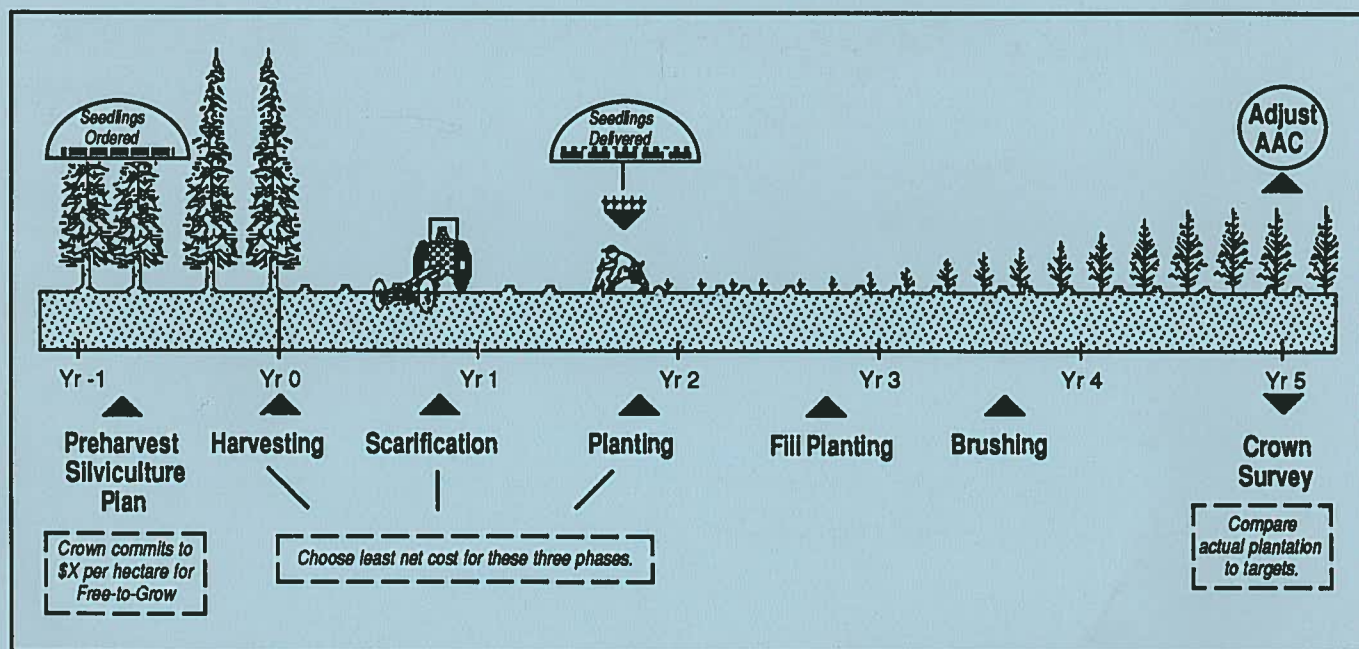




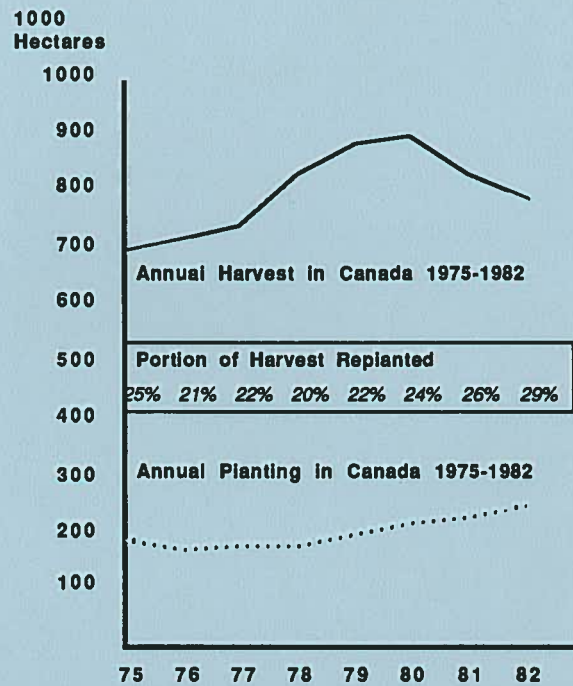
WSCA

Newsletter
Spring 1987

Preharvest Free-to-Grow Agreement



How did we create a backlog?



Western Silvicultural Contractors Association

Newsletter Spring 1987

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News Briefs...Brief News...News Briefs...

Budget Tree Constraints

The 30% bid price increase has put silviculture expenditure \$5-6 million over budget. For the moment, Silviculture Branch has been instructed to juggle its current funding and stay on budget. Unless there is a new directive from the Minister Dave Parker this will mean cancelling or reducing other planned programs in order to avoid the bad press of destroying seedlings.

Root of Problems

Five to seven million seedlings around the province are experiencing root die back or other serious problems. The seedlings are being tested for Root Growth Potential. If they do not respond adequately, the planting program for 1987-88 will be approximately 195 million seedlings (and the budget overrun would be reduced by \$2 million).

No news Budget is bad news

The "big increase" in the new budget for Silviculture is not news. The \$254 million is the amount forecast in last years plan. It does not include the money promised last year for the steady state program. The big news is that despite a \$350 million export tax windfall from the forests, not an extra penny is going back into the forests.

Treeplanters courted

The Mayor of Prince George declared in a radio interview that "Treeplanters are great." Merchants are enthusiastic about the boom treeplanters are causing in local economies. Gone are the days when businesses closed their doors rather than serve treeplanters. What's next, "Treeplanter Appreciation Day"?

1987 Dues Due

A friendly reminder that we voted at the AGM to make the 1987 dues payable by March 31st and to increase the dues to \$300 per year. If your memory is failing, you can check the back inside cover to see if you are a **paid-up** member.

Treeplanting Course Standards

The Silviculture Training Standards Committee has developed a Provincial standard curriculum for training planters. The curriculum is now available from the Ministry of Advanced Education.

The course program is ten days long with one-two days of theoretical training and the rest practical training. Minimum standards (trees per hour, etc.) are specified in the curriculum and a standardised test is being developed for the theoretical portion.

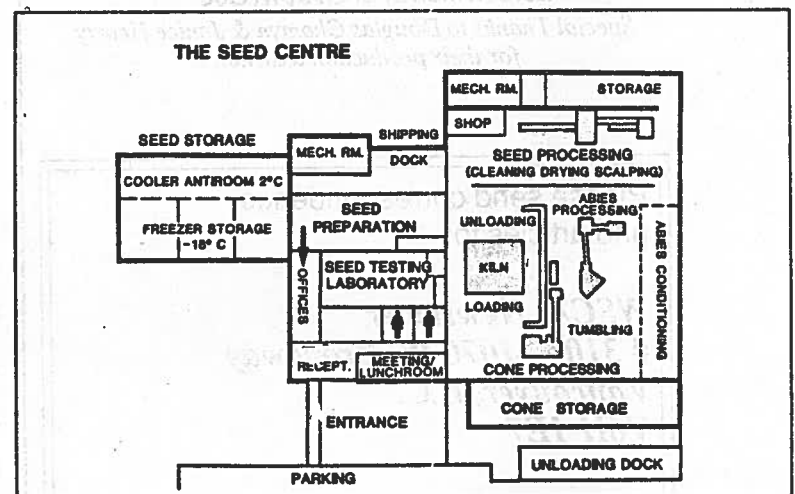
Some colleges will be setting up courses and Canada Employment is considering providing training as well. Of course, contractors can set-up their own courses that meet the standards established by the committee.

Double Privy Issue

Because of the new camp standards, the traditional Spring "shitter issue" of the WSCA newsletter is now a **New Improved Double Privy Issue**.

New Seed Centre

The new Seed Centre located in Surrey officially opened in May. Cone processing and seed cleaning have been streamlined with state of the art machinery. The centre is currently storing 2 billion seeds (approximately the number of seedlings planted in B.C. to date). The most important effect of the centre will be higher quality seed for B.C.'s nurseries.



Editorial

Silviculture Program Review

Inducing "the willing suspension of disbelief" is an art all contractors have had to practice as the beginner steps out of the truck and exclaims "We're planting this?!"

99.5% of BC's voters are beginners.

In a few months the review of "North America's largest reforestation program" will be presented to the public.

The results are not likely to be surprising. There is a lot more area to plant.

Over four million hectares of NSR and NCB won't just grow away during a one year review of the maps in the crummy.

Leading B.C. voters out of the warm crummy for yet another run into some steep slashy backlog will be difficult when they already have 200 million in.

This spring will be a warm-up run for the persuasion needed to reinvest the export dollars in B.C.'s forest land.

Evolution

Natural selection in a severe environment has made contractors efficient operators. Going after the \$400,000,000 export tax on the WSCA's shoe-string budget (\$15,000) challenges even our efficiency. Perhaps we should admit that contractors freshly relieved from the desperate urgency of the season cannot adequately publicise the need for more reforestation investment. The next step is to hire a professional silviculture lobbyist.

End Results Perspective

In 1988 we will plant our two billionth tree in B.C.

The Silviculture Review is now examining the value of this \$2 billion investment.

We have an opportunity to reorient the Silviculture Program to an end results perspective. WSCA members know that we can improve the end product (free growing plantations) and that we can deliver the end product more efficiently.

After 1988, there should be a market for a superior product. The name of the game will be **value added silviculture**.

Treasurer's Report

Tony Harrison

The past six months have seen more activity for the WSCA than the previous five years combined. On the political front, it has played a leading role in many of the positive changes occurring in silviculture and helped to avoid some potential disasters. Internally, the membership has grown tremendously (WSCA members contract over 80% of the trees in B.C.), and—more importantly—participation and commitment by contractors has grown even faster. The Association has truly begun to mature.

The Regional Chapters still have their own identities and they are working together even more. I'm also pleased to announce a new Regional Chapter in Prince Rupert.

As busy as the past six months have been, this is no time to get complacent. The next year will see even more profound changes in our industry (end-results, multi-phase, new contract, etc). It is more important than ever to have a strong, committed and active Association to ensure that contractors' interests are properly represented and that changes are done right.

