

A.R.C.Q. SUMMER 1984 QUARTERLY

Associated Reforestation Contractors Inc.

ECONOMICS IN REFORESTATION



IN THIS ISSUE:

- Rationale For Investment In Forest Renewal**
- Ground Application of Herbicides**
- Vegetation Control Techniques**

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Lead Line

Of the three basic areas of forestry investment; harvesting, management, and regeneration, the last is the riskiest and shows no short term return. Harvesting (logging) off-sets its heavy investments into machinery, insurance, engineering, and wages by an immediate return of income, often at a high rate of profit. Managers (foresters) primary costs are in office and salary. Most regeneration work is either machine or labor intensive, which are both expensive. Yet, the value for bare land and successfully planted land is usually about the same. It then takes from 20 to 100 years before the first return is realized. Compounding an investment for that many years wouldn't require a great rate of return before it would amount to a large sum of money. Which is good, because most projections don't show a very high rate of return for money put into reforestation projects. And those projections often don't include the initial price of the land in the equation. And foresters have only recently begun to acknowledge the costs resulting from legislative actions initiated by special interest political activists.

Given these uninspiring statistics, why do governments, large corporations, investors, and private timberland owners even invest in timber growing? Basically, there are two answers: money, and the law.

The body of local, state, and federal law concerning the reforestation of cut-over lands is extensive. In almost every instance, if an owner is to be allowed to harvest his timber (typically with a tax advantage or a cost subsidy), then he is usually required to implement some acceptable plan towards reforestation within a given period of time. This is because people have known for a long time the long term advantages in having tree covers, particularly on steep or exposed ground, and have legislated accordingly. The other motive for investing in reforestation, profit, is the theme of this Summer's Quarterly; the Economics of Reforestation.

Last Fall, following the keynote address made during the opening session of the Society of American Foresters annual convention in Portland, Oregon, Dr. John Zivnuska, Professor Emeritus, University of California School of Forestry, read his paper on the basic topic of investing in "new forests". I feel very fortunate that he has agreed to let us print his paper, "The Rationale For Investment In Timber Growing." Dr. Zivnuska's insights into how industrial landowners and other private investors approach investing in reforestation

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projects are very interesting and clearly presented.

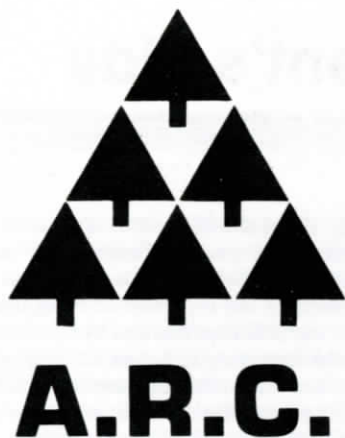
The other reason for planting, or seeding logged-off lands, the law, has a separate economic approach. Here the problem is to adhere to the letter of the law, but try and not waste money doing it. This is most notably apparent in timberland regulations governing the management of federally owned lands, which don't have the budget limitations of state, county and other governmental ownerships. As a result, probably more money per acre is invested in reforestation projects by the federal government than by any other source.

Articles by John Foster, Albert Abee, and Ed Park illustrate specific examples as to how reforestation investments can be considerably lessened by careful

planning and by job cost analysis. Similar methods of analysis can be used during every step of the regeneration process so that an accurate idea can be constructed concerning the quality of the investment. A recent re-print from the excellent Canadian magazine, *British Columbia Lumberman*, examines the transition from federal to private management that has recently started taking place in the government timberlands of B.C.

This issue marks the completion of my duties as editor of this magazine. When I agreed to take the job last year it was under the stipulation that I would only do

(continued on page 4)



ARC is a non-profit association of reforestation contractors. Since 1974, ARC has served as an effective voice on a wide range of pertinent issues. Members of ARC are concerned about the rapid increases in industrial regulation, workers compensation insurance, safety, regional and seasonal volumes of reforestation activity, as well as other state and national issues of importance to our industry. This magazine is published quarterly to provide our readers with a source of current information about the business of reforestation.

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Table of Contents

Lead Line 2
 President's Side 4
 Letters 5
 Facts and Opinions 7
 Editorial 10
 Rationale for Investment in Forest Renewal 12
 Ground Application of Herbicides 16
 B.C. Forestry Issues 18
 Vegetation Control in Southern Oregon 20
 Improving Non-Industrial Lands 22
 Safety Section 23
 Guest Opinion 26

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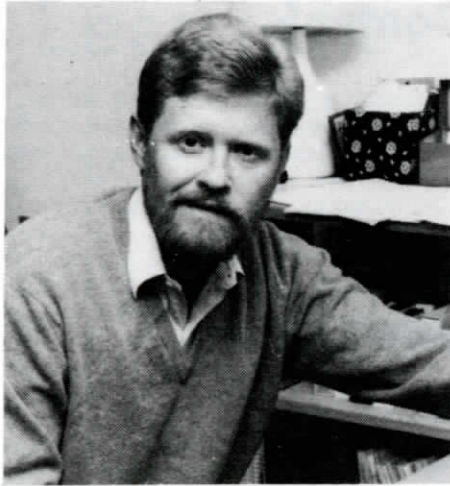
- Ben Meadows 2
- Northwest Chemical Corp. 4
- John Foster 5
- Updegraff-Gardner 6
- Forest Development, Inc. 6
- Wilbur-Ellis 11
- Western Helicopter 11
- Sauze Technical Products Corp. 15
- Pac Trac 19
- Fred S. James 27

**Associate Editors: Bob Zybach, John Foster,
Jim Carbone**

Contributing Editor: Bruce Fraser

**Cover: Crawler tractor mounted with a back tank
with cluster nozzles.**

**Photo Credits: John Foster, Bruce Fraser,
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Jim Stauffer

OFFICE NOTES

• Farewell to Bob Zybach. Bob, who has played a key role in putting together the ARCQ over the past year will be stepping down from his editorial post after this issue—temporarily, we hope. It has been through Bob's efforts that the Quarterly has obtained the quality and stature that it now enjoys. Good luck, Bob.

