

'SY Clearstone 2CL' Winter Wheat

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SY Clearstone 2CL is a 2-gene CLEARFIELD hard red winter wheat developed by Montana Agricultural Experiment Station in 2012 and licensed exclusively to Syngenta Seeds. SY Clearstone 2CL wheat is very similar to Yellowstone. It is a medium maturing, medium tall, white chaffed wheat with average winter hardiness. It is a high yielding wheat (Tables 1,2) with average test weight and protein (Table 3). SY Clearstone 2CL is resistant to stripe rust and has moderate resistance to stem rust, the latter an improvement over Yellowstone. SY Clearstone 2CL is a medium PPO variety with average mill and above average bake properties (Table 4). PVP, Title V has been issued (Certificate# 201300357). Additionally, the CLEARFIELD genes are patented.

Table 1. Yield of SY Clearstone 2CL vs. a set of varieties, 2012-2018^{1/}

Variety	Districts							All Locations
	1 Kalispell	2 Bozeman	3 Huntley ^{2/}	4 Moccasin ^{3/}	5 Conrad ^{4/}	5 Havre ^{5/}	6- Sidney & Williston	
location-years	6	6	36	31	27	19	9	134
Yellowstone	111.4	99.8	72.4	59.3	75.8	57.4	59.3	70.0
Northern	113.1	97.0	72.2	58.6	73.7	57.5	55.6	69.1
SY Clearstone 2CL	113.2	97.7	70.7	59.4	73.9	56.0	52.1	68.5
Decade	50.1	81.5	69.2	56.6	69.8	52.4	53.0	62.6
LSD (0.05)	19.0	11.6	ns	ns	2.8	2.6	4.3	2.1

bold = indicates highest value w ithin a column

ns = non-significant

bold = indicates varieties w ith values equal to highest variety w ithin a column based on Fisher's Protected LSD (p =0.05)

1/ = 2012-2016, 2018 Intrastate and 2013-2018 Off Station tests

2/ includes data from Forsyth, Fort Smith, Hardin area, Hysham, Lodge Grass, Molt, Rapelje

3/ includes data from Belt, Denton, Geraldine, Highway, Winifred

4/ includes data from Choteau, The Knees, Shelby

5/ includes data from Ft. Benton, Loma, Turner

Table 2. Yield of SY Clearstone 2CL vs. a set of CLEARFIELD varieties: 2015-2018 Intrastate Tests

Variety	Districts							All Locations
	1 Kalispell	2 Bozeman	3 Huntley	4 Moccasin	5 Conrad	5 Havre ^{6/}	6- Sidney & Williston	
location-years	3	4	3	4	4	7	6	31
SY Clearstone 2CL	112.9	103.5	111.8	63.8	81.8	64.3	52.1	78.5
WB4623CLP	116.1	99.9	105.7	54.8	75.7	57.3	36.2	71.1
Brawl CL Plus	77.3	82.7	112.9	58.7	81.2	61.2	46.3	69.9
LSD (0.05)	ns	16.2	ns	5.3	ns	5.1	12.0	5.9

6/ = includes Ft. Benton

Table 3. Agronomic characteristics of SY Clearstone 2CL vs. a set of recommended varieties, 2012-2018^{1/}

Variety	Test weight lb/bu	Winter survival %	Heading date		Plant height in	Lodging %	Protein %	Saw fly cutting %	Stripe rust %	Coleoptile length in
			Julian	Calendar						
location-years	134	6	58		132	22	131	18	8	2
Decade Northern	59.6	53	159.4	8-Jun	31.3	23	12.9	28	71	3.2
SY Clearstone 2CL	59.7	41	162.6	12-Jun	31.3	22	12.9	29	22	2.5
Yellowstone	59.1	36	161.5	11-Jun	33.7	28	12.5	38	34	3.0
Yellowstone	59.5	48	161.7	11-Jun	32.9	24	12.5	35	33	2.7
LSD (0.05)	0.3	10	0.4		0.3	non-signi	0.1	7	14	0.2

^{1/} = 2012-2016, 2018 Intrastate and 2013-2018 Off Station tests

ns = non-significant

bold = indicates highest value w ithin a column

bold = indicates varieties w ith values equal to highest variety w ithin a column based on Fisher's Protected LSD (p =0.05)

Table 4. Mill and bake characteristics of SY Clearstone 2CL vs. a set of varieties, 2012-2016

Variety	PPO ^{1/}	Kernel hardness	Flour			Mixograph			Baking		
			yield %	protein %	ash %	tolerance (1-6)	mix time min	absorption %	mix time min	absorption %	volume cc
location-years	20	20	20	20	20	20	20	20	20	20	20
Decade Northern	0.285	75.7	68.6	11.5	0.42	4.6	7.9	64.9	19.2	75.3	1044
SY Clearstone 2CL	0.104	86.2	69.7	11.8	0.45	3.5	4.1	62.4	6.2	72.2	1076
Yellowstone	0.300	77.8	67.8	11.1	0.43	4.0	6.1	62.2	9.9	72.6	1038
Yellowstone	0.217	78.9	68.9	11.3	0.43	4.4	8.3	64.2	16.0	75.0	1052
LSD (0.05)	0.032	2.4	0.7	0.3	0.01	0.4	0.7	1.2	2.0	1.2	ns

bold = indicates highest value w ithin a column

ns = non-significant

bold = indicates varieties w ith values equal to highest variety w ithin a column based on Fisher's Protected LSD (p =0.05)

^{1/} low is best for noodles