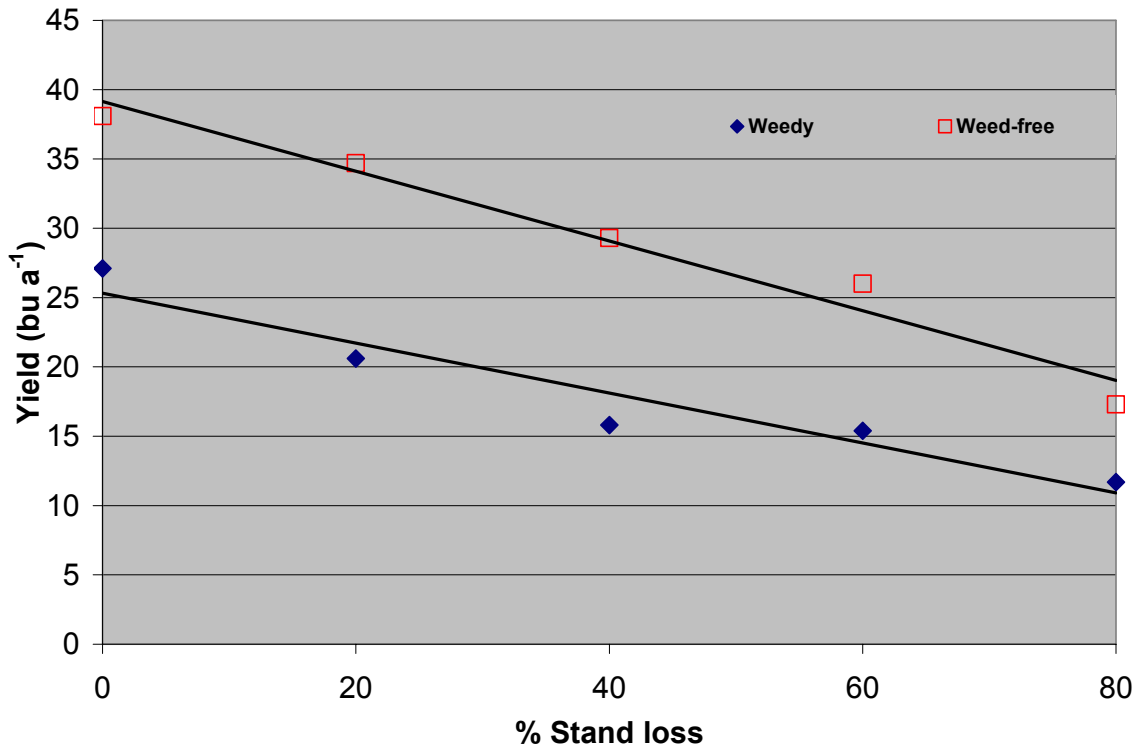


Figure 2. Effect of % Stand Loss on Ernie Yield at the Greenley Research Center in 2002.