• Thanks for the tremendous response of letters, articles and pictures for inclusion in the ARCQ. The Quarterly is a magazine by, for and about professionals involved in reforestation and forest work. So it's essential that the editors keep getting letters and material from you, the readers. Keep up the good work.

• If you are reading a sample copy of the ARCQ please send in your subscription fee today in order to guarantee that you'll continue receiving this important trade journal. See the back cover for details.

(Lead Line continued)

four issues. Several goals were established at that time by myself and the people responsible for getting these issues out in a semi-timely manner, most notably John Foster, Bruce Fraser, and Jim Carbone. I feel that we have met those goals in a satisfactory manner and often enjoyed ourselves in the process. It is my plan to continue working on the magazine in the future, but primarily in a supportive manner so as to be able to allocate more time to other commitments. I would like to thank the advertisers and the readers who have helped to make the A.R.C. Quarterly the voice of the reforestation industry. With your continued support the magazine will continue to grow in both quality and influence. Thank you.

Bob Zybach, Associate Editor ◆

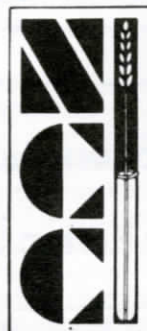
The President's Side

This has been an interesting year for the ARC if not one of its more dramatic years. At last year's annual meeting in Newport when this year's officers were installed several goals seemed to emerge for the ARC in 83-84. We wanted a somewhat higher profile for the ARC. ARC needed to reassert itself as the representative of the mainstream of the reforestation industry. For years we have been represented by far the largest group in the industry, yet have tended at times to disappear as far as our impact in the media and our profile on land-use and forestry issues. To this end we have attempted to put additional energy into the ARC Quarterly as our main public expression. ARC has made its presence felt at the Society of American Foresters meeting, in the debate over Federal Wilderness legislation, etc. We have been invited to participate in forming a, as yet unnamed, "umbrella group" of people from timber, agriculture, etc. concerned with land use issues which confront resource based industry in Oregon.

Another concern was improving our contracting situation particularly in Federal Govt. contracting. Some progress has been made here, though I think no contractor would argue that all is well in Federal Govt. contracting. Yet changes in the widely resented "liquidated damages" clause in Forest Service contracts are in the works as a result of an ARC initiated meeting between ARC, NFWFA, and USFS representatives. Contractors have noticed an increased willingness on the part of government contracting personnel to listen to the contractor's concerns this season. We feel that a reasonable and responsible approach to real problems has been paying off in an improving relationship between contractors and government. We hope more progress can be made.

It's been an interesting year and we hope next year is even better. A great deal remains to be done. Next year in Oregon is an "in" year for the legislature and that always makes things potentially more exciting. ARC should have plenty to do.

Bob Zybach, ARC vice-president and ARC Quarterly editor has informed us that for personal and business reasons he feels he must resign for a time. Bob has been a large part of ARC this year and his presence will be sorely missed. We trust that ARC Quarterly will be hearing from him from time to time and will be glad when he feels he can be back on board. Thanks Bob.



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LETTERS

E.I.S. FOR SHEEP

Your "Ewe-Turn" article on a recent USFS approach to brushcontrol was interesting.

But you didn't tell us the USFS has not done a "Worst Case Analysis" on sheep "brushing" (browsing) at the level of intensity they do for herbicides. Has the USFS written any Environmental Impact Statement for this program, as required by National Environmental Policy Act? And if they haven't, why not? Could it be because it is impossible to satisfy such requirements? It can't be because of relative safety.

Sheep are notorious polluters. They may carry anthrax or other diseases and parasites. Were those USFS streams analyzed for additional levels of coliform bacteria or parasites following sheep use? How many liver flukes per acre are distributed? How many other sheep-borne "germs"? Does anyone KNOW how these might affect our safety? — the deer and elk's safety? Death rates are very high in countries having high sheep populations, I believe.

Again, the total volume of urine from a herd of sheep must be considerably greater than that from the 10 gal/acre represented by a herbicide spray. I understand urine is quite toxic . . . just ask someone who has been shipwrecked and tried it as a substitute for water. So why NOT an EIS on sheep urine? Indeed, I would drink field concentrations of "spray" sooner than sheep urine, especially if I had to drink the extra volume represented by sheep brush-control.

And what about the sediments from those little hooves? They must stir up the extra contamination quite remarkably, so it can enter streams. More, if sheep actually could create extra nitrogen for fertilizer, as one of the sheep studies implies, that effect, too, should require an EIS, I would think.

Though largely ignored by adversary groups, (and EIS!) economic analysis is required by NEPA. The economics of the numbers of sheep required to provide all needed brush control does titillate me. I can only guess at it. Especially if the sheep are not fenced in . . . but even if they are!

So far, the USFS has clearly been one-sided in application of EIS' and WCA's. They impale herbicides alone on this tricky sticker. The greater chemical hazards of the fuel emissions that accompany all mechanical methods including hand-clearing are shrouded in a

(truly bitter) fog of silence, and even worse, so are the far more common and serious physical injuries associated with these tools.