Which brings me to the monetary portion of my message. We voted at the AGM to increase the dues to \$300 and to make 1987 dues payable by March 31st. So if you haven't already sent in your money you are overDUE. (*The membership list on back inside cover shows who hasn't had time to put the check in the mail.*) On the positive side: the Association is in better financial health than ever before, the AGM was a success, the Newsletter is coming out regularly and has received many compliments.

Lets keep up the good work (and lets keep up with our membership dues).

End Results Meeting

Reported by Gordon Murray / Dirk Brinkman

This is a report on the April 3rd meeting between:
Deputy Minister of Forests & Lands, Tom Lee
Silviculture Branch
WSCA
Council of Forest Industries

End Results

The meeting focused on the sharing of accountability and costs between Industry and the Ministry and creating incentives for good performance.

The discussion centered around the fact that there was no incentive for licensees to practice good cost efficient silviculture. Under the current system, Licensees are required to file a pre-harvest silviculture plan—but it is not a formal contract. The only incentive for Industry is the possibility some time in the future of a reduced Annual Allowable Cut. If a plantation fails they can always go back to the Ministry for money to replant.

The proposed system is a pre-harvest free-to-grow agreement. As before, there would be a pre-harvest silviculture plan (including a timetable and targets for density, height, leader growth, etc.). However, Ministry and the Licensee would also agree to a fixed payment per hectare for delivering that free-growing target forest. The Licensee would pay any costs above the agreed-to figure.

At the end of the the five year period, the plantation would be evaluated in reference to the standards. If the Licensee spent less than the agreed to figure, the money saved could be used for stand tending. A bonus might be paid for exceeding the growth targets.

The Ministry benefits from this plan because their costs are guaranteed over a five year period (i.e. no surprise 30% increases). The Licensees, in return for assuming some risk, can conduct their silviculture with minimal interference and receive incentives for good performance. No doubt, this will encourage Licensees to develop end-results agreements with contractors.

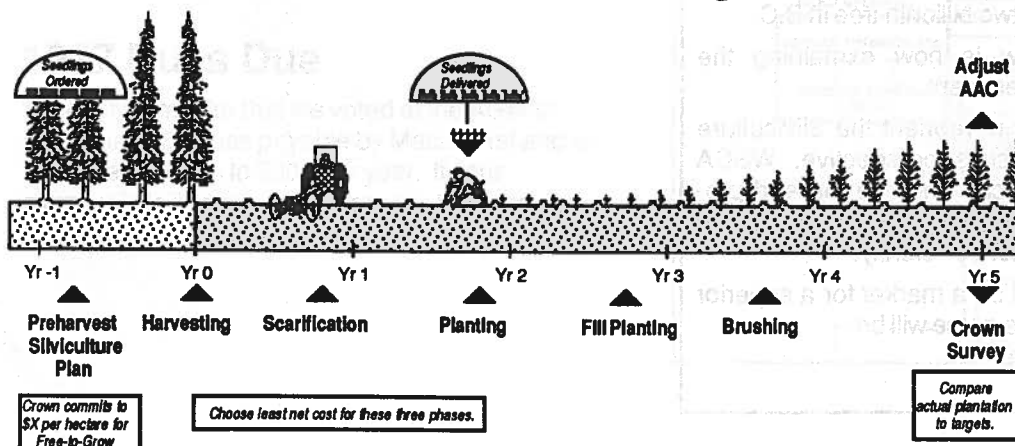
Sharing accountability and costs is one of the most thorny issues of the current Silviculture Program Review. The model identified at this meeting is a good start on an end-results perspective to the problem. Everyone agreed to continue exploring the model both within their organizations and at further joint meetings.

WSCA Reaction

The WSCA is supportive of this plan, but we do have some concerns:

- The plan does not address the NSR backlog nor lands that the Ministry is directly responsible for reforesting. The WSCA suggests that the Ministry contract those areas under similar terms directly to silviculture contractors.
- What is the penalty for not reaching the agreed-to stocking targets on schedule?
- Deputy Minister Tom Lee suggested that the contracts would be on a "Net value greater than zero" basis. We assume this means that MOFL expenditures would never exceed stumpage (future, past, potential?). The WSCA recommends that payments be tied to the actual cost of establishing the free-to-grow plantation, without artificial limits.

Preharvest Free-to-Grow Agreement



For Example:
Biogeoclimatic Zone
Spruce/Hemlock
Density & growth targets set
\$500/Ha funding for
Free-to-Grow agreed to.

Any costs exceeding \$500
(like replanting 3 times) borne
by Licensee.

At Year 5 Density targets met
Growth targets exceeded.
Licensee receives \$500
plus bonus for leader growth.
Bonus used for intensive
silviculture.

April 3rd Meeting continued...

Provincial Goals

The WSCA recommended that B.C. establish clear goals that encompass the entire spectrum of silviculture problems. The goals need to have target dates so that progress can be measured.

Deputy Minister Tom Lee emphasised that any goals had to be realistic; achievable in bad economic times as well as good.

Eliminate the Backlog by the year 2000

Everyone supported the goal of eliminating the backlog, but some people felt that 13 years is not enough time.

100% reforestation

There was some disagreement over this issue.

The WSCA questioned whether we have the right to cut an area and leave an open sore.

The Deputy Minister did not think we can invest more in silviculture than the potential stumpage from an area.

Although there was general agreement that goals would be valuable, no specific targets or timetables were set.

FRDA Agreement

The WSCA suggested that the Province challenge the federal government to increase joint FRDA funding for backlog reforestation.

The Deputy Minister said that the Federal Government was not willing to begin negotiating a new FRDA agreement this year. He felt that the Premier's concern over "getting a fair share from confederation" meant there is a good chance of a positive agreement in the future.

Public Awareness

Don McMullen of COFI suggested the WSCA should become more politically active on issues such as FRDA.

The WSCA acknowledged that it must be more effective in bringing reforestation issues into the public eye.

Tom Lee suggested that the positive aspects of silviculture achievements be publicised. People are more willing to support a program they feel good about.

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Action Plan Update

The WSCA has compiled a progress report on the action plan that was drawn up by the Silviculture Branch after the December meeting (and reported in the last issue of the newsletter).

Selective Invitation

The following proposal has been sent to the Treasury Board for approval:

- Contracts under \$25,000 can be awarded directly.
- Contracts from \$25,000 to \$150,000 can be tendered to three selected bidders.
- Contracts over \$150,000 must be advertised for open bidding
- At least one third of all contracts must be available through open bidding.

RPF Signing Authority

Proposal before Treasury board would allow industry RPF's to sign for Section 88 approval. Potential problem if company foresters are allowed to sign for their own Section 88. Treasury board requires professional **Independent** verification.

Late Flash:

Treasury Board reservations and other problems mean that neither the new advertising limits nor the RPF authority will be implemented this Spring.

Multi-Year Multi-Phase Contracts

Silviculture Branch is developing contracts for both options (in cooperation with the Districts). A trial 3 year contract was let this Spring. The Branch is encouraging the Districts to move faster in this direction [see the letter on page 29], but some districts are cautious and want clearer guidelines.

85% Clause

Silviculture Branch is working on alternatives to the 85% clause [See page 29 for one proposal] but a new clause will not be ready this Spring.

Area Based Contracts

There seems to be resistance to area based contracting among some contract administrators. MOFL and the WSCA have agreed to cooperate on encouraging foresters to try this option where appropriate. The plan is to:

- Put administrators in touch with foresters who have success with area-based contracting.
- Circulate reports showing the favourable results achieved with area based contracting.

Contractor Quality Checking

Some Districts and Licensees will be contracting-out checking to third parties this Spring, but the clause for contractors to do their own checking has not been completely worked out. This may be an option on Summer contracts. WSCA expressed concern that contract checking by third parties could create Double Jeopardy.

Proposal Awards

Proposals will be required for multi-year and multi-phase contracts, but no plan to require them for large single phase contracts. Silviculture Branch believes single phase contracts are too simple for the time consuming process of preparing and evaluating proposals. The WSCA recommends a simplified proposal that acknowledges past work and demonstrates the ability to handle logistics for large projects.

Variable Security Deposits

Ministry Districts instituted 5% security deposits for 'A' contractors. The information on the system was not available early enough for some Licensees to use variable security deposits this year.

Silviculture Branch Rating

Silviculture Branch gets a Bureaucracy 'A' rating. True to professional bureaucratic standards, they have missed most of the deadlines agreed to at the December meeting. Most of the major changes are not in effect for the Spring season.

Spacing Latitude

Dirk Brinkman

Microsight

For years planters have been expressing frustration at the narrow confines of the spacing latitude in the quality checking system. In 1982, when MOFL switched all its calculations from square to triangular spacing patterns latitudes became 15% narrower.

Reduced Survival

Planters, when selecting the planting spot, are often prevented by the narrow spacing latitudes from planting in the best microsite.

Planting a more difficult microsite also results in additional handling and compromises to the quality (eg. increased organic material mixed in the mineral soil). Planting poor microsites reduces the potential growth and survival of the plantation.

Reduced Production

More annoyingly, planters are prevented from planting the easier microsites. (On most settings the best microsite is also the easiest to plant.) This results in lost time, lower production and higher planting costs. Measured over the provincial planting program, this involves millions of dollars.

Inadequate Awareness

Repeated protests and representations from the WSCA resulted in increased latitude being available in the prescription. However, many foresters still do not utilize latitude that is adequate to maximize the use of the best planting spots. (Prescriptions for latitude can range from .3 m to 1.5 m., but most fall in the .3 m to .6 m range.)

Effect on Yield

The most common reason given for not increasing the latitude is that irregular spacing would have an adverse effect on the final yield of the plantation. (Another reason in the interior is that regular spacing makes it easier to harvest mechanically.)

In November 86, I asked Dr. Ken Mitchell if he would present the spacing vs. yield debate to our AGM. His presentation would either put to rest the protests or make a case to increase the latitude.

Ken doubted that irregular spacing would have a adverse effect on growth and yield as long as the density remained the same. [In October 86, MOFL introduced a strict density clause that is not related to the spacing and may make it possible to increase latitude without affecting the density.]

Species Specific Spacing

Ken also advised me that the ability of plantations to utilize irregular canopy space varies from species to species. It is not surprising that coastal species like fir (that grow on a irregular littered surfaces) have a greater ability to utilize irregular canopy space than interior species such as lodgepole pine. Consequently, spacing latitude should vary with the species, as well as the site.

