'Lustre' Durum Wheat

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Small Grain Quick Facts - Montana Foundation Seed Program | Montana State University

Lustre is a low cadmium accumulating, full height durum wheat with good yield potential relative to commonly grown cultivars in Montana that possesses a gene for improved pasta firmness. Lustre was developed by the Montana Agriculture Experiment Station and will be released to certified seed growers in spring of 2022. Lustre is an offspring from crosses between the widely grown North Dakota State University durum varieties, Mountrail and Divide, and a selection from an EMS population that has a modified starch synthase gene and a gene for low cadmium accumulation. Lustre has improved yield potential under dryland conditions in the primary durum growing regions in Montana (Havre, Conrad, and Sidney) (Table 1). Lustre has white glumes and awns, is hollow stemmed and has a heading date one day later than Mountrail and Divide and five days later than Alzada (Table 2). Lustre's plant height is comparable to other full height durum but is 7 inches taller than Alzada (Table 2). Lustre is moderately susceptible to stripe rust at the seedling stage but displays high-temperature adult plant resistance and is resistant to the most prevalent races of stem and leaf rust in Montana (Table 2). Lustre is susceptible to Fusarium head blight and moderately resistant to fungal leaf spot complex (Table 2). Luster has good end-product quality with grain protein equal to Divide and Alzada, improved gluten strength compared to Mountrail, and semolina with a higher yellow color than both Divide and Mountrail but lower than Alzada (Table 3).

Table 1. Lustre grain yield (bu/ac) performance vs. a set of durum varieties across Montana, 2017-2019.

Variety	Bozeman Dryland	Moccasin Dryland	Sidney Dryland	Havre Dryland	Huntley Dryland	Conrad Dryland	Sidney Irrigated	Bozeman Irrigated	All Locations
Lustre	95.2	44.4	65.6	39.6	67.3	55.8	103.9	124.5	74.8
Mountrail	95.2	40.7	63.4	37.2	71.4	51.4	103.7	122.7	73.3
Divide	92.7	41.8	61.5	37.7	72.5	46.4	103.9	125.3	72.7
Tioga	92.4	38.3	63.6	39.5	67.0	47.3	102.4	124.8	72.1
Joppa	92.7	40.0	58.7	37.4	70.9	49.0	97.8	122.8	71.2
Alzada	78.4	41.1	57.5	37.2	69.1	52.5	84.9	108.4	66.0
Mean[a]	92.6	40.6	62.6	39.2	70.1	50.5	102.2	124.1	72.8
Loc-Years	3	3	3	3	2	3	3	3	23
LSD[a]	5.6	NS	NS	NS	NS	NS	NS	8.9	2.66

[a]22 entries were used for statistical analysis. A Fisher's Protected LSD is given at the 0.05 probability level, NS= non-significant.

Table 2. Lustre agronomic characteristics vs. a set of durum varieties, 2017-2019 dryland conditions.

Cultivar	Protein	Test Weight	Plant Height	Heading Date		Stripe Rust[b]	Leaf Rust	Stem Rust	Leaf Spot[c]	FHB[d]
	%[a]	lb/bu	Inches	Julian	Calendar					
Lustre	14.6	59.8	35.2	178.9	Jun 28th	S	R	R	MR	S
Mountrail	14.5	60.2	34.0	178.0	Jun 27th	S	R	R	MR	S
Divide	14.6	60.5	35.4	178.3	Jun 27th	S	R	R	MR	S
Tioga	15.0	60.3	36.5	178.2	Jun 27th	S	S	R	MR	S
Joppa	14.4	60.7	35.3	177.0	Jun 26th	S	R	R	MR	S
Alzada	14.6	60.4	28.4	174.2	Jun 23rd	S	S	R	S	S
Mean[e]	14.7	60.2	34.4	178.1	Jun 27th	-	-	-	-	-
Loc-Years	17	17	17	17	17	2	1	1	1	2
LSD[e]	0.3	0.4	0.9	0.6	-	-	-	-	-	-

[a]Measured by NIR, reported on a 12% moisture basis.

[b]Lines likely have high-temperature adult plant resistance (HTAP).

[c]Leaf spot represents natural infection by fungal pathogens causing tan spot and Septoria leaf spot in Bozeman, MT.

[d]FHB= fusarium head blight, evaluations were carried out in Sidney, MT.

[e]22 entries were used for statistical analysis. A Fisher's Protected LSD is given at the 0.05 probability level.

Table 3. Lustre end-product quality traits vs. a set of durum varieties, 2017-2019.

Cultivar	Semolina Yield	Semolina protein[a]	Semolina ash[a]	*b**[b]	Mixograph pattern	Gluten Index
	%	%	%			
Lustre	61.7	13.5	0.60	28.6	5.0	57.0
Mountrail	62.2	13.5	0.64	25.7	3.1	31.5
Divide	62.2	13.2	0.60	27.3	5.1	73.5
Tioga	62.2	13.8	0.62	29.3	6.0	80.5
Joppa	61.8	13.2	0.61	29.4	6.0	87.0
Alzada	62.1	13.3	0.67	30.8	6.8	94.5
Mean	61.2	13.5	0.62	28.3	5.2	76.7
Loc-years	23	23	23	23	23	2
LSD[c]	0.5	3.0	0.02	0.4	0.4	10.4

[a]Reported on a 14% moisture basis.

[b]CIELAB yellow color value.

[c]22 entries were used for statistical analysis. A Fisher's Protected LSD is given at the 0.05 probability level.