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Keith Van Cleve

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Stephen Lay, interviewer

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Stephen Lay said forests are one of Alaska's major natural resources. Along the states' southeastern panhandle pulp and lumber mills are among the major industries. In the Interior relatively little utilization of the millions of acres of forest is now taking place. UAF scientists in cooperation with researchers from the federal Institute of Northern Forestry have been studying these Interior forests. Together they are preparing for the time when land managers will have to make decisions on utilization of the Interior forests. For more than a decade they have been researching Interior Alaska forests so resource managers will have a reliable database they can use to make decisions.

Dr. Keith Van Cleve has been involved in these studies since 1967. Van Cleve said to begin with all management applications have to be based on basic scientific information then they proceed from there to understand what the manipulations that they might carry on to improve tree growth rate do to these physical or chemical environmental factors that control tree growth. For example reducing forest density would improve the moisture supply and supposedly the nutrient supply for tree use through warming of soil and allowing more moisture to be utilized by the remaining stems that are left in a stand as well as by biological processes that are going on in the soil that are responsible for the supply of nutrients for tree use. If they understand what the range within which these physical controls operate they can better understand what might be the change in these controls as a result of management manipulation and understand what they are doing when they actually carry on some of these very important procedures that are in fact done around the world in an effort to improve growth rates of forests.

Lay said the research has been devoted to gain very basic knowledge of the nature of the local woods. They have evaluated different forest types. In all interior forests certain key variables appear to be the vital factor in growth and production. Van Cleve said at this latitude temperature is probably the most important control. He said all of the processes that are involved in supplying for example, chemical elements that are important for tree growth, are controlled by the biological activity in the soil that is in turn controlled by soil temperature. The other major variable which they do not know enough about at this time is soil moisture because on dry south facing aspects especially in upland locations moisture may be limiting during a good part of the year. So in combination with temperature moisture is the other important physical control for forest growth and development at this latitude. Lay said while utilization of interior forest resources has been limited in the past the future could be very different. Van Cleve said the potential is there. The rates of growth of most of the vegetation types they find at this latitude are equal not at the highest level of production but equal to a moderate rate of productivity compared with those in more temperate latitudes. They found some stands of white spruce in the

Yukon Porcupine area that have a rate of growth equivalent to those in the southern pine area of the southern United States. Nothing is equivalent to the growth rates of Douglas fir in the Pacific Northwest, but there is a potential and that is for native species under naturally growing conditions without any kind of manipulation. They know with the application of certain intensive management practices they can double or triple those growth rates. The question is how that fits into the whole picture from the standpoint of economics of those kinds of procedures. The other thing that is really important to consider is the possibility for use of introduced species from other parts of the circumpolar boreal forest that may in fact be more rapid growing than native plants, but be able to stand the rigors of the environment here. Evaluation of other tree species need to be carried on at a more intensive level than they have in the past. Lay said the investigation of non-native trees is one of several possible future studies. One of the best aspects of the research performed is that it provides the basis from which to make decisions. Because of the work managers will have a greater depth of understanding and knowledge. With this background they will be able to avoid potential of otherwise unforeseen problems. Dr. Keith Van Cleve is a professor of forestry soils with the University of Alaska Fairbanks.