Small Effect on Yield

In December, Henry Benskin, Director of the Research Branch gave Ken the go-ahead on a research project on the mainframe computer to simulate the effect of various latitudes on the growth and yield. [See Ken's report on page 15.]

His analysis concludes that increasing the latitude .3m reduces yield approximately 2.5% (due to irregular stem sizes at maturity).

Big Benefits

The effect on yield is very small compared with the probable benefits:

- growth and survival due to improved microsite selection should increase well over 2.5%.
- reduced costs of (my estimate) at least 3% per .3m increase in latitude.

During his presentation at the AGM, Ken emphasised that the role of research was to make a practical difference to field work. It just may be that the 2 million dollar mainframe computer and data base that simulates BC's growth and yield will pay for itself in this one research project.

Silviculture Branch Cautious

Silviculture Branch has not announced any changes to the spacing rules in the checking system either at the WSCA meeting or anytime before the season. When the WSCA asked Charlie Johnson to simply edict that all latitudes in the 1987 season be increased by .3 meters, he promised to get the message out to the field foresters to increase the use of larger latitudes on future prescriptions.

Microsite Macrovision

Spacing allowances used to be called tolerance—fluctuating spacing was tolerated in the recognition that there were some obstacles out there. Now it is called latitude (that we have been given to adjust to those obstacles).

When planters are recognized as professionals, we may evolve to true microsite planting.

W.S.C.A. Annual General Meeting *Special Report*

The 1987 AGM was the most interesting and best attended to date. The following 'pull-out' section (as long as you have your staple remover) summarizes the presentations made at the AGM. These articles have been compiled from notes, so we apologize for anything that has been left out. Although the AGM is now two months cold, the issues in these articles are still hot.

The theme of the AGM was **Stewardship** (now known as "end results" for reasons that will be explained). Although stewardship is now the hottest topic in silviculture, it was a relatively obscure concept when the theme was proposed last fall. These presentations (and the AGM in general) are largely responsible for the focussing of attention and energy on stewardship.

[See the article on Page 4 for the first pragmatic plan to introduce end results accountability into silviculture.]

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Seedling Stress and Distress

Dr. David DeYoe — Seedling Physiologist, MacMillan Bloedel

Quality Control

Many biological factors are important to the reforestation success: selecting the appropriate species, matching seed source to planting site, using genetically improved seedlings, and planting the stock type appropriate to site conditions. However, it is the *quality* (physiological status) of the stock that determines whether a seedling can express its full potential after planting. All too frequently, the time, labour, and money spent on producing the ideal seedling for a given site are lost because of problems created by poor quality control between cone collection and planting.

Impact of Handling

People often forget that seeds and seedlings are sensitive, living organisms. A seed is a casing for the seedling embryo, not unlike the womb surrounding a developing infant. Rough treatment will cause damage. For example, seed germination is reduced by 20% if a nickel is dropped on a seed from a height of 3 inches. Dropping the nickel on the seed four times will kill the embryo.

A young seedling is as sensitive to stress as a young child. Exposing a seedling's roots, dehydration, rapid heating, wounding, jarring, and low oxygen levels all impose stress on the seedling. The effect of stress is often subtle. Low seedling vigour, like a child's cold, may not be visible but it will affect the seedling's performance. More important, stress is cumulative. Once a seedling is weakened, its resistance to subsequent stress events and its ability to recover are reduced.

This was demonstrated in a Scandinavian experiment where bags of seedlings were dropped 3 metres onto a hard floor. A single drop reduced root growth potential of the seedlings 10 days later but after 18 days the effect was no longer detectable. Dropping the bags 5 to 15 times severely decreased root growth potential even 18 days later. The 15 drop treatment significantly depressed 1 year survival of samples planted in the nursery.

Survival Response

Seedlings respond to stress by shifting their priority from growth to survival. Food and nutrients are allocated to repair and recovery. A few minor

stresses during handling may not reduce growth, particularly on sites rich in available resources. As the number of stresses increases, however, so does the likelihood of reduced growth— especially if the seedling hasn't fully recovered from prior stresses. Roughly handled seedlings planted on harsh or poorly prepared sites frequently die in the first warm weather of spring.

Nursery Stress

Many cultural practices imposed at the nursery are interpreted as stress by the seedling. One example is undercutting. Pruning the roots in this manner triggers a stress response that shifts growth from stem to roots; this increases root fibrosity and actually improves the chances of survival after planting on the site. Although this practice is beneficial, the seedling is being wounded. Like any surgical technique, it must be done carefully and properly to minimize damaging side effects.

Pruning at lifting and during processing also elicit a stress response. Food production can no longer occur because the seedling has been removed from its natural environment. The substrates for wound repair must come from the seedling's limited supply of reserves. Additional stresses prior to planting make similar demands on this reserve. Food reserves used in repair cannot be replenished until after planting, when the need to recover may detract from the quick, extensive root development needed for establishment.

Stress without Distress

There are situations of potential seedling stress throughout the reforestation process. The contractor can contribute to plantation survival by anticipating (avoiding) stress situations and minimizing their impact on the seedlings. Practice planning that accounts for Murphy's Law. Minimizing the effects of seedling stress can be summarized in three words: Cool, Moist, and Protected.

If you're having trouble visualising the effect of stress on that sturdy little tree, consider your response at the dentist when that big needle is eased in between your cheek and gum... nothing less than traumatic.

Stewardship Contracts: A Consultant's View

Dr. Brian Cleary — Silvan Reforestation Consultants (Oregon)

Stewardship Overview

Stewardship might be thought of as a combination of contracts designed to reach a specific objective. They span 3 to 5 years with periodic payments for completed work. Payments are often 40% after completion of planting with 20% at the end of the growing season for the following 3 years. Stewardship tends to lower costs by saving administration costs and making contractors responsible for the results of their work. Reaching the mutually identified goals is easier because it reduces the adversarial basis of many contracting relationships.

The agency letting the contracts establishes general goals of stocking density, average height, leader growth, etc. The contractor prepares a technical prescription to plant and tend the plantation in order to reach the goals. Specific strategies (site prep., stock type, vegetation & animal control, etc) for reaching the established goals are left to the discretion of the bidder. The technical proposal along with a bid price are evaluated by the funding agency. The contract award is based on both technical merit and competitive price. The lowest bidder does not receive the contract without submitting an adequate technical proposal.

Stewardship in Oregon

Stewardship contracting is still evolving in Oregon. Each of the five contracts let since 1982 has had somewhat different rules. There hasn't been non-payment or other failure on a stewardship contract. To date all contracts have been on public land, but private industry is considering stewardship.

The contract targets are generally difficult, but not impossible, to meet. One contract was not let because the price was too high. Our group felt that they had set unrealistic goals so our price reflected the increased risk. The site has since been replanted under conventional contracts.

The stewardship contracts range from 200 to 1600 acres (80-700 Hectares). The prices for 3 year contracts have ranged from \$240/acre to \$380/Acre. The system is fairly competitive—3 to 6 bidders per contract.

In most Oregon contracts, animal management (i.e. controlling browsing) has been a significant factor. In fact, you could have a "natural regeneration" stewardship contract that does not involve any planting whatsoever.

Advantages of Stewardship:

1. Focus is on results rather than details of how the work is to be accomplished.
2. Better seedling survival and growth compared to conventional contracting.
3. Prescriptions are prepared by the person doing the work so they will have more confidence in them.
4. Focus on cooperation to achieve mutual goals not confrontation and mistrust.
5. Grouping of several related operations into one contract saves administrative and inspection time and dollars.
6. Contractors can group work in one location and spread it out over a longer period of time (i.e. site prep, plant, protects and release same plantations).
7. Risks are more controlled. (Contractors are with project from beginning to end.)
8. Gets the contractor to focus further into the future. In stewardship the planters begin to ask how to make trees grow faster rather than how to plant trees faster.
9. Requires that the contractor utilize a forester/advisor which brings new expertise into the reforestation situation. The forester functions as an advocate for the goals set by the contract but is also responsible to and paid by the contractor. (As an advisor I feel as though I am an advocate for the seedling.)

Potential Problem Areas:

1. Stewardship is threatening to those who feel that they lose control. (In fact, they gain control over **results**.)
2. The bureaucracy may try to make stewardship similar to old contracts and thus eliminate the potential benefit of the stewardship approach.
3. It is difficult to exploit stewardship's cooperative potential without one of the parties to the contract becoming jealous or suspicious.
4. Questions over who has responsibility for stock loss, or other "natural disasters."

Stewardship Contracting Options in B.C.

Mike Wyeth — Silviculture Branch

What is Stewardship?

I think that many people have different ideas of stewardship and these misunderstandings cause some of the fear and resistance the concept is generating. I went to University in Edinburgh where the forests have been managed for centuries. Stewards there manage a forest for generations. That is the traditional notion of stewardship and I think those sort of time scales scare some people.

The dictionary defines a steward as "one called to exercise responsible care over possessions entrusted to him." Crown land is owned by the public, but who exactly is the steward? For B.C. Forest Lands the Forest Service is the steward by legislation. This legal responsibility cannot be transferred, so we need to carefully define our notion of stewardship.

Under the current system a form of stewardship already exists: the Timber Farm License. Licensees are responsible for the entire crop cycle, they are rewarded for good results by a higher allowable cut, and the landlord (public) pays for a large share of regeneration. But if the Licensee fails, the Forest Service is still responsible, which makes some people worry about being left holding the baby after the "steward" has disappeared.

Silviculture Stewardship

Silviculture stewardship covers the process of establishing a free growing plantation after harvesting. When you cut a tree you set a timeclock ticking and you have to get on with it. If you wait, you miss the boat and it will cost you a lot of money to catch up. It is important to have total crop planning (stocking standards, free growing assessment, etc.) through to the next crop in order to minimize delays.

The current system is one of extremes:

1. TFL's which do have total crop responsibility, but require enormous corporate resources including professional foresters.
2. Single phase silviculture projects (planting, thinning, site prep., etc.) that require only small resources.

We are looking at contracting for larger parts of the silviculture responsibility, an option in between these two extremes. The contract should be tailored to the individual site. It is also important to have balance, some single phase contracts for new contractors and smaller contractors, some longer term multi-phase contracts that are more efficient for larger contractors, and of course TFLs.

Under the current contracting model, each step of the reforestation process is contracted and paid for separately. There is very little risk to the contractor with this system.

