



APPLICATIONS UNDER EXAMINATION

OAT

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(*Avena sativa*)

Proposed denomination: 'ORE Level48'
Application number: 19-9772
Application date: 2019/04/18
Applicant: Oat Advantage, Saskatoon, Saskatchewan
Breeder: James Dyck, Oat Advantage, Saskatoon, Saskatchewan

Varieties used for comparison: 'ORE Level50', 'Leggett' and 'Summit'

Summary: *The plants of 'ORE Level48' head later than the plants of 'Summit'. At the green stage, the panicle of 'ORE Level48' is shorter than that of 'ORE Level50'. At maturity, the lower glume of 'ORE Level48' is longer than that of 'Leggett' and 'Summit'.*

Description:

PLANT: spring hulled type, erect juvenile growth habit, low frequency of plants with recurved flag leaves at booting

STEM: sparse pubescence above and below the upper culm node

LEAF: medium green, absent or very sparse to sparse pubescence of margin, weak glaucosity

PANICLE: equilateral/symmetrical orientation, medium density, semi-erect attitude of branches, 30 to 45 degree angle between dominant side branch and rachis, few short hairs or spines on lowest node

GLUME: medium glaucosity

SPIKELET: semi-abscission separation, semi-nodding, 2 to 3 grains

RACHILLA: medium length between primary and secondary floret, absent or very short length of grooves, sparse pubescence

LEMMA: medium glaucosity, medium extent of lateral overlap on palea, yellow at maturity, absent or very sparse pubescence on lateral and dorsal surface, absent or very weak tendency to be awned

KERNEL: short basal hairs present, light brown

GROAT: medium density of pubescence

SCUTELLUM: rounded tip, medium size

Origin and Breeding: 'ORE Level48' (experimental designations 309CM140 and OT6021) originated from the cross made between 'Leggett' (female parent) and 'CDC Minstrel' (male parent) at the Oat Advantage research farm near Saskatoon, Saskatchewan in the fall of 2009. The F1 was grown from January to April 2010 with the F2 grown in bulk in a population plot during the 2010 growing season. Field selection in the F2 was based on plant type, disease resistance and grain quality. The F3 was increased in the growth cabinet in the fall of 2010 as was the F4 in the winter into 2011. The F5 seed was sown at the Saskatoon site and further selected for plant type, agronomic qualities, disease resistance, yield and visual grain quality. Seed from a subset of F5 derived F6 selected plants were sent to New Zealand in the fall of 2011 for increase. In 2012, the top performing lines were tested in yield trials in western Canada. One line, OT6021, arose out of this testing and was entered into the Western Cooperative Oat Registration Trial in 2016 and 2017.

Tests and Trials: The comparative trials for 'ORE Level48' were conducted at the research plots of Oat Advantage near Saskatoon, Saskatchewan during the 2018 and 2019 growing seasons. There were 3 replicates arranged in a RCB design. Plots consisted of 6 rows, with a row length of 3 metres and row spacing of 18 cm. The planting density was 360 plants per metre square. Measured characteristics were based on 20 measurements per variety per year. Mean differences are significant at the 5% probability level based on paired Student's T-tests.

Comparison table for 'ORe Level48'

	'ORe Level48'	'ORe Level50'*	'Leggett'*	'Summit'*
<i>Days to heading (when 50% of panicles are fully emerged)</i>				
mean 2018	51	50	51	48
mean 2019	57	55	58	52
<i>Panicle length (cm)</i>				
mean 2018	11.93	12.71	11.83	11.87
std. deviation 2018	0.86	0.94	0.93	1.36
mean 2019	12.59	14.70	13.41	14.10
std. deviation 2019	1.01	1.60	0.76	1.38
<i>Lower glume length (mm)</i>				
mean 2018	21.20	23.45	18.3	17.6
std. deviation 2018	0.95	1.39	1.17	0.85
mean 2019	20.95	21.1	19.3	18.0
std. deviation 2019	1.19	1.31	1.34	1.08

*reference varieties



Oat: 'ORe Level48' (right) with reference variety 'Summit' (left)

Proposed denomination: 'ORe Level50'
Application number: 19-9773
Application date: 2019/04/18
Applicant: Oat Advantage, Saskatoon, Saskatchewan
Breeder: James Dyck, Oat Advantage, Saskatoon, Saskatchewan

Varieties used for comparison: 'ORe Level48', 'Leggett' and 'Summit'

Summary: At booting, the flag leaf of 'ORe Level50' is longer and wider than the flag leaf of 'Leggett' and wider than that of 'Summit'. The plants of 'ORe Level50' head later than the plants of 'Summit'. At the green stage, the panicle of 'ORe Level50' is longer than that of 'ORe Level48' and 'Leggett'. At maturity, the lower glume and kernel are longer for 'ORe Level50' than for 'Leggett' and 'Summit'.

