

DL 900830

Canadian-Swedish project. Site sheet for Ft Nelson site.Contact person (organization):

Steve Lindsey
District Silviculturist
Ministry of Forests and Lands
B C Forest Service
R R 1
Mile 301, Alaska Highway
Fort Nelson, BC VOC 1R0
tel (604)774 3936 facs -3704
(Office at Alaska hwy, just a km west of Ft Nelson)

Location: Lat 59°00' Long 123°12' Elev 600 m
Liard Highway
41 km drive + 25 min walk, NW from Ft Nelson

Description of way: Alaska hwy 24 km west of Ft Nelson, take Liard hwy (77) north towards Fort Simpson, Fort Liard. 13.4 km from the junction. On west side. Sign "Brush Control Area". Path ("seismic line") through the old forest westward. Some hundred meters in the beginning the ground is wet. Continue westward up the hill through brush. Keep slightly to the left of the seismic line to get an easier walk. Continue uphill around 20 min. The experiment is east of the old aspen forest on the top of the hill, slightly to the north (right) of the extension of the seismic line. At present you can see the site (top of hill) while driving to the seismic line on Liard hwy.

Particular about access: There is a slight risk for bear charge. For the first 100 m walk rubber boots may be required if the forest is not dry. It may be a rather hard walk. There are several good and cheap motels close to town centre and forest service, e.g Pioneer motel 774-6459.

Soil and site details: We measured the elevation to 600m (90 m above the road). 10-30 m west of the site is a mature stand, much aspen. The western part of the site is flat, while the eastern plots are on a slope against east. The site is very exposed to sun and winds from all directions except west (actually it is an excellent view from the site). Remains from the clearcutting has been moved out from the site (laying as a fence around). The soil is heavy silt clay.

There is almost no lodgepole pine in the area within 5+ km from the site. There are however a few patchy appearances. There is some very scattered jack pines three kms away. Therefore inoculum of pine-specific diseases is likely to be very sparse.

Site history. The plot is near the centre of a large forest reclamation project where stands of non-commercial species were clearcut, windrowed and burned over an area of 468 ha. The surrounding parts (including some of the misses within the experiment) have been planted with white spruce 1986 (and 1987 in nonadjacent parts). The area is part of a brush control project. Some plots are controlled, others not.

Experimental history: The area was cleared from remains from the previous cutting before planting. The plot was planted in second week of June. The third week of July 1987 the experiment was treated with a substance containing glyphosate. No later treatment was applied (till 1990 at least). The plants are marked both with steel and plastic sticks. Height and condition were measured 88. Condition 4 is a specific syndrome.

Field notes:

CC 85: No report, site staked first 86.

MK 86: Seedlings in excellent condition

CC 87: Survival 96%, 4% frost damage. Grass is a major concern, covering much of the trial and often up to 1m. Clumps of sprouts are affecting in close proximity.

DL 88: Very little severe recent damage. Grass and brush competition rather severe for a number of plants. An interesting syndrome noted and registered. The SE of the tops (this years growth) are affected on almost all pines (excepting some protected ones). Needles fall off or half of the needle falls off. Necrotic spots were found on needles. Necrotic strangulation? There was also damage to the stem, small gaps into the cambium. There did not look to be a correlation between plant vitality and the syndrome. It seems that the cause is mainly environmental. (Addition DL 90: The syndrom was not repeated later. Neither did it develop into something worse. Many of the affected needles were still there 1990. Probably something unimportant which does not deserve additional attention.) There were lodgepole pines in S67 and (in contrast to Whitehorse) also in S66.

Pat inv 890703 Generally healthy, but growth and vigour continues to be poorer here than at the other BC locations. Sibirian larch continues to have problems at this location and suffered top die-back and mortality, associated with low, wet spots within the plantation. Two species of parasitic microfungi usually associated with stressed seedlings were found on larch (new host records). An average of 10% of the foliage on 50% of the lodgepole pine suffered foliar discoloration caused by winter flecking.

