

Project Title: Near-isoline Gene for Tillering in Spring Wheat

Objective: To test agronomic performance of gene pairs of spring wheat genetic lines with tillering traits.

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Summary:

Six tiller near-isoline gene pairs were studied to examine the performance of genes with high tiller compared with the no tiller gene check. This study was in a randomized complete block with three replications. The six gene pairs were planted at lower and higher seeding rates (16 and 24 live seeds/ft²). Detailed management is provided in Table 1. There were no yield differences among the genetic lines regardless of seeding rates (Table 2). The plant height of entry 19 and 20 are the tallest, whereas entry 2 is the shortest regardless of seeding rates. Protein ranged 13.6% (entry 16 at 16 seeding rate) to 15.5% (entry 19 at 24 seeding rate). Both entries 1 and 2 had low test weights compared with the rest of the entries. Entries 19 and 20, showed the largest seed size, as shown in the thousand kernel weights. Falling number quality analysis were above the market critical levels and ranging from 407 (entry 16 at 16 seeding rate) to 483 (entry 2 at 16 seeding rate).

Table 1. Management Information

Seeding date:	April 21st, 2022	Field Location:	R6
Julian date:	111	Harvest date:	8/29/2022
Seeding rate:	24 seeds/ft ² & 16 seeds/ft ²	Julian date:	241
Previous crop:	Alfalfa	Soil type:	fine sandy loam
Herbicide:	Axial Bold, CleansweepM (6/1/2022)	Tillage:	conventional
Insecticide:		Soil residual nutrient (NO₃-, P, K lb/A):	78-6-122
Fungicide:		Nutrient fertilizer applied (N, P₂O₅, K₂O lb/A):	80-50-60-10s (4/6/2022)

Table 2. Agronomic Performance

Entry	Parent Material	Seed No./ft ²	YLD ¹ bu/ac	MC %	HT, in	PRO ² %	TWT ¹ , lb/bu	TKW, g	FN, sec
1	Reeder/Choteau	24	82.4	11.7	31.8	14.3	55.5	33.2	471
1	Reeder/Choteau	16	78.8	11.6	31.3	14.1	55.6	33.2	437
2	Reeder/Choteau	24	83.3	11.7	30.7	13.8	56.2	33.6	461
2	Reeder/Choteau	16	80.9	11.6	30.7	14.1	55.7	33.1	483
15	McNeal/Vida	24	81.7	12.1	38.4	13.7	60.4	34.1	411
15	McNeal/Vida	16	82.7	12.1	38.8	14.1	60.1	33.7	430
16	McNeal/Vida	24	79.9	12.1	39.1	14.0	59.6	32.6	433
16	McNeal/Vida	16	80.9	12.1	37.5	13.6	59.8	32.8	407
19	Reeder/Hank	24	76.2	12.0	46.2	15.5	60.6	42.9	446
19	Reeder/Hank	16	74.1	12.0	46.2	15.4	60.6	42.9	456
20	Reeder/Hank	24	77.3	12.0	46.7	15.1	61.3	40.2	461
20	Reeder/Hank	16	73.7	12.0	46.3	15.4	61.4	40.3	478
		Mean	79.3	11.9	38.6	14.4	58.9	36.0	447.9
		CV	5.9	0.9	3.4	3.0	1.0	4.0	5.8
		LSD	ns	0.1	1.9	0.6	1.0	2.1	37.4
		PR > F	0.0618	0.0001	0.0001	0.0001	0.0001	0.0001	0.0019

TRT: treatment, YLD: yield, HT: plant height inches, PRO: protein, MC: moisture content, TWT: test weight, TKW: thousand kernel weight, FN: falling numbers

1 adjusted to 13% moisture

2 adjusted to 12% moisture