

Nematodes against bean fly in cowpea and bean

Diagnose the problem

Larvae of the bean fly are tiny whitish maggots. They are called "*bean stem maggots*" or "*Isazi y'ibishyimbo*" in Kinyarwanda. They attack seedlings and young plants. The maggots move inside the stem of cowpeas and beans down to the ground. Stem bases swell and crack. Plants wilt and turn yellow. If seedlings are attacked, they often die. The adults are 2 mm black flies. In still weather you see the small flies moving around on the beans.

Background

Bean maggots and pupae live in the stem base near or below the ground.

In the soil also live tiny worms that kill these maggots. They are beneficial nematodes. They are not pests like plant-nematodes. However, beneficial nematodes are often not enough to naturally control pests. Therefore, they are sprayed. Obtain them from the Biocontrol Factory at Southern RAB Rubona (contact Joelle Kajuga, 0727801614/ 0788525794; toll free 4675). As nematodes are alive, transport them quickly, and hold them in a cool area (food cool box, fridge, shadow). You can keep them for 1 week only. When preparing the nematode-water mix, be quick. Nematodes can be applied when vegetation is dense or soil surface is wet. Nematodes are not toxic.



What to do

- Spray nematodes onto seedlings of 2 to 5 leaf stage.
- Obtain nematode "*Steinernema carpocapsae RW14-G-R3a-2*", "*Steinernema sp. RW14-M-C2b-1*", or others from RAB Rubona.
- You get them formulated in sponges. Keep them cool.
- Work on a cloudy day and after rainfall so that the soil surface is wet.
- Prepare a sprayer with a large nozzle or take nozzle out, or take a can.
- Dilute sponges in a bucket of water, squeeze them for a minute, so that nematodes go into water. Then take or sieve sponge out.
- Prepare 6 to 18 million nematodes (= 15 to 45 sponges) for a 20 litre knapsack sprayer for 0.2 acres (=700 squaremetres). This is enough for 500 to 700 plantings. This equals 10000 – 30000 nematodes per plant, or 30 - 90 million per acre. Place the mix into shadowed cool place.
- **Spray nematode-water as a spot application near the stem base of each seedling. Spray at 5 seconds per stem base to allow water to soak around stem. Flat sprays on bare soil will not work as nematodes will die.**
- If a second spray is needed later in the season then spray into dense bean/pea vegetation canopies near stem bases
- If spraying along non-dense crop rows, first open a small furrow first so that soil surface is moist. Then spray into furrow and immediately close.
- You may ridge soil up immediately after sprays.



Bean fly eggs, 2 mm adult, pupa, ¼ cm larva in stem base (Sources NSW Agriculture, Y. Xun)



Wilted plant due to maggots (Photo by Y. Xun)



Sponges with nematodes in water (photos S. Toepfer)



Spot spray or spray into dense canopies if soil is wet (photos Montana S.U.; S.Toepfer)

When using beneficial nematodes, no specific protective clothing is needed as they are safe. But wear at least gloves. There is no pre-harvest interval, or restricted re-entry interval. Follow instructions. Double-check for status of beneficial nematode regulations in Rwanda, this is with RALIS and the Directorate of Agriculture and Livestock Inspection and Certification service.

Scientific name ► *Ophiomyia phaseoli*

Country: Rwanda



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