A Stewardship contract involves much more risk because of the time and complexities involved. Costs for insurance, planning, and carrying charges (deferred payment) will become significant. There is a danger with long term contracts that the risk will become so great as to make the price unacceptable to the landlord. On the other hand, we cannot have "cost-plus" stewardship contracts that remove the accountability of the contractor.

Essential Ingredients for Success

The key ingredient for contracting success is that **you must consider the value of the arrangement for both parties.**

In silviculture contracting both sides have goals:

Contractor's Goals:

- Worthwhile work
- Stability
- Financial reward
- Benefits for good performance

Landlords Goal's:

- Find better ways to get job done
- Cost effective achievement of free growing target forest.

Each side must understand the other's perceptions and explore mutual benefit. For example, when someone says to you "if you want something done right, do it yourself," you may think of growing your own trees, but this advice has a very different meaning to a forester. Some people perceive that with stewardship the contractor takes away control and the landlord gets nothing out of it.

continued next page...

*Stewardship Options contd...***Experience with Stewardship**

I want to make a few comments about the experiences with stewardship contracting in Oregon as described in the Journal of Forestry (November Issue).

- It is important to note that although the contractor does his own technical prescription, the landlord retains general control of the prescription.
- The article emphasises the benefits to both contractor and landlord of long term security.
- Although administration costs decreased, treatment costs increased (at least, initially).
- Stewardship uses a proposal award system. The cost of preparing and evaluating proposals is significant if you want to find the best qualified contractor.
- The contract period for the stewardship contracts was 3-5 years rather than the fifteen years that might be necessary to achieve free growing. Fifteen year contracts would pose too many financial administration and risk problems.
- It is not clear who pays for problems of stock losses, pests, etc.

Recommendations

A steady evolution towards stewardship style contracting based on success. Multi-year and multi-phase contracts would be logical steps in that direction.

Contractors who are interested in this type of contract can make a proposal which should be tailored to a specific site and situation. Discuss your ideas with local managers and if they believe it has merit they can organise a Request for Proposals.

TFL holders would be a logical group to approach to try and develop this type of contract. Once again, explore the opportunities for mutual benefit.

I think there is no magic line between stewardship and non-stewardship contracts, just various degrees of responsibility. Perhaps we should use the name "end-results contract." In an end-results contract, the contractor is not taking over control but is taking responsibility to produce a particular end-product (e.g. a free-growing stand).

Remember, you are a partner with the public in taking care of their land and their money.

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Occupational Study of Treeplanting

Dr. Thomas Smith — Simon Fraser University

Note: This article is a summary of the highlights of Dr. Smith's presentation. A full account of his research has been published in a recent issue of *Silviculture Magazine* (March 87).

This is the first scientific study of human performance aspects of treeplanting in Canada and probably the world. The study has some limitations in that the base of data was not wide enough (taken from survey of 150 planters and in-depth study of two crew).

Sample workforce

Sex:	60% Male
Ave. Age:	28 years
Ave. Experience:	6 years
Smokers:	45% (69% non-tobacco)
Drinkers:	87% (28% daily)
Ave. Productivity:	1300 trees/day
Ave. Planting rate:	182/hour
Ave. Workday:	8 hrs
Breaks:	4 (38 min total)
Ave. Season:	48 Days
Ave. working days:	25 Days

Males are shorter, lighter, and more muscular than Canadian norm. Females are taller, heavier, and more muscular than Canadian norm.

There is a relationship between workers' length of season and experience. Season length increases until 6 years experience and then declines.

Physical demands of work

Treebags 20% of body weight on average (15 kg)
Tool weight 1.8 kg.

Workers use 60% of aerobic capacity.

- Twice maximum recommended level for work in Health guidelines
- Recommend 48% rest to sustain that level of activity (actual 9% rest)
- Energy expenditure among the highest of any occupation ever studied

Worker efficiency is 74%

- Among the highest recorded in human performance studies
- Average office worker 5-10% efficiency
- Not enough green planters in study to determine their efficiency

Health and Safety

90% of workers report injury at some point in their career.

WCB statistics

Average 3 claims per year from those reporting.

Most common areas injured (by prevalence):

- hand/finger
- waist
- back
- upper leg/knee

Most common types of injury:

- Muscle strain
- Bursitis
- Back strain

Most common causes of injury:

- Muscle strain
- Slips and Falls
- Hit by object

Health Problems

90% report health problems at some time in career.

Most common problems:

- Back pain
- Sunburn
- Skin irritation

continued next page...

*Occupational Study continued...***Recommendations****Back problems**

- Avoid twisting
- Lower bag weight to 10 kg
- Use smooth motion
- Reduce stooping
- D-handled shovel too short
- Can be reduced by modifying planting style
- Warm-up exercises, stretching, etc.
- Proven to work in other industries

Cumulative trauma (tendonitis, etc.)

Caused by repetitive motion and extended exertion.

- Avoid extreme flexions and extensions
- Increase size of tool grip (both shovel & dibble too small)
- Do not use loose fitting gloves
- Shorter shifts
- More rest pauses
- Pre-season, preparatory exercises for specific muscle groups involved

Muscle strain

The major cause of muscle strain is eccentric contraction (pressure while lengthening).

- Don't work downhill
- Avoid stepping or jumping downhill
- Avoid exertion while arms fully extended

Slips, trips, falls

- Keep both feet on the ground
- Go around not over
- Use appropriate, well maintained footwear

Cumulative fatigue

Chronic fatigue is a high risk factor for injury and disease (especially at season's end).

- Longer rest pauses
- More days off
- Guard against dehydration
- Good nutrition (minimum 4000 calories/day)
- Maintain good hygiene
- Plenty of sleep

Organizational design

- Give planters an increased role in decision making
- Workers generally want shared responsibility
- Injuries decrease with joint decision making

Improve training

- Awareness of human performance aspects
- Smooth motions, less damaging techniques

Improve planning

- Decrease worker downtime
- Decrease worker frustration and stress

- Set-up crew safety committees (as per WCB regulations).

Conclusions

The problems in the Silviculture Industry are probably human resource and performance problems, not technological or forestry problems.

Treeplanting is one of the most strenuous occupations ever studied. Treeplanters are among the most efficient workers ever studied.

Probable Benefits of Recommendations

- Reduced Health & Safety problems and cost
- Reduced turnover
- Reduced absenteeism
- Increased job satisfaction
- More planting days per season
- Increased proficiency of green planters
- Increased recruiting opportunities

The Impact of Spacing on Growth and Yield

Dr. Kenneth J. Mitchell, Research Branch, MOFL

Background

Silviculture Branch and the WSCA are concerned about the uniformity of spacing in plantations. Increasing the permissible variation in inter-tree distance should lower planting costs by increasing the availability of plantable spots. However, the volume at harvest age is expected to decrease.

This preliminary study examined the relationship between spacing uniformity, and the yield of simulated plantations established with 1100 and 500 trees per hectare on highly productive sites.

Procedure

The Tree and Stand Simulator (TASS) was used to project the development of plantations with 1100 trees/hectare (1.5m / 5ft spacing) and 500 trees/hectare (4.6 m/15 ft spacing) on site 35 (top height at breast height age 50). Perfectly square spacing was simulated in the first trials, followed by runs in which the latitude variation was progressively increased by .3m (using bivariate Normal Distribution). Variation was allowed both along rows and between rows. As a result, only 14% of the trees will be at the intended (perfect grid) location.

Results

1100 Trees/ha

See Figure 1a, 1b, 1c, next page.

The rate of canopy closure (Figure 1a) is not affected by the variation until a standard deviation of 0.9 m (3 ft) is permitted, and then the difference is small. Mortality is accelerated as variation increases (Figure 1b) because local areas of relatively high density and competition are created.

The standing volumes diverge until age 60 as a consequence of variation in spacing (Figure 1c), followed by a converging trend in later years. Each increase in the level of variation decreases the harvest yield by about 2.5% at age 75 (the culmination of the mean annual increment). The lower yield of irregular plantations is largely a reflection of the number of surviving trees per hectare. Differences in stand statistics are more pronounced at age 60 as shown in Table 1.

Table 1. Stand Statistics at Age 60

Standard Deviation (m.)	(ft.)	Number of Trees (per Ha.)	Total Volume (m ³)	Mean Diameter (cm.)
0.0	0.0	858	779	32.2
0.3	1	790	739	32.9
0.6	2	706	707	33.9
0.9	3	589	674	36.0

As the spatial variation increases, the number of trees and total volume decline while the mean diameter enlarges. The increase in average diameter is caused by higher mortality in the lower diameter classes. The larger, more valuable (crop) trees tend to have slightly larger diameters in stands with the greatest variation, but the difference is small.

500 Trees/ha

The response of this stand to variation in spacing mirrors that of the denser plantation although the simulated standard deviations had to be doubled to achieve a comparable impact on volume.

Conclusions

Increasing variation in the spacing of planted trees will reduce the number of smaller trees available for harvest, and thus lower the total fiber volume. The size of the crop trees (largest 250/ha) will not be affected appreciably.

No field data are available to confirm these results. There are many other variables that should be examined when evaluating the impact of spatial variation on yield. These might include the uniformity of tree size at harvest, logging and processing costs, planting costs, quality of microsites, brush control, etc.

No attempt was made to relate the levels of simulated variation in these trials to the contract requirements of the Ministry. This could be accomplished by superimposing 50 m² sample plots on the maps produced by TASS. The relationship between contract compliance and yield could then be assessed.