DL 90 Slight infection of Western gall rust on lodgepoles. 5-10% infected. This is interesting, as we believe the inoculum pressure to be low. There were a few cases of galls near the base of the stem. Infection occurs only on the growth of the current year, thus place of occurrence shows year of attack, this might have originated from the nursery. If so they should have passed undetected in my 88 inventory and the disease surveys 88-89. That is possible if they are rare and not apparent. As it takes more than two years for any symptoms to develop, it need not be very apparent. However, if we later can state that there are sites without any galls near the stem base, possible infection in nurseries can be ruled out. It is possible, but not certain, the presence of gall rust could be interpreted, that even a low initial infection pressure is sufficient to build up a considerable infection with a very short delay.

Suspected occurrence of *Cronartium comptonia* on lodgepole pine. However, no spores were found for identification at our visit in

late August. It would be valuable if others (the federal rangers survey?) could look for it and try to confirm its presence. If it occurs it is interesting to note how Scots pine reacts as this pathogen could easily be established in Sweden as it uses sweetgale (pors, Myrica gale) as an alternate host, and that species is common in Sweden.

No rusts on Scots pine noted.

Some malformed bushy pines, especially lodgepoles, often related to Western gall rust.

Cones on the lodgepoles.

The highest pines are 2m and larch 2.5 m. The highest lodgepole pine increment 1990 is impressive 80 cm. The larches seem rather uneven.

The difference between plots is big in this experiment. Some plots on the slopes grow better than any other plot in the whole series. On the other hand there are flat plots with much grass there growth is much retarded.

The colour differences among lodgepole and Scots were particularly evident at this site. At some previous sites the differences between the species were not very evident.

There is severe grass competition on some plots. A few plants are seriously retarded by brush. My impression is that the competition has not been much intensified since 1988, thus the 1987 treatment still has some reducing effect on competition. I believe we lost a number of plants, and will lose a few more, but it is now too late to do a meaningful additional treatment, and the condition is anyway fully acceptable.

There were very few evident deaths the last two years, but a few cases which are difficult to see died because of competition and a few more will die.

There are a few leaning stakes.

Management: Grass and brush influence some disturbances. The group felt that removal of broadleaved vegetation in the middle of the experiment would make it more valuable and even, but it is probably too complicated to do anything about that related to the rather marginal advantages it may have on the experiment.

Fort Nelson



V #18	V #17	V #16	V #15	V #14
V #9	V #10	V #11	V #12	V #13
V #8	V #7	Miss	Miss	V #6
V #2	V #3	V #4	V #5	Miss
Rep V #1	IV C61	IV C63	IV C59	IV S65
IV N60	IV L58	IV S63	IV S67	IV C57
IV Sib.	IV S61	IV S66	Rep IV S59	III C57
Miss	III C59	III S66	III Sib.	III S67
Miss	III S59	III C63	III N60	III S63
II C61	Rep III S61	III C61	III S65	III L58
II S66	II C59	II N60	II S61	II C57
II S63	II S65	II L58	II S59	II C63
II S67	Rep II Sib.	I S66	I S65	I C63
I Sib	I C61	I S59	I S67	I S61
I C57	I L58	I S63	I N 60	Rep I C 59

← 3 rows of surrounds

DL 900901

Canadian-Swedish project. Site sheet for Whitehorse site.Contact person (organization):

William McJannet
Head of Forest Management
Northern Affairs program
200 Range Road
Whitehorse, Yukon, Y1A 3V1
403 668-2263 facs
Replacer: Don White
Inform Kim Rymer and Christine Boyd

Location: Lat 60° Long 135° Elev 660m
Takhini Reserve
20 km from Whitehorse

Description of way: (from airport) Alaska hwy north. After 2.6 km exit to Whitehorse, immediately after at fire sign on the right is Yukon Forest Service, where you can get key. (There is a radiooperator on guard most of the time.) km 13.5 turn right on Klondike hwy towards Dawson. km 17.9 pass bridge over Takhini River. km 19.7 the entrance to the site, gate to Takhini reserve to the left. Within the reserve, follow the electric wire 500m, park car at building. If you follow Klondike hwy additional 1/2 km, road to Takhini Hot Springs to the left.

