Western Conifer Seed Bug

Leptoglossus occidentalis Heidemann
Hemiptera: Coreidae

Objective: To determine the distribution of *L. occidentalis* in coastal Douglas-fir and lodgepole pine seed orchards.

Abstract: Western conifer seed bug, *Leptoglossus occidentalis* Heidemann, feeds on seeds developing within the cones of coastal Douglas-fir, *Pseudotsuga menziesii* (Mirb.) Franco, and several species of pine (*Pinus* spp.).   It is considered a serious pest in seed orchards in the USA and British Columbia. Studies on the distribution of *L. occidentalis* in coastal Douglas-fir seed orchards in British Columbia indicated that this species has a patchy distribution as the nymphs feed in aggregations. Thus, whole tree counts may be more appropriate than sampling a set number of branches when population densities are low. This species was not observed on trees without cones, suggesting that coneless trees can be excluded from sampling. X-ray analysis of seeds indicated that *L. occidentalis* was responsible for <5% and ≈14% seed loss in coastal Douglas-fir and lodgepole pine, *Pinus contorta* var. *latifolia* Engelm., respectively. Seed loss was not related to *L. occidentalis* density on either host species. The authors concluded that current populations of *L. occidentalis* in seed orchards in British Columbia are not large enough to warrant control measures on either coastal Douglas-fir or lodgepole pine.

Sampling Procedure

Tree sampling: Randomly select trees bearing cones in mid-July. Visually select three cone-bearing branches from each tree from a distance, then examine each selected branch for adult and nymphs of *L. occidentalis*. Use a ladder or bucket truck as needed. Given the aggregation behavior of *L. occidentalis* nymphs, whole tree counts are probably more appropriate for nymphs than just sampling three branches from a tree.

Seed sampling: Randomly select 25 cones from trees at harvest. Dry cones in paper bags, then extract and winnow seeds before x-ray analysis. Examine radiographs to categorize seeds as full, empty, or partially full. Douglas-fir seeds may also be categorized as infested by the Douglas-fir seed chalcid, *Megastigmus spermotrophus* Wachtl.

The number of *L. occidentalis* causing 5, 10, 15, and 20% seed loss over a 120-day feeding period is given in Table 2. Populations of *L. occidentalis* in British Columbia are probably not large enough to exceed the acceptable seed loss of <5%.

Reference:

Hanson, P. D. 1984. Comparison of damage to Douglas-fir [*Pseudotsuga menziesii* (Mirb.) Franco] seed, by each life stage of *Leptoglossus occidentalis* Heidemann (Hemiptera: Coreidae). Vancouver: University of British Columbia; B.Sc. thesis. 28 p.

Table

Table 2. Calculated numbers of *Leptoglossus occidentalis* required to cause 5–20% damage to coastal Douglas-fir and lodgepole pine seed based on Hansen's (1984) feeding rate of one seed bug per day, and extended over an estimated 120 days of favorable weather for feeding from 1 May to 31 August in British Columbia. Estimates of cones per tree and filled seed per cone based on data supplied by D. Reid and B. Barber, B.C. Forest Service, Saanichton and Victoria, respectively, who obtained records from the Tree Seed Centre, B.C. Forest Service, Surrey, B.C.

Species	Source of seed	Cones per tree	Filled seed per cone	Filled seed produced	Percentage damage	Seed damaged	Insects required per tree
Douglas-fir	Seed orchard	3,000	40	120,000	5	6,000	50
					10	12,000	100
					15	18,000	150
					20	24,000	200
	Wild stand	2,800	14	39,200	5	1,960	17
					10	3,920	33
					15	5,880	49
					20	7,840	66
Lodgepole pine	Seed orchard	2,000	15	30,000	5	1,500	13
					10	3,000	25
					15	4,500	38
					20	6,000	50
	Wild stand	8,300	20	166,600	5	8,300	70
					10	16,600	139
					15	24,900	208
					20	33,200	277

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