

Description of CDC Kolmy spring emmer wheat.

Breeding history:

CDC CDC Kolmy (15EMMER5) was selected from the cross PI 133134/Lentz emmer made at the University of Saskatchewan in 2008. The F₁ generation was grown in a greenhouse during the winter of 2008-2009 while the F₂ to F₄ generations were advanced in bulk plots and subjected to mass selection from 2009 to 2011. A total of 718 F₅ progeny were grown in a hill field nursery in 2012. Lines (n=194) selected from the 2012 hill nursery were grown in a hill nursery for further plant type and lodging resistance in 2013. Eighty-one lines were evaluated in an unreplicated yield trial nursery in 2014. From 2015 to 2023 CDC Kolmy was grown in replicated (r=two per trial) yield trials in the Saskatoon region. Breeder seed was developed starting in the F₁₃ generation in 2020.

The parent PI 133134 is an accession obtained from the USDA gene bank. Passport information indicates that this accession was collected in Peru in 1939. PI 133134 was evaluated at Saskatoon in 2007 and 2008 and was less prone to lodging than Vernal emmer. Lentz emmer is a variety grown in the state of Washington.

Cultivar attributes:

Data averaged over 22 field trials is presented in Table 1. The data was obtained from trials which were statistically sound (CV < 10%). The emmer grain yields presented in Table 1 are with the hull attached to the grain. On average, the hull content of emmer is in the 25 to 30% range. Thus, the naked grain yield of emmer is approximately 20% lower than that of CWRS and CWAD wheat.

CDC Kolmy was selected on the basis of a higher grain yield (+5%) relative to Vernal combined with earlier heading (-2.5 days), shorter straw (-8.5 cm) and improved lodging resistance relative to the other two emmer checks in the trial (CDC Tatra and CDC Yon) (Table 1). The primary selection criterion in developing CDC Kolmy was improved lodging resistance as emmer wheat is typically very weak strawed and can lodge as early as the heading/flowering stage. The lodging score of CDC Kolmy is intermediate between that of CWAD wheat and Vernal emmer.

The disease reaction of CDC Kolmy is similar to that of the emmer and CWAD check cultivars (Table 2).

CDC Kolmy has a quality profile similar to that of Vernal and CDC Yon (Table 3) and is more suited to producing a pilaf-type product or other non-baking applications such as whole grain salads.

Table 1. Agronomic data for durum and emmer wheat lines grown in field trials conducted between 2015 and 2023 in the Saskatoon region.

Name	Grain yield (kg/ha)	Days to head	Days to maturity	Height (cm)	Lodging (1to9)
Vernal	4142	59.9	91.4	96.7	5.6
Strongfield	4142	56.2	93.5	83.1	2.0
Avonlea	4045	54.4	93.9	84.5	1.8
CDC Tatra	3939	56.9	90.3	88.5	6.4
CDC Yon	4503	58.5	90.3	91.1	4.9
CDC Kolmy	4350	57.3	90.7	88.2	3.7
# of trials	22	19	22	20	20

Table 2. Disease reaction of durum and emmer wheat lines. CDC disease nurseries (Courtesy of Dr. R. Kutcher).

Name	Leaf rust (sev)	Stem rust (rxn)	Stripe rust (sev)	Bunt (%)
Vernal	31	R-MR	9	17
Strongfield	9	R-MR	8	22
Avonlea	7	R-MR	7	22
CDC Tatra	21	R-MR	11	15
CDC Yon	19	R-MR	12	12
CDC Kolmy	22	R-MR	19	32
# of trials	7	7	7	6

Table 3. Predictive quality analyses of durum and emmer wheat lines in trials conducted between 2015 and 2023.							
	Hulled Test weight		Grain Protein	SDS sedimentation		SKCS	Mixing Tolerance Index
Name	kg/hL	1000 kwt grams	%	cc	FN sec	HI	
Vernal	51.8	35.6	16.1	12	355	82	185
Strongfield	77.5	43.4	16.0	48	336	85	78
Avonlea	77.7	44.2	16.0	36	345	84	106
CDC Tatra	50.2	37.2	16.7	53	372	75	104
CDC Yon	53.0	36.5	15.7	35	353	72	150
CDC Kolmy	52.6	37.7	15.4	20	304	82	152
# of trials	22	22	19	19	19	15	11

This document prepared by Pierre Hucl (March 2024). The Saskatchewan Agriculture Development Fund in part, provided funding for the development of this cultivar.



Figure 1. Seed sample of CDC Kolmy spring emmer wheat (Credit: Gloria Gingera, CDC University of Saskatchewan).