Texas Wheat Producers Board Final Report
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Project: Evaluation of Optimum Winter Wheat Seeding Rates for the Texas High Plains

Investigators:
Dr. Jourdan M. Bell, Texas A&M AgriLife Research and Extension Service, Amarillo, (806) 677-5600, jourdan.bell@ag.tamu.edu
Dr. Kevin R. Heflin, Texas A&M AgriLife Extension Service, Amarillo, (806) 677-5600, kevin.heflin@ag.tamu.edu

Abstract: In response to producer inquiries about traditional seeding rates for TAM 114, funding was requested from TWPB to support a winter wheat seeding rate study targeting Texas High Plains growers. In addition to evaluation of TAM 114 as proposed, TAM 115 was included at select seeding rates. Vegetative development was slow at all locations due to a lack of winter precipitation, but vigor was strong at most locations.

Results: TAM 114 was seeded at 8 seeding rates, and TAM 115 was seeded at 4 seeding rates (Table 1). Because many producers still plant wheat by the pound rather than by seed number, data demonstrates a substantial difference between varieties. For small seeded varieties such as TAM 114, the use of traditional seeding rates may result in planting higher than planned seeds per acre (Table 1; Figure 1). Under adverse conditions, this may result in greater plant competition and yield reduction than if a lower seeding rate had been used. For the seed sources used, the seed size for TAM 114 was 24 grams per 1000 kernels while the seed size for TAM 115 was 35 grams per kernel. Trials were planted at six HPUVT locations representing both irrigated and dryland farms in the region: Bushland Irrigated, Bushland Dryland, Dalhart Irrigated, Dumas Irrigated, Perryton Dryland, and Groom Dryland. Dalhart data was not included due to significant water stress and variability. Winter UAV images at Bushland showed differences in plant density between seeding rates (Fig. 2). There was no significant difference between seeding rates and varieties across the averaged dryland locations as well as for each individual dryland location (Fig. 3; Table 2). Seeding rates and varieties were significant at each irrigated location. While there were no differences between seeding rates, there were differences between the varieties.

Table 1. 2019-2020 Seeding Rates for TAM 114 and TAM 115

	TAM 114	**TAM 115**
lbs./ac	**seeds/acre**	
30	577119	---
40	769492	521839
50	961864	---
60	1154237	782759
70	1346610	---
80	1538983	1043678
90	1731356	---
100	1923729	1304598

