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## IMPROVED ESTABLISHMENT OF ARROWLEAF CLOVER IN THE FIELD USING FUNGICIDE-PELLETED SEED OR FUNGICIDE DRENCHES

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**Background.** Recent findings have shown that establishment problems with arrowleaf clover in East Texas were due to seed and seedling diseases. Pathogenic (disease-causing) fungi found in the soil attack and often kill swelled and germinating seed. Occasionally seedlings may emerge, but are weakened, and may die soon after emergence. This is known as pre- and post-emergence damping-off. At least three fungi have been identified as causal organisms: *Pythium ultimum*, *P. irregulare*, and *Rhizoctonia solani* AG4. These fungi are commonly found in soils and impossible to eradicate because other crops and weeds can harbor them year-round. All three fungi are also capable of long-term survival in the absence of susceptible plants or during unfavorable conditions. Development of resistant plants is one of our long-term goals, however, use of chemicals may be necessary until that is achieved.

**Research Findings.** Some root diseases can be controlled by the fungicides metalaxyl (*Pythium* diseases) and PCNB (*Rhizoctonia* diseases). These fungicides were used as soil drenches at planting in Nov. 1996 or incorporated into a seed coating (1.5 fl oz metalaxyl per 100 lbs seed) over five planting dates in 1997 to determine if either fungicide would improve arrowleaf clover establishment. Establishment and yield data were recorded for both years. Results are presented in Fig. 1 and 2. Significant improvements in establishment and dry matter production were achieved with metalaxyl and PCNB fungicides.

**Application.** Early planting and use of fungicides improved both establishment and forage production of arrowleaf clover. In 1997, the two earliest planting dates were most productive despite very dry soil conditions at planting. Because *Pythium* diseases are generally more severe in cold, wet soils, early planting may have allowed seed/seedlings to escape this pathogen during the most susceptible stages. Seed coating and soil drenches with fungicide offer protection for a short time only, ideally until establishment is complete. A combined approach using chemical control and proper management may be necessary until disease resistant cultivars are developed.

**Acknowledgment.** Seed coatings were provided by CelPril, Manteca, CA. Yuchi arrowleaf seed was provided by Loren J. Smith Farm, Corvallis, OR.

Fig. 1. Dry matter yield and stand establishment of arrowleaf clover using metalaxyl and PCNB fungicide soil treatment at planting. (1996-97 data)

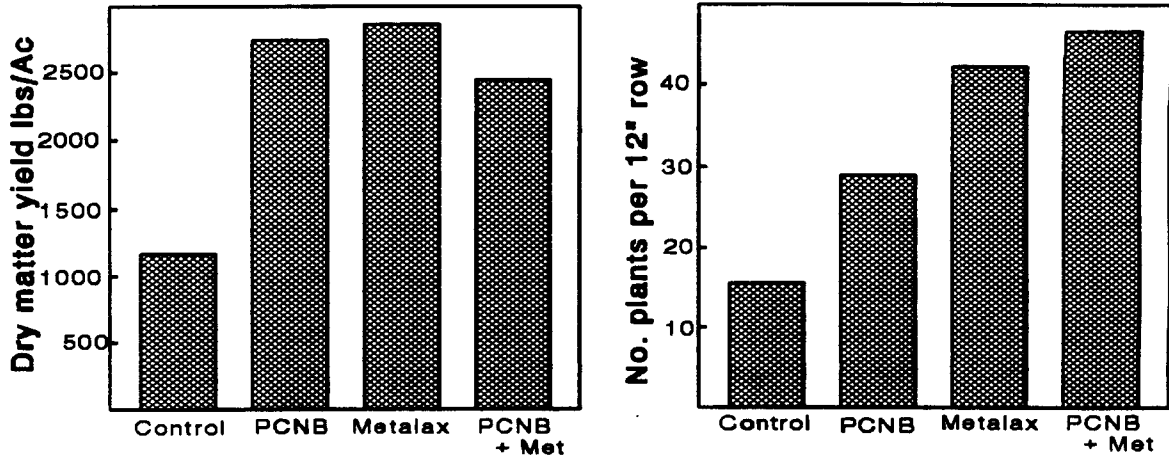


Fig. 2. Dry matter yield for first harvest of arrowleaf clover using metalaxyl seed pelleting and PCNB fungicide soil treatment at planting. (1997-98 data)

