**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. Profitability of each of the planting densities was also evaluated.

Actual live plants/ft$^2$, stems/ft$^2$, and stems/plant all increased with increased seeding (Figure 1), but these did not translate into increased forage yields (Figure 2). Increasing seeding reduced gross income due to the increasing seeding cost (Figure 3).

**Table 1.** Management information

| | | | |
|---|---|---|---|
| Seeding date: | 5/23/19 | Field: | R8 |
| Emergence: | 5/30/19 | Previous crop: | Barley |
| Seed Treatment: | None | Harvest dates: | 8/6 and 10/7 |
| 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 |
| Fungicide: | None | Nutrient fertilizer applied ( N, $P_2O_5$, $K_20$ lb/A): | 21-60-100-10S |

**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 = pure live seed

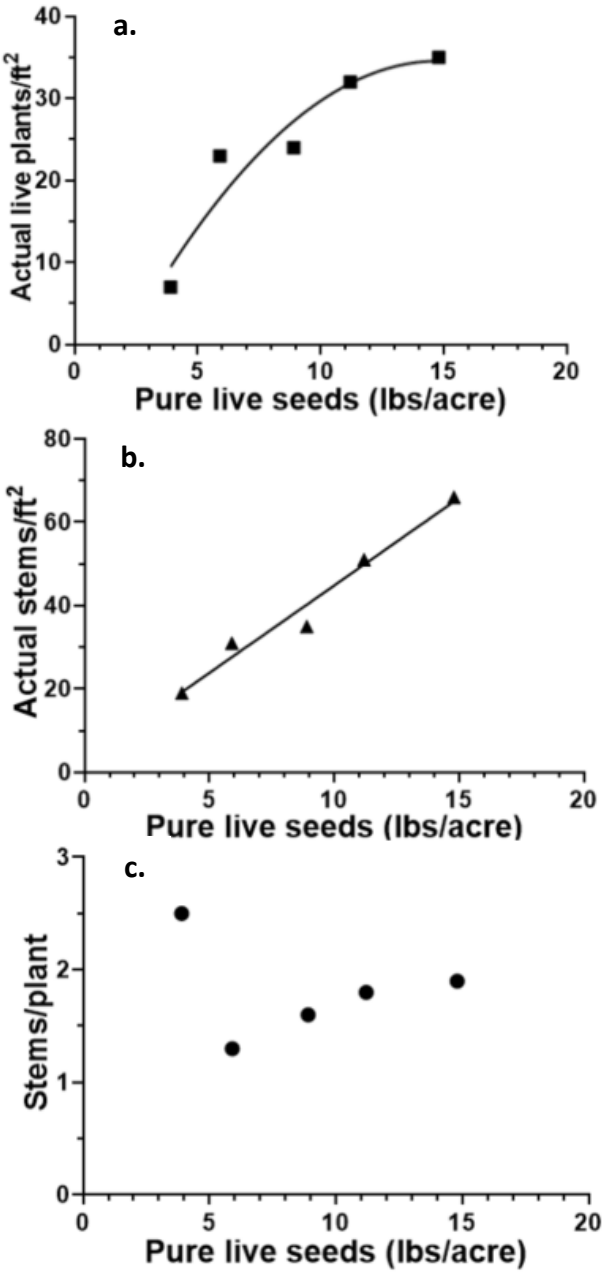


**Figure 1.** Relationship between seeding rate and: (a) actual live plants/ft$^2$, (b) stems/ft$^2$, and (c) stems/plant

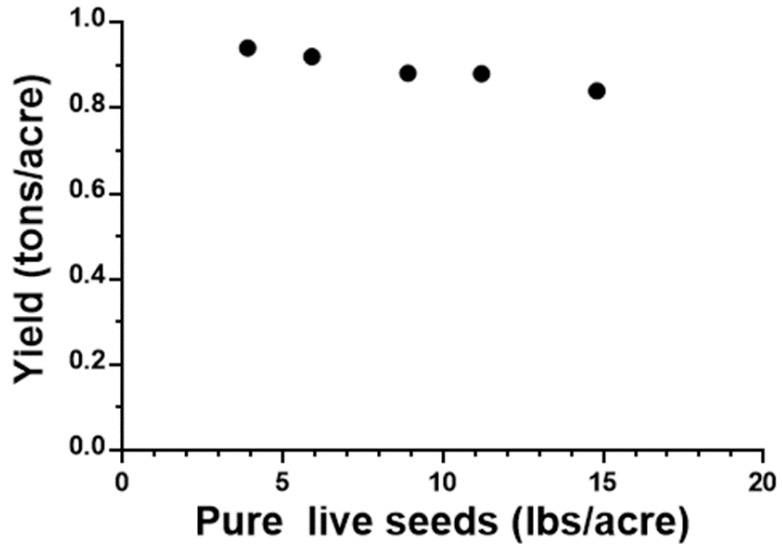


**Figure 2.** Total yield (two cuttings) for each of the planting density treatments. There was no significant impact on the first year's yields due to planting density treatment.

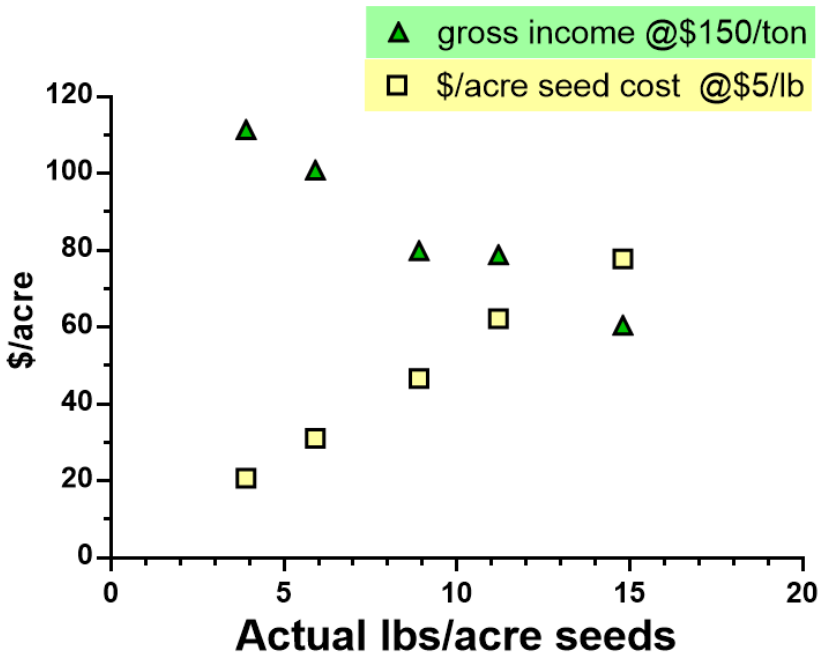


**Figure 3.** Comparison of seed costs and gross income with an increase in seeding rate and its associated costs.