

Pesticides for onion thrips: efficacy and compatibility with biocontrol

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Background

Onion thrips (OT), *Thrips tabaci*, are on the rise in ornamental greenhouses in Ontario. Until we have an effective biocontrol strategy against OT, growers are currently relying on pesticides. However, OT co-occur with the more pesticide resistant western flower thrips (WFT), *Frankliniella occidentalis*.

In this research, we assessed the efficacy of pesticides against OT while considering the need for biocontrol compatibility.

Pesticide evaluations

Chrysanthemum leaves were submerged in pesticide solutions (see Table 1 for rates) for 30 seconds. Ten OT adults or 2nd instar larvae were placed on the leaves when dry. Thrips mortality was assessed at day 2 and 5.

OT and pesticide resistance

The OT used in this trial were a laboratory-reared colony with no recent pesticide exposures:

- OT have developed resistance to many different pesticides.
- Levels of resistance can vary widely between neighbouring populations.
- Follow standard resistance management techniques (e.g. pesticide rotation, spot sprays).
- Do standardized plant taps before and after sprays to verify OT numbers are declining, even if the product has worked in the past.

Table 1. Summary of pesticide efficacy & compatibility with biocontrol agents.

Product	IRAC MoA ¹	Rate in lab trial ²	Mortality in lab trial ²	Damage cessation ³	Compatibility with bios ⁴
Beleaf Flonicamid	29	0.3g/L	<35%	Yes	Soft on most
Ference Cyantranilprole	28	0.75ml/L	58-81%	Yes	Lacking data, believed soft
Kontos Spirotetramat	23	0.26ml/L	<40%	No	Slight-moderate harm
Pylon Chlorfenapyr	13	1.56ml/L	65-89%	N/A	Very hard
Success Spinosad	5	0.5ml/L	100%	N/A	Slight-moderate harm

¹ Insecticide Resistance Action Committee Mode of Action classification.

² Rates used in trial were based on highest label rate for thrips in greenhouse ornamentals.

³ Mortality rate and damage cessation based on laboratory trials.

⁴ Compatibility based on literature review and data available in Biobest & Koppert side effects databases.

Success succeeds (for now)

Success killed 100% of thrips in this trial (Fig. 1). However, spinosad can be hard on predatory mites and spinosad resistance in OT has been recorded in other studies.

Dying of hunger?

Ference and Beleaf both caused immediate damage cessation. Reduced feeding may result in greater mortality over time.

Balancing act

There was no obvious best product in our trials. Success and Pylon offered the best efficacy but Pylon is too hard on biocontrol agents to be compatible with most IPM programs. Success and Ference offer a better balance of efficacy and compatibility (Table 1).

Growers should decide which product best suits their needs by considering crop stage, crop duration, the importance of preserving biocontrol and other pest management needs.

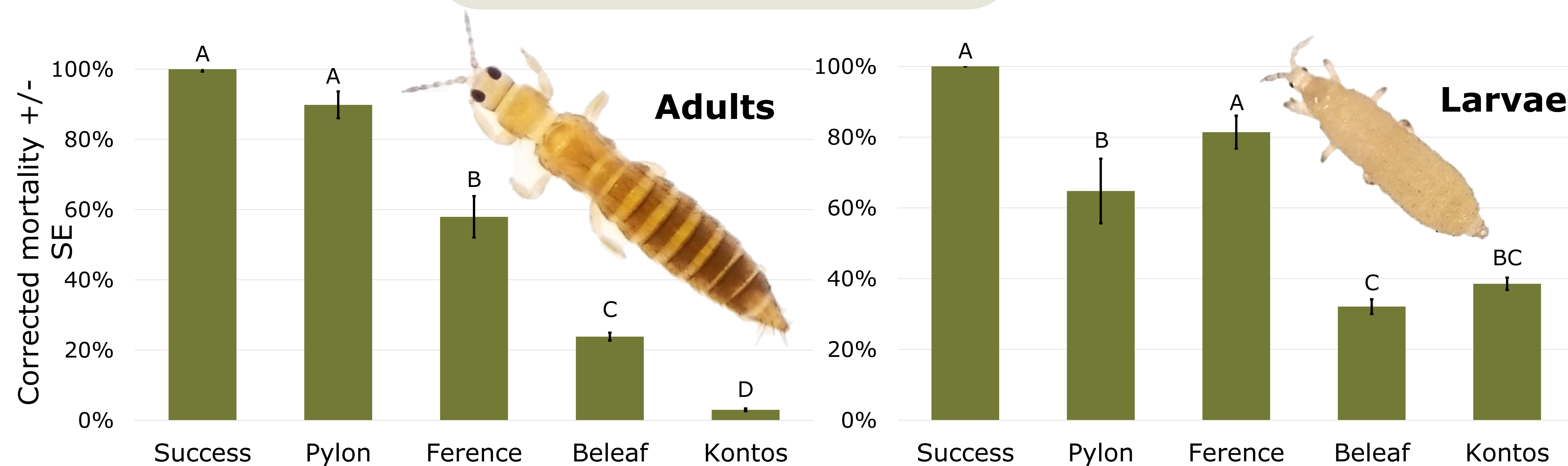


Figure 1. Corrected mortality rate of onion thrips (*Thrips tabaci*) adults (left) and larvae (right) after five days of exposure to pesticide-treated chrysanthemum leaves in a laboratory trial. Letters indicate statistically significant differences between products ($\alpha=0.05$). Corrected mortality rate was calculated using mortality rate in water-only control (Abbott 1925).