

**Evaluating Nitrogen Containing Controlled Release Fertilizers At Stand  
Establishment In Loblolly Pine**

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# Evaluating Nitrogen Containing Controlled Release Fertilizers At Stand Establishment In Loblolly Pine

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## Abstract

The response of loblolly pine (*Pinus taeda L.*) to fertilization and weed control at stand establishment, using various formulations of conventional and controlled release N fertilizers was evaluated in a greenhouse study and at two field trials in the Virginia Piedmont, in 2002 and 2003. The greenhouse study evaluated five fertilizer treatments; 1) check with no fertilizer; 2) granular ammonium nitrate (10-10-10 + micro-nutrients) applied to the soil surface; 3) granular methylene urea (40-0-0) applied to the soil surface; 4) methylene urea (20-10-5) in tablet form applied in the planting hole; and 5) isobutylidenediurea (IBDU) (9-9-4) in tablet form applied in the planting hole. Equal amounts of N and P were applied. Fertilization significantly increased seedling root collar diameter and volume at the end of the first growing season in the greenhouse study. Differences in diameter and volume were still significantly different late in the second growing season, however at the last measurement the differences were no longer significant. An analysis of transformed growth curves for 2003 indicated that the ammonium nitrate treated seedlings had a significantly steeper slope than all other treatments. In field trials, at an old-field site and a cut-over site, the same fertilizer products were tested, except granular diammonium phosphate (18-46-0) was used substituted for the ammonium nitrate. Higher rates of N and P were used in the field trials. Complete weed control increased seedling volume by over 700 % after two growing seasons at the reforested old-field site, however fertilizer effects were not significant. At the reforested cut-over site an interaction between weed control and fertilizer treatments was observed. The MU and DAP granular, and the IBDU tablet treatments each had significantly greater seedling volume than the check and the other tablet controlled release fertilizer. IBDU tablets appear to have high fertilizer efficiency, due to the slow release nature and are safe to place in close proximity to the seedling root system.

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