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IMPROVED ESTABLISHMENT OF ARROWLEAF CLOVER USING FUNGICIDE-COATED SEED

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Background. Seed and seedling diseases are responsible for stand establishment problems of arrowleaf clover in east Texas pastures. Pathogenic (disease-causing) fungi living in the soil attack, and often kill, swelled and germinating seed. If seedlings emerge, they may already be weakened by the fungi, and die soon after emergence. One of the causal organisms has been identified as *Pythium ultimum*. This is a common soil fungus that is impossible to eradicate because it can survive on roots of other crops or weeds. It is also capable of long-term survival in the absence of susceptible plants or during unfavorable conditions. Use of fungicides can improve establishment and forage yields for arrowleaf clover, and may be a necessary disease management tool until resistance to *P. ultimum* can be developed.

Research Findings. The fungicide metalaxyl is capable of controlling certain *Pythium* diseases in plants. Coated arrowleaf clover seed is commercially available with metalaxyl incorporated into the coating (1.5 fl. oz. per 100 lbs. seed), as well as the necessary *Rhizobium* inoculant, providing a convenient method of delivering both. Arrowleaf clover was hand-planted into prepared seedbeds in fall 1997 and fall 1998 at 10 lbs./acre. Establishment and yield data were recorded for both years. Results are presented in Table 1 and Figure 1. Improvements in establishment and yield were achieved through use of a metalaxyl-containing seed coating.

Application. Seed and seedling survival, and ultimately, stand establishment of arrowleaf clover can be improved through the use of commercially available fungicide-coated seed. Total forage yields for the growing season are also greater when coated arrowleaf clover seed are used in pastures where *Pythium ultimum* seed and seedling diseases are a problem.

Acknowledgement. Seed coatings were provided by CelPril, Manteca, CA, and Seedbiotics, Caldwell, ID. Yuchi arrowleaf clover seed was provided by Loren J. Smith Farm, Corvallis, OR.

Table 1. Effect of fungicides on emergence of arrowleaf clover in 1997 and 1998.

Seed treatment	Number of plants per foot-row* (1997)	Percent stand** (1998)
coated	40	70 a
none	34	50 b
LSD (.05)	ns	10

* Means within each year followed by the same letter are not significantly different according to Fisher's LSD.

**Percent stand data were transformed by the $\arcsin(\% \text{ stand})^2$ function prior to analysis.

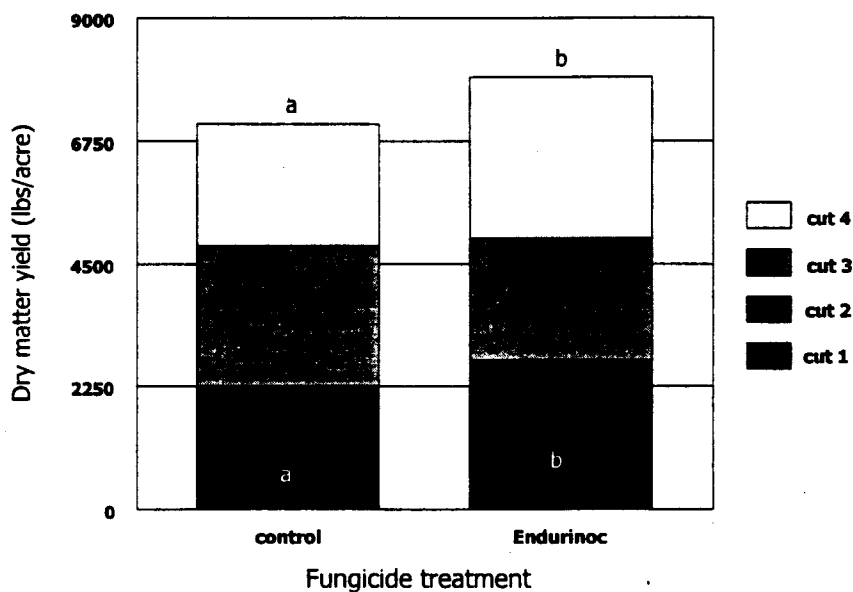


Figure 1. Effect of fungicide-coated seed on forage yield of arrowleaf clover in 1998-99. Harvest dates were: 9 Mar, 31 Mar, 21 Apr, and 19 May 1999. Whole bars represent cumulative forage yields; individual harvests are shown by different colored sections. Within cuts, bars with the same letter are not significantly different according to Fisher's LSD (0.05). Absence of letter indicates no significant differences within that cut.