Since widespread use of chainsaws arrived almost simultaneously with widespread use of herbicides, the omission of chainsaws from EIS cannot be glibly explained away, especially since the safety of herbicides has been increasing faster than that of chain saws.

Sincerely,
Jane Newton

GOVERNMENT TREE PLANTING FORMULA

Is there anyone left — still worth the shirt on their back — looking forward to next season's government tree planting? You don't need a crystal ball to see smarter contractors turning from government tree planting toward private industry tree planting and other federal forestry projects. One can readily see the day the government awards planting jobs from a list of bidders predestined to go broke.

The ARC — ever the concerned caretaker of the industry — is fostering debate at their September 1st annual meeting, in search of sufficient remedy that will allow prudent contractors to continue bidding government tree planting.

In attempting to isolate why government tree planting is the pits, it may be useful to observe that government non-tree planting projects are still viewed as reasonable business propositions. It can also be observed that all government forestry projects seem to accommodate extreme variance of subjective interpretation in inspection. So why is government tree planting akin to combat?

I believe the problem stems from the restrictive, inflexible, mathematical formula used to determine quality and quantity, ergo payment (if any). Talk about absurd. Here is a system that carries higher penalties for misshaping the planting hole, than for not planting the tree to begin with. Here is a system that, when calling for say 450 satisfactory trees per acre, can deliver NO PAYMENT when 450 satisfactory trees per acre are delivered. Here is a system that allows for unplantable plantable spots.

Naturally, I have a solution. I propose the elimination of multiplying above

ground quality by below ground quality. The original intent of below ground quality was to give statistical weight to the perceived severity of the J root over other planting errors. As we all know, we cannot correct a below ground error simply by planting one additional good tree for the one bad tree we planted. No. We must plant 2 or 3 or 4 or ? . . . it depends. What happened to the idea of weighting the J root (below ground quality) is that, like most government ideas, it grew, and grew, and grew. Pretty soon, other planting deficiencies were added to the below ground quality category, not because they needed statistical weighting, but because they happened to occur below ground. Soon minor planting errors that probably would not kill a tree or even hinder its growth were determined to be worse for the forest than not having planted a tree at all.

I propose simply that there be only one percentage derived from the plots.

QUALITY EQUALS THE NUMBER OF SATISFACTORY TREES PER PLOT DIVIDED BY THE NUMBER OF PLANTABLE SPOTS PER PLOT.

(Not to exceed 120% of plantable spots per plot)

Quality should be delivered at 100% to achieve full payment. If the government wants 500 satisfactory trees per acre, they should on average get 500 satisfactory trees per acre, but no more. This system simply allows that one additionally planted tree (evenly spaced) will correct one already planted bad tree. Simple, isn't it.

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LETTERS

HERBICIDES AND WILDERNESS

Oregonians, shame! Where, fellow citizens, is the outpouring of thanks that ought to be directed toward those few (very few) that have brought a halt to herbicide use on federal forests? As a result of the vigilant and ongoing efforts of these valiant activists our forests may one day be safe from brush menacing chemicals.

And for those who would have clear cutting banned on Mapleton Ranger District, a resounding cheer! If they are successful there, it might only be a matter of time until all of the Douglas Fir region is safe from the evil conspiracy of timber barons and foresters. Let's not forget our friends that strive to add acre upon acre to our wilderness areas. Surely everyone can appreciate why it is necessary to keep our forests pristine, without roads and accessible to only the most able and appreciative of our fellow citizens.

Come now, Oregonians, don't murmur in dissent. Don't worry about a reduced allowable cut as a result of a ban on herbicides and the designation of additional lands as wilderness. Don't worry that these measures won't only effect mill workers, loggers and reforestation workers but the rest of the economy as well. What if your job and life-style are in jeopardy? Never fear! Those same people, who we so fervently thank, will, no doubt, teach you how to live off the land. Certainly by combining a liberal dose of Aid for Dependent Children with organic vegetables and food stamps you'll do just fine.

Insincerely,
Steven A. Winston
Oregon Land Works

BIRCH QUIK — TACH SCALPER

I have had numerous phone calls about the article John Foster wrote in your 1984 Winter Quarter magazine about the Birch Quik-Tach scalper teeth and I feel I must write and set some facts straight.

Ronald Bertch is the District Silviculturist on the Ashton District of the Targhee National Forest at Ashton Idaho. I am a technician working on the District for the past ten years in reforestation and related activities. I designed and had the scalper teeth built here in Ashton and the Missoula Equipment Development Section (Ben Howman) took them, drew the blueprints and improved the attachment area.

The teeth were designed to be used where we could not use the SFI machine; (Swedish Forest Industries) on slopes and fill in spots, brushy areas. The costs run from \$1200.00 a set to over \$2000.00 depending on what material they are

made from. The real benefit is the low cost involved and not tying up the cat if other work has to be done. They can be removed in 15 minutes and put on in less than 30.

Russ Ryker's report on competing for moisture shows that a seedling needs a four foot circle of vegetation free soil to grow at the optimum rate. Hand scalping cannot provide this day in and day out. Our SFI machine with 30 inch paddles can provide any number of scalps per acre for planting sites on ground up to 20-25%; over this the scalping teeth do a better job.

We have developed some interesting planting site tools on the District.

Over the last ten years I have had a good relationship with your planting contractors, ie., Jim Holt, Lee Chism, Volmor, Donnelly, Johnston and others.

