CHAPTER TWENTY-THREE

Lygus Bugs

Lygus hesperus; L. lineolaris

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Insect pest and hosts

Lygus bugs *(Lygus hesperus* in Oregon, *L. lineolaris* in British Columbia) have become costly pests in conifer nurseries in the Pacific Northwest. Adults are 6 to 7 mm (1/4 inch) long; immatures (nymphs) are 1 to 6 mm long (Figure 23-1). Both can cause injury to seedlings.

Lygus bugs feed primarily on agricultural crops such as alfalfa, cotton, and fruit and vegetable crops, as well as a great variety of weeds, but they also feed on conifer seedlings. They appear to prefer pines over Douglas-fir and true firs, but they cause less damage to pines than to other conifer species.

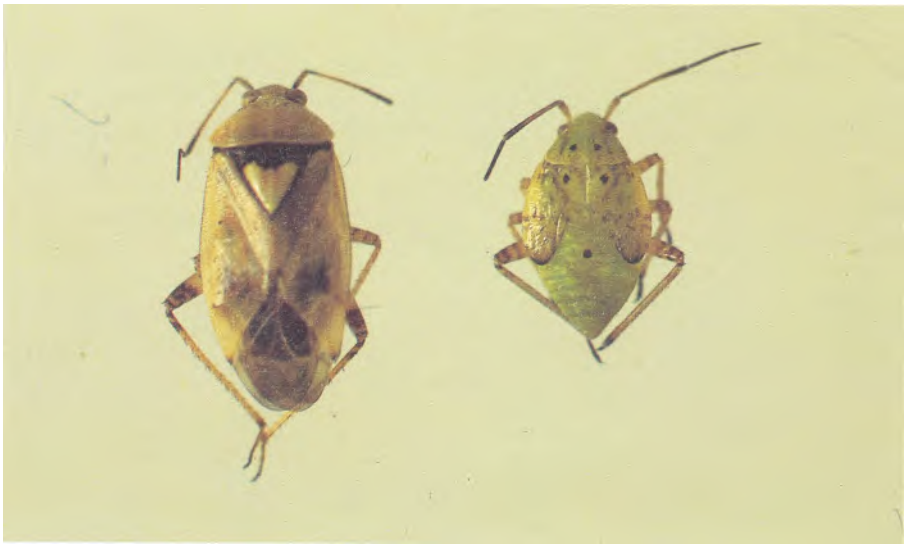

Figure 23-1. *Lygus hesperus* adult (left) and nymph (right). Adults are 6 to 7 mm (1/4 inch) long; nymphs are 1 to 6 mm (up to 1/4 inch) long.

Lygus bug damage may be confused with:
Pesticide damage

Symptoms

Seedlings are injured when the insect inserts its sucking stylet into growing shoots, typically the terminal shoot, and injects digestive enzymes to predigest the plant material. These enzymes and the host's physiological response to wounding cause a lesion to form around the wound (Figure 23-2). These lesions disrupt the growth of terminal shoots, causing them to be deformed (Figure 23-3). Loss of terminal dominance results in lateral shoot growth and, eventually, a bushy appearance.

The bugs feed on 1+0, 1+1, and 2+0 seedlings. Injury occurs throughout the growing season, but most damage occurs when the bugs migrate after harvest of nearby alfalfa or other crops. In western Oregon, lygus bugs feed on 2+0 seedlings in the spring during shoot elongation, and then move onto 1+0 seedlings during summer and fall. Their move coincides with the germination and growth of these seedlings, the top pruning of the 2+0 seedlings, and the dispersal of the first generation of bugs (Figure 23-4). Bug damage resulting from late-season feeding is revealed the following spring as excessive lateral bud growth during shoot elongation.

Insect biology

At least two generations of lygus bugs are produced annually in western Oregon. Overwintering adults appear on 2+0 seedlings in May at bud break, and first-generation immatures appear soon after. Mature adults and second-generation immatures appear in July. Second-generation adults mature in August and overwinter.

Flightless nymphs are abundant throughout large blocks of seedlings, indicating that lygus bugs reproduce within nurseries. It is not clear whether the insects reproduce naturally on conifer seedlings or only on associated weed hosts such as groundsels and clovers. Spindle-shaped lygus eggs have been found on seedlings caged with adult lygus bugs, but nymphs hatched from these eggs have not developed successfully on seedlings.

