

EFFECT OF SITE PREPARATION AND AN OAT COVER CROP ON THE HEIGHT GROWTH OF BALSAM FIR

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Balsam fir (*Abies balsamea* L.) has been used as planting stock on a wide variety of sites throughout central Maine for production of Christmas trees. Because of its good color, aroma, and response to cultural measures, this species will be planted more extensively in the future. In spite of the desirable characteristics, balsam fir has been difficult to establish in open fields. Competing grasses caused poor growth and low survival rates in many plantations.

Plowing and harrowing the site before planting has given excellent results when oats were also seeded down as cover. This method, when used with an application of a herbicide, such as Simazine, in following years, produced an early rapid growth of balsam fir.

Method

Site preparation in an 8-acre plantation consisted of plowing and harrowing the soil and sowing feedoat seeds at $1\frac{1}{2}$ bushels to the acre prior to planting the fir. Plowing and harrowing was done from May 8 to 10, 1965. Sowing and harrowing of the oat seeds followed on May 15th. Tree planting took place on May 19th and 20th.

Machine planting of 3-1 balsam fir transplants, at a 6-by 6-foot spacing, was done with the Lowther three-point hitch planter pulled by a Ford farm tractor. A three man crew was used: a driver, a man planting, and a man following behind, firming down soil around the planted fir.

On a second planting site, the same age stock was planted with the same equipment. However, the

site was not prepared in any way before planting. The second planting site contained the same type of soil and was adjacent to the prepared site. It was planted 1 year after the prepared site planting (1966). During the spring of 1968, Simazine was applied to both planted sites, at the rate of 7Y2 pounds of wettable Simazine per acre. This herbicide was applied to release fir from grass competition and followed planting by 3 years on the prepared site and 2 years on the unprepared site.

Five growing seasons after planting, the total height of the fir on the 1965 prepared site was measured to the nearest one tenth of a foot.

Results

During early 1970, measurements were taken to determine height response to site preparation, as opposed to height response without site preparation. On the site plowed, harrowed, and sown to oats prior to planting fir, the total height ranged from 1.3 to 5.3 feet. The mean total height of fir on this site was 3.3 feet.

The total height growth of the fir planted in 1966, on the unprepared site, ranged from 0.6 foot to 4.1 feet. Mean total height of the fir was 1.6 feet.

The mean total height was computed by dividing the total heights of the samples by the number of samples. An analysis of the mean total heights shows that balsam fir grew taller on prepared sites (with oats sowed prior to planting) than on unprepared sites.