Description:

PLANT: spring hulled type, erect juvenile growth habit, low frequency of plants with recurved flag leaves at booting

STEM: sparse pubescence above and below the upper culm node

LEAF: medium green, absent or very sparse to sparse pubescence of margin, weak glaucosity

PANICLE: equilateral/symmetrical orientation, medium density, semi-erect attitude of branches, 30 to 45 degree angle between dominant side branch and rachis, few short hairs or spines on lowest node

GLUME: medium glaucosity

SPIKELET: semi-abscission separation, semi-nodding, 2 to 3 grains

RACHILLA: medium length between primary and secondary floret, absent or very short length of grooves, sparse pubescence

LEMMA: medium glaucosity, medium extent of lateral overlap on palea, yellow at maturity, absent or very sparse pubescence on lateral and dorsal surface, absent or very weak tendency to be awned

KERNEL: short basal hairs present, light brown

GROAT: medium density of pubescence

SCUTELLUM: rounded tip, medium size

Origin and Breeding: ‘ORE Level50’ (experimental designations 309CM127 and OT6016) originated from the cross made between ‘Leggett’ (female parent) and ‘CDC Minstrel’ (male parent) at the Oat Advantage research farm near Saskatoon, Saskatchewan in the fall of 2009. The F1 was grown from January to April 2009 with the F2 grown in bulk in a population plot during the 2010 growing season. Field selection in the F2 was based on plant type, disease resistance and grain quality. The F3 was increased in the growth cabinet in the fall of 2010 as was the F4 in the winter into 2011. The F5 seed was sown at the Saskatoon site and further selected for plant type, agronomic qualities, disease resistance, yield and visual grain quality. Seed from a subset of F5 derived F6 selected plants were sent to New Zealand in the fall of 2011 for increase. In 2012, the top performing lines were tested in yield trials in western Canada. One line, OT6016, arose out of this testing and was entered into the Western Cooperative Oat Registration Trial in 2015 and 2016.

Tests and Trials: The comparative trials for ‘ORE Level50’ were conducted at the research plots of Oat Advantage near Saskatoon, Saskatchewan during the 2018 and 2019 growing seasons. There were 3 replicates arranged in a RCB design. Plots consisted of 6 rows, with a row length of 3 metres and row spacing of 18 cm. The planting density was 360 plants per metre square. Measured characteristics were based on 20 measurements per variety per year. Mean differences are significant at the 5% probability level based on paired Student’s T-tests.

Comparison table for ‘ORE Level50’

	‘ORE Level50’	‘ORE Level48’*	‘Leggett’*	‘Summit’*
<i>Flag leaf length (cm)</i>				
mean 2018	13.03	11.91	11.04	10.70
std. deviation 2018	2.24	2.64	2.21	1.81
mean 2019	16.49	13.54	13.38	14.51
std. deviation 2019	1.81	1.92	1.21	2.65
<i>Flag leaf width (mm)</i>				
mean 2018	8.20	7.55	7.50	6.80
std. deviation 2018	1.15	1.05	1.00	0.77
mean 2019	11.55	9.50	11.15	10.00
std. deviation 2019	0.83	1.24	1.04	1.38
<i>Days to heading (when 50% of panicles are fully emerged)</i>				
mean 2018	50	51	51	48
mean 2019	55	57	58	52
<i>Panicle length (cm)</i>				
mean 2018	12.71	11.93	11.83	11.87
std. deviation 2018	0.94	0.86	0.93	1.36
mean 2019	14.70	12.59	13.41	14.10
std. deviation 2019	1.60	1.01	0.76	1.38
<i>Lower glume length (mm)</i>				
mean 2018	23.45	21.20	18.3	17.6
std. deviation 2018	1.39	0.95	1.17	0.85
mean 2019	21.1	20.95	19.3	18.0
std. deviation 2019	1.31	1.19	1.34	1.08

Kernel length (primary grain) (mm)

mean 2018	16.50	16.40	13.55	14.60
std. deviation 2018	1.10	0.68	0.51	1.05
mean 2019	14.85	12.85	13.95	13.90
std. deviation 2019	0.93	0.99	1.50	1.07

*reference varieties



Oat: 'ORe Level50' (left) with reference variety 'Summit' (right)