Loss potential

Susceptibility of seedlings depends on genotype, proximity of the nursery to other crops preferred by lygus, and size of the lygus population among those crops. Irrigation may make seedlings more susceptible to feeding injury because it stimulates new growth, which is preferred by the bugs.

Lygus bug damage appears:
1+0, 1+1, 2+0
Spring through summer

Cumulative damage in western Oregon has ranged from 10 to 50 percent. Early-season damage may be largely cosmetic, with seedlings reestablishing terminal dominance. Late-season damage is more severe, frequently resulting in death of terminal buds and deformed growth in the following year. The long-term ability of damaged seedlings to recover height growth and resist future attack is unknown.

Figure 23-2. Lygus bug feeding injury to 1+0 Douglas-fir seedling. Note the lesion, up to 1 cm (3/8 inch) long, and deformed needles below the top of the seedling. Oregon Department of Forestry photo.

Figure 23-3. Seedling deformity resulting from lygus bug feeding (left), compared to an undamaged seedling (right). Note the lesion and needle deformity below the damaged top and the development of lateral dominance. Oregon Department of Forestry photo.

Management

Lygus bugs can be detected by sweeping a fine-mesh net through seedling beds, by examining weeds in or near seedling beds for adults and nymphs, and by carefully checking seedlings for the first appearance of lesions and deformed tops.

Pesticides may be applied at the first appearance of lygus bugs and periodically thereafter. Two to four applications of fenvalerate or acephate between mid-July (within 2 weeks of initial damage) and early September reduced damage by 80 to 90 percent. Later applications did not reduce the frequency of multiple tops in the following year. Pesticides should eliminate flightless nymphs. Control of the highly mobile adults requires spraying in the early morning when the insects are sluggish. Heavy irrigation dilutes pesticides. Rapid seedling growth also reduces their efficiency. Alternatives to chemical control include isolating the nursery from alfalfa or other preferred hosts.

Selected references

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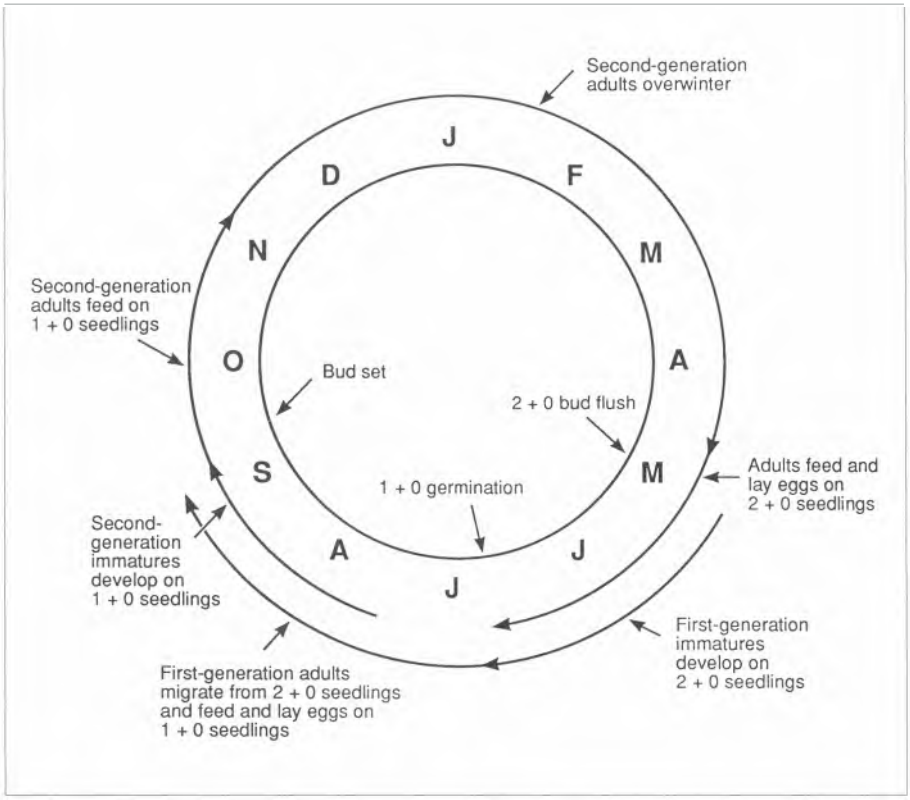

Figure 23-4. Two-generation life history pattern for *Lygus hesperus* in a conifer nursery in southwest Oregon.

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