



County	Contact	Premium Hay (\$/ton)	Top Quality Hay (\$/ton)	Other Hay (\$/ton)	Cut Complete/Condition	Market Activity
Chaves	Sandra Barraza, County Agent	\$190-240 large; \$260 small, \$7.50-8.50/bale	\$185-190 large, light striped	\$180-185 large, brown or better; \$175-180 black	6 th 50%, will have some 7 th cuttings	Very Strong, limited supply
De Baca	Leigh Ann Marez, County Agent	\$210 large; \$230 small; \$30 back per grade	\$200 small, light stripe	\$170 small, heavy stripe	6 th 60%	Good demand; short supply on large bales
Dona Ana	Rafa Realivasquez, County Agent	\$180 large; \$7.00/bale small	\$140 large; \$5.75/bale small	\$100 large; \$3.00/bale small	6 th 75%	Good, short supply
Eddy	Woods Houghton, County Agent	\$220-240 large; \$230-240 small	\$160-190 large light striped	\$180-200 small light striped	6 th 75%	Most growers contracted
Hidalgo	Christy Rubio, County Agent	\$180-190 large	\$168-180 large	\$150, oat hay	6 th 95%	High demand; most consigned
Lea	Wayne Cox, County Agent	\$210-220 large	\$200-210 large	\$180 and up	6 th 75%	Active
Roosevelt	Patrick Kircher, County Agent	\$225 and up large	\$210 large; \$7.00-7.50/bale	\$170 and up	Final cuts finishing	Steady, may surpass supply
Torrance	Gene Winn, County Agent	\$190-200 large	\$180-190 large	\$140 and up	Final cut finishing up with frost conditions	Good to excellent
SE & SW Colorado	USDA-CO	\$180-195 large; \$7.00-8.00/bale	\$160-185 large \$5.50 to 6.00/bale small	\$150-170 large fair quality	Final (4 th) cuts finishing	Moderate; demand good; supplies tight

Seeding Rate in Alfalfa Establishment

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Introduction

In the July issue of *Alfalfa Market News* it was mentioned that 15 to 25 lbs/A is the alfalfa (*Medicago sativa* L.) seeding rate recommendation for Lubbock, TX, and that recommendation likely also applies for most of New Mexico. In this issue we want to emphasize from where that recommendation comes from, not just for New Mexico and Texas, but also for other States. As it was mentioned in the July issue, seeding rate is one of the important steps involved in achieving a healthy and productive alfalfa establishment. There are two features that need to be considered when thinking about how much seed we are going to buy and plant in our field: 1) seed characteristics and 2) soil conditions and method of planting.

- 1) Seed characteristics are basically: how many seeds we have per pound, percent of germination, and pure live seed (PLS). There are approximately 220,000 alfalfa raw seeds per pound, when not coated. Percentage of germination is the number of seeds that we expect to germinate, and percent of pure live seed (PLS) is the number of seeds that we expect to germinate including dormant and non-dormant seeds (see example below).
- 2) Regarding soil conditions and method of planting, seedbed conditions, seeding depth control, broadcasting vs. drill, moisture control, seedling diseases, and weed control are going to have an effect on alfalfa establishment and productivity over time.

Let's assume that seedbed conditions are fine and the seed will be drilled. Now the question is:

What is the alfalfa seeding rate that I need to use?

Most of the seeding rate research studies express alfalfa seeding rate in terms of pure live seed (PLS). So what is PLS? As it was mentioned above, PLS is the percentage of potential alfalfa seeds that are going to germinate and establish. Here is an example (this information was taken from a commercial alfalfa bag seed):

1. Bulk pounds of seed: 50
2. Purity % of seed: 65.9
3. Germination % seed: 75.0
4. Dormant of hard % of seed: 15.0
5. Total germination and hard seed: 90.0%
6. Percent of pure live seed: $65.9 \times 90 / 100 = 59.31\%$
7. Number of PLS pounds of seed: $50 \text{ lbs} \times 59.31 / 100 = 29.66 \text{ Lbs PLS/bulk}$

<http://www.graniteseed.com/guidelines/live-seed/plscalculator.php>

In addition, it is considered that 5 plants/ft² (43 plants/m²) is the threshold for an economically sustainable stand of alfalfa; below this point there is a significant decrease in yield (Hall et al., 2004).

