Relationship Between Filled Seeds Per Halfcut and Filled Seeds Per Cone in Interior Spruce[1]

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A quick estimate of total filled seeds per British Columbia interior spruce cone can be made by multiplying the filled seed count on a longitudinally sliced half-section by 5 and adding 3.

Cone production in interior British Columbia spruce (Picea glauca, P. engelmannii, and hybrids) is unreliable. The frequency of good crop years is estimated to be every 7 years on low-elevation, dry sites and every 12 years on high-elevation sites (1). Information on total filled seeds per cone is useful for cone collection planners. For instance, the number of cones required to supply a specific quantity of seeds can be determined from a half-count/full-count relationship. A recommended minimum half-count per cone for a collectable spruce crop is 7 seeds (2). Our study estimates the relationship between filled seeds per half-count and full-count for interior spruce cones.

Methods

Two 60-year-old interior spruce trees were selected in the Salmon Arm area of British Columbia (lat. 50°47' N., long. 119°24' W.) to establish a way to estimate seed count of a whole cone from the seed count of the exposed half-section of longitudinally sliced cone. In August 1980, the top cone-producing whorls of the trees were shot down using a 303-caliber rifle. Cones were picked off the trees and allowed to after-ripen. Each cone was sectioned longitudinally using a sharp knife. A count was made of the exposed filled seeds on a half-section followed by a complete count of filled seeds per cone.

Results and Discussion

A total of 63 cones collected from the two trees was used in the data analysis. Tree 1 provided 45 cones and tree 2 had 18 cones. Figure 1 shows a linear relationship between half-count and total-count with r2 = 0.69. The mean number of seeds per half-count was 3.45 and seeds per cone 21.35. A quick assessment of filled seeds per cone can be made by multiplying the filled seeds per half-count by 5 and adding 3. Additional cone sampling will be carried out to strengthen the data base.

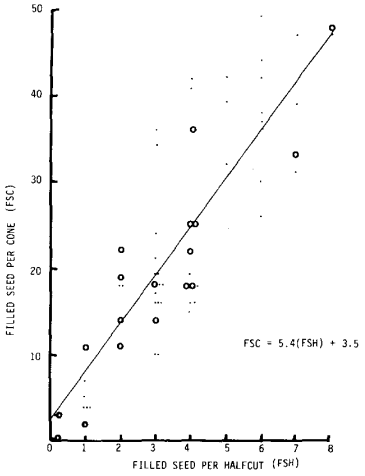

Figure 1.—*Relationship between filled seed count on a longitudinally sliced halfsection and total filled seeds per cone for interior spruce. (Data from tree 1 and 2 indicated by w and o respectively.)*

Literature Cited

1. British Columbia Ministry of Forests. Silviculture manual. 1979. Unpublished.
2. Dobbs, R. C.; Edwards, D. G. W.; Konishi, J.; Wallinger, D. Guideline to collecting cones from B.C. conifers. Joint Rep. 3. Victoria, BC: British Columbia Forest Service/ Canadian Forestry Service; 1976. 98 p.

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