PROJECT TITLE: Evaluation of winter triticale lines for grain yield and adaptation to dryland cropping in Montana.

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OBJECTIVES:
To identify winter triticale selections which exhibit high yield, quality and winter hardiness when grown in environments and cropping methods representative of Montana. To develop a winter feed grain adapted to livestock production areas in eastern Montana because seeding spring grains conflicts with calving and lambing.

RESULTS:
Germplasm for the nurseries originated from Mathias Kolding's breeding program and/or Phil Bruckner. The Moccasin location had one trial planted on no-till re-crop following barley and one trial on tilled black fallow. Sidney, Huntley and Bozeman trial were all planted on fallow ground. Multi-location yield, test weight and protein data is presented in Table 1.

Moccasin Fallow yields ranged from 3100 to 4500 lbs/a with the average equal to 3850 lbs/a. All but one triticale variety yielded more than Tiber, the winter wheat check. Ugo was the highest yielding variety. Test weights were normal, based on 50 lbs/bu as the standard test weight. Winter survival was excellent, due to a mild winter (data not shown). Proteins were comparable to 1998 (11%), however only one triticale line had a higher protein content than Tiber.

Moccasin Re-Crop yields averaged 2800 lbs/a and ranged from 1750 to 3850 lbs/a. All but one triticale variety yielded more than Tiber, however Tiber did have the highest protein value in the trial. Test weights were above average. Proteins were comparable to 1998 values (11%).

Sidney yields ranged from 3500 to 5400 lbs/a and averaged 4400 lbs/a. All the triticale lines in the trial yielded more than Tiber, by 300 lbs/a. Test weights were well above average at 55 lbs/bu. Proteins were average (11%).

Huntley yields averaged 3800 lbs/a and ranged from 2600 to 4650 lbs/a. Test weights were above average (54 lbs/bu). The average protein value of the trial was 15.7%. Interestingly, the average protein value for the top four yielding varieties is 14.6% and the average protein value for the lowest four yielding varieties is 16.8%.

Bozeman yields ranged from 5600 to 8440 lbs/a and averaged 6900 lbs/a. Test weights were above average (53 lbs/bu). Sixty-three percent of the varieties/lines headed earlier than Tiber and the top 50% yielding varieties/lines headed, on average, 7.2 days earlier than the bottom 50% (data not shown). Proteins averaged 13%.

SUMMARY:
Bozeman was the highest yielding location, followed by Sidney, Moccasin fallow, Huntley and Moccasin re-crop. Ugo was among the top five yielding lines at all locations. Experimental line 92E005 and RAH371-F93 performed well at four of five locations. Test weights were normal to above normal at all locations. Huntley and Bozeman had the highest proteins of all locations.

FUTURE PLANS:
The statewide triticale trial will continue in 2000 at Bozeman, Huntley, Winifred, Sheridan, WY and a fallow and re-crop location in Moccasin.

Table 1. 1999 Statewide Triticale Trial Multi-Location Yield, Test Weight and Protein Comparisons - Exp. SWTR99. Trials were located at Moccasin (re-crop and fallow), Sidney, Huntley and Bozeman. Central Agricultural Research Center.

Cultivar/Line	Yield (lbs/a)						Test Weight (lbs/bu)						Protein (%)					
	McF 1/	McR 2/	Sid 1/	Hunt 1/	Bzn 1/	Avg	McF 1/	McR 2/	Sid 1/	Hunt 1/	Bzn 1/	Avg	McF 1/	McR 2/	Sid 1/	Hunt 1/	Bzn 1/	Avg
UGO	4507	3353	4714	4655	7660	**4978**	47.4	52.5	55.2	51.7	49.8	**51.3**	9.7	10.2	10.1	14.2	11.9	**11.2**
92E005	4253	2801	4731	4298	8224	**4861**	50.3	53.9	58.0	53.6	55.3	**54.2**	10.2	11.2	10.8	15.2	13.8	**12.2**
RAH173-F93	3999	3126	4225	4057	8440	**4769**	49.9	54.4	56.5	52.7	52.7	**53.2**	10.4	10.8	10.8	15.2	12.0	**11.9**
RAH371-F93	3819	2865	4691	4349	7916	**4728**	49.1	53.1	56.7	51.8	52.2	**52.6**	10.0	10.9	10.0	15.2	12.8	**11.8**
KT941776-5002	4299	3835	4620	3783	6788	**4665**	51.0	55.1	57.3	54.2	54.5	**54.4**	9.8	10.5	9.9	17.1	12.3	**11.9**
KT941864-5002	4372	3323	5398	3877	6222	**4639**	49.8	53.9	58.0	54.0	53.8	**53.9**	9.8	12.0	9.8	15.7	14.1	**12.3**
ALMO	4043	2588	4868	4355	7168	**4604**	48.2	53.5	55.3	52.1	52.2	**52.3**	10.6	11.7	12.9	14.6	13.3	**12.6**
91T113-C12-5	3839	2583	3942	4510	7862	**4547**	51.8	46.1	59.2	56.7	56.3	**54.0**	11.3	10.4	10.7	14.2	12.8	**11.9**
KT941289	4316	2263	4201	3979	7366	**4425**	50.1	56.3	57.5	54.9	54.0	**54.6**	10.5	11.3	10.8	15.8	13.8	**12.4**
B0010	3851	2987	4628	3671	6174	**4262**	46.5	50.9	49.2	50.7	49.7	**49.4**	10.3	7.5	10.3	15.7	13.5	**11.5**
SR94719	3545	2916	4573	3107	6034	**4035**	45.3	50.2	49.2	52.8	49.4	**49.4**	10.8	11.5	10.4	16.5	13.5	**12.6**
SR94717	3487	3363	3832	3082	5780	**3909**	48.8	51.2	49.3	53.3	51.9	**50.9**	11.4	11.4	10.4	17.3	12.3	**12.6**
SR94721	3431	2487	4213	3152	6012	**3859**	48.0	50.5	51.8	54.5	51.7	**51.3**	10.8	12.3	10.2	16.0	12.7	**12.4**
KT943322-6003	3070	1731	3867	3498	7128	**3859**	50.7	53.7	55.3	54.9	54.3	**53.8**	12.2	11.8	11.4	15.1	13.8	**12.8**
TIBER	3394	2184	3517	4131	5878	**3821**	57.2	48.9	62.2	62.5	61.7	**58.5**	11.5	9.4	13.0	15.7	13.9	**12.7**
SR94710	3464	2809	4439	2625	5602	**3788**	49.6	51.2	49.3	53.6	50.3	**50.8**	11.3	11.7	12.2	17.3	12.7	**13.0**
Site Mean	**3856**	**2826**	**4404**	**3821**	**6891**	**4359**	**49.6**	**52.2**	**55.0**	**54.0**	**53.1**	**52.8**	**10.7**	**10.9**	**10.9**	**15.7**	**13.1**	**12.2**

1/ Fallow.
2/ No-till Re-crop (previous crop = barley).
3/ Tiber is used as a hard red winter wheat check.