

Biology/Phenology

The growth and development of the consperse stink bug, *Euschistus conspersus*, on selected potential host plants present in orchard ground cover

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Abstract: We conducted a study to compare the development of *E. conspersus* from the egg stage to adult on the most common plants found in the cover crop of Washington orchards. Three of the 6 hosts assayed were found to support *E. conspersus* development from egg to adult stage. This information is presented in conjunction with survey data documenting distribution of *E. conspersus* within and outside orchards, as well as patterns of fruit damage within orchards.

Materials and Methods

D-vac samples. All data were collected in commercial orchards in Manson, WA. Samples were conducted bi-weekly beginning in late June of 2002. Samples consisted of 1 m² areas both within commercial orchards and along orchard borders. Data were expressed as means of bugs/m².

Host plant screening. The following potential host plants were taken from the field, planted in individual pots, and maintained under greenhouse conditions for the duration of the experiment: orchard grass (*Dactylis glomerata*), lambsquarters (*Chenopodium album*), white clover (*Trifolium repens*), dandelion (*Taraxacum officinale*), mullein (*Verbascum thapsus*), and common mallow (*Malva neglecta*). Six plants of each species were placed in 8-inch diameter pots and covered with fine mesh organdy cloth to prevent bug escape. One *E. conspersus* egg mass (18-21 eggs) was placed upon the leaves of each plant. Plants were watered weekly and cropped bi-weekly to prevent the development of flowers or seedheads, as we wished to test only vegetatively growing plants. Counts of numbers of bugs and dominant instar on each plant were conducted weekly. Bugs reaching the adult stage were sexed and weighed.

Damage distribution. Row-by-row counts of stink bug damage were conducted in a commercial Red Delicious orchard in Manson, WA. Twenty apple trees were sampled in each row, with 20 apples counted on each tree.

Results and Discussion

We found no evidence to support the theory that stink bug populations are building within orchards. D-vac samples taken from orchard ground cover yielded very few stink bug nymphs compared with border samples (Table 1), and damage counts conducted in the orchard once again revealed a trend of decreasing damage away from border rows (Fig. 1). Results of rearing experiments conducted with a variety of host plants indicate that stink bugs are able to develop from egg to adult on common mallow, mullein and white clover only (Table 2). These plants could be managed with effective broadleaf weed control. Since previous experiments have

shown that stink bugs are unable to develop upon apple, this may represent an ideal way to restrict stink bug populations to areas outside orchard borders.

Table 1. Comparison of in-orchard vs. border D-vac samples of ground cover vegetation

Date	Site	# bugs/sample	Instar
06/27/02	In-orchard	0.11	2 nd
	Border vegetation	1.00	2 nd
07/09/02	In-orchard	0	N/A
	Border vegetation	0.55	2 nd -4 th
08/01/02	In-orchard	0	N/A
	Border vegetation	0.5	4 th -adult
08/14/02	In-orchard	0	N/A
	Border vegetation	0.88	5 th -adult
08/31/02	In-orchard	0	N/A
	Border vegetation	0.33	4 th

Table 2. Survivorship of stink bug eggs placed on various ground cover plants

Plant	% reaching adult	Mean wt. males	Mean wt. females
Common mallow	13.91	0.057	0.064
Dandelion	0	-	-
White Clover	1.83	N/A	0.093
Mullein	7.27	0.079	0.079
Lamb's Quarters	0	-	-
Orchard Grass	0	-	-
Field-collected		0.083	0.096

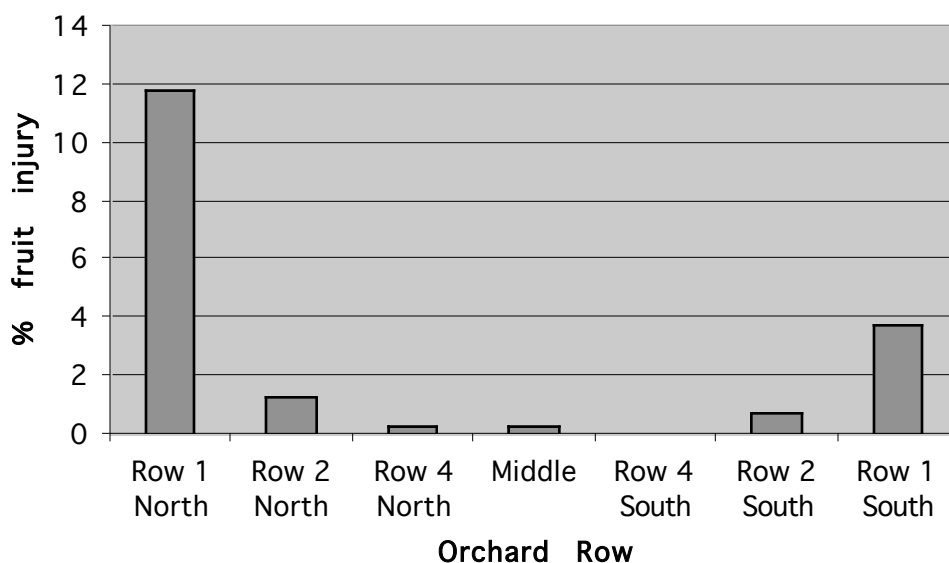


Fig. 1. By-row distribution of stink bug injury at harvest.