

Brief Explanation of Activities

A. Forest Planning/Forest Measurements

With the many impacts on our forested lands, today's forest management departments have a very important role to fill. Key areas of concern are water quality and vegetation stability.

First, an inventory must be established. This will consist of not only fiber values, but also topography, watersheds, economics and social impacts, wildlife and soils. To aid in this large task, comprehensive mapping, photography and field sampling are the tools of the trade. Priority areas and annual allowable cuts are developed from the information collected.

Secondly, management plans and overall objectives are developed to maintain or enhance forest values. All the inventory items are built into this plan, which will reflect sustained yield and other prime objectives.

Thirdly, the FMA (Forest Management Agreement), quota holders or timber permit holders have the right to harvest timber. A harvest design is developed using all the above data. Long term and short term goals are objectives built into these annual operating plans.

Fourthly, the planning group must constantly monitor the actual harvesting operations to ensure the objectives of the plan are being met. This group is always looking for better ways to meet overall objectives.

The last step is the planning of reforestation. Each site has unique values and may be better suited for a particular species. The northern boreal forest has many challenges for today's silviculture department.

B. Plant Identification

Before blocks are harvested, a comprehensive stand evaluation is done called a pre-harvest assessment. This assessment is done to determine the tree and plant species and soil type that is present in each timber type within each scheduled cutblock. This helps the silviculture department determine the best silviculture prescription for each block. The type of soil and some plant species provide a good indication of the nutrient regime of the site and the expected vegetative competition that can be expected after the site is harvested. It also helps to determine whether the site should be logged during frozen ground conditions or if a summer harvesting operation would be possible.

C. Silviculture

Site Preparation

Site preparation or scarification is a silviculture technique used to prepare the ground for the establishment of new trees in a cut block. The trees can be replaced on the site by planting, seeding, or natural regeneration. Site preparation is done to improve the survival rate and growth of the new seedlings. Some of the reasons to do scarification are:

1. Increase soil temperatures to improve growth rates and create a longer growing season and earlier planting season.
2. Decrease competition from grass and other plants.
3. Improve drainage of water on a site.
4. Improve access within the block to create easier planting and to reduce the accumulations of slash and debris.

There are many site preparation methods used in Northern Alberta such as plows, hoe mounds, patch scarifiers, brush blades, and drag scarifiers.

Reforestation/Regeneration Surveys

Tree planting is the physical placement of young tree seedlings in the soil to establish a new forest after logging. To ensure the long-term survival of the seedlings, extreme care must be taken in handling the seedlings and selecting the planting location.

Seedlings are planted at a density of 1400 to 2000 trees per hectare and normally at a spacing of between 2 to 4 meters. Professional contractors who are paid "by the tree" for each seedling planted correctly do most tree planting. Quality checks are done to guarantee that each tree is planted with the roots and stems straight, roots are covered with moist soil, located in a good microsite, and at the specified spacing and density.

Eight and fourteen years after the block is logged, the company must complete a regeneration survey to check that there are enough trees of a specified height standard to produce a new forest. If the block fails a survey, the block must be retreated.

The students will have the opportunity to actively participate in a silviculture program by learning about regeneration surveys in a recently planted cutblock. They will have the chance to watch their trees develop into a new forest during their lifetime.

D. Succession/Ecology Walk

There are three types of reforestation: natural, artificial and succession.

The boreal forest is a mixture of many different plant and animal species. These species each have a niche.

Silviculture is the science of growing trees.

Reforestation - After harvesting we strive to replicate the natural processes as best we can. We utilize the characteristics of each species to give us a better chance for success.

Aspen, Pine, and Black Spruce are fire origin species. They reproduce best through strategies associated with open areas. Pine and Black Spruce have strategies, which utilize forest fires in their regeneration. After a fire, the cones left on the ground open due to the heat of the fire and winds cast the new seed over the burned landscape. Other lesser plant species such as fireweed and grass similarly reproduce from seed.

Aspen uses a different technique. Aspen and Balsam Poplar roots have little nodes on their roots, which get triggered after the death of the tree. These nodes turn into new sprouts. This is called suckering. Very often hundreds of Aspen trees growing in a grove are actually from the same tree. Clear cutting benefits reforestation of Aspen and Spruce because the open areas increase the soil temperature and make it more favorable for suckering and root growth. Early successional species are shade intolerant and will not grow well in the shade.

White Spruce on the other hand is a mid to late successional species. It can tolerate being under a canopy or being in the open. Young White Spruce prefer to be slightly shaded. This tree usually begins under an Aspen forest. Because of its needles it actually begins growing earlier in the spring and grows later in the fall.

Balsam Fir is what we refer to as a climax species. Its presence indicates an old forest where both the Aspen and White Spruce are dying and being replaced by a forest of fir. Fir trees are less desirable for lumber or pulp and as such are not normally planted or desired except for wildlife purposes.

The most diverse forest is one that has been renewed although, all stages of succession are desirable to insure that all species have a niche in which to live.

Key Points:

1. **Deciduous species and coniferous species and how they intermingle.**
2. **Clear cuts are a form of disturbance and do reforest (grow) back.**
3. **Wildlife and other species make use of all types of forest successional stages.**

E. Forest Protection

This station will look at the role that fire plays in the forest, and how the Land and Forest Service work to minimize the amount of area lost to fire each year. Three different sections will be covered at this station:

1. A look at forest succession including the ability of a forest to regenerate after experiencing a forest fire or other natural disturbance.
2. Detection - how the Land and Forest Services try to find forest fires before they have a chance to do serious damage.
3. Suppression - the methods used to fight a forest fire and the tools that are used.

CONCLUSION

This tour is being put on as an educational event for the students in this community.

Volunteers from the following organizations will be at the various stations on this tour:

Alberta Sustainable Resource Development

Alberta Plywood Ltd.

Slave Lake Pulp

Vanderwell Contractors (1971) Ltd.

Buchanan Lumber

Tolko (Slave Lake)

Tolko (High Prairie)

Northern Lakes College