

FECUNDITY OF THE BLACK VINE WEEVIL, *OTIORHYNCHUS SULCATUS* (COLEOPTERA: CURCULIONIDAE), FED FOLIAGE FROM SOME CURRENT CULTIVARS AND ADVANCED SELECTIONS OF STRAWBERRY IN BRITISH COLUMBIA

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ABSTRACT

Adults of the black vine weevil, *Otiiorhynchus sulcatus* (F.), kept individually in plastic vials in the laboratory were fed foliage picked from strawberry cultivars or selections in one field of the British Columbia strawberry breeding program at Abbotsford. The source of foliage had no significant influence of preoviposition period, weight gain, or amount of foliage consumed. However, there were significant differences in the number of eggs laid during a ten-week period and in the number of larvae that hatched. The fewest eggs were laid and larvae hatched when weevils fed on the new cultivar Tyee and the selection BC 73-9-79. The other foliage sources in order of increasing numbers of eggs were BC 70-22-82, Totem, BC 69-5-34, Shuksan, and BC 70-20R-15.

INTRODUCTION

In earlier laboratory studies the fecundity of the black vine weevil, *Otiiorhynchus sulcatus* (F.), was affected when adults were fed on different cultivars of highbush blueberry (Cram 1970). This paper reports the results from feeding adult *O. sulcatus* in the laboratory on excised foliage of some current cultivars and advanced selections from the British Columbia strawberry breeding program at Abbotsford.

METHODS

Newly emerged adults of *O. sulcatus* were collected from a grower's field of Totem strawberries at Abbotsford on June 14, 1978. Ninety-one were selected for uniformity of weight and these were judged to be recently emerged from the soil on the basis of the softness and light brown colour of their sterna. Fresh foliage was picked from plants grown in replicated trials of cultivars and advanced selections in the B.C. strawberry breeding program at Abbotsford and kept overnight in closed plastic bags in a refrigerator. One leaflet was fed to each weevil in 16-dram plastic snap-cap pill vials (35-80 mm). There were 13 replicates for each of 3 cultivars and 4 advanced selections. Fresh foliage was picked and fed weekly when clean vials were also provided. The trays of vials were kept at room temperature in the laboratory. The consumption of leaf tissue was recorded weekly by overlaying the old foliage on a grid and counting the number of 5 x 5 mm squares judged to be consumed. All weevils were weighed after 3 weeks and individual

daily records were kept on the preoviposition periods. After oviposition began, the eggs were counted weekly at least 3 days and at most 10 days after they were laid to determine the viability of the eggs by the number that darkened (Cram and Pearson 1965). In the last 4 weeks the eggs were allowed to hatch and both eggs and larvae were counted.

RESULTS

All results are summarized in Table 1. There was no significant difference in weight gain during the first 3 weeks nor in the preoviposition periods or leaf area consumed. There were significant differences in total and brown viable eggs and also in the number of larvae in the last 4 weeks. When fed the newly named cultivar, Tyee (Daubeny 1980), the weevils showed a significant reduction in fecundity and egg viability over those fed the standard cultivars, Totem and Shuksan. The selection BC 73-9-79 also resulted in low egg viability. On the selection BC 70-20R-15 weevils produced twice the fecundity and 4 times the larvae in the last 4 weeks than they did on Tyee. These results indicate that for the black vine weevil there are significant differences in the nutritional status of foliage from various strawberry cultivars and selections.

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TABLE 1. Means of weight gains in first 3 weeks, preoviposition periods, leaf areas consumed, all eggs and brown eggs laid, larvae hatched in the last 4 weeks and survivors of 13 *O. sulcatus* adults fed individually in the laboratory on excised leaflets of 3 cultivars and 4 selections of strawberry¹ from June 14 to September 26 in 1978.

Cultivar or selection	3-wk wt. gain mg	Preov. period days	Means ² of				Larvae last 4 wks no.	No. of survivors of 13 adults
			Leaf area consumed cm ²	All eggs no.	Brown eggs no.			
Tyee	15.1	43	30	311 a	187 a	41 a	8	
BC 73-9-79	11.9	45	32	392 ab	168 a	33 a	10	
BC 70-22-82	16.0	48	31	459 abc	298 ab	98 b	13	
Totem	11.7	40	31	496 bcd	310 ab	111 bc	9	
BC 69-5-34	18.2	41	31	558 cd	371 bc	109 bc	13	
Shuksan	13.2	43	32	602 cd	354 bc	124 bc	8	
BC 70-20R-15	13.4	43	31	640 d	453 c	162 c	12	

1/ Foliage was obtained from plants grown at Abbotsford, B.C. in the B.C. strawberry breeding program.

2/ Means in the same column followed by the same letter are not significantly different at P = .05.

REFERENCES

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