

PROJECT TITLE: Evaluation of seeding rates of winter spelt in comparison to winter wheat and winter barley under dryland cropping.

PROJECT LEADER: G.F. Stallknecht

PROJECT PERSONNEL: Ken Gilbertson

PROJECT LOCATION: Southern Ag. Research Center, Huntley, MT

OBJECTIVES: To evaluate seeding rates of 40, 60 and 80 lbs/acre for yield and quality of winter spelt in comparison to winter wheat and winter barley under dryland cropping.

RESULTS: The effects of seeding rates on spelt yield for 1991 and 1992 are described in Tables 1 and 2 respectively . There was no effect on test weight of the spelt, winter wheat or winter barley due to seeding rate in 1991 or 1992. No differences in yield due to seeding rate were observed for the hard red winter wheat variety Tiber, or the winter barley varieties Kamiak and Schuyler with the exception of the 80 lb/acre rate of Schuyler in 1991, in 1991. In 1991 the 80 lb/acre seeding rate produced yields significantly higher than the 40 or 60 lbs/acre rate. While not always significant, the 40 lb/acre rate appeared not to be adequate for maximum yield potential for the spelt cultivars. Our data indicate that a 60 lb/acre seeding rate would be optimum in most cases. The yield data presented in Tables 1 and 2 are the combined averages for all seeding rates. The yields reflect the respective yield differences among the winter wheat, winter barley, and winter spelt varieties for comparison purposes only.

SUMMARY: Data on the effect of seeding rate for 1991 and 1992 are consistent, in that 60 lbs/acre seeding rate appeared to be adequate for maximum yields of winter spelt, while a seeding rate of 40 lbs/acre was not sufficient for production of maximum yields. Tiber hard red winter wheat produced more pounds of grain per acre in both years when compared to spelt, however the yields were not significantly different from the higher yielding spelt cultivars. In contrast to off-station results, the winter barley variety Schuyler produced respectable yields of 3564 lbs/acre (79 bu/ac) and 4148 lbs/acre (86.5 bu/ac) in 1991 and 1992 respectively. The winter barley variety Kamiak always produced significantly lower yields compared to Schuyler.

One drawback to winter barley production even if the variety is winter hardy is the generally lower test weight when compared to spring barley. When comparing winter barley to winter spelt, winter barley has a much higher test weight, however spelt cultivars are more winter hardy and produce higher yields, particularly under low moisture growing conditions.

FUTURE PLANS: The study on seeding rate which has been conducted for 2 years is completed. The future emphasis on spelt agronomics will continue with evaluations for comparing spelt to hay barley varieties for forage use, and spelt grain quality as compared to wheat.

Table 1. The effect of seeding rate on yield of winter spelt as compared to winter wheat and winter barley in 1991. SARC Huntley, 1992.

Cultivar	Yield * Lb/A	Test Weight Lbs/Bu	Observed yield difference due to seeding rate
Tiber HRWW	3517	59.56	No Sig. difference
Champ Spelt	3174	28.32	No Sig. difference
Sindelar Light Spelt	3497	28.60	No Sig. difference
Sindlear Dark Spelt	2787	27.35	40 lbs sig. lower than 60, 80 lb
Sindlear Mix Spelt	3129	29.57	40, 60 lbs sig. lower than 80 lb
Willie Spelt	2600	26.29	No Sig. difference
SP 949 Spelt	3333	27.86	40 lb sig. lower than 80 lb
Schylar Winter Barley	3564	43.37	40, 60 lb sig. lower than 80 lb
Kamiak Winter Barley	2629	48.0	No Sig. difference

* Yield given in table is averaged over all seeding rates.

Table 2. The effect of seeding rate on yield of winter spelt as compared to winter wheat and winter barley in 1992. SARC Huntley, 1992.

Cultivar	Yield* Lb/A	Test Weight Lbs/Bu	Observed yield difference due to seeding rate
Tiber HRWW	5657	59.56	No Sig. difference
Champ Spelt	5109	28.70	40 lb lower not sig.
Sindelar Light Spelt	5093	31.04	No Sig. difference
Sindlear Dark Spelt	5097	31.64	40 lbs lower not sig.
Sindlear Mix Spelt	5035	33.47	No Sig. difference
Willie Spelt	4897	30.09	No Sig. difference
SP 949 Spelt	4927	30.96	40 lb lower not sig.
Schylar Winter Barley	4148	45.51	No Sig. difference
Kamiak Winter Barley	2310	46.05	No Sig. difference

* Yield given in table is averaged over all seeding rates.