

**PROJECT TITLE:** Evaluation of the regional durum yield trial – 2012(4W4145)

**PROJECT LEADER:**

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**PERSONNEL:**

Dr. J. Ohm, North Dakota State University  
Dr. E.M. Elias, North Dakota State University

**Objectives:** To evaluate new and introduced lines and cultivars of spring wheat and durum developed by Universities, the USDA-ARS, and private seed companies, and to determine adaptability of those lines and varieties to conditions in eastern Montana.

**METHODS:**

Soil type: Williams clay loam  
Previous crops: 2011- fallow, 2010 – safflower, 2009- small grain plots  
Residual soil N to 3 ft: 66 lb N/ac  
Residual soil P to 6 in: 34 ppm  
Applied fertilizer: 40 lb N/ac as liquid 28-0-0  
Herbicides: Brox M, 2 pt/ac applied May 12  
Precipitation April – August, 2012: 7.78 in  
Ave (63 yr) precipitation April – August: 9.53 in  
Precipitation September 2011 – August 2012: 9.76 in  
Ave (63 yr) precipitation September – August: 13.99 in  
Conditions were dry at planting, and it was generally a hot, dry summer. Rain was timely.

Nursery	Planting date	Harvest date
Uniform regional durum trial	April 16	August 7

**RESULTS:**

**Uniform Regional Durum trial:** The Uniform Regional Durum trial is conducted in cooperation with Dr. E.M. Elias, North Dakota State University, Fargo. Dr. J. Ohm of North Dakota State University, Fargo, tests quality of each line and variety. Thirty-two experimental lines and varieties were tested under dryland fallow conditions (Table 1). One experimental line yielded significantly more than the check variety, Mountrail. Five-year summaries for yield, test weight, and protein are shown in Tables 2-4.

**SUMMARY:** The experiments reported under this project are all of the replicated small plot type. The uniform regional yield trials are conducted at many sites in several states across the western USA, and have been in place since the 1930's. These trials provide important information about experimental lines from state breeding programs, private companies, and the USDA-ARS breeding programs. New varieties are released based on data from these trials.

**FUNDING SUMMARY:** Expenditure information to be provided by OSP. No other grants support this project.

**MWBC FY2012 GRANT SUBMISSION PLANS:** It is planned to submit this project for funding consideration in the next fiscal year.

Table 1. Agronomic data obtained from a Uniform Regional durum yield trial grown under dryland fallow conditions at the Eastern Agricultural Research Center, Sidney, MT

entry	heading*	height, cm	grain protein, %	test wt, lb/bu	yield, bu/ac	
D07726	63.7	78.0	12.92	57.5	43.1	a
D071016	64.0	79.7	13.13	59.0	41.9	
D06886	63.7	79.7	13.05	59.5	41.2	
D06932	64.0	80.7	12.07	60.0	40.5	
D07942	65.0	81.7	13.33	60.0	40.4	
Tioga	63.7	78.3	13.08	58.5	40.4	
D04581	63.7	82.0	11.02	59.5	40.1	
D071660	64.0	84.0	13.23	58.5	39.8	
D03708	63.7	81.0	17.03	58.0	39.8	
D06855	64.3	85.7	11.65	60.0	39.6	
D04586	64.3	78.7	14.21	57.0	39.4	
D06707	64.0	78.3	15.56	59.5	39.2	
D06587	64.7	79.0	14.11	58.5	38.9	
D03028	65.0	77.3	14.68	58.0	38.9	
D071023	64.7	80.3	16.54	58.5	38.8	
D07667	64.0	77.7	11.78	58.5	38.7	
D07892	64.7	80.0	14.89	58.0	37.8	
D07594	64.7	81.0	12.47	59.5	37.8	
D071579	64.3	82.3	14.11	61.0	37.5	
Alkabo	65.0	77.7	12.28	59.5	37.2	
D07604	63.0	81.3	13.78	58.0	36.9	
D07791	65.0	79.3	13.05	58.5	36.6	
Mountrail	63.7	81.3	13.75	59.5	36.6	
D071327	64.3	82.3	11.98	60.0	36.4	
D07574	63.3	81.3	15.07	59.0	36.4	
D06931	64.7	82.7	17.03	58.0	36.3	
D071022	64.0	81.3	13.34	59.0	35.8	
Divide	65.7	79.3	12.75	59.5	35.4	
D06710	64.7	79.3	14.09	57.0	35.2	
Grenora	64.7	81.3	14.21	57.0	35.2	
D07576	64.3	78.7	13.34	60.0	34.4	
D041708(+)	63.7	81.0	16.42	59.0	34.2	
average	64.3	80.4	13.75	58.8	38.2	
probability	0.991	0.715			0.260	
CV (S/MEAN)	2.3	4.5			9.3	
CV						
(SE/MEAN)%	1.3	2.6			5.4	
LSD (0.05)	2.4	6.0			5.8	

\*days from planting

a indicates significantly greater yield than check variety, Mountrail, at probability <0.05

Table 2. Relative yields of durum varieties in bu/ac as compared to Mountrail when grown in the Uniform Regional Durum trial under dryland fallow conditions at the EARC, Sidney, MT.

Cultivar	2008	2009	2010	2011	2012	Ave	as % of Mountrail
Tioga	32.6	31.8	53.4	29.7	40.4	37.6	107.7
Divide	32.0	32.5	57.7	28.8	35.4	37.3	106.9
Alkabo	33.3	30.7	55.1	20.9	37.2	35.4	101.6
Mountrail	30.6	30.4	53.9	22.9	36.6	34.9	100.0
Carpio	26.9	28.5	55.4	22.5	38.9	34.4	98.7
Grenora	31.6	25.7	58.0	20.5	35.2	34.2	98.1

NOTE: Average yields in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 3. Relative test weights of durum varieties in lb/bu as compared to Mountrail when grown in the Uniform Regional Durum trial under dryland fallow conditions at the EARC, Sidney, MT.

Cultivar	2008	2009	2010	2011	2012	Ave	as % of Mountrail
Divide	59.2	62.2	61.0	61.5	59.5	60.7	101.2
Alkabo	59.2	62.5	60.5	61.5	59.5	60.6	101.2
Carpio	58.0	61.8	61.5	61.5	58.0	60.2	100.4
Mountrail	57.5	61.7	60.5	60.5	59.5	59.9	100.0
Grenora	58.5	61.5	60.5	61.0	57.0	59.7	99.6
Tioga	59.0	62.7	60.5	6.0	58.5	49.3	82.3

NOTE: Average test weights in this summary should not be compared to each other since they are not grown in the same years. Compare test weights only to the check variety.

Table 4. Relative protein contents of durum varieties in percent as compared to Mountrail when grown in the Uniform Regional Durum trial under dryland fallow conditions at the EARC, Sidney, MT.

Cultivar	2008	2009	2010	2011	2012	Ave	as % of Mountrail
Mountrail	15.0	14.5	12.0	13.9	13.8	13.8	100.0
Grenora	14.3	14.9	12.2	13.4	14.2	13.8	99.7
Tioga	14.6	14.5	12.4	13.3	13.1	13.6	98.1
Carpio	15.4	13.5	11.0	13.2	14.7	13.6	98.0
Alkabo	14.4	13.8	12.8	14.4	12.3	13.5	97.8
Divide	14.1	14.4	11.6	13.7	12.8	13.3	96.2

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare only to the check variety.