Lowell E. Birch

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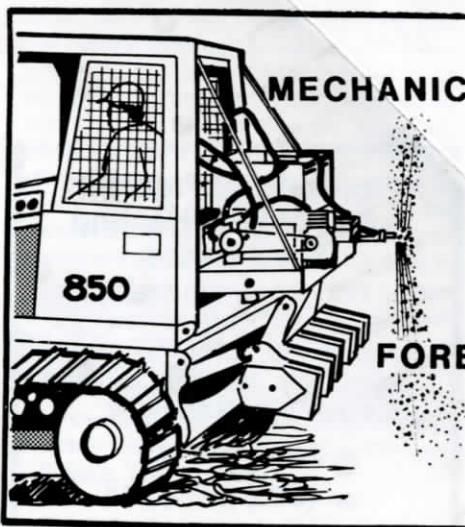
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FACTS & OPINIONS

⑦

U.S. TEMBER SALES LOSING MILLIONS — OR ARE THEY??

According to the General Accounting Agency's audit of 1981 and 1982 USDA Forest Service timber sales, more than \$80,000,000.00 was lost in 10 western states. However, when all 3,244 timber sales were accounted for in all 12 western states, \$712 million was netted. That is because federal sales in Oregon and Washington alone accounted for \$687 million in net income in 1981 and \$106 million in 1982. Over 70% of the sales in the other 10 western states audited, though, (Montana, Idaho, Colorado, North and South Dakota, Wyoming, Kansas, Nebraska, Utah, and Nevada) lost money. An examination of 8 losing sales in detail showed that expensive road construction on steep slopes was a major reason for loss in 6 of them, the GAO report said.

The Forest Service defended the losing sales by saying that reforestation with better quality trees would recover those losses as well as covering the cost of the new trees. GAO said its figures showed that the next generation of trees would also lose money. Forest Service Chief Max Peterson claimed "We're incurring a whole bunch of costs on the public lands for other values besides timber... We haven't separated those costs." He mentioned recreational use of roads as an example. GAO said that roads were "indeed" assets, but should not be counted in receipts from buyers because the buyers didn't pay for them.

Most of the apparent contradiction in these assessments seems to stem from different accounting approaches toward the public agency's expenditures. When congress amended the 1974 RPA (Forest and Rangeland Renewable Resources Planning Act) with the 1976 NFMA (National Forest Management Act) the specific intent was to consider the economic aspects of federal forest management. The RPA has clearly identified the various types of forest uses when it comes to management considerations concerning the multiple uses of federal lands. It should be a simple accounting procedure to allocate specific investments into those specific categories. For instance, timber set aside for spotted owl habitat, visual corridors, or streambank protection should be put into those accounts. Likewise, additional management costs associated with those set-asides should go into the same accounts. The same thing with road use for planners, engineers, hunters, and observers.

Perhaps congress was a little hasty with passing the RPA without first preceeding it with an RAA: a Forest and Rangeland Renewable Resources Accounting Act. Sooner than later we're going to find that one is needed. Then we may be able to understand what everyone is talking about.

CLAIMS DELAYS

As a rule reforestation contractors working for private timber companies find that minor contractual problems such as contract specifications, inspections, seedling stock, road access, number of planting spots per acre, etc. can be talked out with the right land owner representative and an agreement or equitable adjustment can be arrived at.

Too often Federal Government procurement rules and regulations prevent the Federal Contracting Officers (C.O.) or his or her representative from being able to work out problems as easily as may be done with a timber company. On Federal Government projects when the two parties fail to agree that what is being required falls outside of what the contract requires, then the contractor needs to file a claim with the C.O. Public Law 95-563 requires the C.O. to make a determination and decision of claims for money (not exceeding \$50,000) within 60 days after receipt of the contractor's claim if this is requested in writing by the contractor. On claims over \$50,000 the C.O. is required by law to either issue the

decision within sixty days of receipt or else to notify the contractor of the time within which the decision will be issued.

If the contractor does not agree with the C.O.'s decision, he then has the option of appealing the decision to the agency board of contract appeals within 90 days from the date of receipt of the decision. Otherwise he may take the appeal directly to the United States Court of Claims within 12 months of receipt of the decision.

Public Law 95-563 goes on to state "Any failure by the contracting officer to issue a decision on a contract claim within the period required will be deemed to be a decision by the contracting officer carrying the claim and will authorize the commencement of the appeal or suit on the claim as otherwise provided for in this Act."

As a general rule most reforestation contract claims are for smaller amounts of money. The appeals process is fairly expensive for both parties and takes anywhere from six months to several years before a decision is issued. It would be unconscionable to think that Congress intended when passing this law for C.O.'s to make a practice of neglecting their responsibility to make a decision within the 60 day period thereby forcing the expense of an appeal for legitimate claims.

A large percentage of the C.O.'s have been making decisions in a timely manner. However, the C.O.'s that have not are causing hardships for many. If the C.O.'s fail to police and correct this problem, contractors should start writing the various C.O.'s supervisors each time a decision is not made in a timely manner and ask for the supervisor to respond in writing on just what the problem is.



FACTS & OPINIONS

NORTHWEST TIMBER RECESSION CONTINUES

On August 9th two logging companies in the Grays Harbor area auctioned off over \$5,000,000.00 worth of logging equipment in a quitting business sale. In July a mill owner on the Oregon Coast closed down his two saw mills; small town businesses that had been in his family since 1949. During the same period that the nation's economic indicators, especially stock market indicators, were showing record high results, businesses in the timber-dependent Pacific Northwest, especially those dependent upon federal timber, continued to wallow in the worst recession since the 1930's. Many are calling the 1980's a full-fledged depression.