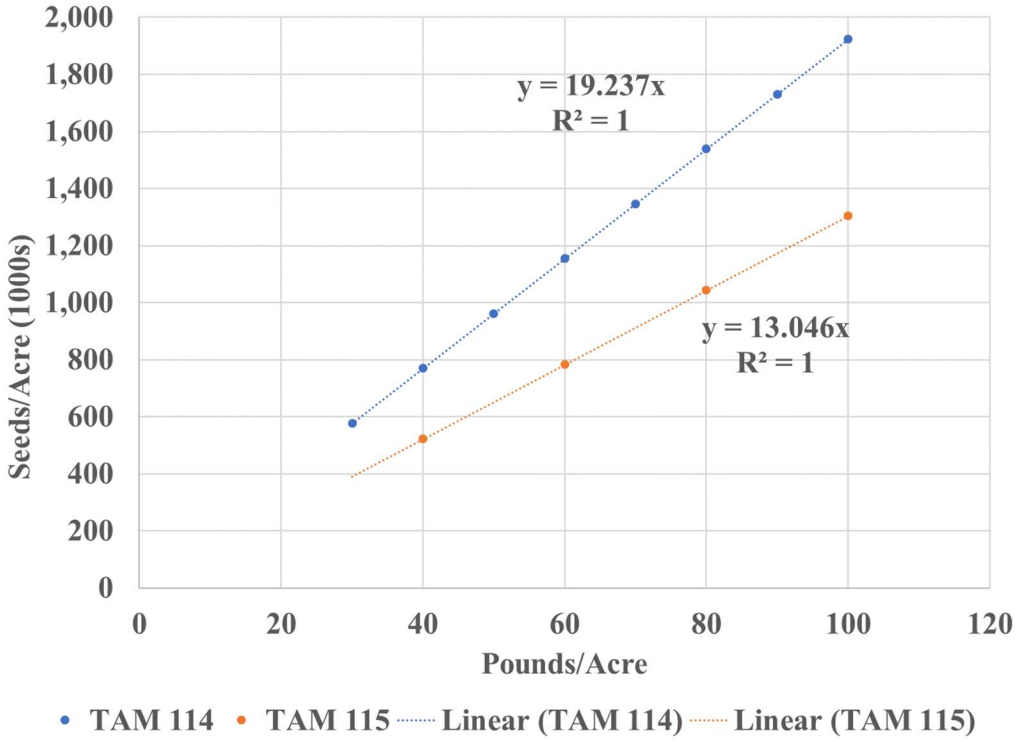

Figure 1. Comparison between TAM 114 and TAM 115 number of seeds per pound.

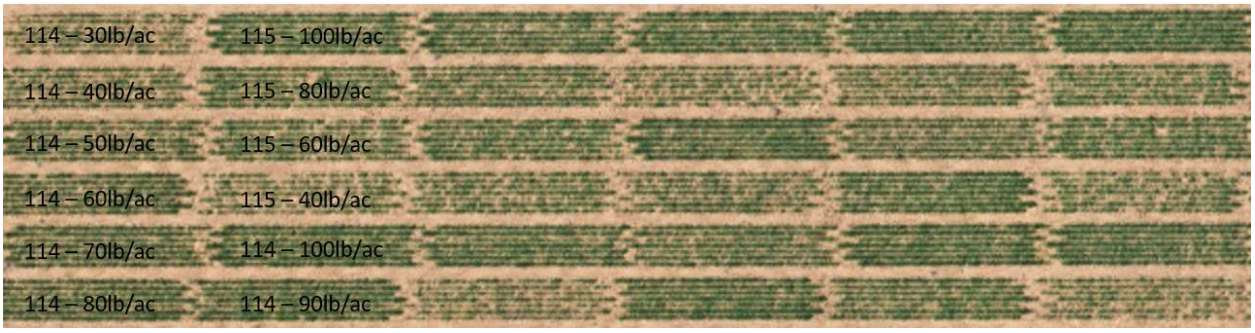

Figure 2. Bushland Dryland Seeding Rate Trial on February 24, 2020 (photos courtesy of Shannon Baker).

Producer or industry impacts: Updated information about seeding rates will assist producers with preplant decisions to optimize yields and profitability. Results will be presented at regional Extension programs as well as provided to producers through direct correspondence and AgriLife publications.

