

Chemical Control/New Products

Evaluation of Surround® (Kaolin) for Insecticidal Activity

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Surround® (Kaolin, Engelhard Company) is a novel pesticide, the efficacy of which is based on a thin layer of particle film, consisting mainly of clay, that is deposited on foliage and fruit. Studies have been conducted in the laboratory, small field plots, and some large grower tests to evaluate the efficacy of this product for control of apple and pear pests. Initial trials have provided valuable insights into the spectrum of activity and mode-of-action on some pests and natural enemies. These tests have primarily been designed to have a continuous coating of Surround® on the foliage and fruit, and the impacts of the treatment have been assessed by monitoring pest populations and/or fruit injury. In order to determine how Surround® works against specific pests, individual trials need to be conducted to determine timing, rates and frequency of applications that provide optimum pest suppression with fewest effects on natural enemies.

Surround was evaluated in field tests and laboratory bioassays against several pests in 1999. There appears to be weak action against codling moth in both field and laboratory bioassay tests, indicating that this product would be a supplement to other tactics like mating disruption but might not be adequate as a stand-alone product for codling moth control. Surround inhibited the colonization of foliage by leafroller larvae and lacanobia fruitworm larvae in bioassays and reduced densities and foliage injury by lacanobia fruitworm in field trials. The impact of Surround on stink bugs is unclear but does not appear to have great potential as a deterrent for this pest.

Surround for control of first generation codling moth, 1999.

Treatment	Rate (form./25 gal)	Timing ¹	#/50 fruits		
			Stings	Entries	% total injury
Surround	25 lbs	Oviposition	0.8a	3.0bc	7.6b
Surround	25 lbs	Hatch	0.8a	4.0b	9.6b
Surround	25 lbs	Ovip.+hatch	0.8a	2.0bc	5.6b
Untreated	NONE		0.8a	12.2a	26.0a

Means in the same column followed by the same letter not significantly different ($p=0.05$, Duncan's new MRT).

¹Application dates for Oviposition timing were 19, 27 Jul and 4 Aug and for the Hatch timing were 12, 18, 25 Aug. Applications for the Oviposition+hatch timing were on all six dates.

Surround for control of first generation *Lacanobia subjuncta*, 1999.

Treatment	Rate/a	Timing	Post-treatment averages			
			19 Jul		9 Aug	
			lv/20 tray	% inf. shoots	% fruit injury ¹	% inf. shoots
Surround	50 lbs	Oviposition	3.3b	6.8ab	0.0a	30.0b
Surround	50 lbs	Hatch	1.0a	2.8a	0.0a	11.3ab
Surround	50 lbs	Ovi + hatch	0.3a	1.2a	0.0a	6.7a
Pyrellin		Hatch, + 10d	0.7a	11.1ab	0.1a	31.0b
Untreated			4.0b	16.8b	0.3a	99.7c

Means in the same column followed by the same letter not significantly different (Fisher's Protected LSD, p=0.05).

Surround for control of summer generation obliquebanded leafroller, 1999.

Treatment	Rate/a	Timing	Post-trt. avg. % inf. shoots
Surround	50 lbs	Oviposition	5.7bc
Surround	50 lbs	Hatch	6.0bc
Surround	50 lbs	Ovi + hatch	0.5a
Lorsban 50	3 lbs	Hatch	3.1ab
Untreated			18.4c

Means in the same column followed by the same letter not significantly different (Fisher's Protected LSD, p=0.05).