Betty Heath of Don Bell Logging of Hoquiam, Washington says the main reason her firm held an equipment auction with Mayr Brothers Logging was "escalating compensation insurance costs". The business has joined with 15 others in the area to advise a Governor's Task Force on the problem. Other reasons cited were the August 11 shutdown of the local Boise-Cascade mill and costly federal sales. Don Bell Logging has been in business for 35 years and Mayr Brothers has been a local employer for over 50 years.

Jack Gates closed down the 3-G Lumber Company mills in Wren and Harlan, Oregon for the first time since 1959. Using hind-sight, Gates says he should have closed the mills in 1980, shortly after the recession began; "We've been losing money most of the time since then". Primary problems given were high interest rates and unprofitable lumber prices. Other problems stated were protests against forest herbicides, high timber taxes, and increased wilderness designations. Gates has also begun to sell some of the timberland holdings of the 35 year old family business.

Many other timber related businesses in the region, such as Publisher's Paper Co. and Roseburg Lumber, have also recently announced plans to reduce or suspend production.

SIGNED CHANGE ORDER FOR CONTRACT FINAL

On a tree planting contract in a National Forest in Western Washington, the Government-Furnished Property (root length of furnished seedlings) exceeded contract specifications. Both

parties entered into negotiations during which the contractor asked for both additional time and money for extra work needed to prune the roots. The Government offered only time, stating that it was not possible to pay more money as none was available.

The contractor ended up signing two change orders providing for a total of a 6-day time extension with no additional compensation. At the time the contractor signed the change orders, he did not reserve the right to claim additional money at any later date. Later (assumed to be at the end of the contract) a monetary claim was made for the long root problem. The basis for this claim was 1) a change had occurred which resulted in increased costs to Appellant, 2) that Appellant is entitled to an equitable adjustment under the Changes Clause, 3) that Appellant sought additional time and money from the Government, 4) that there "is no

(continued on page 11)

PATENT OMISSION IN BID SOLICITATION

A tree planting bid solicitation in a National Forest in Eastern Idaho consisted of several separate bid items. The Appellant was awarded four of the bid items.

Each bid item referred to an exhibit giving the size of the hand scalp required. On two of these items, the exhibit referred to had been omitted or misidentified. The Appellant contended that when making his bid estimate he thought that a 12" x 12" scalp was what was required on these two bid items.

The Board found that while the IFB may not have been a model of clarity, it was not ambiguous in the sense that it permitted two reasonable interpretations. It did not contain the "exhibit 1" referred to but did contain an "exhibit" which showed 24" x 24" scalps. It found that the contractor had completed contracts in previous years on the forest in question where the 24" scalps had been required and had also just completed work on another Ranger District where the 24" scalp was required.

The Board concluded that the IFB had a patent omission and that the Appellant had a duty to inquire with regard to it. Since Appellant did not inquire, Appellant must bear the consequences of proceeding with its silent interpretation of the IFB.

Refer to: DONLEY CONTRACTORS, INC., AGBCA 83-127-1

LEAVE TREES DIED

The contract on a National Forest in Western Oregon was for the conifer release by hack and squirt (stem injection) of the herbicide 2, 4-D to kill competing hardwood. The species of trees to kill varied in several units but one Red Alder was to be left at a 35 ft. x 35 ft. spacing plus all the conifers were to be left.

The Contract General Specifications included clauses requiring 1) the coniferous trees shall be kept from damage at all times . . . , 2) contractor shall take care to avoid spillage of chemical, 3) two inspections were to be made, one during the work progress and the second 40 days after the first inspection. If unsatisfactory kill (below 90%) was found in the second inspection, the contractor was required to re-work the unit and then a third inspection was to be made in another 15 days.

In performing the second inspection the three Forest Service inspectors noticed that the leave alders were dying. Two weeks later "quite a bit of damage to conifers from over spray of chemical" was noticed. In order to assist in ascertaining the cause of the damage found, sampling of the chemical used by Appellant was undertaken by the Forest Service. Additionally, photographs of the damage were taken using both Polaroid and 35 mm cameras.

The results of the samples from one of the units analyzed by an Oregon State laboratory revealed that the alder chips and fir needles (conifer) had rather high amounts of the herbicide 2, 4-D (7400 ppm) and the alder foliage and small limbs had much less (2.5 ppm). The causes of the damages to the trees apparently came from Appellant's herbicide being squirted directly on conifers, overspray by using too wide a sprayer, and drifting of spray to smaller trees killing those under three feet high. Damage to the trees was assessed as 3% mortality and 20% conifer damage.

The Government charged the contractor for planting replacement costs for the 3% mortality of the conifers, for the additional inspection costs and for the chemical analysis by the Oregon State lab.

The Board in its decision stated that "The Appellant agreed, however, to pay for the damaged leave trees, provided that the Government can prove that the leave trees were, in fact, damaged."

(continued on page 9)

FACTS & OPINIONS

Guest Opinion

A FEE PAID ON BEHALF OF THE BIG GAME HUNTER

By Dave Jessup, Field Forester, OFIC

Every forester's boss wants him to make the minimum investment necessary to arrive at a fully producing timber stand. One of the most frustrating problems the forester has is regenerating a clearcut area where the level of big game animals is too high. Severe damage from browse is predictable for most areas, yet significant reductions in deer and elk herds prior to planting appears to be a political nightmare. It involves hunting and killing off many does and cows which is very controversial and not at all acceptable to the Fish & Wildlife Commission nor does it make good public relations for many of the woods products firms. Current hunting regulations are recognized as giving some degree of relief, but investments to prevent big game damage to tree seedlings are still necessary no matter how we approach the problem. We are damned if we do and damned if we don't. Some figures tell us we can't afford the protection from big game damage, but then we must protect the investment already made.