Alfalfa seeding rate effect on dry matter yield (Ton/A) and plant density.

Seeding rates ranging from 2.0 to 31.3 lbs PLS/A were tested in several studies shown in Table 1. These studies were conducted each one for at least three years at Nebraska, South Dakota, Missouri, Spain, and California. Interestingly, the seeding rate suggested from all five studies was very similar, ranging from 8.0 to 15.2 lb PLS/A.

In the California study, Mueller, et al. (2007) found that increasing alfalfa seeding rate from 6.0 (10 lb/A) to 24 (40 lb/A) lb PLS/A did not significantly increase dry matter yield in the first two years (Fig. 1), but it had more than a 100% increase in plant density (Fig. 2) the first month after planting, with minimal difference at the end of the first year (Fig. 2). In contrast, survival plants percentage decreased more than 100% with the highest seeding rate at the end of the two years (Fig. 3).

Table 1. Alfalfa seeding rates tested in five different studies and final seeding rate suggested.

Research study	Seeding rates tested (Lb PLS/acre)	Seeding rate suggested (Lb PLS/acre)	Seeding rate suggested ¹ (Lb/acre)
Moline and Robison (1971)	2.7 to 21.4	15.2	25.6
Kephart et al. (1992)	2.0 to 30	10 to 12.0	17 to 20
Hall, et al. (2004)	2.7 to 21	15.2	25.6
Lloveras, et al. (2008)	7.9 to 31.3	8.0	13.5
Mueller, et al. (2007)	6 to 24 Lb PLS/acre (10 to 40 Lb/acre)	12-15 Broadcast 9-12 Drill	20-25 broadcast 15-20 drill

¹Value calculated by dividing lb PLS/acre by 0.5931 (value from number 6 in the example above=59.31%).

In summary:

Even though soil characteristics, seedbed conditions, planting method, irrigation, and weed control are going to have an effect on alfalfa establishment, this information indicates that with 20 to 25 lb/acre (12-15 lb PLS/acre), we can expect a plant density greater than 5 plants/ft² and a good dry matter yield. If we have an excellent seedbed and soil conditions, we decrease the seeding rate to 14 or 15 lb/acre (8 to 9 lb PLS/acre). Higher seeding rates will naturally thin within the first year to have a similar or fewer numbers of plants per square foot as lower seeding rates and there will be no yield difference (Figs 1 to 3).

For more information about seeding rates or other aspects of alfalfa establishment and management, contact your local county Cooperative Extension Service Office.

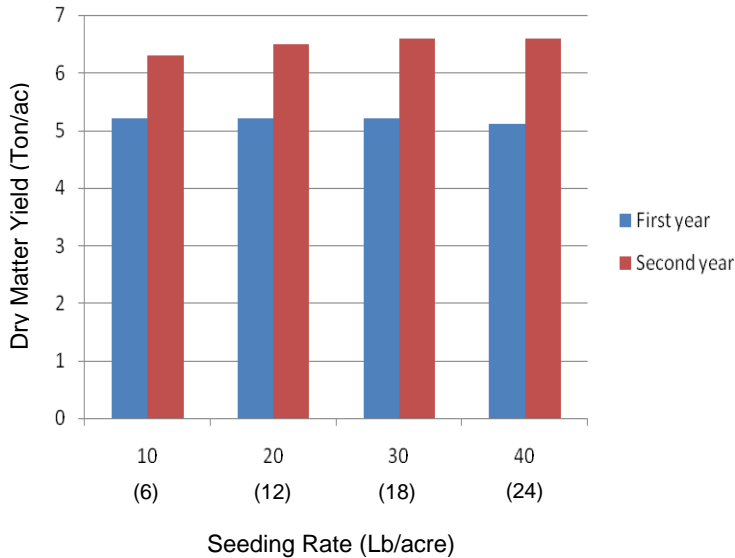


Fig 1. Alfalfa dry matter yield in first and second year at four different seeding rates. Values in parenthesis are lb PLS/acre (Mueller, et al., 2007).

