FERTILIZATION: MATERIALS AND METHODS

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(Informal opening statements to generate discussion on assigned topic).

The forest nurseryman, like the farmer, is faced with a bewildering array of choices among fertilizers today. Not only does he have to decide what and how much to apply in the way of N, P, K, etc., but he has to choose among several physical states of the material (solid or liquid and even sometimes gaseous), among materials of varying solubility and particle size, and from several possibilities in timing and mode of application. Add to this dilemma the sometimes overstated claims for superiority of certain "special-purpose" fertilizers, stir in a few cases of disastrous results following ill-advised changes in fertilizer practice and you may come up with a confused and skeptical nurseryman who would prefer, thank you, to stay with the status quo. This is not an altogether unhealthy attitude. Changes in fertilizer practices in nurseries should come slowly after small-scale tests, in the nursery of question has proven that the theory upon which the recommendation for change is made does work out on the site and tree species of concern.

But, on the other hand, nurserymen should constantly strive to improve their understanding of the plant-soil system and to update their knowledge on developments in fertilizer technology so they can weigh for themselves and their situation the merits of various fertilizer materials and systems they read about or have recommended to them.

Since my job as a part of this panel is--as I understand it--to help stir up discussion and not to expound at length, I would like to pose some questions which, on the surface, appear simple enough. If you can answer them with some completeness, you are doing a good job of keeping up with the sciences of tree nutrition and fertilizer technology. If not, perhaps the panel can provide some answers and prescribe some helpful references.

Questions for possible discussion:

1. What are some of the fertilizer materials--organic and inorganic--which can be used to supply N to tree seedlings? What are some possible advantages of one over another? When should N be applied? Why? What are some consequences of applying too little and too much N?

2. In what forms can P be applied to tree seedlings? What factors determine availability of P fertilizers to seedlings? When should P fertilizers be applied? Why? What are the consequences of applying too much P?

3. What are common sources of K for nursery fertilization? What are their relative advantages? When should K be applied? What are the possible effects of excessive K application?

4. How can Ca and Mg be supplied to tree seedlings? What are some alternatives to limestone as a source of Ca? Of Mg? What are the effects on tree seedling nutrition of maintaining a low soil pH? High pH? What are the main sources of soil acidity? Of alkalinity?

5. Do forest nursery soils generally require micronutrient applications? Under what conditions do we encounter micronutrient deficiences in nurseries? How are they best corrected?

6. How effective are soil tests for estimating fertilizer requirements for seedling nurseries?

7. Which seedling diseases and disorders are associated with fertilization practices?

8. What are some ways to cut costs in fertilizer handling and application?