The boss wants to know the size of the impact that big game damage has on forestry investments and if the company can justify it in dollars spent vs. value gained. Tough questions!

The Fish & Wildlife Commission, on the other hand, wants to know how extensive the problem is and if foresters are doing everything possible to make

forestry and wildlife management compatible. The up front investments for vexar tubes, bud caps, mesh socks, BGR, sleeves, etc. don't seem large at 10 cents per tree, or even \$1.00 per tree. Trying to explain the effect of carrying such costs for 60 years is like speaking a foreign language — not easily comprehended! Yet, in reality, front-end costs to prevent damage from big game are significant enough in terms of the long term investment to make economists quake in their shoes. The level of damage to warrant some of the expenditures made to prevent it is debatable. So much depends on the predictable growing conditions and then the not so predictable habits of the big game in the area.

If it were just a matter of expenditures to keep the trees growing at a normal rate, then the carrying cost of the early investment over 60 years is calculated to be less than the added value generated by the increased yield at harvest time. However, the trees are never growing at a normal rate when severely damaged by deer and elk; plantation delays of one to five years or more then occur and when brush and grass take over, brush spraying is then needed. More dollars needed. Diminishing returns result. The forester is placed in a dilemma. He can't afford the loss of productive land to continue. Brush spraying PLUS a replanting expenditure PLUS a postponement of harvest or reduced yield or

both will result. An additional cost to the tree grower comes from what may be described as the "allowable cut effect." At the mill this reduction in supply can result in a loss of employment because jobs are geared to production levels. It really gets complicated! Ask any economist about it and you walk away very frustrated.

What to do? Look into your crystal ball . . . If you believe in a low annual real rate of growth in stumpage value (from 0 to 1½ per year), it's generally a toss of the coin between doing a treatment to prevent big game damage or not doing it. Treatment does, however, provide the insurance factor relative to avoiding further treatments in worse than average situations — i.e. very brushy sites or very dry sites. If you believe in higher real rates of growth in stumpage values (more than 1.5% per year, which by the way, has historically been the case) then treatments for big game damage prevention do appear to be a worthwhile cost of doing business. The return on your initial investment is certainly small but greater than if you had not treated. You will successfully protect your initial planting investment but can't produce any more wood and money over what a plantation without big game damage does. The expense was only a rather large fee to enhance wildlife, for enjoyment of the hunter.

(continued from page 8)

(The Board did not state whether this was just trees damaged by his negligence or if it was assumed by everyone including the Appellant that all dead trees would have been the Appellant's fault.)

The Board stated that the Forest Service General and Labor Standards Provisions (Form 6300-38) made a contractor clearly liable for any and all damage to property caused by its fault or negligence. The Board decided therefore that the Appellant was liable for the substantiated inspection costs by the Government of locating the dead leave conifers, the planting replacement cost

for these dead trees and the cost of the analysis performed by the State of Oregon lab.

REFER TO: MANUEL GALAN AGBCA No. 82-121-1

EDITOR'S NOTE: This decision was written by Judge Edward Houry with Judges Jewel F. Lewis and Morris Pullara, Jr. concurring.

The editor of this magazine who reviewed this case was troubled by the circumstances leading up to the damages even though the damages totaled a relatively small amount (under \$500). 2,4-D is used quite often for conifer release by aerial application. This method sprays right over the top of plantations during certain times of the year without any protection on the conifers and only the broadleaf vegetation is killed.

A phone call was made to a forester with several decades of experience with one of the large chemical dealers in the Northwest. It was explained to him that the Board had concluded that the uncontroverted evidence in the record substantiated that the damage had been caused by the herbicide 2,4-D applied by the Appellant's crew squirting the chemical directly on conifers, overspray by using too wide a sprayer, and drifting of spray to smaller trees killing those under three feet high. This forester explained that conifer damage by 2,4-D would have been unusual especially when the contract had required not a sprayer but an applicator that injects into cuts or frills of a target tree such as with a squirt bottle.

He explained that he had seen "flashback" (term used when chemicals are transmitted between tree roots) and subsequent kill of the leave trees when "hack and squirt" had been done using Tordon 101 (another chemical). He felt that the traces of the 2,4-D found in the lab analysis would have been expected because of the "flashback" effect but that even the slight kill of 3% would have been unusual, at best, given the chemical used.

In this case the Appellant had not been represented by council and may have unwittingly become the victim of improper timing and release prescription of the Forest Service.

Rationale For Investment In Forest Renewal

John A. Zivnuska
Professor Emeritus; University of California, Berkeley

The basic reason for investments in forest renewal for timber production is an expectation of profits. Stumpage price trends are favorable for profits from some species, but not for others. Profit potentials vary widely and are highly dependent on species, site, property location, and type of management input. Even in favorable profit situations, the long-term nature and lack of liquidity of investments in growing timber will limit potential sources of investment funds. Many forest owners are not potential investors in forest management. Three types of potential investors in forest renewal are discussed. The need for forest policies which are responsive to the characteristics of favorable investment opportunities and the potential investors is illustrated. The rationale for investment in forest renewal is held to be the product of selectivity among investment opportunities, identification of appropriate investment sources, and a responsive forest policy.

Although forests yield many values, considerations of time and space compel me to limit my comments here to investments in forest renewal for the purpose of timber production.

The basic rationale for investments in growing timber is the same as for other investments — the expectation of a profit. This is evident enough in the case of private investments, for those who are not concerned with profits rarely have funds to invest. Profits are also an appropriate guide to public investments, although not the only appropriate criterion. When the public invests in a production process such as growing timber, profits mean that the products are wanted by members of the public sufficiently so that they are willing to spend their own funds, and not simply taxpayers' dollars, to obtain such benefits.

