

Alfalfa Planting Date Influences Nutritive Value in the Semiarid US Southwest

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Irrigated alfalfa (*Medicago sativa*, L.) is a significant cash crop in the southwestern US. Traditional recommendations are for producers to plant in late summer or early fall for ease of establishment, reduced weed competition, and water conservation. However, previous research demonstrated that spring planting offers a potential opportunity to increase yields sufficiently to recover establishment costs within the planting year. It is not understood if planting date has an effect on subsequent year production or nutritive value over the life of the stand. Randomized complete block studies at New Mexico State University's Rex E. Kirksey Agricultural Science Center at Tucumcari (sown in 2013 and 2014), NM USA, compared effects of six planting dates on harvest forage mass, nutritive value, and gross returns ha⁻¹ based on relative forage quality (RFQ) during 2015 and 2016 in a six-cut system. Planting date differences were observed ($P < 0.0001$) for all variables. Forage mass averaged across the growing season were 2.41, 1.99, 1.92, 1.96, 1.55, and 1.62 Mg ha⁻¹ for 5-Jun, 26-Jun, 17-Jul, 7-Aug, 28-Aug, and 18-Sep planting dates, respectively (SED = 0.09). Positive attributes of nutritive value were negatively correlated with forage mass. Crude protein, digestibility (In vitro true dry matter digestibility), and RFQ value Mg⁻¹ were greater on average for the 28-Aug planting and least for the 5-Jun and 17-Jul planting dates. Nevertheless, because RFQ-derived returns ha⁻¹ were largely driven by forage mass, gross returns were greatest for the 5-Jun planting, at \$284 USD ha⁻¹ and least for the 28-Aug and 18-Sep planting dates, with respective returns of \$222 USD ha⁻¹ and \$202 USD ha⁻¹. Consequently, spring planted alfalfa may offer continued economic benefits beyond the initial seeding year cost recovery.

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