ADAPTING TO THE GREENHOUSE EFFECT THROUGH TECHNOLOGICAL PREPAREDNESS

Peter Farnum
Weyerhaeuser Company
Tacoma, WA

While climatologists predict with some certainty that the rate of temperature change during the next 40 years will be greater than at any previous time in history, there is more certainty that the rate of technological change during this same time period will also be unprecedented. By adopting a strategy of technological preparedness the managers of forest plantations can reasonably expect to he able to develop trees and stands which are *adapted* to a greenhouse warmed world. Unfortunately, many aspects of this strategy are not available to those foresters who have stewardship over natural stands.

At Weyerhaeuser Company our strategy of technological preparedness is concentrated in the areas of silviculture, physiology, genetics, and biotechnology. We leave the development of the models needed to predict the impacts of the greenhouse effect to others. Important tactics in our strategy include: maintaining technological awareness, assessing the impact of the greenhouse on business decisions, evaluating threats to our forests, and adjustment of our *ongoing* research strategies.

For both our southern and western ownerships we are doing physiological research to understand and be able to screen our genetic families for characteristics which will enable them to be adapted to a greenhouse environment. It is important to note that this research was started long before there was any significant concern for the greenhouse effect. Once we know the important physiological characteristics and how to screen for them, we seek to increase their frequency in the populations which we manage. We anticipate that our ongoing programs in vegetative propagation both in rooted cuttings and in somatic embryogenesis will he useful in this regard. At some future date, once our biochemical understanding of tree physiology has advanced, we may be able to use the tools of genetic engineering to create greenhouse adapted trees.

Given an ongoing and goal oriented research program which has already been addressing key genetic and physiological characteristics of the tree populations under management, and given that this program will continue to develop and use knowledge and technological gains during the next 40 years, we believe that we can produce greenhouse adapted trees and stands through our strategy of technological preparedness. However, given the large complexity of biological systems, and the difficulty of predicting the unintended effects of new technologies, one who adopts this strategy must proceed with care and humility.