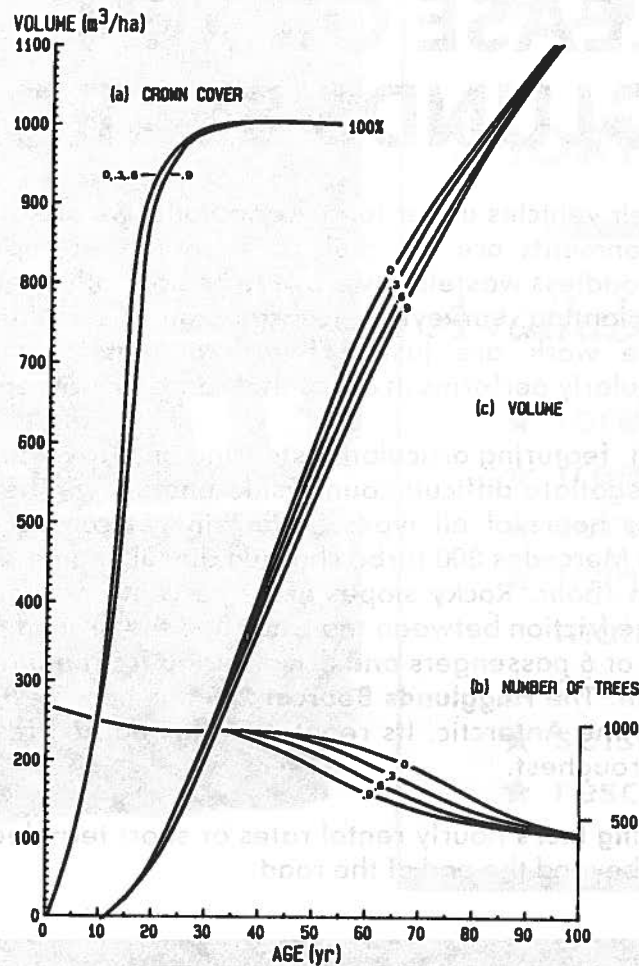
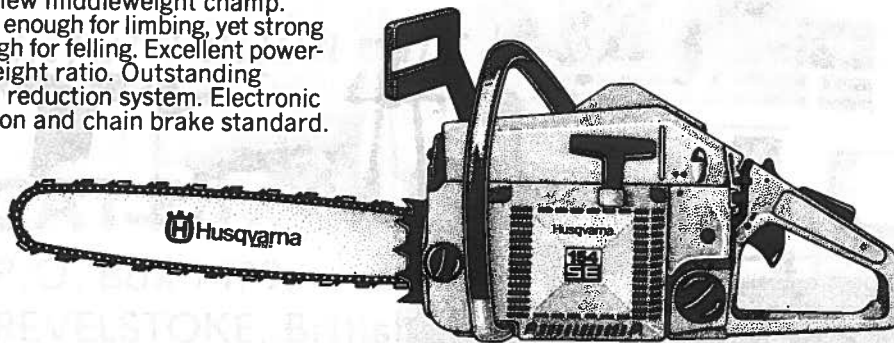


Figure 1. The Impact of spatial variation on the growth of plantations established at 1100 trees/Ha

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Camp Standards

Robin Brown — Silviculture Branch

Gerry Penner — Health Inspector

Andy Hazelwood — Director of Inspections

Note: For background on this issue see the article in last fall's newsletter.

Ministry of Forests & Lands Perspective

- The contract administrators are responsible for enforcing the camp standards. They may charge fines of \$250 per day and, if the deficiencies are not rectified, shut the camp down.
- Camp standards must be posted in all camps so the planters know what they are entitled to.
- It is very important to have a safe water supply.
- The camp site must be approved by the contract inspector.
- The contractor must report any health incidents (particularly gastro-intestinal problems, such as diarrhoea, dysentery, etc.) to the local Health Unit.
- The contractor is required to have separate food preparation facilities and staff. The contractor must provide meals to all employees.
- Contract administrator will thoroughly inspect camps when they are first set-up. Subsequently will observe conditions to ensure the standards are maintained and respond to any complaints.
- Responsibility for standards has been given to licensees through Section 88.
- Expect increased attention from the Ministry of Health, including inspections at any time. **Remember the only action available under the Health Act is camp closure.**

Health Inspector's Perspective

The Ministry of Health has been aware of conditions in silviculture camps for some time. Last year's well publicized outbreaks of "Beaver Fever" (Giardiasis) pushed the Ministry of Health and Ministry of Forests to respond.

As a result of the letter of understanding between the two Ministries, the industrial camp standards (which were designed for relatively permanent camps) will not be enforced for silviculture camps.

MOH has agreed to remain at arms length, to assist and advise MOFL who will enforce the Silviculture Camp Standards.

At the end of the year the standards will be reviewed and recommendations for changes made.

Nothing precludes the use of the Health Act (i.e. closing camps) if the Health Inspectors feel that workers' health is being compromised.

The Ministry of Health is preparing a pamphlet on Giardiasis for public distribution.

Health Ministry on Water Supply

The most important aspect of these standards is securing a safe water supply. There are two options: attain water from a certified safe supply (i.e. municipal water system) or boil the water.

Perhaps you should look at the options of installing wells on long term campsites.

It is not feasible for MOH to test run-off water supplies (creek, river, etc.) because it requires millions of gallons to detect Giardia contamination.

Filter systems are problematic because they are very liable to clogging and malfunction under inhospitable field conditions. They require knowledgeable operator to clean them and ensure they are operating properly. If you are set on getting a filtration system, obtain results from independent testing labs (e.g. National Sanitation Foundation) to make sure the unit lives up to manufacturer claims. Then get approval for use of the system from the local Health Unit.

Silviculture Perspectives

C. M. Johnson — Director, Silviculture Branch

I want to provide my perspective on our silviculture industry and what I see as our future directions.

First, I want to get a few things off my chest. Four years ago Chief Forester Jack Toovey addressed you about the importance of the WSCA becoming a mature organization. I see this evolving, but all too slowly. For example, Silviculture Branch has received favourable comments on establishing camp standards, but we should not have had to waste our time on this. Because of a lack of will in the WSCA to police your own members, the bureaucratic public servants, as people love to call us, were forced to provide bureaucratic regulations that may tie your hands in the long run.

Your industry has a poor public rating on what you pay your planters. Last winter the Director of Silviculture took "flak" over this issue at UVic. The WSCA should be defending themselves. The Forest Service and industry staff hope that the planters will see their share of the 30% increase in 1987 planting contract prices.

For your businesses to flourish, you must become more concerned with the public's perception of your industry and you must ensure that your workers are adequately housed, trained and remunerated. We need a strong workforce and public support for the greatly expanded silviculture programs we are embarking upon.

As a multi-million dollar industry, you must be prepared to plow some money back into research and training. You must ensure that you are working in the most cost effective manner. We in government also have responsibilities in this area but we cannot be expected to carry the entire load. The planting ergonomics work of Dr. Smith is a very positive example of how useful research can be. But even the PRWA has done more than your association to support this kind of research.

The Silviculture Branch has always valued our close relationship and cooperation with the WSCA. We do not always agree, but we have worked through a number of issues together and communicated well over the years. As a result of a meeting this winter, the Branch staff are re-examining the form of security deposits, changing advertising limits to encourage the preferred contractor status, allowing Section 88 approval with an RPF seal, and we are developing a clause for contractors to provide their own quality inspection.

In the past year the Silviculture Branch and regional staff have developed multi-year contracts for most silviculture activities. This approach should provide more stability to your industry. We expect that stability should also lead to lower prices.

We are developing multi-phase contracts that cover regeneration surveys, site preparation, planting, survival surveys, brushing and weeding over a 2 to 3 year period. These new silviculture contracting initiatives can not be implemented overnight since they require forward planning by Forest Service and industry staff.

Recently there has been considerable talk of stewardship. There are a great many complex factors in this concept, but I do not see organizations bolting to be first in line for stewardship. In my opinion this approach has the greatest chance of success on the TFL's. Perhaps the WSCA should sit down with the TFL holders to work out an approach for this type of contracting.

We have much to be very proud of in the B.C. silviculture industry over the past fifteen years. I believe we are being too self-critical. Van Eerden is comparing planting stock in Ontario with B.C., Finland, Sweden, and the U.S. which shows that B.C. has some of the best. We have to get the message out where we are doing a good job.

I'm very proud when I go back and see the seedlings we planted are now forests 25 feet tall. Areas along side we left to regenerate naturally are just fireweed with nothing over 2 feet high. This is the real story of reforestation.

We are not making the public aware enough of the need for silviculture and what is involved with silviculture operations. Most people in this province still think that the forest industry and government do most of the silviculture work. You need to get the message out that this multi-million dollar program is being delivered by WSCA members. In forestry you have to show people what you are doing and where you are going.

Finally, we should see more of you at Silviculture Committees' workshops and meetings. You need to keep up with the technological changes that are occurring rapidly in our industry.

We have much work and a great many opportunities in the silviculture field. We must find new directions and flexible approaches to silviculture to ensure that the needs of our society and the aspirations of individual contractors are met.

Management of the Forests

Tom Lee — Deputy Minister of Forests and Lands

I am not a forester, so I don't know anything about growing trees. I see my job as a manager and managing the Ministry is no different from the way you manage your own companies.

I measure management success in three ways, whether in business or in the Ministry:

1. Making the right investment decision
2. Operating in an efficient manner
3. Providing excellent service to clients

The right investment

The first thing a manager must do is set investment priorities; or in business terms, analyse the rate of return on investment. The Ministry of Forests & Lands is on an incremental growth curve that would shock the public tax payer. Our current budget is over \$400 million and our own priorities indicate we need at least \$500 million. There are so many incremental costs that in the next three years this figure could go to \$700 - \$800 million for currently approved programs. I think its clear you can't stay on the incremental spiral forever. The management challenge is to get the maximum value for each dollar spent.

Anyone familiar with financial models knows that return on investment is not a straight line. At some point the curve begins to flatten out and you receive less and less for each dollar invested. We don't know where we are on the curve right now. The current accepted level is 75% reforestation. How much does it cost to go from 73 to 75% and how much does that add to the curve. For that matter, what about going from 60 to 75%? How much are we prepared to pay to reduce the rotation by 10 years and is that a sound investment

At the Ministry, we are willing to state openly our knowledge and our lack of knowledge. At the moment we don't know the fundamental value of our investments. For example, maybe we should be spending more money to plant less trees. What is balance between quality and quantity.

We have budget priorities for research and for better inventory of forest lands and annual allowable cut. It tough to go before your banker and say we need money for research and inventory so we know if we're making the right investments but also we want to plant an additional 40 million trees. We also had to tell our banker, the treasury board, that our cost estimates were out 30%, so we need 30% more money to meet our tree targets. The obvious response is: how about finding a way to plant those trees for 30% less.

Now that may not be possible. But these are the kind of questions that we have to ask ourselves— that Treasury Board asked us and we couldn't answer. These questions give us an opportunity to pause and re-evaluate our position.

