FIELD DAY REPORT - 1992

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NITROGEN FERTILIZATION OF OVERTON R18 ROSE CLOVER-RYEGRASS MIXTURES

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Background. Cool-season annual clovers overseeded into warm-season perennial grass sod (bermudagrass, bahiagrass, etc.) produce 80 to 90% of their annual forage yield after March 1. Annual ryegrass is mixed with clovers to provide earlier grazing and increase total forage production. Ryegrass requires nitrogen (N) to be productive on the infertile, sandy soils in East Texas. Clover does not provide any N to ryegrass until spring. Therefore some N fertilization of the ryegrass in a clover-ryegrass mixture is necessary for early ryegrass production. Too much N will make the ryegrass so competitive that the clover component of the mixture will be significantly reduced. An Overton R18 rose clover-TAM 90 ryegrass mixture was overseeded on a Coastal bermudagrass sod. Nitrogen fertilizer at 0, 30, 60, and 90 lb/acre was applied at planting (Oct. 12) or when clover seedlings reached the first true leaf stage (Nov. 2). These initial N treatments were usually followed by 60 lb N/acre on Dec. 13 and Mar. 27. Ryegrass alone, with, and without 180 lb N/acre in 3 equal applications, was included in the study for comparison. All treatments were harvested on Mar. 26, Apr. 16, and May 29, 1991.

Research Findings. The highest rose clover production was 1360 lb/acre in the no-N treatment (Fig. 1). Applying 60 lb N/acre in Dec. and Mar. significantly reduced clover production to 925 lb/acre. There were further yield reductions as N rate increased at planting or first clover leaf. Rose clover appears to be more sensitive to competing ryegrass than some of the other clover species. Total forage production of the rose clover-ryegrass mixture was related to the total amount of N applied. No-N and 0-60-0-0 treatments were the least productive and the 0-60-60-60 and 0-90-60-60 the most productive. Ryegrass alone receiving 180 lb N/acre in three equal applications was as productive as the best clover-ryegrass mixtures. The detrimental effect of early N fertilization on rose clover is further demonstrated by the percent clover in the harvested forage at the first two cutting dates. Percent clover at the first harvest was significantly reduced when N was applied at planting or first clover leaf. Substantial clover reduction occurred when N rate was increased from 0 to 30 to 60 lb N/acre. By the second harvest, percent clover dropped for most treatments but followed the same trend as observed at the first harvest.

Application. One year's data suggest that rose clover is more sensitive to ryegrass competition than other clovers. No more than about 30 lb N/acre should be applied to a rose clover-ryegrass mixture in autumn.

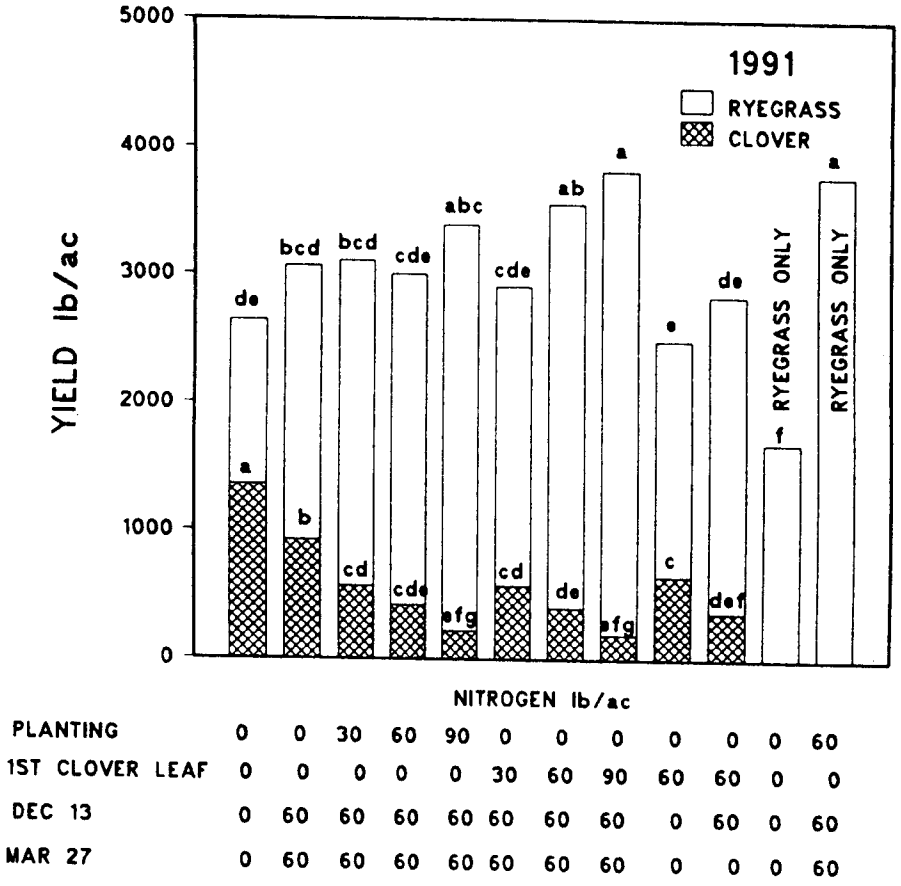

Fig. 1. Yield response of rose clover-ryegrass and ryegrass alone to nitrogen rate and time of application. Clover and total yields followed by the same letter are not significantly different at the 0.05 level Waller-Duncan Multiple Range Test.

Table 1. Influence of nitrogen rate and time of application on percent clover in an Overton R18 rose clover-TAM 90 ryegrass mixture.

At planting	lst clover leaf	13th Dec.	27th Mar.	Harvest dates 26 Mar.	Harvest dates 16 Apr.
----------lb N/acre----------				----------clover %----------	
0	0	0	0	81 a†	59 a
30	0	60	60	53 bc	20 cd
60	0	60	60	27 de	22 cd
90	0	60	60	23 e	6 e
0	30	60	60	49 c	23 cd
0	60	60	60	18 e	19 d
0	90	60	60	16 e	5 e
0	60	0	0	40 cd	32 bc
0	60	60	0	18 e	23 cd
0	0	60	60	67 ab	38 b

†Values within a column followed by the same letter are not significantly different at 0.05 level, Waller-Duncan Multiple Range Test.