Timber growing is a biological process, with the rate of growth being limited by natural processes. Since the physical growth rate in percentage terms is commonly lower than the interest rate required to attract investment funds, a central issue in forest economics and policy is that of the

Professor Zivnuska is recognized as an influential founder and lifelong contributor to the field of forest economics. During his career he has published about 180 articles, mostly concerning forest industry economics, forest taxation, and international forestry. Upon his retirement in 1982 Professor Zivnuska was awarded the Berkely Citation, which is the highest honor given on the Berkely Campus. Since receiving his Masters degree in Forestry at Berkley in 1940 and his Ph. D. in Agricultural Economics at the University of Minnesota in 1947, he has held many eminent positions and received many of the highest awards in his field.

profitability of investments in growing timber. Most recent analyses which show a reasonable expectation of profits from such investments involve an assumption of strong markets and rising real prices for timber continuing over periods longer than a forest rotation. Fortunately for timber investments, most analyses of long-term timber supply and demand support this assumption of rising real prices.

Long-term investments in growing timber involve an act of faith. Such investments can be justified only by faith in the future and the belief that our present standards of living will continue to rise, and that broad economic growth will occur. Given such conditions, a general upward trend in the real price of timber extending well into the next century can be expected.

Although the most recent analysis of the timber outlook by the Forest Service was not published in final form until last December (USDA Forest Service, 1982), the agency is already well along on a substantial revision of this study. Review draft material (USDA Forest Service, 1983) indicates that the new projections through 1990 will be more consistent than previously to recent experience. For example, the housing start projection for 1990 has been brought down to 1.8 million, which is within the upper range of other recent housing projections. Over the longer term, however, the changes are less pronounced. Indeed, projected softwood timber prices in the South in the next century are higher than in the 1982 publication.

In the review draft, softwood stumpage prices in constant dollars in the year 2000 are projected as 22 percent higher than in

1976 in the Douglas-fir region, as 31 percent higher in the North, and as 132 percent higher in the South. In contrast, hardwood stumpage is projected as declining by 4 or 5 percent in the North and by 10 percent in the South over the same period.

While the Forest Service projections extend out to the year 2030, wise investors will not take such projections literally. No matter how well the econometric model fits the base period, any such very long-term projections involve extrapolations of the relationships among the variables at levels wholly outside the range of experience. Further, the projections do not appear to recognize the probability of countervailing forces developing in response to extended continuation of some of the trends shown.

While the exact magnitude of changes in timber prices in the next century is highly uncertain, the prospects surely are for strong markets. The Forest Service projections are simply one possible scenario for the future. Many forest products analysts contend that the Forest Service projections of domestic demand are too high. However, such analysts (and I include myself among them) also commonly contend that imports from Canada will be lower than projected and that the level of export trade from the United States can be much higher than projected. On balance, their case is also for strong markets, although with a different scenario.

Investors in timber growing must recognize major differences by species groups. A recent Forest Service analysis (Skog and Risbrudt, 1982) shows that from 1920 to 1980 sawtimber stumpage prices for National Forest timber in constant dollars increased at an average annual rate of 7.5 percent for Douglas-fir, of 5.5 percent for ponderosa pine, and of 4.3 percent for southern pine. In contrast, eastern hardwood stumpage showed essentially no change from 1947 to 1980. In the case of pulpwood stumpage, softwoods have shown a modest downward trend, while hardwood stumpage has shown a marked decline.

The outlook for the future differs from this past experience. Southern pine stumpage prices can be expected to rise



Safety & Profit

By Bob Zybach

Unfortunately, one of the fastest ways to shift a worker's (or a contractor's) mind into neutral is to mention the words "safety" or "training" as if you were going to pursue the subject. I say "unfortunate" because I think that it can easily be demonstrated that in a service industry, such as ours, there is a direct link between safety and training, training and efficiency, and efficiency and profit. In other words, dollars invested by the contractor into safety and training programs should yield a profit. As with any investment, a great deal is dependent upon how those dollars are invested and of course upon a degree of luck.

Although the trend is varying, it has almost been traditional to hire reforestation workers through a phone call in answer to an ad or by a request sent to the local employment office. Thousands of workers will be hired this year merely through word of mouth or by showing up when the crummy arrives in the morning. No application. No physical. No training. This is O.J.T. Training in one of its purer forms. Most of these workers will be transported to work sites in vehicles in direct violation of Chapter 47 division 57 of the Oregon Occupational Safety and Health Code. At the job site many of these men will be given a chain saw for the first time in their lives and with the benefit of a little instruction (or none at all) turned loose thinning or slashing trees. A few of these men will die or be seriously injured.

In the past there has been little trouble with this system as the workers — many of them foreign and in the country illegally — have been reluctant to file civil suits for damages due to contractors negligence or to demand compensation insurance for job-related injuries. Those times are in the past. With the exception of a few contractors willing to exploit illegal aliens, several co-ops and some

partnerships, most contractors are beginning to carry legally required amounts of compensation insurance. This legitimacy carries with it at least one burden: costly malingering, faked accidents, faked injuries and physical and mental injuries inherited from other employers.

- Which brings us to our first example, a Case History. Too bad it was mine. I hired a worker who was highly recommended by his neighbor, one of my better planters. No questions, no writing (except a W-4), just Normal Hiring Practices.

While the ground was scarified and the seedlings small he was everything his friend said; hard working, competent and reliable. When we took a two week Christmas planting break I put him on a cutting crew. After a couple of hours he said his hemorrhoids would keep him from doing any further cutting. This and a dubious case of malaria are the only excuses I've heard only one time. I should have been suspicious, but he'd been such a good worker I looked upon it as a humorous incident and little else.

