



DOVE
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Information

General correspondence on sulphur burners and predators

Generally, vaporised sulphur seems to be harmful, whilst sprayed sulphur (e.g. Thiovit) seems to be relatively safe. We did some trials a few years ago to try to understand this and it appeared that sulphur vapour killed *Phytoseiulus* eggs (gave them an opaque, 'ground-glass' appearance) and larvae. If we missed treatments, we were able to find proto- and deuto-nymphs. We tried to calculate a sulphur rate which would be the same as that used commercially in Holland, but of course we had a very small glasshouse, so we may not have been correct.

Our hypothesis is that the sulphur forms sulphurous acid, which attacks the surface structure of the egg.

Generally, in practical terms, we recommend that growers reduce the duration of burn from 8 hours to 2-3 hours per night, reduce the frequency to 2-3 nights per week, rather than 7 as is often done, and avoid sulphur burning when trying to establish predatory mites.

I'd speculate that any negative effects on *Aphidoletes/Feltiella* and other beneficials have a similar mechanism: either damage to eggs or destruction of antennal chemo-receptors, preventing mate finding or host location. This implies that periodic use would permit better control, but this has not been confirmed.

In 1997, we found that sub-lethal doses of sulphur vaporised during the nights in a glasshouse of 150m², retarded the colonisation of a sweet pepper crop by *Amblyseius degenerans*. The highest rate tested (nightly application during 1.5 hours vaporizing the equivalent of 40 grams per hectare) completely eliminated the predator population. A summary was published in *Groenten en Fruit/Glasgroenten* 12 December 1997, week 50, pp. 20-22.

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In tests, we found that a burner operated for 20 hours released approximately 2 grams of sulphur. That is 0.1 grams per hour, so that our first night burn of 3 x 30 minutes probably gave about the right dose, and our later burns which released 3 grams per night were seriously excessive.

- In Holland, burning 0.7g sulphur per 100 m² per night controlled *Tetranychus* sp.
- 1.43g sulphur per 100 m² per night = detrimental to control.
- Agree with trials at Bioline: no effect on *Phytoseilus* with 0.75g sulphur per 100 m² per night.
- BUT effect seen with 1.67g sulphur per 100 m² per night = dead *Phytoseiulus*. Curled up larvae; opaque eggs; possible effect on adults.
- *Tetranychus* production OK initially - may be enhanced by plant tonic effect of sulphur.
- BUT, possible phytotoxicity on *Phaseolus* observed over time - detrimental to *Tetranychus* production.



Suppliers

Hotbox International Limited, Unit 1, 236 Main Road, Newport, Brough, East Yorkshire, HU15 2RH
<http://www.hotboxworld.com/products/hotbox-sulfume/8/cat>

Nivola, Heereweg2, a2161 AC Lisse, The Netherlands
<http://www.nivola.nl/en/horticulture/zwavelverdamper/specificaties/>

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