Particular about access: Need key for gate (human can pass without but not cars). Very good paved road. Site accessible by common car or camper. Accommodation at Whitehorse, e g Airport Chalet, walking distance from airport, (668-2166). Food served at hot springs, 10 km from site, not expensive. (Can have a swim too!).

Soil and site details: The plantation site is even and flat, probably frost and water pockets at snow melting. Thin or absent humus layer, no organic matter. The soil is exposed on most of the site. Silt and fine to medium sand. Close to the Yukon River, and there may be deep sand (up to 60m). Probably the soil is depleted of nutrition and poor, which will reduce plant growth. (Some plants on area where piles of slash was burnt showed a much better growth). This type of poor nutrition status may be rather common in this part of Yukon. The elevation is around 30 m above the nearby Yukon River, thus 660m, (the same as the IUFRO trial, Whitehorse at the Yukon is 635 m).

Site history. The site has supported a dense stand of young lodgepole pine typical of the type which regenerates following fire. This type now borders the plantation on three sides, the fourth side being open. An old stand burned 1958, leaving a few old trees. Later removal of vegetation and repeated burning has taken place. The site was kept open since before 1978.

Experimental history. Planting last week of June 1986. Tagging with steel stick. Inventory of damage by McJanette. Survival

inventory and marking with plastic sticks 1987. There is a weather recorder on the reserve only a km from the site (used for fire risk prognosis). Measurement of height and damage 1988. OS reports 890914 that rabbit repellent was applied and that removing wilding of lodgepole and aspen suckers are under way. DW reports 900830 that around 2/3 of wildlings removed.

Field notes:

CC 85: Slash was burnt on site leaving some parts of the area burnt and some unburnt. Several small roads cross area causing soil compaction. There is an advanced generation 1-3 year old pine and several large poplar.

Pat inv 86 (Garbutt): Comandra blister rust infected the stems of about 1 % of the young, very densely stocked lodgepole pine bordering the plantation. Stem and branch galls of western gall rust affected a similar number of trees. In the provenance trial 30% of the needles on 50% of the trees were infected with an unidentified needle disease. This disease could pose a significant hazard for the young seedlings. The site was visited one week following plantation. After a prolonged dry spell, rain fell during the planting and the seedlings appeared to have been given a good start.

MK 86: Majority of seedlings in good condition, some weather damage observed on lodgepole - especially among the controlled crosses. All Scots pine were intact.

CC 87: lower survival than at other sites, still 93%. Likely severity of climate reason. E g 870616 -5⁰ was recorded. Forest Service cited cold winter with little snow cover.

DL 88: Many dead leaders and dead needles from the preceding year. Not much new damage caused by conditions this year. Small plants, poorly developed buds. Slow growth. Many plants have restarted development from bottom after severe earlier damage. No particular insect or disease problems noted. The damage likely to be related to climate. S67 got lodgepole pines in them, may overflow of seeds between pots in nursery.

Eje Andersson 89. Says it looks worse than 88.

Pat inv 890624 10% of lodgepole dead and 60% have dead tops, probably as a result of repeated winter or frost damage, combined with infections by secondary organisms.

DL 90: The condition of the experiment is still very much influenced by the unfortunate bad weather-condition late in 1986 and early 1987. The current condition may be the accumulated effect of several events rather than just a single episode. Even if events after 1987 contributed, they can not be the major quantitative explanation. The site may be unrepresentatively exposed to frost episodes (flat with frost pockets and little cover vegetation). As there is not much experience from Yukon overall, it is not easy to say exactly how unrepresentative the plantation is for what may happen in future Yukon plantations. It looks that 1989 was a rather bad year also, but 1990 seems to have been a good year, when many plants recovered and got healthy shoots and needles. The general impression 1990 was better than 1988. The growth is very slow, many plants are around 30 cm and only a few above 50 cm. This experiment is not more developed after five seasons than the other six in the series after two seasons. A measurement now would not contribute much information.

