

Project Title: Alfalfa Planting Density Trial

Objective: To evaluate alfalfa yield under different planting densities.

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Summary:

The trial was conducted under rainfed conditions on a fine sandy loam soil and received seven inches of precipitation from planting to final harvest (Table 1). Alfalfa (var. Rugged) was planted at five different seeding densities (Table 2) to assess the impact of planting density on yield and persistence.

In the 2nd year of establishment, the actual live plants/ft² increased with increased seeding up to 9 lbs/A pure live seeds (Figure 1a) and stagnated beyond 9 lbs/A. The actual stems/ft² also increased with increased seeding rate (Figure 1b). Importantly, the number of stems per plant only increased from 4 to 6 lbs/A seeding rate. Increased seeding rate beyond 6 lbs/A decreased the number of stems per plant significantly (Figure 1c). The ability of sparser plant density to produce more stems than the denser density led to the no significant forage yields among the various seeding rates (Figure 2).

Table 1. Management information

Seeding date:	5/23/19	Field:	R8
Emergence:	5/30/19	Previous crop:	Barley
Seed Treatment:	None	Harvest dates:	6/23; 8/3; 9/15
Seeding rate:	Various		
Inoculant:	PreVail (Verdesian)	Soil type:	Fine sandy loam
Herbicide:	None	Tillage:	Conventional
Insecticide:	None	Soil residual nutrient (NO ₃ ⁻¹ , P, K lb/A):	22-15-19 (2019)
Fungicide:	None	Nutrient fertilizer applied (N, P ₂ O ₅ , K ₂ O lb/A):	21-60-100-10S (2019)

Table 2. Planting density treatments

Treatment	Target planting density (plants/ft ²)	lbs/A PLS*
1	16	4
2	24	6
3	36	9
4	48	12
5	60	15

*PLS = |

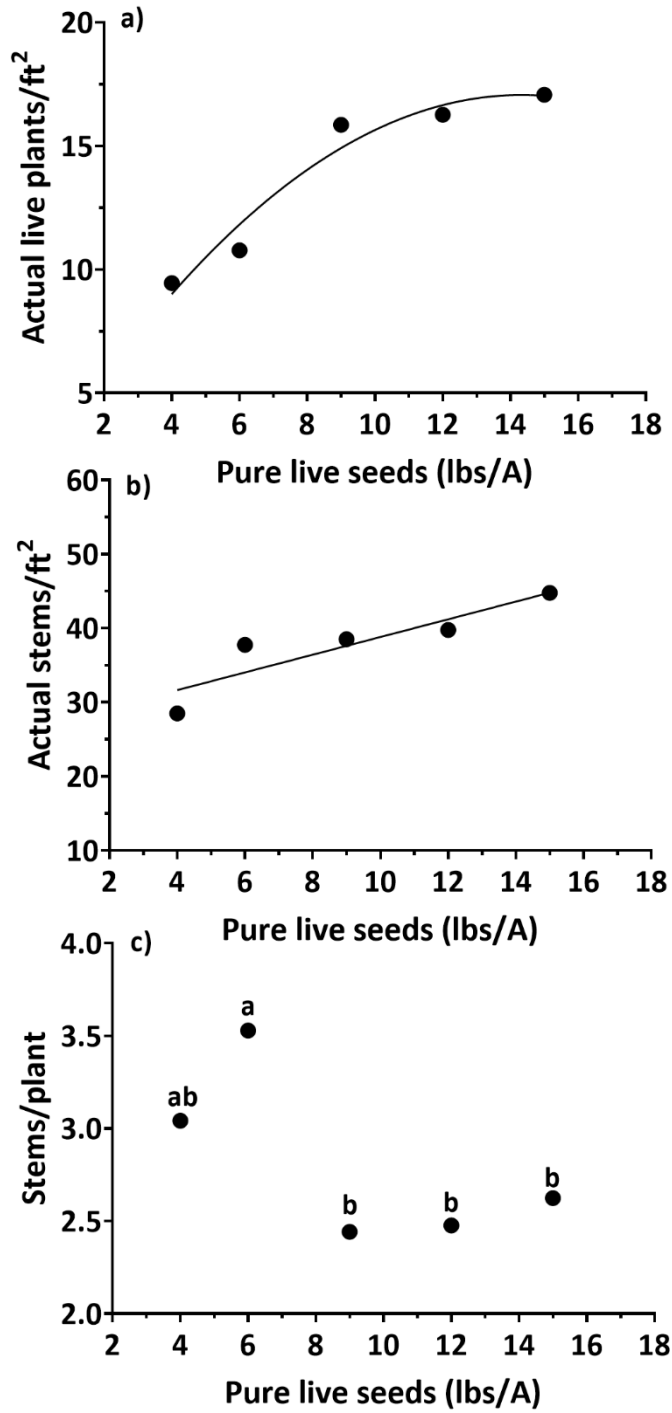


Figure 1. Relationship between seeding rate and: a) actual live plants/ft², b) stems/ft², and c) stems/plant



Figure 2. Total yield (two cuttings) for each of the planting density treatments. There was no significant forage yield impact on the second (2020) year of establishment across seeding rates.