

Section II

Foliage & Seed-Feeding & Mining Insects

Host Selection by First Generation Adults of Colorado Potato Beetle

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The Colorado potato beetle, *Leptinotarsa decemlineata* (Say), is one of the most important pests of potatoes in Washington. Overwintered adults colonize commercial potatoes in spring, and develop the first summer generation. Mark-recapture techniques verified that many adult beetles of the first generation move out of potatoes to another host plant, hairy nightshade. Egg densities of second summer generation on the weed were as much as 5-fold higher than on potato. Larval densities, consequently, were much higher on the weeds.

To determine the host preference by first generation adults, no choice and free choice tests were set up in lab experiments on colonization, feeding and oviposition. In the case of colonization trials, both potato and nightshade foliage were provided for newly-emerged beetles. Daily observations were made to record host colonized by the test beetles. Results from this experiment indicated that first generation adults apparently ($p=0.01$) preferred nightshade to potato.

Feeding is necessary for proper development of newly-emerged beetles. Starved adults did not harden their elytra, and more than 94% of them died within 9 days after emergence. Hardening of elytra took 7 days if beetles were fed potato foliage at 26° C of temperature, and 16/8, L/D photoperiod. The developmental interval from emergence to oviposition was shorter when beetles were fed potato foliage only. The period was elongated when beetles were fed nightshade. The total foliage consumed during this period did not vary much, no matter which foliage was supplied. Beetles provided with both plants developed intermediately. However, beetles significantly preferred feeding on leaf disks of potato to that of nightshade, in free-choice tests.

The oviposition preference of first generation adults was examined by counting daily number of egg masses and eggs. Results indicate that adult beetles of the first generation significantly preferred nightshade foliage for oviposition. Many more egg masses were found on nightshade than potato, and more than 70% of all eggs were laid on nightshade.