FALL vs. SPRING PLANTING STUDY

by

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STUDY METHODS

The study was designed by the Forest Science Laboratory at Moscow, Idaho. Two replications were established on south and southwest exposures and two on northerly exposures.

Within each replication block 35 trees of each species WL, OF, ES, and DF were planted on 3 dates in the fall and 3 dates in the spring. Fall dates were mid•September, early October, and mid-October. Spring dates were mid-May or late May, depending on snow conditions, early June, and mid-June. The exact planting dates are shown on the percent survival bar graphs.

All planting was done with a short-handled planting bar. Two men were used as much as possible. One man made the hole with the planting bar, and the other man placed the tree in the hole. Due to a shortage of manpower at the District level, on certain dates only one man performed the entire planting operation.

Rows of trees were spaced about 4 feet apart. Trees in the rows were also spaced at approximate four foot intervals. Care was taken to place roots straight in the hole and tamp trees properly. Due to spacing requirements, care was not taken to avoid rotten wood, scalp planting spots, or take advantage of shade from stumps and logs.

A large wooden stake was placed at the end of each row. Small 5" plastic stakes were placed next to each tree to aid in checking survival.

At the time of planting, soil moisture samples were taken at three locations in each block at the 0" - 4" level. 4" - 8" level and 8" - 12" level. Soil samples were placed in cans, sealed with tape and sent to the Coeur d'Alene nursery for weighing.

The nearest weather station is at the Avery Banger Station, 51/2 airline miles north of Cougar Creek at 2500 ft. elevation. Temperature and precipitation records were obtained from this location. The cougar Creek area was used for planting during the first two years. Due to a lack of space on the southwest exposure, the third year planting was shifted to Sisters and Webfoot Creek. A bad snowstorm in mid-October 1968 made it necessary to use the Cougar. Creek area again for the third fall planting in 1968. It was later decided to install the third spring planting of 1969 in the area, also next to the fall planted area.

A total of 3360 trees were planted each period as follows:

Fall 1966	Spring 1967	- 3360
Fall 1967	Spring 1968	- 3360
Fall 1968	Spring 1969	- 3360
	Total	10,080

THE PLANTING STOCK

Stock used for planting was 2•0 age class DF and GP, 1-0 age class WL, 2-0 and 3-0 ES. All was grown at the Coeur d'Alene Nursery except certain lots of 3-0 ES were grown at Savenac nursery.

CF and DF stock was generally large and vigorous on all planting dates. ES varied considerably in size. The 2-0 planting stock from the Coeur d'Alene Nursery that was used in the fall of 1966 was large and vigorous. Savenac 3-0 stock appeared to be generally small with many crooked roots.

WL used in fall planting was very small, spindly and succulent and could not withstand planting prior to mid-October. WL used in the spring of 1967 seemed to be fairly vigorous in appearance.

Unfortunately, practically all stock planted in the spring of 1969 had broken dormancy and this appeared to reduce survival rates below the two previous spring plantings particularly on the dry sites. The dormancy break in WI. appeared to be disastrous as shown in the bar graphs.

Planting stock for fall planting was lifted a day or two prior to planting. For spring planting, stock was usually lifted early and stored except for the spring of 1969 when it was lifted just prior to planting.

Care was taken to avoid heating and drying of the planting stock at all times. Roots were wrapped in wet burlap before placing them in the planting bags. Trees were stored in the shade at the planting site prior to planting and paper bags were kept closed. No drying of tree roots was observed at any time during planting. A slight amount of mold was noted for the first time on some tree roots during the spring of 1969, immediately after bags of trees were opened. Ten trees of each species were retained at the nursery or sent back in a plastic bag to the nursery on each planting date. The nursery placed these trees in a freezer for later measurement. Stem diameter, root length, and top length of these trees were measured.

SURVIVAL CHECKS AND ROOT MEASUREMENTS

Survival checks after one growing season were made about October 1 in 1967, 1968, and 1969. The results are summarized In the bar graphs. In addition, 5 trees were dug from each row, enclosed in a plastic sack and labeled. These trees were sent to the Coeur d'Alene Nursery for cold storage. Root elongation was measured on these trees.

STUDY RESULTS AND CONCLUSION

This study points up the need to learn more about the physiology of each individual species, especially during the fall planting season.

The following conclusions appear to be supported by the data on this particular study.

(1) 1-0 WL is too small and succulent to plant in the fall prior to mid-October. WL planted in the spring should be planted early and on favorable sites.

(2) Early fall planted Engelmann Spruce appears to survive better than late fall planted spruce.

(3) Grand fir is very erratic, particularly fall planted GF. Dry exposures appear to give better results than wet exposures in many instances.

(4) It is generally best to plant as early as possible in the spring. However, late spring (June 15-20) planting of vigorous stock may give results as good as fall planting.

(5) Spring planting (66% survival) is generally more successful overall than fall planting (50% survival).

(6) Difference in survival between dry sites and moist sites did not seem to be as critical overall for fall planting as it did for spring planting.

3-year Summary	Fall	Spring
Dry site survival	50%	54%
Moist site survival	51%	75%

(7) Stock that has broken dormancy appears to result in much lower survival rates during spring planting; perhaps as much as 30% loss in survival on dry sites when compared to dormant stock.

(8) The good survival rate (78%) of the spring planted stock for 1967 despite the fact that 1967 was one of the driest years on record, shows that planting with proper techniques and good planting stock is feasible even during extremely dry years on medium and better sites.

(9) During so called "wet falls" such as 1968, we can expect that survival will be as good as spring planting for all practical purposes.

(10) There are many unexplained differences in fall planting. For example, the low survival of fall planted Douglas-fir in 1966 compared to the fall of 1967, although the stock and other conditions appeared similar. The erratic performance of grand fir in the fall i.e., better survival on dry sites than on wet sites, requires further study of the physiological difference between various species of trees.