

FORAGE-LIVESTOCK FIELD DAY REPORT - 1998

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COMPARISON OF TWO PYTHIUM DISEASES ON ARROWLEAF CLOVER EMERGENCE WITH FUNGICIDE TREATED SEED

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Background. Stand establishment of arrowleaf clover can be severely reduced by a "complex" (interacting group) of seed and seedling diseases which cause plants to die before, or soon after, emergence. If plants survive past the seedling stage, roots will exhibit tan discoloration and fine feeder roots may be destroyed. *Pythium ultimum* and *P. irregulare* are part of this complex of fungal pathogens found in East Texas soils. Pastures harboring these pathogens will suffer poor or spotty stands, low yields, and poor regrowth after grazing. Because there are no resistant arrowleaf clover cultivars, our objective was to evaluate the effectiveness of chemical control on these two diseases.

Research Findings. Metalaxyl is a fungicide which controls *Pythium* and other diseases caused by fungi in the Oomycete group. Treatments were: (+MET) = arrowleaf clover seed with a preinoculant coating and 1.5 fl oz metalaxyl per 100 lbs seed; (-MET) = arrowleaf clover seed with a preinoculant coating; and (BARE) = arrowleaf clover seed with no coating. In this laboratory study, seed were sown into a sand/peat mix in cups infested with the fungi. Control treatments were left uninfested. All treatments were watered and placed under fluorescent lights. Seedling emergence was noted over the course of two weeks (Fig. 1). While 80-90% of control plants emerged within 9 days, only 5% of the BARE or -MET seedlings emerged if exposed to *Pythium ultimum*. The +MET seed coating increased emergence to 65%. Seed exposed to *P. irregulare* had 95% emergence in the +MET treatment, and 65-70% in -MET or BARE.

Application. Metalaxyl fungicide applied as a seed coating can significantly increase germination and emergence of arrowleaf clover if *Pythium* disease organisms are present in the soil. Germinating seed and pre-emergent seedlings are most susceptible to these diseases. Until resistant cultivars are developed, fungicides may be crucial to establishment of a healthy stand of arrowleaf clover.

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Figure 1. Seedling emergence of Yuchi arrowleaf clover exposed to two *Pythium* diseases and using seed coated with metalaxyl fungicide.