It is unfortunate for the Yukon that the experiment has suffered so much injury at the start, but the current prognosis is that it will recover and look nice 1992.

The recent mortality is low, and even badly damaged plants with just a few alive branches, or died back to the stem base, have probably a fair chance of slow recovery.

The occurrence of naturals is abundant in the 1/3 of the experiment there it has not been cleaned out yet. The naturals look better than the experimental plants.

Western gall rust and Comandra rust were found on the naturals but not on the experimental plants. However, the experimental plants are still small and weak trees, so it is no surprise.

It would be interesting to compare temperature data from the on site station to data from the airport. Sooner or later I will work with the airport station data. The problem is to get data which are not too many and in a format easy to deal with. Data like monthly mean, mean of daily low and mean of daily high for April - October would be an example of what could be meaningful to compare to get a translation key.

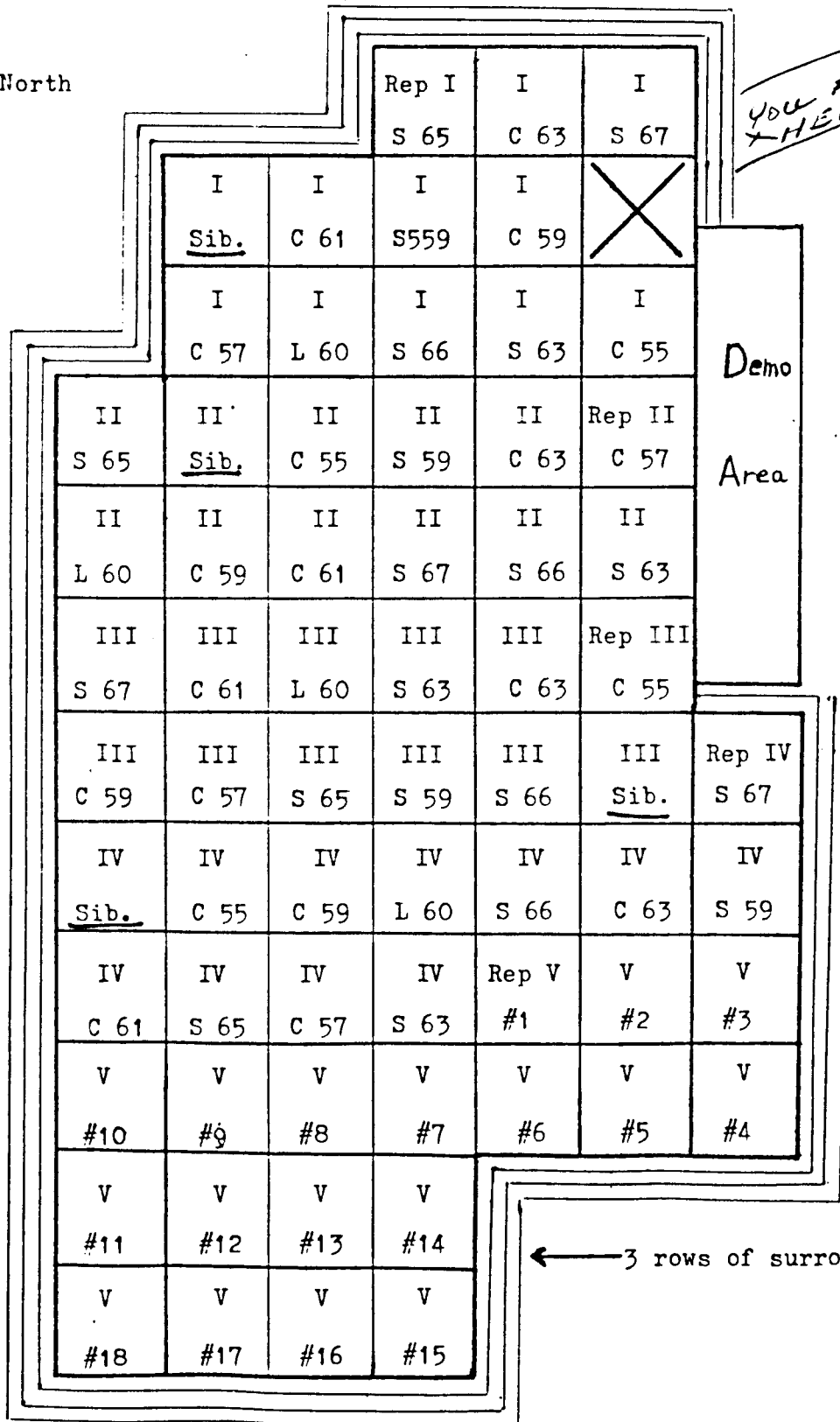
The proper way of dealing with the cases where a plantation spot is occupied by a plant of the wrong species must be to remove it at the next measurement, and consider it as if it was never planted.

