PROJECT TITLE: A comparison of winter spelt, hard red winter wheat, and winter barley, to: spring oats, barley, and triticale.

PROJECT LEADER: G.F. Stallknecht

PROJECT PERSONNEL: Ken Gilbertson, John Ranney Yellowstone Co. Agent, and Dover Sindelar, grower.

PROJECT LOCATION: Sindelar Ranch, Billings, MT, SARC Huntley, MT

OBJECTIVES: To compare the yield and quality of winter spelt to spring oats, with hard red winter wheat, winter and spring barley, and spring triticale as comparison checks.

RESULTS: Yield and quality results of the winter cereal crops are described in Table 1. The 1992 growing season precipitation was above average, thus the cereal crop yields were above average.

The 1992 yield of 3851 lbs of Tiber winter wheat represents a yield of 64 bushels/acre, while the normal average would range from 30 to 40 bushels/acre. In 1991 several spelt cultivars produced higher yields than Tiber winter wheat which yielded 39 bushels/acre. However in 1992 Tiber winter wheat significantly out yielded the spelt cultivars.

Winter barley yields were significantly lower than spelt or winter wheat in both the 1991 and 1992 seasons.

When winter spelt was compared to spring oats, spelt significantly out yielded oats in 1991, whereas in 1992 oats produced a slightly higher, but non-significant, yield in comparison to spelt. Test weights of the spelt cultivars were lower than that of oats in both 1991, and 1992, however lower test weights of spelt are expected due to the large amount of hull which covers the spelt kernel.

The comparison of winter spelt to spring barley yields are similar to the spelt/oats comparisons. In 1991 barley yields were 46 bushels/acre, a normal average yield for this cropping area. The results of the 1991 data showed winter spelt to out yield spring barley. However in 1992, an above normal moisture year, barley yields were 81 bushels/acre dryland, the barley significantly out yielded spelt.

Spring triticale yields in both 1991 and 1992 were lower than oats or barley. This may be due to the triticale variety used in the study.

SUMMARY: The 1992 data presented in this report show that when growing precipitation is well above normal, oats and barley

varieties grown in Montana will out yield the Montana spelt cultivar. However during years of normal or below normal growing season moisture levels, spelt will out yield both oats and barley on a pound per acre basis. Thus there appears to be advantages to produce a winter spelt over spring oats, if the producer intends to utilize his crop for feed. As yet there is not a readily available market for spelt, with the exception of organic production for human food uses.

FUTURE PLANS: The winter cereal vs spring cereal crop comparison will continue for three years for evaluation of yield and quality. During the next three years, we will expand the quality study to include feed values such as total digestible materials, neutral and acid detergent fiber values, and total available protein.

TABLE 7 . 1992 DRYLAND OFF STATION WINTER COMPARISON TRIAL, SINDELAR FARMS, SARC, HUNTLEY .

VARIETY	YIELD LBS/A	TEST WT LB/BU	PLANTHT INCHES	HEAD DATE	% PLUMP	% THIN
TIBER WINTER WHEAT	3851.12	62.43	33.67	147.00	.00	.00
CHAMP SPELTZ	3501.44	29.70	42.00	152.00	.00	.00
SINDELAR LIGHT SPELT	3152.56	30.37	37.33	154.00	.00	.00
SINDELAR MIX SPELTZ	3122.86	31.73	36.33	157.67	.00	.00
SP 949 SPELTZ *	3080.40	31.77	37.33	154.00	.00	.00
SINDELAR DARK SPELTZ	2879.58	30.73	37.33	153.67	.00	.00
WILLIE SPELTZ	2556.60	27.57	37.67	152.67	.00	.00
SCHUYLER BARLEY	2485.33	48.80	25.33	146.00	53.60	9.53
KAMIAK BARLEY	2239.39	49.77	32.00	138.33	54.67	10.70
FB77796 BARLEY	2166.02	49.10	26.33	137.33	64.00	5.10

* Smut, first rep

***** STATISTICAL TABLE *****

EXPERIMENTAL MEANS	2903.53	39.20	34.53	149.27	17.23	2.53
TOTAL OBSERVATIONS	30.00	30.00	30.00	30.00	30.00	30.00
NO. OF REPLICATIONS	3.00	3.00	3.00	3.00	3.00	3.00
NO. OF VARIETIES	10.00	10.00	10.00	10.00	10.00	10.00
C.V. 1: (S/MEAN)*100	11.11	4.62	5.94	1.24	22.78	73.81
C.V. 2: (S OF MEAN/MEAN)*100	6.41	2.66	3.43	.72	13.15	42.62
LSD (0.05)	553.27	3.10	3.52	3.19	6.73	3.21

Date Planted: 9-30-91 SIND92WC.WCD
Date Harvested: 7-08-92 (Barley) 92WINTER.STT
Date Other plots Harvested: 7-20-92

TABLE 2 . 1992 DRYLAND OFF STATION SPRING COMPARISON TRIAL, SINDELAR FARMS, SARC, HUNTLEY, MT.

VARIETY	YIELD LBS/A	TEST WT LB/BU	PLANTHT INCHES	HEAD DATE	% PLUMP	% THIN
STEPTOE BARLEY	4027.01	44.43	28.00	148.67	91.87	1.93
GALLATIN BARLEY	3907.68	51.37	27.00	150.33	92.80	1.60
BOWMAN BARLEY	3712.33	50.67	29.67	148.67	98.83	.27
CLARK BARLEY	3609.64	49.90	24.00	152.00	89.53	1.63
MONIDA OATS	3565.25	39.80	32.67	159.33	.00	.00
OTANA OATS	3408.27	38.73	36.33	160.00	.00	.00
SHONKIN BARLEY	3299.39	52.83	27.33	155.00	42.70	20.27
WAXBAR BARLEY	3175.26	54.70	25.33	156.00	50.07	15.43
WAPITI TRITICALE	2831.81	49.47	40.00	149.33	.00	.00
KARL TRITICALE	2824.95	50.73	24.67	148.33	.00	.00

***** STATISTICAL TABLE *****

EXPERIMENTAL MEANS	3436.16	48.26	29.50	152.77	46.58	4.11
TOTAL OBSERVATIONS	30.00	30.00	30.00	30.00	30.00	30.00
NO. OF REPLICATIONS	3.00	3.00	3.00	3.00	3.00	3.00
NO. OF VARIETIES	10.00	10.00	10.00	10.00	10.00	10.00
C.V. 1: (S/MEAN)*100	8.56	3.21	9.97	.47	4.54	33.27
C.V. 2: (S OF MEAN/MEAN)*100	4.94	1.85	5.76	.27	2.62	19.21
LSD (0.05)	504.63	2.66	5.05	1.22	3.63	2.35

Date Planted: 3-12-92 92SPSIND.SGD
Date Harvested: 7-20-92 92SPRING.STT