Efficient and accountable

This brings me to the second management topic: we need to deliver a reforestation program that is both efficient and accountable. The obvious questions are "How to deliver" and "Who should deliver" to get the greatest return for the least cost.

I think that Stewardship is a step in the right direction, and your proposals on that will help us. We can go to Treasury and say exactly this is going to cost, we know what we are going to get for it, and we know that this is the most efficient method.

As Dr. DeYoe has said it is important to put biological gain and economic benefit in balance. At the moment the green machine is working; the biological aspects are fairly clear but the fundamental investment choices are unclear.

Customer satisfaction

Quality of service is important to us. We intend to treat you more as clients. We want to develop a better working relationship that is positive on both sides. We will treat you with respect, believe in you and your objectives.

continued next page...

Management continued...**Management Plan**

There are three specific plans in place that will help us with the objectives I've just talked about.

1. Decentralization

We are moving 280 people out of the central and regional offices into the district offices. Decentralisation will delegate more authority and accountability down to the front line, to the people in the field. They have the local knowledge, and should make the decisions.

For you this will mean better decisions and faster decisions.

2. Integrated Resource Management

There is a lack of public confidence in our resource management. We have to consider all the uses of forest lands recreation, fishing, range, etc. We have people saying: don't cut this area at all, or keep the pesticides out of my watershed. All this has an increasing effect on future harvests so we need an integrated plan.

3. Small business opportunities

The Ministry has a mandate to increase opportunities for small business. It is important to us that your industry thrive, so we will do everything we can to ensure it is strong and stable.

Forestry review

The recent Forestry Management Review is of interest to you. This white paper is an expression of the priorities and planned changes as seen from within the Ministry. We are currently analysing public input and are interested in hearing from you.

There is also Silviculture Program Review which will look specifically at the silviculture programs and budgets in order to set priorities. [See the article on Page 25.] We need a clear up to date objective statement on the status of silviculture in B.C.. The review has been met with some cynicism, but it is not just a disguise to do nothing. There is no preset agenda of what the results will be. My response to the accusations is that no one killed Bambi and no one is trying to kill silviculture.

The review will be complete in November and Position Papers will be available by September. You have the field and operational experience so it is important that your organization participate in the process.

Public Image

I may be new to silviculture but I know when things are not right. For example, when there is a screaming headline in a Vancouver newspaper "B.C. Silvicultural Slum," I think your organization should stand-up and shout a bit. The media tend to give a negative perspective and its up to us to educate the public.

Yes, we need to plant more trees and we are willing to say that, but we also need to talk about what we are doing right.

We must have pride in what we are doing.

Opportunity

Some people may say we have a problem; I see it as an opportunity to ensure that the public's dollars are spent most efficiently, an opportunity to find better delivery systems for silviculture, and an opportunity to create a model working relationship between the Ministry and your industry.

Resolutions of the Annual General Meeting

Reported by John Betts

The following four resolutions were presented by Dirk Brinkman as proposed Strategic Objectives of the WSCA:

Strategic Objective #1: Educate Members

The WSCA enhance the competence of its members by providing a forum for discussing issues and educating members (through such things as the Annual General Meeting, Chapter Meetings and a Newsletter), that it develop and maintain training standards for all types of silviculture, that it encourage training and support government funding for training, that it support enforcement of camp standards and WCB safety standards.

Strategic Objective #2: Public Awareness

The WSCA work to enhance public recognition, appreciation and understanding of good silviculture by gaining fair media coverage of reforestation issues, that it also develop a coherent industry position on these issues, educate its own members and create an urgent awareness of the inadequacies of funding for silviculture.

Strategic Objective #3: Improve Results

The WSCA improve the reforestation program's results by promoting preferred contracting, stewardship contracting, appropriate silviculture, an improved checking system and the further use of 'proposal award' contracts (past performance used as a factor in the award).

Strategic Objective #4: Viable Industry

The WSCA preserve the viability and integrity of silvicultural contracting by lobbying against manipulated bidding and unqualified open tender low bid awarding of contracts, eliminating the subjectivity of the quality checking system and preventing cut-throat competition.

These four motions were all passed unanimously.

Resolution #5: Constitution Review Committee

That a committee be struck to investigate reviewing and updating the Constitution and By-laws of the WSCA. (It is important that the activities of local chapters be coordinated and not conflict with the central WSCA By-laws. In this light some central By-laws may need to be reviewed and revised.)

Resolution #6: Prince Rupert Chapter

That a Prince Rupert Regional Chapter of the WSCA be formed. (This region accounts for 30 million trees annually and has the three member minimum membership.)

Motion #7: Camp Inspections

(Defeated)

The WSCA petition the Ministry of Health to ensure that tree planting contractors' camps be certified annually following an on-site inspection with the inspections to occur early in the spring planting season. (The majority of members felt the regulations could not be enforced equitably under these circumstances.)

Resolution #8: Bid Deposits

The WSCA seek to have the current system of Bid Deposits amended to allow contractors the option to register beforehand, for bidding on license and Ministry planting contracts, on a region by region basis upon payment of a lump sum to be determined by the Region to be held in lieu of the deposit normally required to accompany each bid.

Resolution #9: Viewing Deposits

The WSCA work to stop the practice, by some licensees, of collecting non-refundable deposits for viewing.

Motion #10: Start-up Dates

(Defeated, referred to Contract Committee, see Resolution #15)

The WSCA seek to effect changes in Clause 1B, Schedule A of the Ministry's tree planting contract and parallel clauses in Licensee contracts such that a date upon which work is to commence is stated specifically, and such that if the date upon which the contractor is ultimately required to start varies from the specified date by more than the stated lead time, resulting in the contractor being unable to start and subsequent cancellation of the contract, then there should be no loss or discredit to the contractor.

Resolution #11: Checker Experience

The WSCA petition the Ministry of Forests and Lands to require that anyone who does planting payment plots shall have four weeks experience planting in contract situations or one year's experience as a checker.

continued next page...

Resolutions continued...**Resolution #12: Checker training**

A committee of the WSCA should examine the silviculture curriculum of Forest Technicians' training which bear on contract administration, and if this curriculum is judged inadequate for proper application to field conditions the WSCA should recommend changes or additions. (Industry advisory committees exist for curriculum development and approval of training programs. The WSCA will find out how to participate on these committees.)

Resolution #13: Stand Value

The WSCA recommend that the Ministry of Forests and Lands alter their objectives from maximizing the 'yield' of stands to maximizing the 'value' of stands. (Considering yield results alone is too narrow a criterion for considering the worth of many silvicultural activities).

Resolution #14: Steady State

The WSCA recommend that the Ministry of Forests and Lands establish early growth and performance targets for the Steady State Program.

Resolution #15: Contract Committee

The WSCA form a committee to seek improvements in the Ministry of Forests and Lands tree planting contract.

Resolution #16: Dues Due

The dues for the Calendar Year of 1987 are payable at the AGM and contractors will be in default if not paid by March 31, 1987.

Resolution #17: Adjustment Committee

Dirk Brinkman and Tony Harrison continue to represent the WSCA on the Silviculture Industry Adjustment Committee. Tony Greenfield and John Betts to act in their place if they are unable to attend to their duties on this committee.

Resolution #18: White Paper Committee

Create a committee to respond to the Forest Management Review White Paper.

WSCA Elections**Central Executive**

President: Carl Lowland
Treasurer: Tony Harrison
Director: Dirk Brinkman
Director: Tony Greenfield

Constitution Review Committee:

Ross Styles is chairman (see resolution #5).

Ethics Committee:

Tony Harrison, Rick Dunn and Dave Jenkins all accepted positions on the Ethics Committee. (This committee is part of the Ethics Review Board which comprises at least one non-contractor, appointees of the Board of Directors and the three elected members as mentioned. For more information refer to the Association's Constitution and By-laws.)

Contract Committee:

Rami Rothkop is chairman (see resolution #15) he is to appoint three person committee to report to Central WSCA executive by July 31, 1987.

White Paper Committee:

John Betts, Rami Rothkop, Ron Jensen, Susan Lovejoy were elected (see resolution #18).

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Human Resource Adjustment Committee

As reported in the last issue of the newsletter, the WSCA and the PRWA are involved in a committee to study the "human resource" (manpower) issues of the industry. The WSCA representatives to the committee are Dirk Brinkman and Tony Harrison.

We Need Your Help

The committee recently hired a consultant team (Stevenson Kellogg Ernst & Whinney and Ried Collins) to assist us. They will be collecting data and interviewing contractors and employees across the Province. **If a representative of one of these firms contacts you, please give them your cooperation.** All the information you provide to them will be held in confidence.

If you have any questions contact the committee representatives or WSCA Regional coordinator.

The following is an overview of the study being conducted by the committee.

Background of the Study

The B.C. silviculture industry has expanded very rapidly. In 1985-86, \$135 million was spent on silviculture, with 116 million trees being planted. In 1987-88, the estimates are for over 200 million trees to be planted and for increased work to be undertaken on other silviculture activities. This amounts to over 560,000 person days of work. It is estimated that anywhere from 100 to 12,000 people can be employed, depending upon the time of the year.

In 1987-88, it is expected that \$280 million will be spent on silviculture. In 1988-89, the amount is projected to be as high as \$320 million.

Importance of the Study

To meet increased silviculture activities of the future, more attention must be paid to the availability of competent workers to carry out the work. Since silviculture work is labour intensive, the human resource component has a major impact on the ability to achieve future plans. The consultant's report will have an important bearing on the future of contractors, workers, the industry, and the ultimate wealth of the province. The committee is looking forward to the silviculture industry's cooperation in producing a constructive and timely report.

Study Overview

The study will have four sections:

Section 1 — The Demand for Labour

Projections of expenditures (government and private) on silviculture and projections of labour requirements, broken down by geographic location and type of work activity.

Chart typical distribution of labour demand throughout the year and suggest possibilities to alter or smooth out the imbalances.

Section 2 — The Supply of Labour

Survey of the contractors in the industry (number, size, geographic region, experience, etc.)

Examination of the adequacies of silviculture employment in terms of: training on-the-job, job supervision, camp conditions, working hours, wage payment systems, and compensation rates, job enrichment and rotation, the general organizational climate in contracting firms, etc.

Estimates of the labour force size and composition.

The length of the work season and the off-season work activities (or inactivity) of silviculture employees, including other sources of income (U.I., etc.).

