

An alternative to chemicals and predatory mites

## Nematodes keep thrips at low level in chrysanthemums



*Piet van Boven (left) together with the grower look for signs of thrips damage in the crop.*

**Dutch chrysanthemum grower, Laurens van der Lans of 's-Gravzande, has a lovely-looking nursery. Each bay consists mostly of white chrysanthemums with one sixth of contrasting yellow ones. It looks stunning, especially when the chrysanthemums are virtually ready for harvesting. For most of the year the grower keeps thrips under control by spraying with nematodes.**

The chrysanthemum grower is very proud of his beautiful, top quality flowers. They are mainly destined for the east European market for which he grows two varieties on his 28.000 m<sup>2</sup> nursery: white 'Zembla' and yellow 'Ranomi'. There's a story behind

'Ranomi'. "Four years ago I told Delifor that I wanted to name a flower after the Dutch swimmer Ranomi Kromowidjojo. Last year the double gold Olympic medal winner launched the variety herself," says Laurens van der Lans, still enjoying the moment.

Together with four other nurseries, that also supply the East European market, he's formed a partnership, VannoVa. "We grow the top five chrysanthemums and work together on the marketing. Together we have one image and we exhibit together at the large trade shows. Our aim is to acquire a leading position at international level," says Van der Lans.

The growers position VannoVa as their breeder's name. This is printed on the gold

decorated sleeves, on which the individual growers also have their own name.

### **Nematodes against thrips**

One of the problems with growing chrysanthemums is thrips. The pests get into the leaf and flower buds and both the larvae and adult thrips cause damage by sucking. Among other things, this causes small light marks on the petals. For the most part of their life cycle thrips remain on the plant although, in some cases, pupation takes place on the ground.

Van der Lans: "Because we use artificial light it's always spring in the greenhouse and so the thrips are always present." The opportunity to tackle them with chemicals is getting less and less. "Resistance is becoming

more common, substances disappear from the market and we get close to using the maximum number of applications allowed on the label. More and more growers are switching over to a biological approach, mostly using predatory mites in sachets or loose. As one of the few we have been using nematodes to control thrips with great satisfaction for nine years already.”

### Steinernema feltiae

The infectious nematodes are delivered in a white container which contains a gel that holds moisture and air so that the nematodes can survive. They can survive like this for at least six weeks in the refrigerator. The nematodes, *Steinernema feltiae*, are naturally obtained from soil and carry the bacteria *Xenorhabdus*.

These nematodes penetrate the body of their host via natural openings in the insect. They invade all stages of thrips except the egg stage. The symbiotic bacteria are released in the body fluid, multiply rapidly and kill the host insect within one to two days.

### Leaves wet for two hours

Piet van Boven of BASF, manufacturer of biological crop protection substances, has been following Van der Lans’ crop protection strategy for about six years. “You have to create favourable conditions before application. That means enough moisture, both in the soil and in the crop. If the leaf is wet for a period of two hours it’s enough for the nematodes to do their work. We advise spraying in the evening because then adult thrips are less active.”

The chrysanthemum grower agrees that sufficient moisture is important but opts for a different approach. “If we spray in the evening the crop remains wet for too long, which can lead to problems with rust. We shower the chrysanthemums the night before. The next morning I start spraying at 6 am and I’m finished between 8.00 and 8.30. I water again at 9.00 and 10.00 for 3 seconds.”

The screen is slightly open and the lights are out. The crop has to stay moist otherwise



**The grower keeps thrips under control by spraying with nematodes.**



**Laurens van der Lans: “As one of the few we have been using nematodes to control thrips with great satisfaction for nine years already.”**

the nematodes will quickly die. The crop has to be dry again by the evening to prevent any rust problems. This regime is the key to success says the chrysanthemum grower. In other words apply the nematodes at just the right time onto a crop that has been wet for a sufficient length of time. “Everyone sprays in their own way. It’s not just about what you apply, but how you apply in order to get the most advantage.”

### Spray with a normal spray boom

The grower applies the nematodes with a regular spray boom but the pressure on the pump mustn’t be too high. It should be a maximum of 20 bar. Van der Lans: “The pressure here is 40 bar, because otherwise spraying would take me far too long. It does kill some of the nematodes but sufficient live ones come out of the spray heads. We compensate for the lower number by using nozzles so that they remain longer in the crop and can do their work.”

The supplier recommends using half a container of 250 million insects per 1,000 m<sup>2</sup> as a preventive measure and a whole container per 1,000 m<sup>2</sup> as a curatief measure if the thrips population gets too high. The grower opts for four containers for seven bays (just over 5,000 m<sup>2</sup>) and gets good results.

### Spraying better than watering

Like the instructions say, it’s important that the mesh in the nozzle caps is large enough, or it should be removed completely from the caps. Some growers also water in the nematodes during the first three weeks of the cultivation to kill off the pupa on the ground.

Van der Lans focuses primarily on the spray boom and the stage at which the thrips

are in the plants. Van Boven: “With a sprayer, the grower also catches the stage in the soil. Certainly at the beginning of the cultivation a large proportion of the nematodes get into the soil. An advantage of spraying is that it is more accurate that watering-in the nematodes.”

### Not more expensive

Nematodes are reputed to be expensive. Ten years ago they were relatively expensive compared with other methods of pest control. The chrysanthemum grower has a paper published by DLV Aktua Chrysant in March 2013 that compares the costs of different substances. Spraying/watering-in nematodes costs 3 Euro cent per m<sup>2</sup> each time. “It costs me about 2 cents per m<sup>2</sup> each time. Over a crop of eight weeks it costs me 16 cent/m<sup>2</sup>. That’s about the same as predatory mites. Chemical treatment is cheaper than biological but are chemicals as effective?”

Until now the grower has used only chemical control during the winter but now wants to use nematodes all year round and only use chemicals if it becomes really necessary.

## Summary

Chrysanthemum grower Laurens van der Lans grows large chrysanthemums for the East European market. Thrips is a problem that can be controlled. He sprays the crop with nematodes on a weekly basis so that thrips remain at a low level and cause minimum problems.