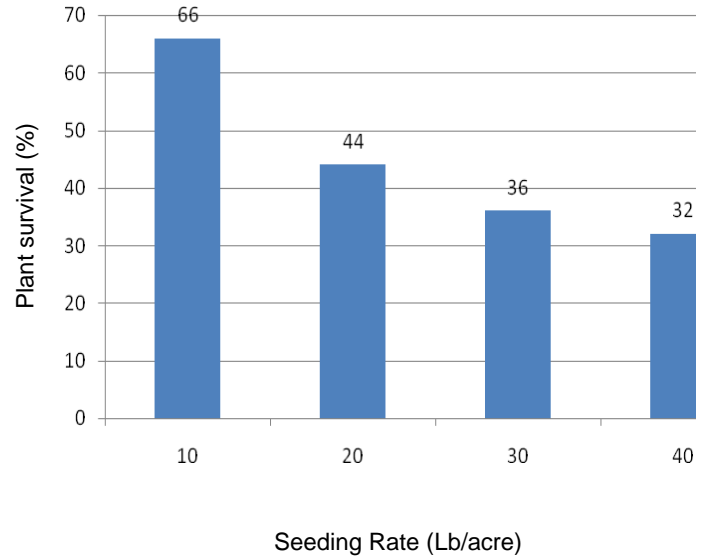


Fig 3. Alfalfa survival after the second year at four seeding rates (Mueller, et al., 2007).

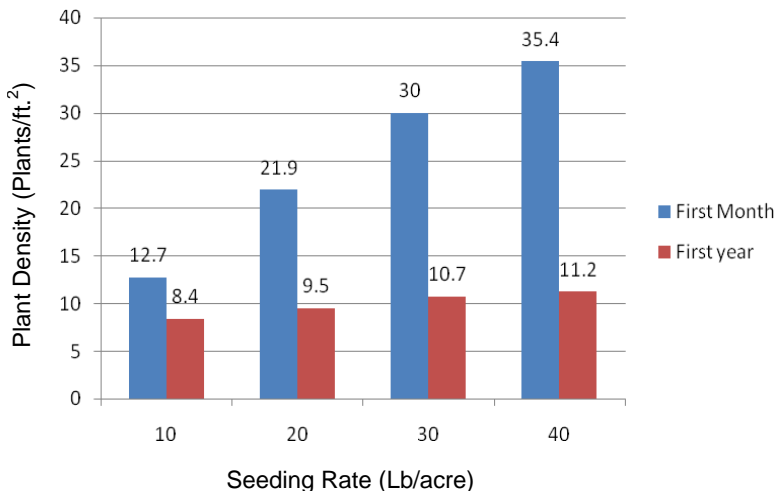


Fig 2. Alfalfa plant density (plants/ square foot) at four different seeding rates (Mueller, et al., 2007).

References:

Mueller, S.C., C.A. Frate, and M.C. Mathews. 2007. Alfalfa stand establishment. In C.G. Summers and D.H. Putnam (eds.), *Irrigated alfalfa management for Mediterranean and Desert zones*. Chapter 4. University of California Agriculture and Natural Resources Publication 8290. <http://alfalfa.ucdavis.edu/IrrigatedAlfalfa>

Hall, M.H., C.J. Nelson, J.H. Coutts, and R.C. Stout. 2004. Effect of seeding rate on alfalfa stand longevity. *Agron. J.* 96:717-722.

Lloveras, J., C. Chocarro, O. Freixes, E. Arque, A. Moreno, and F. Santiveri. 2008. Yield, yield components, and forage nutritive value of alfalfa as affected by seeding rate under irrigated conditions. *Agron. J.* 100:191-197.

Moline, W.J., and L.R. Robison. 1971. Effects of herbicides and seeding rates on the production of alfalfa. *Agron. J.* 63:614-616.

Kephart, K.D., E.K. Twidwell, R. Bortnem, and A. Boe. 1992. Alfalfa yield component responses to seeding rate several years after establishment. *Agron. J.* 84:827-831.

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******* UPCOMING EVENTS *******

- Southwest Hay & Forage Conference, Ruidoso, NM, January 15-16, 2009. www.nmhay.com