



# TEXAS A&M FOREST SERVICE

## *Timber Management: Fertilization*

Few forest soils provide an optimum supply of the nutrient elements essential for the growth potential of trees. Proper foliage or soil testing can identify the deficient elements necessary to produce optimum growth for a site. The nutrient elements most likely to be deficient are the NPK elements (nitrogen, phosphorus, and potassium, in that order of frequency of deficiency) found in most commercial fertilizers and chicken litter. There are a few cases in forestry in which benefit has come from fertilization with trace elements, some of which may be found in chicken litter.

Most common commercial nitrogen fertilizers used in forestry are urea compounds that are easily taken up by plants (Urea, Ammonium Nitrate, Diammonium Phosphate). Urea-formaldehyde compounds have the advantage of releasing the ammonium slowly while nitrate compounds are easily lost from the soil by leaching.

### **When to Apply:**

The best time of the year to fertilize appears to be late winter or early spring. Fertilizing at mid rotation is usually done with around 200 pounds per acre of nitrogen and 25-50 pounds per acre of elemental phosphorous. Response will normally last 5-8 years and average results are approximately 0.5 cord per acre per year in increased growth. Fertilizing with 2-4 tons per acre of chicken litter in forest stands is becoming more common in the south but this is a relatively new practice.

In most cases it is best to restrict forest fertilization to the latter part of the rotation. A given amount of fertilizer seems to produce about the same amount of wood regardless of tree size and a given cubic volume put on large trees is worth more than the same volume put on small trees plus, your investment is carried for a shorter period of time. The supply of available nutrients is generally greatest just after the destructive events associated with regenera-

tion. Deficiencies are most likely to set in after the stands have filled all the growing space and more and more nutrients are getting tied up in living and dead organic materials on the site. Fertilization is done at the time of planting or regeneration only if the deficiencies are very serious. Fertilization of young stands sometimes favors the competing vegetation more than the preferred trees so herbicide applications are a must.

### **How to Apply:**

Forest fertilization is normally done from the air with commercial fertilizers while chicken litter fertilization is normally conducted with ground spreaders. Special care should be taken to prevent direct application to water bodies in order to prevent eutrophication (algae blooms). Fertilizers are generally heavy enough that drift is usually not a problem. Cost will vary according to tract size, fertilizer type and source, availability of vendors, etc.

### **Summary:**

Fertilization is now becoming more commonplace in the South but before landowners jump on the fertilization bandwagon, the economics of its application should be carefully considered. Fertilization is an investment, done in hopes of improving output at a thinning or final harvest. The time value of money and inflation must be considered when evaluating the economic costs/benefits of fertilization.