**RELEASE AND ESTABLISHMENT OF *APHIDIUS SONCHI*,
A PARASITOID OF THE SOWTHISTLE APHID
IN NEW ZEALAND**

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In New Zealand, the sowthistle aphid (*Hyperomyzus lactucae*) alternates between sowthistle and blackcurrant. Spring infestation of blackcurrant foliage causes leaf-curling damage requiring insecticide treatment for control (W. Thomas pers. comm.). In 1992, biological control was chosen as an alternative control measure, using the parasitoid *Aphidius sonchi*, which had been introduced into Australia in 1981 (Carver and Woolcock 1986), but was not known in New Zealand. The parasitoid was collected in Australia and reared in the Insect Quarantine Laboratory at Lincoln. Tests of parasitoid host range were carried out and an Importation Impact Assessment was submitted to the MAF Regulatory Authority with a request for permission to release (Stufkens and Farrell 1994).

Release of *A. sonchi* was authorised in February 1994. Parasitoids were cultured on sowthistle aphids at Lincoln and batches of 1000-18 000 mummified aphid hosts (mummies) and adult parasitoids were released on sowthistle in blackcurrant crops or market gardens at 1-2 sites in all regions (Table 1) except the Bay of Plenty and Marlborough. First releases were made in mid Canterbury during February and March 1994, and in other regions (Table 1) between April 1 and June 30, excepting south Canterbury, where parasitoids were first released on 23 November 1994. The establishment of *A. sonchi* was surveyed in November 1994 and May 1995. Sowthistles were searched at release sites, and at numerous other sites in each region (Table 1). Mummies and live sowthistle aphids were collected and taken to the laboratory, where parasitoids emerging from mummies were identified and the rate of parasitism was determined by dissection of c. 100 fourth-stage aphids from each site.

TABLE 1: Rate of parasitism (%) of fourth-instar *Hyperomyzus lactucae* on sowthistle by *Aphidius sonchi* at sample sites (No.) in November 1994 and May 1995.

Region	%	November			%	May		
		SE	<i>n</i>	No.		SE	<i>n</i>	No.
Waikato	19	2.1	352	20	27	2.5	326	29
Bay of Plenty	24	3.5	146	17	38	2.2	520	22
Hawke's Bay	20	1.7	581	33	50	2.3	459	29
Manawatu	0	-	108	18	24	3.0	204	13
Marlborough	10	1.3	504	21	41	2.2	518	43
Nelson	3	0.9	399	36	31	2.2	410	37
N. Canterbury	0	-	208	24	6	0.7	1163	59
mid Canterbury	0	-	326	3	21	1.1	1287	109
S. Canterbury	0	-	122	7	0	-	150	17
Southland	0	-	212	14	-	-	0	0
<i>n</i> Total aphids dissected		SE Standard error of %			- no data			

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Aphidius sonchi was the only primary parasitoid reared from sowthistle aphid mummies, so larvae dissected from live sowthistle aphids were considered to be *A. sonchi*. In November, the substantial rates of aphid parasitism recorded in the Bay of Plenty and Marlborough (Table 1), where no releases were made, indicated that *A. sonchi* was established in these regions prior to the present work. In mid Canterbury, no parasitoids were found in a survey of *H. lactucae* in spring 1993 (M. Stufkens unpublished data) and the rate of parasitism increased from 0% in November 1994 to 21% in May 1995 (Table 1). It is likely that *A. sonchi* spread from release sites in the Christchurch area in the year ending May 1995. No parasitism was found in South Canterbury, where one release was made in November, or in Southland, where the first release was made in April 1994, with a second release in November. The failure of establishment in Southland is unexplained.

Surveys of blackcurrants at two Nelson sites and two mid Canterbury sites in November 1994 yielded few (total 44) mummies of *H. lactucae* in dense aphid populations. No parasitism was found in dissections of 1056 sexual forms (males, sexuparae and oviparae) collected from blackcurrants at these sites in May 1995, when 16-68% parasitism was found in *H. lactucae* on adjacent sowthistles. Sexual forms of *H. lactucae* were parasitised by *A. sonchi* in the laboratory (M. Stufkens, unpublished data). Blackcurrant foliage may be unattractive to *A. sonchi*, and further study of factors limiting parasitism in blackcurrants is required.

REFERENCES

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