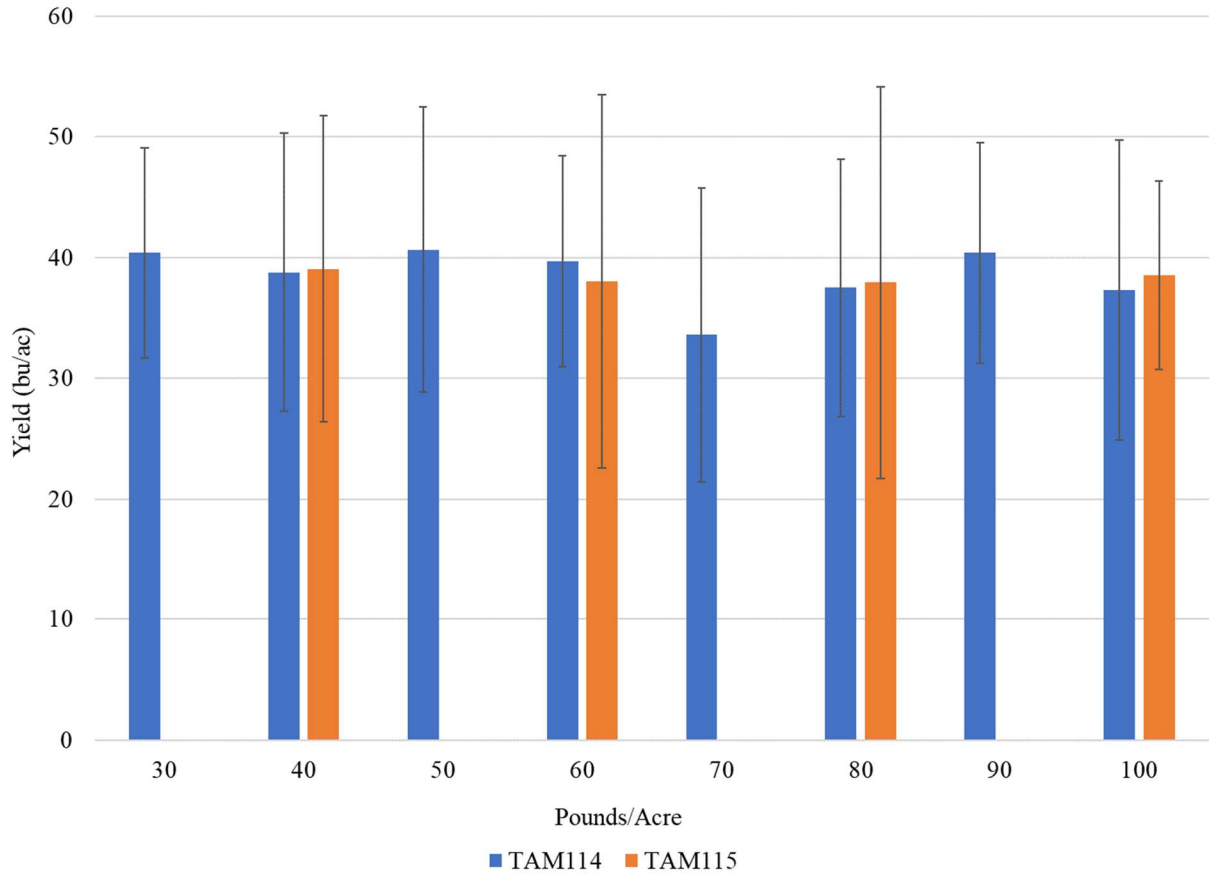

Figure 3. Average yields for 2020 dryland seeding rate trial across 3 locations (Bushland, Groom, and Perryton).

Table 2. Average yields for different seeding rates at 2020 dryland locations.

	Dryland Average		Bushland Dryland		Groom		Perryton	
Var/Rate	Grain Yield (12% Moist.)	Test Weight	Grain Yield (13% Moist.)	Test Weight	Grain Yield (13% Moist.)	Test Weight	Grain Yield (13% Moist.)	Test Weight
TAM 114-30 lbs/a	40.4	60.0	29.2	60.5	48.6	59.5	43.4	62.7
TAM 114-40 lbs/a	38.8	59.5	25.1	59.7	48.7	59.3	42.6	63.0
TAM 114-50 lbs/a	40.6	59.7	25.2	.	50.7	59.7	46.0	62.7
TAM 114-60 lbs/a	39.7	59.7	32.0	60.3	48.3	59.2	38.8	63.3
TAM 114-70 lbs/a	33.6	59.4	23.8	.	49.5	59.4	27.5	63.0
TAM 114-80 lbs/a	37.5	59.4	25.7	.	50.3	59.4	36.4	63.1
TAM 114-90 lbs/a	40.4	59.8	28.3	60.4	46.7	59.2	46.2	63.7
TAM 114-100 lbs/a	37.3	59.7	23.3	59.9	48.1	59.4	40.5	63.4
TAM 115-40 lbs/a	39.1	60.5	23.0	61.9	49.6	59.2	44.6	63.1
TAM 115-60 lbs/a	38.0	58.9	18.5	.	50.8	58.9	44.7	63.3
TAM 115-80 lbs/a	37.9	58.8	17.6	.	51.4	58.8	44.8	63.4
TAM 115-100 lbs/a	38.5	61.1	30.8	62.9	45.4	59.3	39.4	63.9
Average	38.5	59.7	25.2	60.8	49.0	59.3	41.2	63.2
p-Value	0.9909	0.9999	<0.0001	---	0.7829	0.6874	0.2499	0.1761
CV (%)	---	---	11.6	---	9.8	1.0	14.3	1.0
LSD	---	---	2.8	---	NS	NS	NS	NS

