UNIVERSITY OF MINNESOTA
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Weed control in Organically Grown Spring Wheat – 2002

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Objective: To evaluate the effects of variety and harrow treatments for weed control in organically produced hard red spring wheat.

Study Details:

- Planting Date: May 27, 2002
- The two Varieties planted were: Reeder and Gunner
- Harrow treatments: 4 different harrow timings with a 4-bar spring tooth harrow.
- Cooperating Grower **Jim and Pat Todahl**, Fertile, MN

Results and Discussion: Stand Reduction

	Days After Planting					% Stand Loss	
Harrow Trtmt	1	4	7	10	21	Reeder	Gunner
1	X	X	X	X	X	27	11
2	X	X	X	X		13	18
3	X		X		X	23	9
4		X		X		11	23

Harrow Treatments:

- Initial plant populations for the first count done on 6/6/02 ranged from 1.38 to 1.18 million plants per acre
- The final stand count done on 6/20/02 ranged from 1.20 to .98 million plants per acre.
- Total stand loss ranged from 11% harrow treatment 1 which is harrowing the plot 5 times with the variety being Gunner to 27% harrow treatment 1 which is harrowing the plot 5 times with the variety being Reeder.
- Harrow treatment 1, which consisted of 5 harrow treatments one on 5/28/02, 5/31/02, 6/3/02, 6/6/02, and 6/17/02 with average total stand loss of 19%.
- Harrow treatment 2, which consisted of 4 harrow treatments one on 5/28/02, 5/31/02, 6/3/02, and 6/6/02 with an average total stand loss of 16%.
- Harrow treatment 3 which consisted of 3 harrow treatments one on 5/28/02, 6/3/02, and 6/17/02 with an average total stand loss of 16%
- Harrow treatment 4 which consisted of 2 harrow treatments one on 5/31/02 and 6/6/02 with an average total stand loss of 17%.
- Stand Loss for the 10 DAP harrow operation (Wheat 1 leaf, 4-5” tall) = 12%.
- Stand Loss for the 21 DAP harrow operation (Wheat tillering, 10” tall) = 8%.

Yield

Harrow Treatment	Variety	Yield (Bu/A)
1	Gunner	21.4
2	Gunner	20.5
3	Gunner	22.2
4	Gunner	22.6
1	Reeder	31.2
2	Reeder	30.4
3	Reeder	38.5
4	Reeder	34.5
		5.8 (LSD 0.05)

Average Yield: Gunner 21.7, Reeder 33.1 LSD 3.1 (0.05)

Harrow Treatments: 1: 26.3 2: 25.5 3: 28.5 4. 28.6 (NS 0.05)

Summary:
Stand: Harrow treatments varied from 2 to 5 passes with a 4 bar spring tooth harrow in a time period from 1 to 21 days after planting. Total stand loss for the various harrow treatments ranged from 9 to 27%. The varieties Gunner and Reeder had similar stand loss for the various harrow treatments.

Experiments over the past two years indicate that harrowing is most effective when performed when wheat and weeds are small even though there is more stand loss when wheat is small. Although stand loss varied by year and harrow treatment, this research would suggest that a good general guideline for wheat farmers is to plant an additional 10% pure live seed for every planned harrow operation. Actual stand loss will vary with equipment, crop stage, and soil conditions. Farmers should always check behind the harrow at the beginning of an operation to evaluate whether or not stand loss is excessive due to soil conditions, equipment setting, or other factors. It was very evident in this study for both years that where there is was a low wheat population there was poor weed control regardless of harrow treatment. No amount of harrowing will result in acceptable weed control when wheat population is low. Therefore, it is critical for weed control as well as for crop yield, to have an adequate stand of wheat.

Yield: Averaged over harrow treatments, Reeder significantly out-yielded Gunner (33.1 bu/A vs. 21.7 bu/A)

Weed Control: Weed control was not significantly affected by harrow treatment or variety.