Management suggestions: It is highly desirable to get rid of remaining naturals quickly. The job becomes more difficult as time passes, and soon it will be difficult to see the difference between the naturals and the experimental plants. The idea was expressed that it should work well with fire-soldiers. This does not seem to work. The brush is generally rather sparse and is likely to have a positive effect as frost protection. There are however individual bushes which are seriously disturbing individual plants, and which would help the experiment to get rid of. In some years when the experimental plants reach one meter height, all other vegetation could be removed. Some stakes are fallen and should be raised. It would be instructive if the rows in the demonstration trials were marked with identifications, so an interested visitor can understand the identifications.

WHITEHORSE

North ↑

*YOU ARE
HERE*



Demo Area

← 3 rows of surrounds

DL 890917

Canadian-Swedish project. Site sheet for Garsås site.Contact person (organisation):

Anders Persson (assisted by Erik G Ståhl and Nils Ganered)
 Department of Forest Yield Research
 Swedish University of Agricultural Sciences
 S 770 73 GARPENBERG
 Tel 0225-22100 facs 22193

Location: Lat 60°56' Long 14°53' Elev 205
 Mora, Siljansfors
 19 km SO from Mora.

Description of way: Riksväg 70 between Rättvik and Mora. Around 17 km SE from Mora (bridge over Orsaälven) or 1 km NW from Garsås (centre of village). Forest road NE around 1.4 km, then right 2.2 kms. The site is NE the turning circle.

Particular about access: Forest Road accessible by ordinary car.

Soils and site details: Part of 25 ha clear-cutting. Rather even ground, weak slope facing N. Boniteten är enligt "STORA's beståndsregister" T 23. Humustäcket är övervägande tunnt och domineras av friskmarksmossor med viss inblandning av lavar. Fältskiktet domineras av lingen. Jordarten är sandig morän. Ingen maskinell markberedning.

Site history: The area was cut 1984. The stumps have been removed.

Experimental history: Plants transported from cool storage in Umeå 860526. Planting immediately 860526-31. White sticks placed besides the plants. Treatment with Ambush because of anticipated insect problems 860606. Survival check 871001 and 89. Height measurement 90.....

Field notes:

NG: Snytbaggar at planting. Still more early summer 1987. October 87 60% survival. The mortality related to snytbaggar and several types of fungi.

88: Very bad condition, almost spoilt. Remarkably that there are so much snytbaggar in spite of that stumps are removed. Not much competition.

NG 89,90:?

AP + DL 90:?

Management suggestions After studying the condition records 1989, it seems clear that the area should not be abandoned.

Planerat besök av DagL. Kontakt med AP em 901029. Foutbn 901030. Tåg 901030 Uppsala-Hedemora. Övernattning Hedemora Stadshotell, 800 m från stationen, tel 0225/12260 bokat!, måste avbokas om jag inte kommer! Hämtas av Anders på morgonen, kör till ytan, boka plats åter från Hedemora? kl 14? flyg fr Arlanda ? Diskutera IUFRO 92 med Anders vid samma tillfälle.

