CAMELINA
(Camelina sativa)

Proposed denomination: **'SES1154HR'**
Application number: 18-9663
Application date: 2018/12/17
Applicant: Smart Earth Camelina Corp., Saskatoon, Saskatchewan
Breeder: Christina Eynck, Linnaeus Plant Sciences, Saskatoon, Saskatchewan

Varieties used for comparison: 'AAC 10CS0048' and 'SES0787LS'

Summary: *At the rosette stage, the pubescence on the upper side of the leaf is absent or very sparse for 'SES1154HR' whereas the pubescence is sparse for 'SES0787LS' and of medium density for 'AAC 10CS0048'. The leaf of 'SES1154HR' is shorter and narrower than that of the reference varieties. After flowering, the natural plant height of 'SES1154HR' is taller than that of the reference varieties. The stem of 'SES1154HR' is longer than that of the reference varieties. At ground level, the main stem of 'SES1154HR' has a smaller diameter than that of 'AAC 10CS0048'. The plants of 'SES1154HR' mature later than the plants of 'AAC 10CS0048'. At maturity, the thousand seed weight for 'SES1154HR' is greater than that of 'AAC 10CS0048'. Based on the percentage of plant injury observed, 'SES1154HR' is resistant to thifensulfuron-methyl herbicide whereas 'AAC 10CS0048' and 'SES0787LS' are susceptible to thifensulfuron-methyl herbicide.*

Description:
PLANT: open pollinated spring type, natural height is medium after flowering, flowers and matures mid-season

STEM: medium length, medium length up to the first branch, branching on primary stem at the base, semi-erect branch attitude, medium thickness (diameter) at ground level, medium number of branches

LEAF: undulation of margins absent at rosette stage, absent or very sparse pubescence on upper side, medium length and width, medium length to width ratio

FLOWER: pale yellow petal
INFRUCTESCENCE (middle third at maturity): medium density of silicles
SILICLE: medium length, pyriform shape, semi-erect attitude
PEDICEL: medium length, semi-erect attitude

AGRONOMY: fair resistance to lodging

CHEMICAL REACTION: resistant to thifensulfuron-methyl herbicide

Origin and Breeding: 'SES1154HR' (experimental designation 18CS1154) was bred and developed by the breeder, C. Eynck, an employee of Linnaeus Plant Sciences Inc., now owned by Smart Earth Camelina Corp. The cross was conducted in May 2015 between the variety 'SES0787LS' and a herbicide resistant proprietary line at the Agriculture and Agri-Food Canada Research Station in Saskatoon, Saskatchewan, Canada. The resulting F1 seeds were planted in the greenhouse in August 2015. Ten F1 plants were backcrossed with 'SES0787LS'. The resultant backcrossed F1 plants (BC1F1) were sprayed with a half rate of the herbicide thifensulfuron-methyl. Four healthy plants were selected based on herbicide resistance and backcrossed to the recurrent parent 'SES0787LS'. This screening and backcrossing cycle was repeated three times in Saskatoon from 2016 to 2017. In 2017, the resulting BC4F1 plants were sprayed with a half rate of thifensulfuron-methyl and five healthy plants were selected based on herbicide resistance and allowed to self-pollinate to produce BC4F2 seed. This cycle of screening and self-pollination was repeated twice from 2017 to 2018. Eighty plants from the last herbicide treatment were selected and transplanted and self-pollinated in the greenhouse. The resultant BC4F4 seed was bulk-harvested and designated as 18CS1154. During the multiple back-crosses, seed size was also included as selection criteria.

Tests and Trials: The comparative trials for 'SES1154HR' were conducted at the Agriculture and Agri-Food Canada Saskatoon Research Farm and the Ag-Quest Research Farm in Saskatoon, Saskatchewan during the 2018 and 2019 growing

