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Natural Resources Research Update

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Title: Grass Pea: Importance of Planting Date and Their Value When Inter-seeded with Bermudagrass.

The rising cost of commercial inorganic fertilizer has renewed interest in legumes to reduce the agricultural dependence on commercial fertilizers. Legumes fix atmospheric nitrogen and make it available to both legume and subsequent non-legume crops. Grass pea (*Lathyrus sativa* L. cv. AC Greenfix) is a cool season grain legume that has been noted for its tolerance to dry conditions and adaptability to difficult environments. Proper agronomic practices and planting date are important management factors necessary to maximize the yield of grass pea. This study examined the influence of planting date (March 15, April 01, and April 15) on the yield and nutritive values of grass pea in the southern Great Plains Region (1). The differences in standing crop were minimal among planting dates; however, nitrogen accumulation varied. Nitrogen accumulation in the above ground plant material was 125 lbs per acre for March 15, 137 pounds per acre for April 01, and 112 pounds per acre for April 15, planting dates. These results suggest that planting grass pea in Southern Great Plains Region on or before April 01, will maximize N accumulation and provide high quality forage when winter wheat forage quality declines and summer perennial grasses are unavailable for grazing.

In another study, inter-seeding non-traditional, cool-season legumes into Bermudagrass [*Cynodon dactylon* (L.) Pers.] paddocks was evaluated as an approach to increasing the quality and duration of forage production and replacing a portion of the nitrogen (N) fertilizer required in the southern Great Plains (2). We compared the effects of inter-seeding either grass pea or lentil (*Lens cilinaris* Med. cv. Indianhead) with N fertilizer rates

of 0, 40, or 80 pounds per acre. All plots received 54 pounds of P₂O₅ per acre in early March. The legume and fertilizer treatments were imposed in mid March during 2001, 2002, and 2003. Forage samples were clipped from 0.25 m² quadrats on five sampling dates between May 1 and July 15 each year. Yield, N concentration, species composition and in vitro digestible dry matter (IVDDM) were determined. Year, sampling date, and treatment effects were significant (P< 0.05). Total, end-of-season standing dry matter of Bermudagrass and grass pea was 4995 pounds per acre, which was similar to biomass production with 40 pounds of applied N per acre (4775 pounds per acre) and less than that produced with 80 pounds per acre. End-of-season standing crop with lentil was similar to the non-fertilized Bermudagrass, but N and IVDDM concentrations of the forage mixture were intermediate between the higher N rates. Although additional studies are needed to optimize management for the inter-seeded legumes, we conclude that inter-seeding grass pea can improve the quality and duration of production from Bermudagrass paddocks in this region.

1. Rao, S. C., and Northup, B. K. 2008. Planting date affects production and quality of grass pea forage. *Crop Science*. 48:1629-1635.
2. Rao, S. C., Northup, B. K., Phillips, W. A., and Mayeux, H. S. 2007. Improving forage Production in bermudagrass paddocks with novel cool-season annual legumes. *Crop Science*. 47:168-173.

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