RYE
(Secale cereale)

Proposed denomination: **'Elias'**
Application number: 20-10192
Application date: 2020/05/07
Applicant: Saatzucht LFS Edelhof, Zwettl, Austria
Agent in Canada: La Coop fédérée, Saint-Hyacinthe, Quebec
Breeder: Elisabeth Zechner, Saatzucht LFS Edelhof, Zwettl, Austria

Varieties used for comparison: 'Danko' and 'Hazlet'

Summary: *The intensity anthocyanin colouration on the coleoptile of 'Elias' is strong whereas the anthocyanin colouration on the coleoptile of 'Danko' is of weak to medium intensity. At the tillering stage, 'Elias' has an intermediate to semi-prostrate growth habit whereas 'Danko' has a semi-erect to intermediate growth habit. The foliage of 'Elias' is dark green whereas it is medium green for 'Danko'. The plants of 'Elias' head earlier than the plants of 'Hazlet'. At maturity, the plants of 'Elias' are taller than the plants of 'Danko'. The spike of 'Elias' has a recurved attitude whereas the spike of 'Hazlet' has a horizontal to semi-recurved attitude and that of 'Danko' has a semi-recurved attitude. The kernel weight of 'Elias' is less than the kernel weight of 'Hazlet'.*

Description:
PLANT: winter type, diploid, intermediate to semi-prostrate growth habit at 5 to 9 tiller stage, heads early season

COLEOPTILE: strong intensity of anthocyanin colouration

STEM: dense hairiness below spike

FOLIAGE: dark green
FLAG LEAF: medium degree of glaucosity on upper third of sheath

SPIKE: medium to strong degree of glaucosity at heading, dense, recurved attitude at maturity
LEMMA AWNS: present, weak intensity of anthocyanin colouration

KERNEL: long, green to blue-green colour

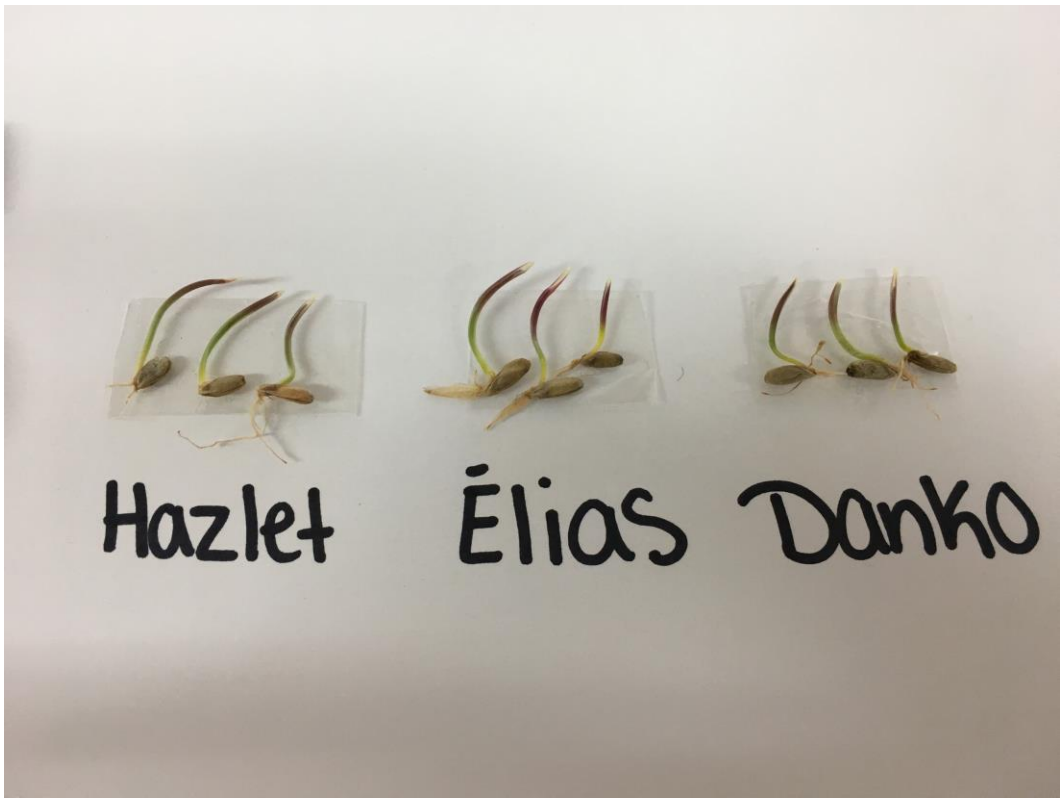
Origin and Breeding: 'Elias' (experimental designations CFSA1610 and C1M16143) originated from a controlled cross conducted in Zwettl, Austria between the varieties 'Elect' (female parent) and 'Amilo' (male parent) in 2006. The F1 to F3 generations were grown and harvested in bulk. In 2010, the first field plots testing for agronomic value began at the F4 generation when 'Elias' was identified in Zwettl, Austria. In 2010, maintenance breeding began with single plant descendants, the removal of unwanted rows before flowering and harvesting single plots. Yield tests and maintenance breeding continued on sister lines until 2012. The selection criteria included grain quality such as falling number, amylogramm and resistance to Ergot (*Claviceps purpurea*).

Tests and Trials: The comparative trials for 'Elias' were conducted in Saint-Simon, Quebec in 2020 and 2021. The trials were sown in the previous fall season and arranged in a RCB design with 4 replicates per variety. Each plot measuring 6 metre squared consisted of 7 rows, each row 5 metres long with a row spacing of 0.18 metre. The seeding density was approximately 400 seeds per square metre resulting in at least 8840 plants per variety per year. The measured characteristics were based on a 60 measurements except for the kernel weight with 20 measurements per variety each year. Mean differences were significant at the 5% probability level based on paired Student's t-test.

Comparison table for 'Elias'

	'Elias'	'Danko'*	'Hazlet'*
Number of days to heading (from planting to 50% of heads fully emerged from boot)			
mean 2020	149	150	151
mean 2021	140	139	142
Plant height (stem plus spike, including awns) (cm)			
mean 2020	124	112	125
std. deviation 2020	10.0	12.0	12.0
mean 2021	130	128	130
std. deviation 2021	1.5	1.5	1.9
Kernel weight (grams per 1000 kernels)			
mean 2020	30.2	28.0	32.5
std. deviation 2020	1.0	0.8	1.0
mean 2021	30.9	34.9	33.2
std. deviation 2021	0.5	1.1	0.9

*reference varieties



Rye: 'Elias' (centre) with reference varieties 'Hazlet' (left) and 'Danko' (right)