DL + KL 901005

Canadian-Swedish project. Site sheet for Renberget site.Contact person (organisation):

Dag Lindgren (Stefan Löfmark)
Department of Forest Genetics and Plant Physiology
Swedish University of Agricultural Sciences
S 901 83 UMEÅ
Tel 090-166294, facs 165901, home 193860

Location: Lat 64°15' Long 19°48' Elev 220

Umeå - Svarberget - Renberget
55 km NNW from Umeå.

In the Swedish system the series has the code IDA 6914 and the site IDL 02114

Description of way: At Vindeln take road 355 towards Botsmark. After 6.5 km the farm Åheden, take to the left (through gate) Svartbergsvägen around 1.5 km. After passing the creek take to the right 200m. You see the fenced area to the left. You pass some other trials on your walk to the site.

Particular about access: Ordinary car till you see the site. The road may be dangerously soft after snow-melting. You can access the site by bus (June-September), but when you have to return backwards the last 200ms. Gate may be locked early May and late autumn, then you have to walk (<2kms), or approach the area from the opposite side. There is a research field station (Svartberget) with permanent staff 3 km from the site.

Soils and site details: Ytan ligger på ett 9 ha stort hygge, svagt lutande (2-4°) mot SSO. Ytan, som är belägen på hyggets övre/högre partier är något fuktigare i den syd-östra delen. Ytan är till övervägande del översilad. Botten-skiktet domineras av frisk-marks-mossor och fältskiktet av lingon- och blåbärsris med inslag av gräs på fuktigare partier. Jordarten är sandig-moig morän med blockinslag. Maskinell markberedning (harvning) utfördes under våren 1986. Under hösten 1988 har befintliga diken fördjupats efter hyggets östra kant. Omgivande bestånd utgöres av barr-blandskog.

Site history: Hygget upptogs under hösten/vintern 1985. Det avverkade beståndet hade trädslagsfördelningen: Tall 42%, Gran 47%, Löv 11%. There are charcoal remains indicating that the previous stand has been affected by fire.

Experimental history: Planting 860530-0606. Survival inventory 870701, full inventory August 89. Moose fence raised September 89. Needle collections made 1990 by Björn Elfving. Needle collections 900815-901215 for hardiness development studies (KL).

Field notes:

SL88: Good stock at planting. Normal development 86. Inventory 87 on an average 95% survival. No specific causes or pattern of mortality.

DL89: Generally good condition. Damage: Moose (eating and

tramping), insects, a little vole, some depressed wet spots.
KL90: There seems to be greater differences between the provenances and a higher fraction healthy plants than 89. There is *melampsora pinitorqua* in Scots pine, and to a small degree something similar on *contorta*. People pick raspberry within the fence.

Other remarks: There is a demonstration area to the right of the road. The materials are planted in five-tree row plots. The materials are arranged according to number.

Management suggestions 1990: No particular actions needed, Wiltex Ziram if vole risk exceptional.

Beskrivning av försöksyta: Försökskarta.

Framställning: Maj 1987 / SL.

Försöksytans namn: Renberget - Svartbergets försökspark.

Försökslokalens läge: Lat 64° 15', Long 19° 48', Alt 220 m.

Försökslokalens identifikation: IDA 6914, IDL 02114 "Art - Genotyp - Miljö samspel".

Försökslokalens areal: 1,74 ha.

Planteringsdata: Södd Maj 1985. Harvning Maj 1986. Plantering Juni 1986.

Ett-trädsparcereller i 2 x 2 m förband.

Block I - IV är indelade i subblock om 64 träd (vanligen 8 x 8 sorter).

Se vidare materialsanmanställning och planteringsplan.

