

(E52)

PEPPER (BELL): *Capsicum annuum* L., ‘Socrates’

INSECTICIDE EFFICACY EVALUATION OF EUROPEAN CORN BORER CONTROL IN BELL PEPPER, 2004

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European corn borer (ECB): *Ostrinia nubilalis* (Hübner)

The objective of this research trial was to evaluate the efficacy of 10 insecticides for ECB control in bell peppers. The ECB is the key insect pest of Ohio bell peppers. Chemical management of this pest is the most commonly used tactic by farmers. Orthene is the preferred insecticide against ECB, but its use is limited to a maximum of two applications per season. It is thus necessary to investigate materials that might offer an efficacy comparable to that of Orthene. This study was conducted in 2004, at the North Central Research Station of the Ohio State University, Fremont, Ohio. Insecticide performance against ECB was tested in a RCB design containing 11 treatments and four replications. Peppers were seeded in 200-cell trays in a greenhouse on 5 Apr and transplanted in the field on 4 Jun. Each plot was a single row of pepper plants 30 ft long with a guard row on each side. A tractor-drawn hydraulic boom sprayer pressurized by CO₂ with 2.5 gal stainless steel canisters tanks was used to apply the insecticides at approximately 7-day intervals, starting when the second generation of ECB moths was detected by a blacklight trap, and ending when moth flight ceased. In some weeks, weather conditions delayed chemical applications. Actual dates of insecticide applications were: 12 Jul, 6, 13, 23, and 31 Aug, and 7 and 14 Sep. Dimilin was not included in the 23 Aug application because of logistics problems; instead, it was applied on 27 Aug. The applications were made at a speed of 3 mph, 55 psi, nozzle TJ-60 11003 VS, and a spray volume of 29.5 gpa. For disease management, Champ (24 fl oz product/acre) and Manex (51.2 fl oz product/acre) were applied uniformly on all treatments; including the untreated check on 18 and 30 Jun, 12 Jul, 13 Aug and Sep 10. Quadris (7 fl oz product/acre) was applied on 2 Sep. Wet, cold, and cloudy climatic conditions, especially during the first month of the growing season, delayed and reduced the growth of pepper crops throughout Ohio. All fully red fruit were harvested from a row length of 6.01 m (20 feet), from the center of each plot, on 16 Sep and 1 Oct. Total fruit number and weight were recorded. Fruit too rotten to pick were not harvested. Each harvested fruit was inspected for damage on the outside, then cut open and examined for larval damage or presence. Data were subjected to ANOVA and means were separated using LSD ($P \leq 0.05$).

Pest pressure was heavy as evident in low yield and high amount of damage in the untreated check. Orthene provided the best protection of red bell pepper fruits from ECB injury due to higher harvestable yield and lower percentage of fruit damaged, in both individual harvests and in cumulative harvest data. Orthene was not significantly different than Mustang Max in either variable for any harvest. Avaunt and Intrepid were not significantly different than Orthene for some but not all variables and harvests. Assail,

Calypso, Dimilin, SpinTor, Rimon, and Proclaim at the rates tested did not offer a significantly better protection from ECB fruit damage than the untreated checks based on both yield and infestation variables in the cumulative harvest. The untreated check, Assail, and Calypso treatments obtained the lowest cumulative yields.

Treatment/ formulation	Rate amt product/acre	First harvest		Second harvest		Cumulative harvest	
		Kg of fruit /20 ft row	% ECB- damaged fruit/ 20 ft row ^a	Kg of fruit /20 ft row	% ECB- damaged fruit /20 ft row ^a	Kg of fruit /20 ft row	% ECB- damaged fruit/ 20 ft row ^a
Orthene 97S	16.0 oz	10.90a	2.52e	4.83a	0.96c	15.74a	1.68e
Mustang Max 0.8EC	4.0 fl oz	7.72ab	12.04de	3.35ab	6.67bc	11.07ab	11.66de
Intrepid 2F	6.0 fl oz	7.55abc	35.10bcd	2.62b	38.84abc	10.17b	35.50bcd
Avaunt 30WG	3.5 oz	7.14abc	22.80cde	2.65b	33.61abc	9.80bc	26.14cde
Proclaim 5WDG	3.6 oz	5.84bc	35.54bcd	2.16bc	60.72a	8.00bcd	41.07bcd
Rimon 0.83EC	15.0 fl oz	5.40bc	39.86bc	1.78bc	49.80ab	7.18bcd	49.70abc
SpinTor 2SC	4.0 fl oz	4.40bc	42.18bc	1.81bc	35.00abc	6.21bcd	39.02bcd
Dimilin 25W	8.0 oz	4.39bc	47.33abc	0.84c	56.88a	5.23cd	61.54ab
Calypso 4F	3.0 fl oz	3.69bc	52.78ab	0.71c	28.13abc	4.40d	48.42abc
Assail 70WP	1.7 oz	2.95c	60.00ab	0.87c	26.79abc	3.82d	59.80ab
Untreated check	--	2.92c	72.58a	0.50c	65.00a	3.42d	76.74a

Means within a column followed by the same letter are not significantly different ($P > 0.05$, LSD).

^aFruit with ECB damage are shown as a percentage of the total number of fruits.