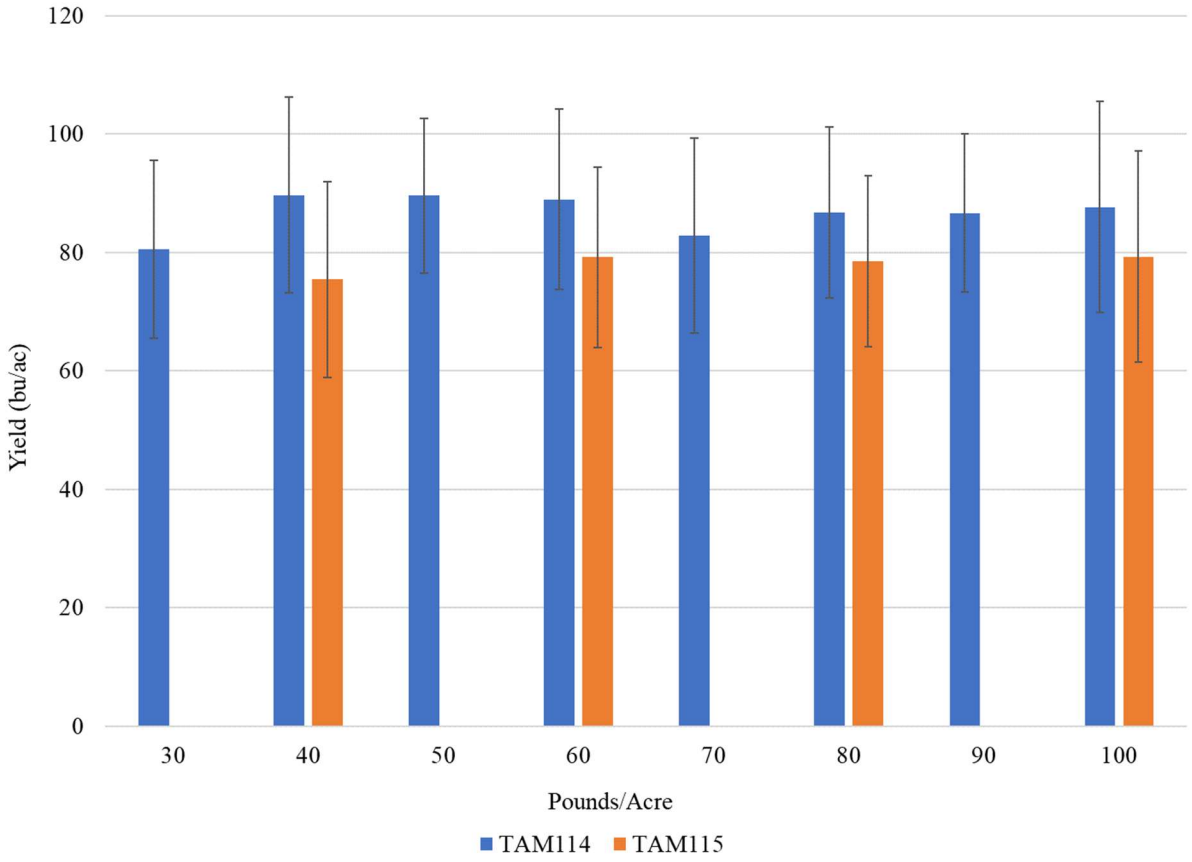

Figure 4. Average yields for 2020 irrigated seeding rate trials across 2 locations (Bushland and Dumas).

Table 3. Average yields for different seeding rates at 2020 irrigated locations.

	Dryland Average		Bushland Irrigated		Dumas	
Var/Rate	Grain Yield (13% GM)	Test Weight	Grain Yield (13% GM)	Test Weight	Grain Yield (13% GM)	Test Weight
TAM 114-30 lbs/a	80.5	61.6	68.0	63.0	93.0	60.1
TAM 114-40 lbs/a	89.7	61.7	76.0	63.4	103.3	59.9
TAM 114-50 lbs/a	89.6	61.3	79.1	63.3	100.1	59.2
TAM 114-60 lbs/a	88.9	61.7	77.7	63.6	100.1	59.9
TAM 114-70 lbs/a	82.8	61.5	69.6	64.0	96.1	59.1
TAM 114-80 lbs/a	86.7	61.7	73.9	63.9	99.5	59.6
TAM 114-90 lbs/a	86.7	61.9	77.6	64.1	95.7	59.7
TAM 114-100 lbs/a	87.6	62.0	72.0	64.1	103.3	59.8
TAM 115-40 lbs/a	75.4	61.5	73.0	63.4	77.8	59.5
TAM 115-60 lbs/a	79.2	61.5	77.6	63.8	80.8	59.1
TAM 115-80 lbs/a	78.5	61.4	83.4	64.4	73.6	58.4
TAM 115-100 lbs/a	79.3	60.9	86.0	64.6	72.5	57.2
Average	83.7	61.6	76.2	63.8	91.3	59.3
p-Value	0.5304	0.9999	0.0001	0.7709	<0.0001	0.1008
CV (%)	---	---	4.7	1.4	7.2	1.8
LSD	---	---	3.1	NS	5.6	NS