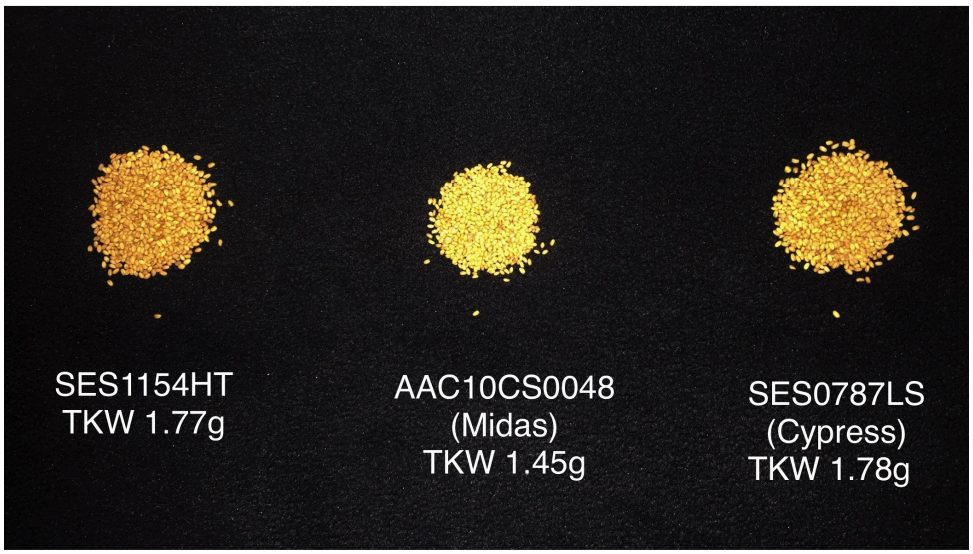
seasons, respectively. The Ag-Quest Research Farm is 21.5 km west of the Agriculture and Agri-Food Canada Research Farm. Trials were arranged in a RCB Design with 4 replications per variety including a control with two herbicide treatments. In 2018, each 7.43 metre squared plot consisted of 4 rows 6.10 metres in length with a spacing of 0.30 metres between rows whereas in 2019, each 7.32 metre squared plot consisted of 6 rows 6.10 metres in length with a spacing of 0.20 metres between rows. Measurements were taken from 60 plants or 60 parts of plants of each variety except for the thousand kernel weight where one sample was measured per replicate per variety. Mean differences were significant at the 5% probability level based on LSD values. The herbicide resistance was evaluated by spraying plants at the 4-5 leaf stage with 0, 1 and 2 times the recommended application rates for thifensulfuron-methyl (0, 6, and 12 grams active ingredient per hectare). The Canadian Weed Science Society 0-100 Rating Scale for Herbicide Efficacy and Crop Phytotoxicity Herbicide was used to assess the plant injury. The plant injury ratings were assessed visually 7 days after treatment, as a percentage of wilting and yellowing of the leaf tissue, and assessed 14 and 21 days after treatment, as a percentage of stunting of the plant height compared to the untreated control plants.

Comparison table for 'SES1154HR'

