

PROJECT TITLE: Evaluation of the regional durum yield trial under dryland conditions – 2014 (4W4640)

PROJECT LEADER:

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PERSONNEL:

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

Objectives: To evaluate new and introduced lines and cultivars 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: 2013 - fallow, 2012 – safflower, 2011 – small grain plots
Residual soil N to 3 ft: 46 lb N/ac
Residual soil P to 6 in: 30 ppm
Applied fertilizer: 50 lb N/ac as granular 34-0-0
Herbicides: Full Deck 16 oz/ac and Axial 16 oz/ac, applied Jun 10

Precipitation April – August, 2014: 10.57 in
Ave (65 yr) precipitation April – August: 9.67 in
Precipitation September 2013 – August 2014: 13.59 in
Ave (65 yr) precipitation September – August: 14.11 in

Comments:

Conditions were wet at planting. May and August had much above average rainfall.

RESULTS:

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. Results are shown in Table 1. Five-year summaries of 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 durum trials is conducted at many sites in several states across the western USA. 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 FY2014 GRANT SUBMISSION PLANS: It is planned to submit this project for funding consideration in the next fiscal year.

Table 1. Agronomic data 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	
D09555	63.7	84.0	9.84	62.5	46.2	
D07892	64.7	84.7	9.43	62.0	45.5	
D101132	63.7	86.3	9.91	61.0	45.4	
D09970	63.3	86.3	10.11	62.0	44.8	
Mountrail	63.3	80.3	11.56	59.5	44.7	
Tioga	63.3	87.7	10.21	62.0	44.5	
D101049	63.7	84.0	10.50	62.5	44.0	
D101871	63.0	90.0	11.86	59.0	44.0	
Alkabo	64.0	80.7	10.60	61.0	43.7	
D08900	62.7	85.0	11.00	61.0	43.4	
D071022	64.3	85.0	11.28	60.0	43.2	
Divide	64.3	84.0	8.97	60.5	43.0	
D101205	64.7	84.3	10.13	63.0	43.0	
D101076	61.0	85.0	10.01	61.5	42.7	
D101073	64.3	85.7	9.14	62.5	42.6	
D101650	63.7	84.0	10.21	62.5	42.5	
D06707	63.7	83.0	10.32	63.0	42.3	
D09690	64.3	90.3	9.54	61.0	42.2	
D10582	64.7	88.0	9.15	61.0	41.7	
D101558	63.3	84.3	9.35	61.0	41.7	
D09557	63.7	85.7	10.60	61.0	41.7	
D10581	63.3	87.7	10.10	60.5	41.6	
Joppa	63.7	84.0	8.96	61.0	41.2	
D06855	63.7	82.7	11.00	60.0	41.0	
D101795	64.3	90.3	9.83	62.0	40.7	
D101537	62.0	85.7	10.99	60.5	40.5	x
D071016	64.0	79.3	9.43	59.5	39.9	x
D10844	63.3	90.0	10.59	60.5	39.8	x
Carpio	64.3	82.3	9.53	61.0	39.7	x
D07726	63.3	82.3	11.18	60.5	39.2	x
D101786	64.7	92.7	12.47	60.0	38.7	x
Strongfield	63.0	81.7	10.32	61.5	38.3	x
average	63.7	85.2	10.25	61.1	42.3	
probability	<0.001	<0.001			0.008	
CV (S/MEAN)	1.3	3.4			5.9	
CV (SE/MEAN)	0.7	1.9			3.4	
LSD (0.05)	1.3	4.7			4.1	

*days from planting

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	2009	2010	2011	2012	2014	Ave	as % of Mountrail
Tioga	31.8	53.4	29.7	40.4	44.5	40.0	106.0
Divide	32.5	57.7	28.8	35.4	43.0	39.5	104.7
Mountrail	30.4	53.9	22.9	36.6	44.7	37.7	100.0
Alkabo	30.7	55.1	20.9	37.2	43.7	37.5	99.5
Carpio	28.5	55.4	22.5	38.9	39.7	37.0	98.1
Joppa	25.7	50.6	25.9	40.1	41.2	36.7	97.3
Strongfield	--	--	--	--	38.3	38.3	85.7

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. Hailed out in 2013.

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	2009	2010	2011	2012	2014	Ave	as % of Mountrail
Strongfield	--	--	--	--	61.5	61.5	103.4
Tioga	62.7	60.5	62.0	58.5	62.0	61.1	101.3
Alkabo	62.5	60.5	61.5	59.5	61.0	61.0	101.1
Divide	62.2	61.0	61.5	59.5	60.5	60.9	101.0
Carpio	61.8	61.5	61.5	58.0	61.0	60.8	100.7
Joppa	61.7	61.0	59.6	59.5	61.0	60.6	100.4
Mountrail	61.7	60.5	60.5	59.5	59.5	60.3	100.0

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. Hailed out in 2013.

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	2009	2010	2011	2012	2014	Ave	as % of Mountrail
Mountrail	14.5	12.0	13.9	13.8	11.6	13.2	100.0
Alkabo	13.8	12.8	14.4	12.3	10.6	12.8	97.1
Tioga	14.5	12.4	13.3	13.1	10.2	12.7	96.5
Carpio	13.5	11.0	13.2	14.7	9.5	12.4	94.1
Divide	14.4	11.6	13.7	12.8	9.0	12.3	93.5
Joppa	14.7	13.3	13.2	11.0	9.0	12.2	93.0
Strongfield	--	--	--	--	10.3	10.3	88.8

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. Hailed out in 2013.