80	Block V								Subblocken är skyltade i sydvästra hörnet. Kompletterande orienteringspälmar är uppsatta där så erfordras. Två kantrader med tall omger försökslokalen, med undantag för den södra kanten som dikt angränsar till Tall - avkomme-försöket.
73									
65									
57									
49	Pc 63 FS	Pc 63 FS	Pc 61 FS	Pc 58 SS	Ps 67 HS	Ps 63 FS	Ps 65 FS	Pc 63 FS	N ↑
41	16	16	15	19	10	6	8	16	
33	Ps 61 SO	Ps 65 FS	Pa 60 SO	Ps 65 FS	Ps 66 FS	Ps 61 SO	Ps 67 HS	Pc 59 FS	
25	4	8	23	8	9	4	10	13	
17	Ps 66 FS	Pc 61 FS	Pc 55 HS	Pc 59 FS	Ps 65 FS	Ps 64 FS	Ps 64 FS	Ps 61 SO	
09	9	15	11	13	8	7	7	4	
01	Pc 57 HS	Pc 55 HS	Pc 57 HS	Pa 59 SO	Pc 59 FS	Pc 61 FS	Ps 63 FS	Pa 59 SO	
	12	11	12	22	13	15	6	22	
	Pc 59 FS	Ps 64 FS	Ps 63 FS	Ps 61 SO	Pc 57 HS	Pc 63 FS	Pc 55 HS	Ps 66 FS	
	13	7	6	4	12	16	11	9	
	Ps 67 HS	Ps 63 FS	Ps 64 FS	Ps 67 HS	Ps 66 FS	Pc 55 HS	Pc 57 HS	Pc 61 FS	
	10	6x	7	10	9	11	12	15	
Y/X	I		IV		II		III		Block
	01	09	17	25	33	41	49	57	64

16 x 16 m

1 3
2

4

1. Species: Pc = Pinus contorta, Ps = Pinus sylvestris, Pa = Picea abies.
2. FS = Progenies from controlled crosses between plus trees in Swedish seed orchards.
HS = Ps: Polycross crosses in Swedish seed orchards.
Pc: Open pollination in Canadian stands.
SO = Harvest from free pollination in Swedish plus tree seed orchards.
SS = Stand seeds.
3. Approx origin of parent.
4. Subblock.

List of publications and documents which can be considered as output of the project

van der Kamp BJ 1989. The relative susceptibility of scots and lodgepole pine to western gall rust. Eur J For Path 19:274-280.

Lindgren D & Lindgren K 1990. A Canadian-Swedish species genotype environment interaction study. Proceedings of IUFRO joint WP meeting in Olympia, August 1990.

van der Kamp BJ 199?. Major gene resistance of Scots pine to Western gall rust. Manuscript.

B.J. van der Kamp. Swedish-Canadian Species-Genotype-Environment Interaction Study 1985. Appendix II. Dated November 1986.

B.J. van der Kamp. Progress Report 1988.

Karlman, M. 1986. Report from an excursion in British Columbia and the Yukon, July 14-26, 1986. A short survey of the condition of the seedlings on the five sites in "A species-genotype-environment-interaction study". - Swedish University of Agricultural Sciences. Dept of Silviculture. 26 pp.

Sundström, E. 1986. Results from plant measurements in "A species-genotype-environment-interaction study". - The Swedish University of Agricultural Sciences. Dept. of Forest Genetics and Plant Physiology. Arbetsrapport nr 18. 17 pp.

Thomsen, R.E. 1986. Early growth characteristics of lodgepole pine and Scots pine. A thesis submitted in partial fulfilment of the requirements for the degree of bachelor of science in Forestry. - University of British Columbia, Faculty of Forestry. 30 pp.

Janett, W. 1986. Genetics Trial. Observations from the Whitehorse site September 22 to October 3, 8 pp.

Plans, research proposals, documentations and other documents of relevance for the continued work

A species-genotype-environment-interaction study. There are many versions, one of the more important are dated 880910.

Lindgren, D. State of the Canadian Swedish Experiment 1988.

Lindgren, D. State of the Canadian Swedish Experiment 1989.

Lindgren, D. State of the Canadian Swedish Experiment 1990. (Current document.)

Seed lots for "A species-genotype-environment-interaction study". The latest version is dated: 861111 - Dag Lindgren.

Swedish project survival check 1987 - Cartwright, C. The document includes the plantation plans of the Canadian sites. It is distributed to (at least) Stig Hagner, Per Persson, Margareta Karlman, Oscar Sziklai.