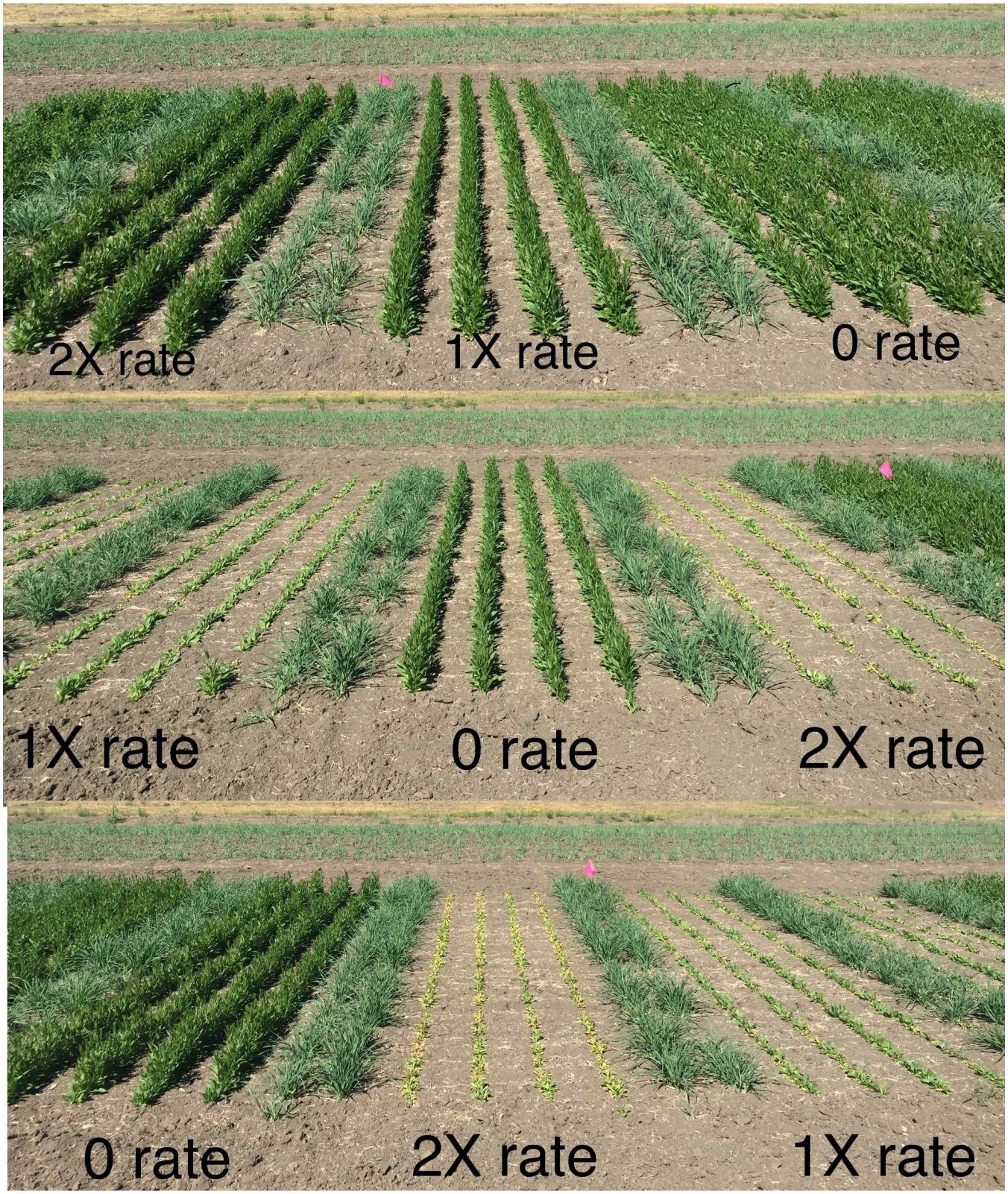
	'SES1154HR'	**'AAC 10CS0048'***	**'SES0787LS'***
Leaf length (cm)			
mean (2018) (LSD=0.36)	5.9	6.6	6.3
std. deviation (2018)	0.97	1.23	1.06
mean (2019) (LSD=0.49)	5.6	6.4	6.0
std. deviation (2019)	0.90	0.75	1.04
Leaf width (cm)			
mean (2018) (LSD=.095)	1.1	1.3	1.2
std. deviation (2018)	0.14	0.30	0.17
mean (2019) (LSD=.096)	1.1	1.3	1.2
std. deviation (2019)	0.19	0.30	0.23
Natural plant height after flowering (cm)			
mean (2018) (LSD=3.50)	69.9	65.0	64.2
std. deviation (2018)	4.71	6.27	7.55
mean (2019) (LSD=3.46)	65.8	62.1	62.5
std. deviation (2019)	7.06	6.13	4.27
Stem length (cm)			
mean (2018) (LSD=7.48)	71.4	65.7	68.3
std. deviation (2018)	5.09	6.42	5.75
mean (2019) (LSD=3.68)	71.1	65.9	66.6
std. deviation (2019)	7.81	6.65	4.62
Main stem diameter (at ground level) (mm)			
mean (2018) (LSD=0.41)	3.8	4.5	4.2
std. deviation (2018)	1.26	1.19	1.38
mean (2019) (LSD=1.34)	6.4	7.2	5.78
std. deviation (2019)	2.06	1.92	1.88
Days to maturity (days after sowing)			
mean (2018)	85	80	85
mean (2019)	116	112	116
Thousand seed weight at maturity (grams per 1000 seeds)			
mean (2018) (LSD=0.099)	1.77	1.45	1.78
std. deviation (2018)	0.07	0.03	0.03
mean (2019) (LSD=0.066)	1.93	1.34	1.95
std. deviation (2019)	0.07	0.05	0.08
Percentage of plant injury (1 x herbicide treatment application) (%)			
mean 2018 (day 7 after application)	0	85	85
mean 2018 (day 14 after application)	0	80	80
mean 2018 (day 21 after application)	0	80	80
mean 2019 (day 7 after application)	0	80	81
mean 2019 (day 14 after application)	1	90	90
mean 2019 (day 21 after application)	0	85	84

Percentage of plant injury (2 x herbicide treatment application) (%)			
mean 2018 (day 7 after application)	0.5	90	87.5
mean 2018 (day 14 after application)	0	90	90
mean 2018 (day 21 after application)	0	90	90
mean 2019 (day 7 after application)	1	83	85
mean 2019 (day 14 after application)	0	94	94
mean 2019 (day 21 after application)	0	81	80

*reference varieties



Camelina: 'SES1154HR' (left) with reference varieties 'AAC 10CS0048' (middle) and 'SES0787LS' (right)



Camelina: 'SES1154HR' (top) with reference varieties 'AAC 10CS0048' (middle) and 'SES0787LS' (bottom)