



## SECTION 1: NUTRIENT MANAGEMENT

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This section focuses our attention on the reality that foresters can and do manage nutrients in forests. Nutrient management is most effective when managers consider the fundamentals of tree nutrition, the basics of nutrient element sources and forest dynamics, and the different characteristics of the various forest types and ecosystems.

To provide a context, we might well consider the following questions about the forest ecosystems of concern to us: What are the major sources and storage "compartments" for nutrients? What organisms and processes control availability of nutrients to trees and other plants? How large are the supplies of elements and how fast are they replaced in relation to removals during harvesting? What effects do forest management practices have on nutrients and related processes and organisms? While we know that fires, erosion, and slash treatments affect nutrients, unless we think critically about such effects in the context of these questions and the following discussions, we run the risk of not managing our forests in the wisest and most effective ways possible. And we may preclude the possibility of obtaining the maximum benefits that forest fertilization can provide.

Forest fertilization offers only one set of techniques among many that can be used for nutrient management. Others include manipulation of species composition, management of nitrogen-fixing plants, utilization of forest residues, and recycling of human residues in forests. Astute forest managers are using and will continue to use a variety of appropriate techniques for managing nutrients as well as other factors which influence forest productivity. The chapters in this section, and the entire volume, should help forest managers continue to think broadly as well as deeply about the nutrients needed to sustain and improve growth of western forests.