Canadian Sites - Cartwright, C. Sept 1985.

Lindgren, D 8909 Exkursionsguide vid fält-forskarexkursion om contortans biologiska förutsättningar i norra Sverige. Beskrivning av Renberget-ytan och result från en inventering 8908.

Documents about visits for surveying disease and insect problems on Canadian sites have been written by Garbut and Turnqvist.

etc. (not complete!)

General instructions for future inventories
(just the start)

Best way to cruise the Canadian sites.

Based on my past experiences, conditions may change.

If you use rental cars, the best way is probably to use Ft St John as a base. Rent a car for non paved roads. Do all four BC sites (drive directly between Mackenzie and Ft St James). Return car in Ft St John and then fly to Whitehorse (there is a direct flight), and make that a separate business. There is a discount on domestic Canadian flights if you buy the tickets in Sweden. Best time is probably in end of August. There is probably no need for motel reservations long time ahead.

As Whitehorse is lagging three years behind, reduced measurements efforts could be made there the next years.

Management when a major inventory is made

Strangling tags? Because they changed material in the plastic, a few of the tags may stragulate. If so it is connected to the number, and can be found only in a few plots. Look for examples of such stragulation, and if it is found, release all tags from the trunk bottom in affected plots.

DL 901102

Canadian-Swedish project. Site sheet for Garsås site.Contact person (organisation):

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Department of Forest Yield Research
Swedish University of Agricultural Sciences
S 770 73 GARPENBERG
Tel 0225-22100 fax 22193

Location: Lat 60°56' Long 14°53' Elev 205
Mora, Siljansfors
19 km SO from Mora.

Description of way: Riksväg 70 between Rättvik and Mora. Around 17 km SE from Mora (bridge over Orsa-älven) or 1 km NW from Garsås (centre of village). Parking lots on both sides. Forest road. NE around 1.4 km. Right. 3 kms. The site is situated at the end of the road.

Particular about access: Forest Road accessible by ordinary car or bus.

Soils and site details: Part of 25 ha clear-cutting. Rather even ground, weak slope facing N. Boniteten är enligt "STORA's beståndsregister" T 23. Humustäcket är övervägande tunnt och domineras av friskmarksmossor med viss inblandning av lavar. Fältskiktet domineras av lingon. Jordarten är sandig morän. Ingen maskinell markberedning.

Site history: The area was cut 1984. The stumps have been removed.

Experimental history: Plants transported from cool storage in Umeå 860526. Planting immediately 860526-31. White sticks placed besides the plants. Treatment with Ambush because of anticipated insect problems 860606. Survival check 871001 and 89. Height measurement 90.

Demonstration

There is a demonstration part there the materials are arranged in rows with proper tagging behind the main experiment, tags facing from the row. It is worth the walk!

Field notes:

NG: Snytbaggar at planting. Still more early summer 1987. October 87 60% survival. The mortality related to snytbaggar and several types of fungi.

88: Very bad condition, almost spoilt. Remarkably that there are so much snytbaggar in spite of that stumps are removed. Not much competition.

NG 89,90:?

DL + KL 90: Staking in good condition. No stakes within block 5 may complicate orientation at inventories. No explanation at entry. Tags in lower right corner of plot. 4*16 plots.

The plants are low and bushy. Undisturbed plants are a very small minority. The experiment is more developed at all other sites except Whitehorse. Needles and shoots 1990 seem healthy and indicate that the experiment is recovering. No evident snow-blight or other fungi. Very little competing vegetation, the site makes a sterile impression (but some epilobium). Some moose damage, but not worth fencing.

Height will underestimate plant size.

Some plots have a very high early mortality. In the field it makes an impression to be much closer correlated to the plot and spot than to the material.

Some of volunteers recently removed, some more actions necessary in the future, but not immediately.

The surrounding commercial plantation looks generally better.

Management suggestions After studying the condition records 1989, it seems clear that the area should not be abandoned. After height measurement 1990, it is not meaningful to come back until 1993. There are pine volunteers, which should be removed around 1993.