After a week of letting him set chokers (at a relaxed pace) on another job site we were ready to get back to planting, only this time we were planting the largest plug-1 seedlings we have ever handled. After a few hours work, I saw him on the unit and asked him how it felt to be planting again. He said his back hurt. He's still on comp. Even though he has cost my company \$11,000 this year, he has hired a lawyer to appeal for more. He had hurt his back in California a few years before for another employer. It had taken him nearly six months of "fighting" to secure his claim there, but this was Oregon. Here he was an Instant Winner. Other workers could not help but be impressed at the length of the paid vacation being enjoyed by this apparently healthy man.

A well-worded application form would have probably screened out this man as a potential health (safety) problem. And our company would have been returned several thousand dollars under our existing insurance plan if this "re-injury" had not occurred.

- My second example is more hypothetical and involves crew A and crew B, two pre-commercial thinning crews. Crew A features a foreman who periodically makes the rounds of the crew exhorting his men to work harder and to not mess with their saws; he will do that. If they dull their chain on a cable shortly after he leaves, they are still expected to keep working until he returns, at which time they are conditioned to really hump until he shuts them off. Then they ask him to sharpen their chain. As any experienced cutter knows, a dull chain will cause arm and back fatigue, will be more apt to "kick back", more apt to bind or cause "barber-chairing," in fact, be more apt to do just about anything but cut fast. And yet the man will not even be given a file and will be told to do nothing on his saw but put the chain back on if it comes off. Crews like this really do exist. Obviously, this type of situation is more hazardous and less productive than it would be if the chains were sharpened immediately upon being dulled.

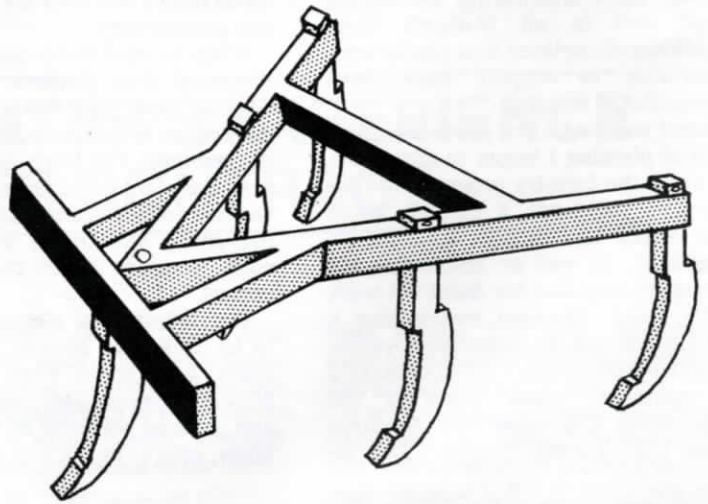
Crew B also has a foreman who periodically visits each of his cutters. Not only is he making sure that each of his workers is alive and steadily working, but he is also checking for safety gear such as gloves, good boots, hard hat and chaps, correct positioning in relation to the other cutters and the operating condition of the machinery. If he observes a man cutting with a dull chain he immediately shuts him off and, if necessary, shows him how to sharpen

(continued on page 26)

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(Safety & Profit continued)

it. After a few weeks even the newest men are operating their equipment near peak capacity. This is bound to lower the injury rate over the long haul, dramatically lower saw maintenance costs due to vibration caused by dull teeth (burned bars, clutch bearings, sprockets, etc.) and keep the saws cutting faster, thereby adding to the potential to increase production. Each of these factors directly relates to a contractor's profit margin.

All other things being equal, it would seem that even the slightest amount of training (How to Sharpen Your Chain) would give an obvious bidding edge to crew B over crew A.

• To summarize these two points (and simultaneously attempt to avoid the nether void of "mods", "retro plans," and "deviated premiums") I have attempted to show how even the most modest of investments in the area of safety and training can realize good returns. In the first example, if I had invested a few hundred (or even a few thousand) dollars into a workable application form I could have screened out a potential injury fairly easily and earned several thousand dollars return

on my present insurance plan. Or I could have placed the applicant in a position that would not have placed a strain on his back (if I had one). In the second example I have tried to show how even the most rudimentary instruction can almost immediately lead to a more productive (and profitable) man-day's work. Also safer.

I believe that a safer working environment, or even an attempt at a safer working environment, is good for crew morale and that morale is directly tied to productivity and work quality, often two of the most obvious characteristics of profitable operations. ▲

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(Forest Investment continued from page 15)

However, public policy itself shows some signs of becoming the source of a new kind of risk for the investor in timber growing. Through the medium of forest practice regulation or other regulatory controls, some forest owners are now being required to provide for environmental and amenity values to a degree which is unknown on agricultural and grazing lands. In addition, there are

an increasing number of instances in which such regulation is used as a means to prevent the logging of merchantable timber, either through direct prohibition, the refusal to grant permits, or the imposition of costs and standards designed to make harvesting uneconomic.

Such public policy practices are still limited and localized, but they have become increasingly evident in recent years. If such practices become more common, investors in timber growing would face an increasing risk of the loss of the rights to grow timber efficiently and to harvest timber when it becomes merchantable. Public policy would then be serving to reduce the possibilities for rational investments in timber growing.

In summary, rational investment in timber growing requires concentration on the more favorable opportunities for such investments, the reaching of investors who have the funds to make such investments, and public policies intended to enable and encourage such investments. Given these elements and the outlook for strong timber markets over the long-term, at least for softwoods, there is a strong rationale for major investments in forest renewal.



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