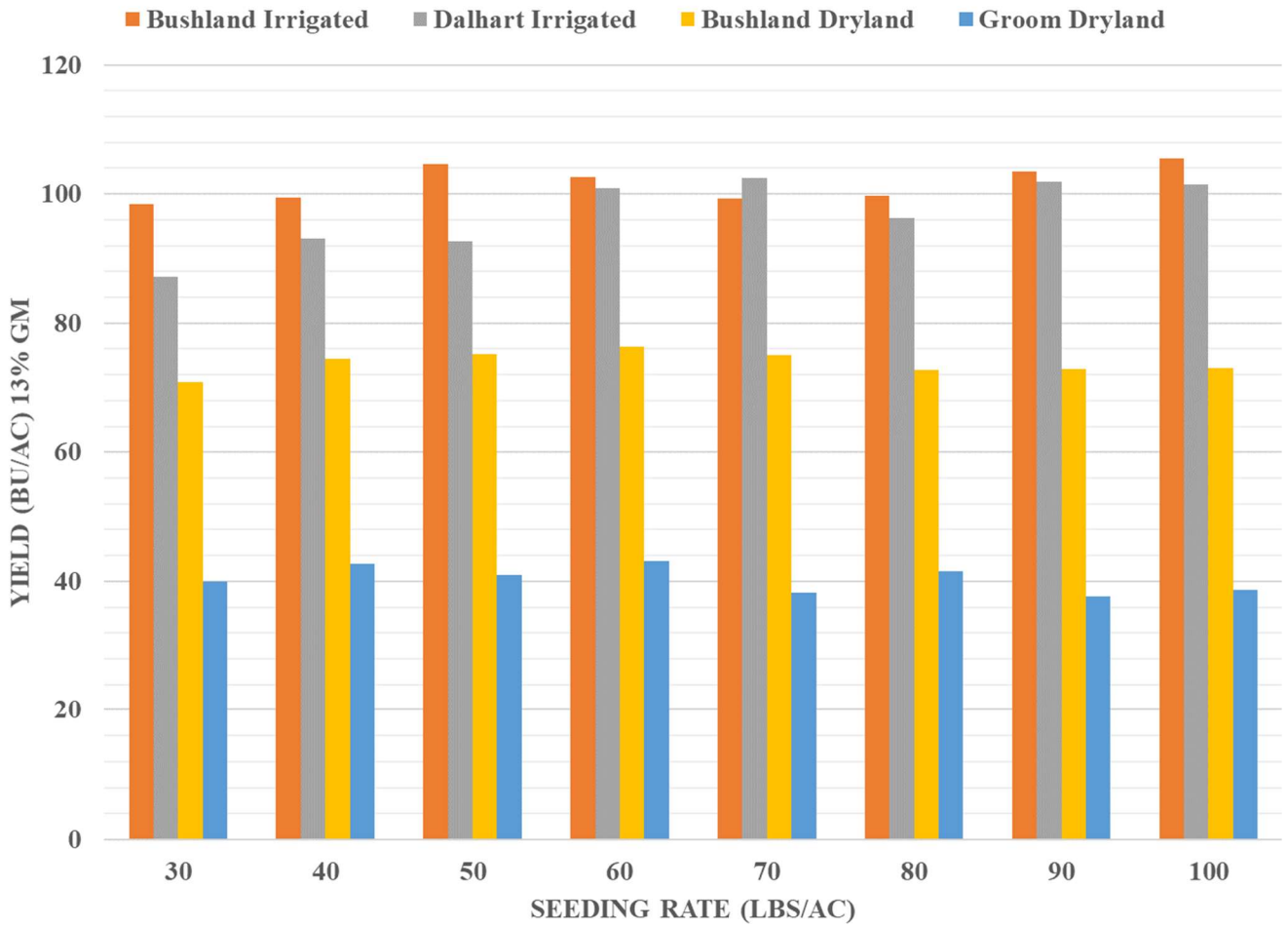

Figure 5. 2018-2019 seeding rate data.