

## CROP DEVELOPMENT CENTRE

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**SUBJECT:** S9582 | Tall fescue (*Festuca arundinacea* Schreb.)

### VARIETAL CHARACTERISTICS

‘S9582’ is a 29-clone synthetic line selected for its improved winter hardiness and high forage yield in Canada. It showed a 6-17% higher winter survival rate compared to the check cultivar ‘Courtenay’ tall fescue. ‘S9582’ matures about 2-3 days later than the check. The membrane like ligule is slightly shorter than that of ‘Courtenay’ tall fescue. A summary of morphological data is presented in Table 1. Winter survival rate is shown in Tables 2 and 3. Forage yield data is provided in Tables 4 and 5.

**PLOIDY:** Hexaploid, 42 chromosomes

### PERFORMANCE AND ADAPTATION:

**Hay Yield:** Across 12-site-year in western Canada, the mean forage yield of S9582 was 4% greater than the check cultivar, ‘Courtenay’ (Table 4). In a multi-location trial, ‘S9582’ was the best performing cultivar at Normandin and St-Augustin, Quebec; Saskatoon and Swift Current, SK; and Millville and Panguitch, Utah (Table 5).

**Adaptation:** S9582 produced high yields in western Canada both in dryland and under irrigation. S9582 showed a broader adaptation to various climatic conditions.

**Seed Yield:** Limited data were available for seed yield. Seed yields of S9582 were similar to check cultivar ‘Courtenay’ under dry growth conditions in 2021 (Table 7).

### SEED STOCKS:

Breeder seed will be maintained by the Crop Development Center of the University of Saskatchewan. Breeder seed (110kg) was produced in 2023 and 2024.

## Brief Breeding History:

In 2009, winter-hardy tall fescue cultivars ‘Courtenay’, ‘Kokanee’ and ‘Montebello’, along with the experimental line ‘NTF02’, were established in a four replicated spaced plant nursery at Saskatoon, and evaluated for plant vigor, plant height, growth habit, freedom from disease three times in 2010 and 2011. In 2011, 29 vigorous plants were selected and poly-crossed in the greenhouse during the winter of 2011-12. The seed harvested was designated S9582. From 2015-16, a large, spaced nursery was established for S9582 to further select winter hardiness and performance. In 2016, about 95% of the plants survived the winter. Of these, approximately 15% of plants with low vigor were removed before floral development. Around 80% of the remaining plants were poly-crossed to produce 728g of seed, which was used to produce breeder seeds.

**Table 1.** Morphological characteristics of S9582 tall fescue (*Festuca arundinacea* Schreb.)

Plant Traits	Courtenay	S9582	description
Growth habit	3.0	3.0	1 = erect; 3 = erect to intermediate; 5 = intermediate; 7 = intermediate to prostrate; 9 = prostrate
Ligule (mm)	1.1	0.9	
Crownwidth (cm)	16.8	17.1	
Leaf Blade Colour	7.8	6.9	1 = light green; 7 = medium to dark green; 9 = dark green; 11 = bluish green;
Leaf Pubescence	3.0	3.0	
Stem Pubescence	3.0	3.0	3 = glabrous; 5 = slightly pubescent; 7 = moderately pubescent; 9 = strongly pubescent
Collar Shape	3.9	4.0	3 = v-shaped; 5 = closed; 7 = open
Leaf attitude	5.9	5.6	3 = erect; 5 = semi-erect; 7 = intermediate; 9 = drooping
Normal Leaf Length	151.2	150.5	
Normal Leaf Width (mm)	6.5	6.5	
Heading date	50.7	52.1	from May 1
Plant height (cm) (anthesis)	77.6	76.7	measure at anthesis
Basal Tillering (score)	3.6	3.7	3 = low; 5 = medium; 7 = high
Flag Leaf Width (mm)	4.8	4.8	
Flag Leaf Length (mm)	96.4	96.5	
Panicle shape	6.2	6.2	3 = compact; 5 = moderately open; 7 = open
Panicle color	5.2	4.8	3 = no anthocyanin; 5 = little or no anthocyanin; 7 = slightly red; 9 = red

note: Courtney is check cultivar

Values were means of 66 plants observed in 2021 and 2022

**Table 2.** Winter survival rate (%) of tall fescue plants in a spaced nursery at Swift Current, SK in 2019-2020

Cultivar	Winter survival
<b>S9582</b>	<b>84</b>
Kokanee	75
Courtney	67
Arido	41
Tower	37
Fawn	24
Cowgirl	19

**Table 3.** Winter survival rate (%) of tall fescue plants in a spaced nursery at Clavet, SK in 2020-2022

<b>S9582</b>	<b>88</b>
Courtenay	82

**Table 4.** Forage dry matter yield (kg/ha) of tall fescue S9582

		Courtnay	S9582
Saskatoon	2017	4,353	5,555
	2018	4,726	4,965
	2019	1,717	2,066
Saskaoton	2019	5,439	5,210
	2020	4,489	4,382
	2021	1,086	1,188
Melfort	2019	9,337	9,485
	2020	4,143	3,811
Clavet	2021	1,687	1,776
	2022	3,403	3,390
Lethbridge (irrigation)	2022	12,335	12,236
	2023	12,714	14,245
12-site-year		5,452	5,692
% of Courtney		100	104

**Table 5.** Mean values corresponding to across environment analysis of tall fescue cultivars evaluated at Normandin and St-Augustin, Quebec; Saskatoon and Swift Current, SK; and Millville and Panguitch, Utah from 2019 to 2021 for dry matter yield

Cultivar	Forage yield (Mg/ha)
<b>S9582</b>	<b>8.45</b>
Kokanee	6.54
Courtney	7.84
Arido	6.39
Tower	5.16
Fawn	6.35
Cowgirl	5.50

**Table 6.** Forage nutritive value (% dry matter) of tall fescue S9582

	2017			2018			2021			2022		
Cultivar	NDF	ADF	crude protein	NDF	ADF	crude protein	NDF	ADF	crude protein	NDF	ADF	crude protein
Courtenay	57.3	31.5	11.1	56.8	33.0	12.5	54.9	28.1	12.5	53.7	27.8	12.3
S9582	58.2	31.2	11.4	56.2	32.8	12.3	54.8	27.8	12.8	54.2	27.8	12.5

NDF, neutral detergent fiber, ADF, acid detergent fiber.

**Table 7.** Seed yield (kg/ha) of S9582 tall fescue at Clavet SK under drought in 2021

Cultivar	Clavet 2021
Courtenay	391
S9582	382



Breeder Seed production of tall fescue S9582 near Clavet, SK in July 2024