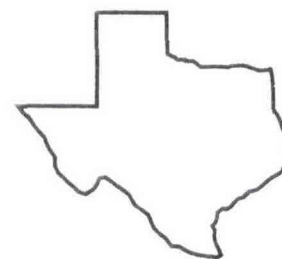
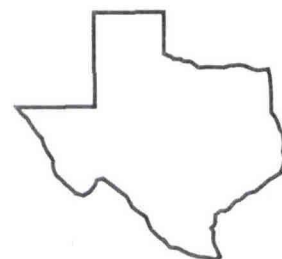
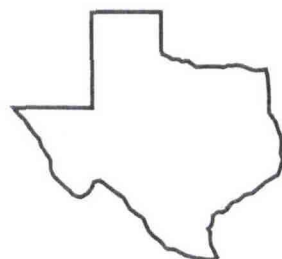


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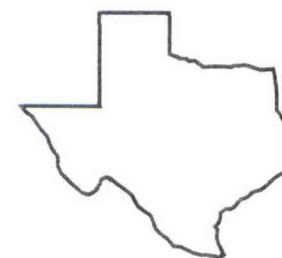
1994



Texas Agricultural Experiment Station
Texas Agricultural Extension Service
The Texas A&M University System



OVERTON FIELD DAY REPORT - 1994



**1994
Research Center
Technical
Report**

No. 94-1

COMPARING SEEDLING GROWTH OF FIVE FORAGE LEGUMES IN EAST TEXAS

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Background. Seedling vigor, or rate of growth after a seedling emerges, is important for good stand establishment and early forage production for cool-season annual legumes. Seedling vigor is related to seed size, the larger the seed, the better the seedling vigor. Good legume seedling vigor is especially critical in East Texas where most legumes are overseeded on a warm-season perennial grass. The young legume seedling must grow quickly so it can extend its leaves above the grass sod to intercept sunlight. Sunlight is necessary for photosynthesis to produce sugars and carbohydrates which in turn stimulates more seedling growth. Good seedling vigor is also critical for early forage production. 'Yuchi' arrowleaf clover, 'Tibbee' crimson clover, 'Overton R18' rose clover, 'Mt. Barker' subterranean clover, and 'Hairy' vetch were planted in a prepared seedbed on September 20, 1990 at the Texas A&M University Agricultural Research and Extension Center at Overton. Beginning October 10, seedlings were removed every 2 weeks through December to measure shoot weight, root weight, leaf area, and nodules per seedling.

Research Findings. Hairy vetch had the greatest shoot weight, root weight, and leaf area at every sampling date (Fig. 1). Tibbee crimson clover was intermediate with the other three species having the lowest values. Hairy vetch exhibited better cold tolerance as it continued to increase in weight and leaf area from December 5 to 18th. The four clover species had a slower increase during this period. Differences between arrowleaf, rose, and subterranean clovers were more distinct for root weight, with subterranean clover having the heaviest roots, followed by arrowleaf clover and then rose clover. Nodules per seedling were only counted through November 19. Crimson and subterranean clovers had the most nodules, with arrowleaf clover and vetch being intermediate, and rose clover with the fewest nodules. Good seedling nodulation is important because it indicates good N^2 -fixation which provides N to the seedling for growth. Although rose clover has good spring production, it had the poorest seedling vigor of the species evaluated when planted in a prepared seedbed.

Application. Hairy vetch had the best seedling vigor. However, it has poor regrowth after being grazed off which limits its use in pastures. Of the remaining species, crimson clover had the best seedling vigor and should be used when early forage production is important.

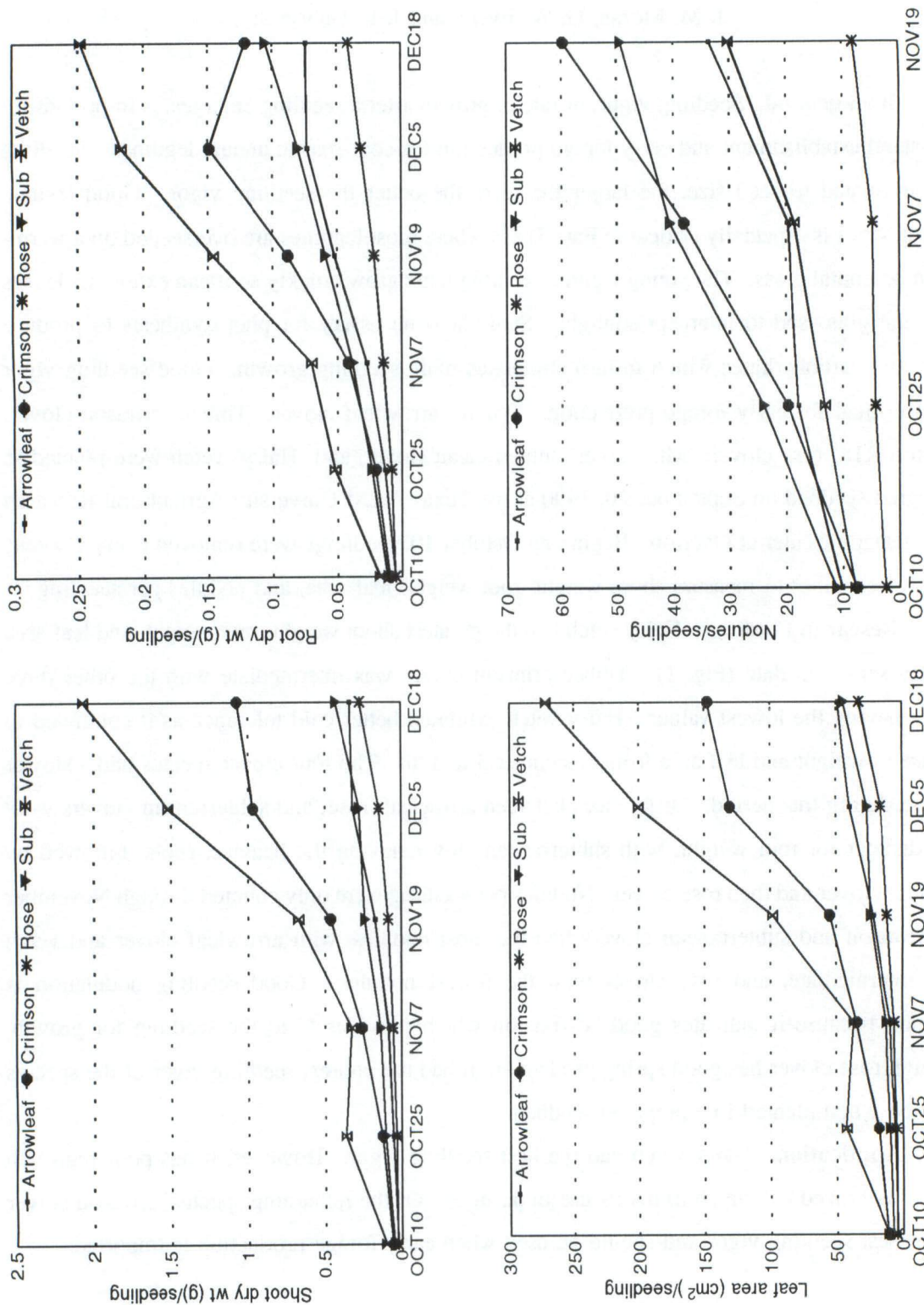


Figure 1. Comparison of forage legume seedling parameters.