

NITROGEN FERTILIZER RATE AND APPLICATION TIME ON GROWTH OF ANNUAL RYEGRASS

G. W. Evers, N. B. Melson, M. J. Parsons, and D. M. Vietor

Background. Nitrogen (N) fertilizer is an expensive plant nutrient and is needed in the large amounts because of the low fertility, sandy soils in East Texas. The N applied to annual ryegrass should be based on a soil test. The total amount may be applied in two to four applications depending on planting date and method, and if ryegrass is planted in a pure stand or mixed with small grains or legumes. Information is needed to understand N utilization by ryegrass to provide economical and environmentally sound guidelines for producers. TAM90 ryegrass was planted at 25 lb/acre on a prepared seedbed in October 2001 and 2002 at the TAMU Agricultural Research and Extension Center at Overton. Fall growth was measured on plots fertilized with 0, 50, 100, or 150 lb N/acre at ryegrass emergence. Winter growth was measured on plots fertilized with 50 lb N/acre at emergence to provide moderate fall growth and then mowed to a 2-in. height in late December and fertilized with 0, 50, 100, or 150 lb N/acre. Spring growth plots were treated the same as the winter plots until late December when they were fertilized with 50 lb N/acre to maintain winter growth, mowed off in late February to a 2-in. height, and fertilized with 0, 50, 100, or 150 lb N/acre. Plots were sampled at 2, 4, 6, and 8 weeks after the N fertilizer treatments were applied.

Research Findings. In 2001-2002, fall growth increased with each increase in N fertilizer rate at all sampling dates (Fig. 1). In 2002-2003 fall growth was about 50% less than the first year with no response to N fertilizer until 6 weeks. The poor fall growth was due to lack of significant rainfall from 12 days before planting to 17 days after planting and limited sunlight because of frequent cloudy weather from 2 to 5 weeks after planting. During the winter months, N response was limited by low temperatures with maximum yields at 100 lb N/acre in 2001-2002 and 50 lb N/acre in 2002-2003. The highest yields were in spring but ryegrass only responded to 50 lb N/acre both years. Although spring plots were fertilized with 50 lb N/acre at planting and late December there was probably little residual N left by spring to affect growth.

Application. When planting on a prepared seedbed, the greatest response by annual ryegrass to N was in fall. Growth response to only 50 lb N/acre in the spring may be due to regrowth from vigorous plants fertilized with 50 lb N/acre in fall and winter and optimum spring weather conditions.

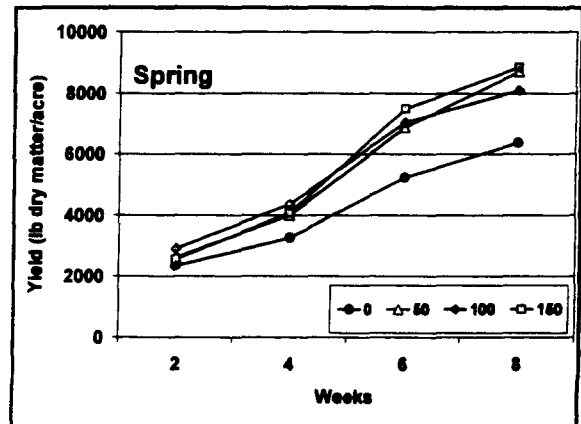
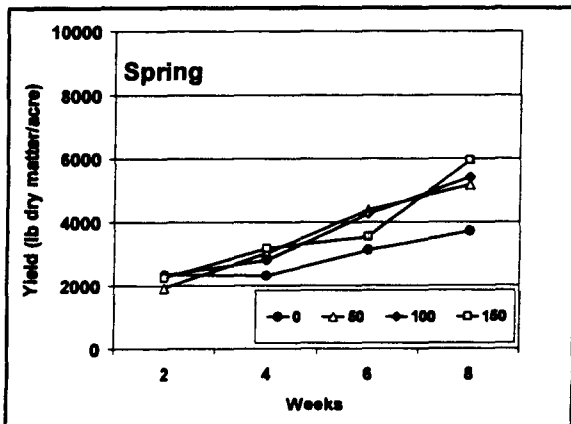
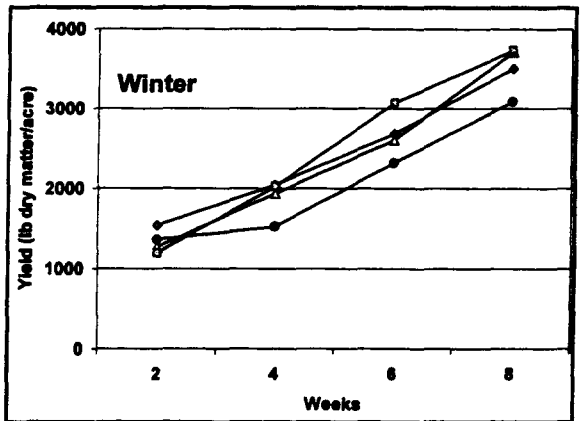
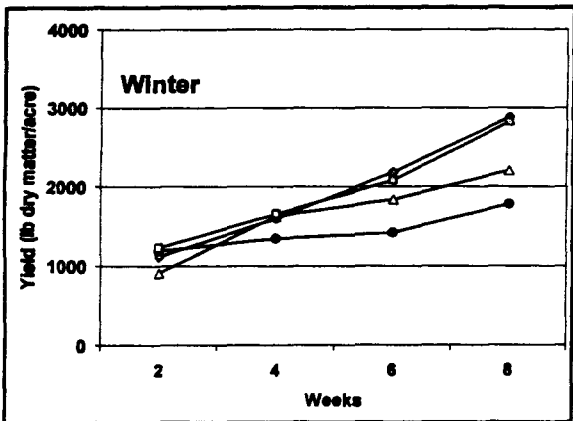
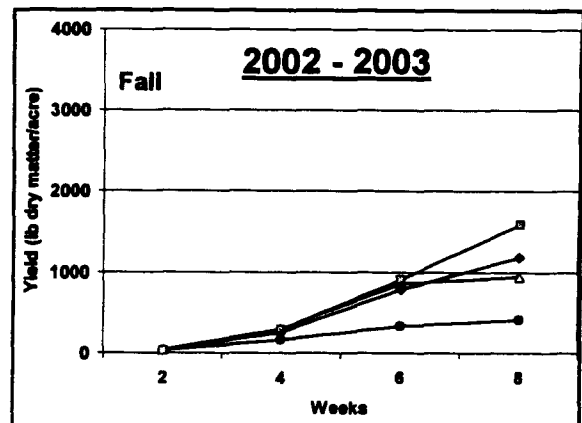
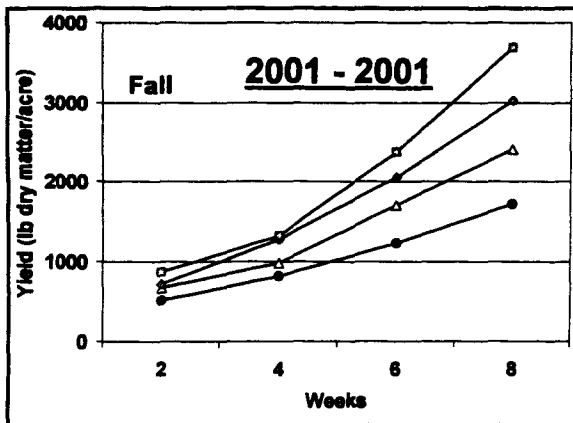


Figure 1. Influence of nitrogen fertilizer rate on growth of annual ryegrass 2, 4, 6, and 8 weeks after nitrogen application by season.