Section 3 — Labour Market Environment

Analysis of the impact of job creation activities on the industry (and whether the silviculture industry should be used as a mechanism for employment and social policy), including existing and planned silviculture training programs and the degree of coordination between them.

Examination of the impact of bidding procedures on the size of contracts, the continuity of work, completion requirements, incentives for quality, future payments for success.

The effect of quality assurance procedures on rework, contract payments (and associated wage payments), etc.

Section 4 — Other Jurisdictions

Compare the silviculture industry human resource procedures in other provinces and countries and how these procedures affect productivity, employment, and quality in their industries.

Silviculture Program Review

The Minister of Forests & Lands has commissioned a Silviculture Review which will be undertaken by the following committees:

Steering Committee:

J. Cuthbert, Chief Forester
B. Devitt, CIP Inc.
D. Little, Northwood
L. Reed, UBC
D. Brinkman, Brinkman & Associates

Working Committee:

L. Atherton, Silviculture Branch
W. Howard, Development & Marketing Branch
D. Errico, Research Branch
A. Prelusky, Inventory Branch
H. Benskin, Research Branch

The Review will have the following format:

1. Overview of the silviculture program

An historic look at the development of the program. Silviculture costs will be compared with other forestry sector and government costs and revenues.

2. Funding sources and cost control

Review the various funding sources for the silviculture programs and their implications on total program costs. Steps the Ministry has taken and can take to control costs will be identified.

3. Basic silviculture review

The Ministry is updating its "Steady State Plan." Data from this plan will be analyzed and recommendations provided. The analysis will concentrate on yields resulting from various mixes of artificial and natural reforestation techniques, their effects on future harvest levels and their social and economic costs and benefits.

Additional matters to be reviewed are:

- the availability and utilization of growth and yield data;
- the specific need for brushing activities and the appropriate use of herbicides;
- classifying and measuring not satisfactorily restocked (NSR) land;
- improving methods for monitoring regeneration performance;
- the need for ensuring that harvesting and silviculture prescriptions are both ecologically and economically sound.

4. Intensive silviculture review

Intensive silviculture is seen as a solution to overcoming projected wood supply shortages and increasing the value of future wood supplies. A specific review of growth and yield data needs as well as the need for making better use of analytical models will be undertaken to enable determination of an optimum mix of silviculture treatments at the management unit level.

5. Development of a strategic silviculture planning framework

There is a need to develop analytical models as well as to improve the conceptual economic framework within which silviculture program decisions can be made. This is seen as a long term project which would be done over the next several years. This will provide a linkage between silviculture and other ministry programs.

6. Responsibility for the Silviculture Program and Private Sector Opportunities

Licensee responsibilities for silviculture activities will be reviewed. Methods of program delivery will be reviewed with specific reference to stabilizing the silviculture industry. Opportunities for stewardship, multi-phase and multi-year contracts will be investigated.

The results of the foregoing reviews will be capsulized in one or more discussion papers for release.

Proposed timetable:

March 4, 1987

Completion of terms of reference for each review and assignments to carry out reviews.

August 1, 1987

Competition of reviews.

September 1, 1987

Release of discussion paper(s).

October 15, 1987

Deadline for public responses.

November 30, 1987

Final report and recommendation submitted to the Minister of Forests and Lands.

Stewardship for Excellence

Dirk Brinkman

Note: This is a summary of a speech presented by Dirk to the Canadian Pulp and Paper Association Conference on March 16, 1987. This is the first year silviculture contractors were invited to address the conference. The complete text is available on request from the WSCA Regional Coordinators.

Introduction

The provincial governments were made the stewards of Canada's forests at Confederation. The silviculture contract reflects the goals of the provincial government. It is a segment (for a specific area, time, and task) of this stewardship contractually assigned to a private contractor.

The overall design of provincial stewardship has an immediate impact on the problems in and the results of silviculture contracting. Vision and shared goals are needed to produce healthy and vigorous forests for the future.

B.C. Silviculture Contracting

Silviculture contracting is unquestionably the most efficient instrument for delivering Provincial forest renewal programs. The industry has proved that it can adapt and innovate under the most difficult conditions.

Over the last seventeen years tree prices have decreased (relative to difficulty and cost of living) while the difficulty of planting has been increasing, as have other costs. 1982-86 were particularly tough years. Contractors had to adapt (by increasing productivity and cutting costs) or leave the industry.

In 1987, B.C. increased its planting program from 145 million to 200 million seedlings. New contractors require experience, financial backing and expert management to start up. Many established contractors have dropped out. As a result of the diminished supply of contractors, the average price increased nearly 30% in 1987.

Those who survived the challenges of the lean years form a strong and resilient industry. Silviculture contracting has become an irreplaceable professional service.

Possibility for Excellence

Canada can have the most cost effective and excellent forest renewal in the world.

During the time I have been in silviculture great progress has been made in most phases of forest renewal, but the quality of the end product—plantations—remains inconsistent. Some plantations do not survive, some have poor growth and vigor. At the same time, due to inadequate commitment to forest renewal, the N.S.R. backlog increases and the old backlog brushes-in.

We can shift from mediocrity to excellence.

Canada is a forest nation. The silviculture contracting community of planters, contractors and government administrators are dedicated to forest renewal. The level of individual commitment and ability is outstanding.

Aligning the efforts of the outstanding individuals will produce excellent results.

In declaring this possibility for excellence many opportunities appear.

Opportunities for Excellence

I see six immediate opportunities:

1. Establish Provincial objectives

Establish short term silviculture objectives for each Province (this is especially important in the light of the export tax revenue).

In B.C. I have proposed three objectives:

1. 100% reforestation
2. Eliminate the N.S.R. backlog by the year 2000.
3. Enhance forest growth to exceed the annual loss.

continued next page...

Stewardship for Excellence continued...

2. Composite Cost/Benefit Analysis

Silviculturalists are investment brokers for Canada's future. We need to know the returns for our silviculture investment.

The analysis needs to be a composite of all costs and benefits: financial, economic, social, environmental, cultural, ethical and ecological.

I am confident that a composite benefit analysis will secure the urgently needed investment.

3. Measure Results

We need to shift the emphasis from the number of trees planted to the growth and vigor on the hectares that are free growing.

4. Award contracts by Proposal

The proposal award system acknowledges past performance, rewards outstanding quality, and provides incentives for improved survival and growth.

Price remains a significant factor.

5. More Area based contracts

By shifting the payment system for treeplanting from per tree to per hectare you align the planter-contractor goals with the forester-public's.

6. Multi-year multi-phase end results contracts

Multi-year multi-phase end results contracts probably offer the greatest opportunity for cost savings and excellence.

Multi-phase and multi-year contracts minimize the total cost by reducing administrative and checking costs. They also encourage industry stability, local contractors and year-round employment.

Delivered end results contracts ensure clear objectives (density, growth and vigour), improve prescriptions, and limit costs. They also provide incentive to implement research in the field and develop innovative practices and equipment.

Forest tenure should define reforestation responsibility on a delivered end results basis.

Action

We represent the possibility for excellence.

Begin by committing yourself to this goal and discovering opportunities that move in that direction.

Planters and contractors:

Express your preparedness to be responsible for delivering outstanding forests. Educate yourselves to improve plantation results. Innovate and bring new ideas into the field.

Industry foresters and managers:

Let the provincial governments know you are ready to practice excellent silviculture; to assume the risks and reap the benefits of an end-results tenure system. Challenge your company president with the opportunity of entrepreneurship within the silviculture responsibilities of your tenure system.

Everyone:

Support the provincial foresters in setting goals and aligning all the players in the silviculture industry behind those goals.

Challenge our leaders to provide vision.

We need to create a climate where all players share a will to excel.

You know we can do it.

Let's do it.

Announcements from the Ministry

Silviculture Survey Courses

The Ministry of Forests and Lands, Silviculture Branch, in conjunction with the six Forest Regions, will be presenting a five-day Silviculture Survey Course throughout the Province in 1987.

The purpose of the course is:

1. To ensure a consistent provincial understanding by field foresters and technicians of the basics of Silviculture Surveys.
2. To effectively communicate the importance of surveys and their linkages to other systems.
3. To describe how surveys are used in decision-making for forest land treatment.
4. To certify persons passing this course as being technically competent in the basics of Silviculture Surveys and their use.
5. To upgrade the knowledge of silviculture surveyors.
6. To begin the registration of qualified silviculture surveyors. **Beginning Jan. 1, 1988, Ministry of Forest Silviculture Survey contracts will specify completion of this course as part of the survey eligibility requirements for a proportion of surveyors on each contract.**

As the course is targeted at experienced field personnel, prospective students should meet the following qualifications:

1. University degree in forestry or equivalent with two years silviculture experience or
2. Technical diploma in forestry or equivalent with two years silviculture experience or
3. Five years (seasons) silviculture experience. Silviculture experience shall be deemed to include employment in silviculture surveys, planting prescriptions, site preparation assessments, planting project administration, brushing and weeding administration and juvenile spacing administration. A substantial part of the experience should be in silviculture surveys and recommendations.

Schedule for Silviculture Survey Courses

The following is a tentative schedule for the five-day Silviculture Survey Courses.

Region	Location	Dates
Kamloops	Vernon	March 23 - 27
Cariboo	Williams Lake	April 6 - 10
Prince George	Prince George	April 27 - May 1
Prince Rupert	Smithers	May 4 - 8
Nelson	Castelgar	May 11 - 15
Kamloops	Kamloops	Sept 28 - Oct 2
Prince George	Prince George	October 5 - 9
Nelson	Cranbrook	October 19 - 23
Vancouver	Vancouver	October 26 - 30

The specific locations and times will be advertised by local colleges and in the Vancouver Sun. For more information on the course schedules or content please contact your local college or the Regional Surveys Coordinator.

Silviculture Committees

At your AGM there was considerable discussion about including contractors at the Silviculture Committees. Please inform your members and other contractors about the organizations and their meetings.

There are three silviculture committees, made up of Forest Service, licensee, university, college, contractors and anyone else interested in the practice of silviculture. Generally, they have a winter business meeting and a summer workshop. The workshops are:

Committee	Workshop	Contact
Coastal Silviculture Committee (CSC)	June 10, 11 UBC Research Forest	F. Barber 387-1191
Southern Interior Silviculture Committee (SISCO)	March 31 - April 1	J. Sutherland 354-6280 Penticton
Northern Silviculture Committee (NSC)	March 17 Tree Improv.	Mike Bruhm 565-6177

If your members can attend these meetings, I'm sure that they would gain from the experience and add considerably to the meetings.

continued next page...

*Ministry Announcements continued...***Alternatives to 85%***Brian Story*

The Deputy Minister of Forests has instructed the Silviculture Branch to investigate possible alternatives to the current 85% minimum planting quality for payment standard. The following principles must be integral to any new system.

1. It may not rely on arbitrary penalties. Any payment reductions must be linked to performance and actual costs.
2. Payment must go to zero when planting quality reaches a point where the Ministry receives no value. That is, when survival losses will reduce the stocking below the minimum standard and replanting will likely be required.
3. The payment system must be as simple as possible and easy to calculate.
4. Payments may not exceed 100% of the contracted price.
5. Payments for work over 90% should be very close to full payments but should then drop off rapidly as the risk of replant increases.

For the purposes of discussion a system of subtracting the cost of the improperly planted trees at bid price plus 20 cents per tree from the calculated rate has been suggested.

For example, a 100,000 tree contract with a bid price of 30¢/tree and a seedling cost of 20¢/tree:

P.Q. %	Approx. Pay Rate (%)	Current System		Proposed New System	
		Payment (\$)	% of Max.	Payment (\$)	% of Max.
100	100	30,000	100	30,000	100
95	100	30,000	100	30,000	100
90	95	28,500	95	26,000	87
85	90	27,000	90	22,000	73
80	85	25,500	85	18,000	60
75	80	0	0	14,000	47
70	75	0	0	10,000	33
65	70	0	0	6,000	20
60	65	0	0	2,000	7

Please send comments on the proposed change or alternate suggestions to the Silviculture Branch.

New types of contracts

*Letter to the Northern Silviculture
Committee from C. M. Johnson*

The subject of long-term "evergreen," or quota types of contracts in silviculture has been of interest to my staff for some time.

In fact, the contract formats for what we call Multi-year planting contracts have been developed and distributed for use among Ministry offices as a trial for the 1987 planting season. This contract format simply includes several years planting in one contract and uses a performance clause to ensure the continuation of the contract for the three year period.

In addition, the award is through a proposal system which selects the best candidates and uses price to select among those qualified. Should this type of contract be successful, we intend to refine the documents and expand their use to link several types of work (i.e., Multi-phase operations) with the multi-year procedure.

Encouragement of your members to try these new contracting tools would be appreciated as it is always difficult to get new ideas accepted.

Mail In

Job Creation

I enjoyed the Winter 1987 issue of your newsletter and have ordered subscriptions for myself and other WFP foresters.

One item that concerned me and other foresters were Dirk Brinkman's comments on CEIC job creation programs. The implication is that the \$164 million for forestry job creation and training was not properly spent and a cadre of trained forestry workers did not result from these programs. If anyone cared to ask or check the North Island you would find these workers employed right now by forest companies on major silviculture contracts including spacing, brushing and weeding and planting. These workers are doing exactly what the program was intended for. Many have started their own businesses as a result and improved the competitive nature of silviculture contracting in this area.

We are very proud of these local workers and the contribution they have made and will make to the advancement of silviculture and we are pleased to have aided in the training programs for them.

W. E. Dumont, R.P.F.
Divisional Forester, Western Forest Products Ltd.

Communication

Communication and cooperation are the keys to change that will result in benefits to all players in the reforestation game. Confrontation begets confrontation. Pure self-interest expressed in terms of biased journalism and abusive manifestos are impediments to successful resolutions.

Over the past months we have seen an explosion of creativity and positive results. It is about time. Congratulations to those who have finally decided that it takes honest hard work and commitment to good faith negotiations to find better ways to conduct our business. If we can continue to focus our energy on creative solutions instead of dwelling on problems and negative rhetoric, this progress will continue. There are no limits other than the ones we impose on ourselves. Let us turn win-lose (lose-lose) into win-win.

I urge the regional chapters of the W.S.C.A. to meet with Regional Forest Service and forest company representatives to examine issues and generate solutions. The agenda is open.

Bruce A. Fraser, R.P.F.
Reforestation Coordinator, MOFL

Mail Out

Reply to Bill Dumont

re: Appropriateness of Job Creation Programs

The foresters administering the programs, and the workers involved in the programs, for the most part, can be proud of the contribution made to silviculture in B.C., and the forestry worker training and skills achieved.

These programs did not result, in my, and other contractors' experience, in training workers for the open market piece-work silviculture contracting industry. The degree of motivation and achievement required, was not nourished or stimulated in the make-work climate.

Admittedly, the intensely competitive production oriented work climate of the silviculture industry has its own severe problems. The optimum environment lies somewhere between.

The Silviculture Adjustment Committee Study will identify, in fact, the degree to which the past programs produced trained silviculture workers who are participating in the present increased silviculture program. We will also identify problems in both the job-creation and contracting industry.

Any input that you may have into this review process would be welcome.

Thank you for your positive comments on the newsletter.

Dirk Brinkman, Director W.S.C.A.



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VANCOUVER, B.C. V6A 1M6

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More Mail In...

Contracting is a business

For too long the contractors have accepted what private industry or the ministry cared to grant them. You must realize that you are now in a position of power. Without your expertise and initiative the silvicultural program would fail. The number of experienced and competent contractors dwindles every year as those of us now in our forties turn to more gentle ways of making a dollar, not that planting trees isn't a wholesome occupation, it's just that following spring around the province, year after year, tends to bring on arthritis, rheumatism and marital discord.

As you have entered into a contract with the other side, you are able to hold them to it. I can advise you that in all five occasions I had to represent contractors this fall, the ministry was most reasonable in accepting the contractors' position, once it was made clear to them.

I am not encouraging litigation (although that's what you think lawyers tend to do, it's not what I do—I've got enough going as it is), I am trying to say that you have a right to compensation if the contract has been misrepresented and as a result you have suffered a loss. You could declare the contract as having been breached by them and walk away from it. If you do so, I believe you could sue for your lost profits. This will not be true if the contract waives your right to compensation in these circumstances. Many contracts do.

This brings me to my main point. The standard contracts, in my view, are almost solely for the benefit of the Ministry or Licensee. Any of the risk involved in the business seems to fall upon the contractor. I suggest that contractors come together to devise an equitable, reasonable contract, one to which the ministry and industry will agree so that in the future you will avoid hassles, litigation, heartburn, ulcers and bankruptcy.

A mature industry has fair, reasonable and straightforward contracts. The silviculture industry does not. As long as you are willing to continue to sign whatever contract that they put in front of you year after year you will be at a disadvantage. I have seen some new industry contracts that are three times as long as the ones produced last year.

They are covering their butts every which way possible. Why don't you cover yours? A fair contract would be to everybody's benefit.

Peter Kendall

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Who is the WSCA?

Vancouver

Beaverfoot Resources *
Brinkman & Associates Reforest.
Cardinal Reforestation *
Cascade Resources Ltd.
Coast Range Contracting Ltd. *
Emerald Forest Corp. (A) *
Highrigger Forest Mgmt. *
Loki Reforestation
Mountain Reforestation *
Oliver & Giltrap *
Osprey Silviculture Operations *
Skookum Reforestation *
Stellar Holdings Ltd. *
Whiskeyjack Reforest. Ltd. *
W.J. Green Forestry Services *
Zanzibar Holdings

Cariboo

Blue Collar Reforestation *
Cottonwood Reforestation *
Lid's Reforestation
Likeley Reforestation

Prince George

C.A.G. Holdings Inc. *
Folklore Contracting *
Integrated Silviculture Services
Kahan Enterprises *
Mountain Top Reforestation *
Mudslide Contracting Ltd. *
Nechako Reforestation Services *
Nomadic Silviculture *
Roots Reforestation
Seneca Enterprises Ltd.
Serac Reforestation Ltd. *
Shannon Silviculture *
Silvaram Holdings Ltd.
Tawa Reforestation Ent.
Triple 8 Enterprises *

Prince Rupert

Summit Nursery Ltd. *
Roots Reforestation
Waterside Ventures Ltd. *

Alberta

Tsuga Forestry Contracting *

Kamloops

Crown Projects *
Crowpoint Enterprises Ltd. *
Golden Raven Co-op *
Grandy Reforestation *
Hawkeye Reforestation *
Mountain Pacific Forestry *
Nu Growth Industries Ltd. (A) *
Rainbow Resources (A) *
Southern Okanagan Silviculture *

Nelson

Arbolitis (A)
Dark Star Forestry Ltd. *
Evergreen Co-op *
Fieldstone Resources Ltd. *
Forestcover Resources Ltd. *
Green Peaks Holding Ltd.
Jansma Reforestation *
Mart Resources *
Rothkop Contracting Ltd. *
Siltech Reforestation Ltd. *
Skyline Contracting Ltd. *
Talking Tree Forestry *
Wildhorse Valley Treepl. Coop *

(A) Indicates Associate Member.

* Indicates some or all of dues still to pay.

WSCA Code of Ethics

This Code of Ethics is being incorporated into the Bylaws of the WSCA Constitution and will apply to all members of the Association.

If you have questions or suggestions concerning the code of ethics, please contact Constitution Review Committee Chairman Ross Styles.

1. That Members conduct their business in the public's best silvicultural interests and make their work silviculturally effective.
2. That Members conduct themselves with respect for their fellow Member contractors.
3. That Members adhere to legal requirements and regulations governing the industry and contracting business.
4. That Members complete contracts within the general interest of the client. In the case of reforestation contracts, the contractor must in no way create, encourage or turn a blind eye to trees unaccounted for. Members must immediately dismiss any employee caught destroying trees.
5. That Members be in good standing with the business community and pay all their bills.
6. That Members provide workers with the agreed upon payment, working conditions and living arrangements.
7. That Members ensure that there is a written agreement between the contractor and the worker, and that the agreement include who is supplying the tools and the stock.
8. That Members responsibly ensure the health, safety and welfare of his/her workers.
9. That Members provide adequate information, training and supervision to enable the worker to perform optimally.
10. That Members act to inspire confidence in his/her profession by maintaining high standards in his/her conduct and daily work.
11. That Members support the principle of just compensation for professional services rendered.
12. That Members strive to protect the silviculture profession from misrepresentation and misunderstanding.