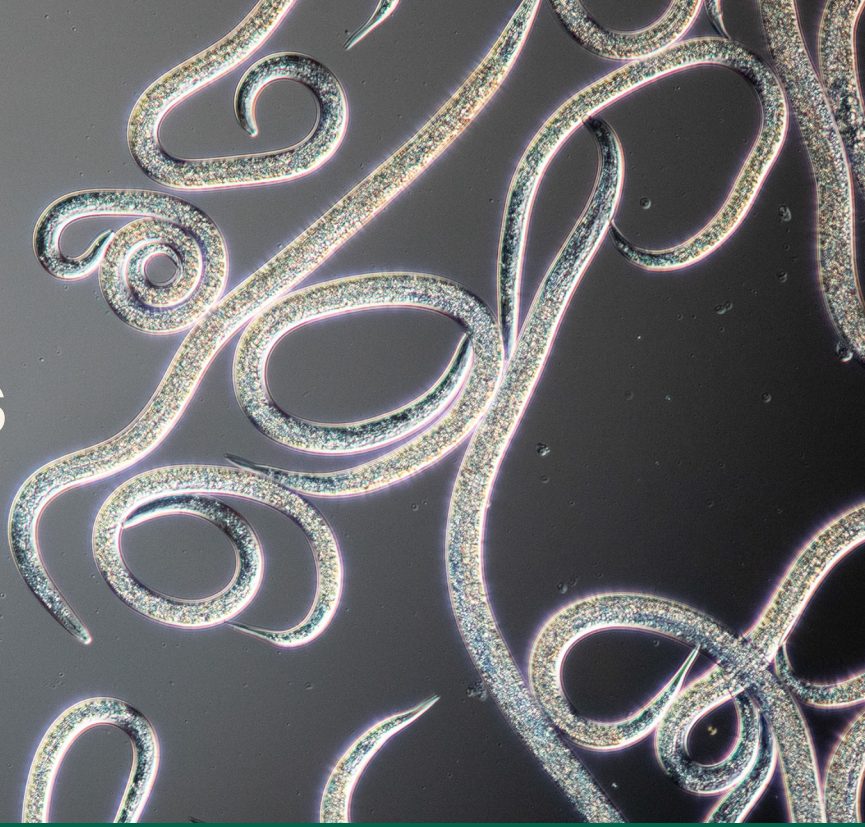


Larvanem Trial Results 2025



Trial Introduction

- Field study conducted to determine the percentage infection of false codling moth (FCM) pupae by entomopathogenic nematodes (EPN) and/or entomopathogenic fungi (EPF) after two weeks in soil.
- Four treatments were evaluated: EPN, EPF, EPN + EPF, and untreated control. For each treatment, 10 mesh bags containing 10 FCM pupae each were buried below the soil surface for 14 days, after which the pupae were retrieved and analysed for infection.

Materials and Methods

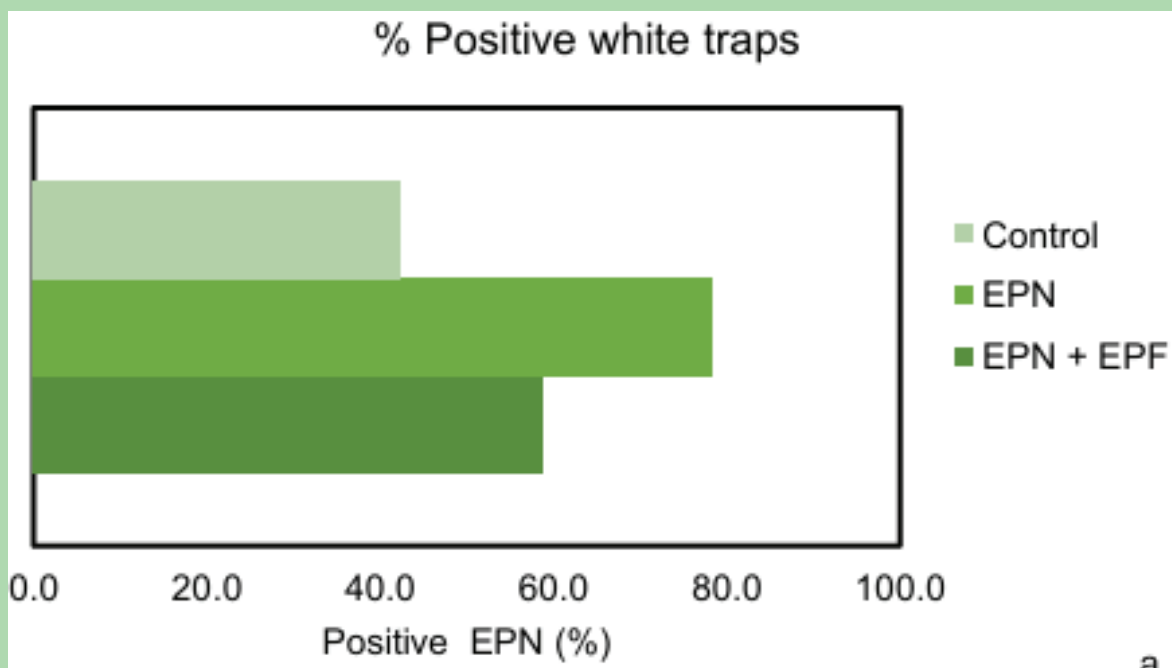
- For each treatment, five trees were selected, with two mesh bags placed per tree. Each mesh bag was buried below the soil surface using field soil.
- Treatments were applied using a knapsack sprayer, followed by irrigation. Samples were then retrieved and sent to Nemlab (Western Cape) for analysis.



EPN Isolation

- EPN isolation was conducted using the White Trap method, a standard technique to confirm infection success by recovering entomopathogenic nematodes from infected hosts.
- Nematodes that successfully developed within the host emerged from the cadaver and migrated into the water, where they were observed and collected for further analysis.

RESULTS EPN's



* The average percentage of white traps in which nematodes were found living or lifeless after 10 days.

Results

→ A positive white trap means that nematodes were able to emerge from the pupae and move into the surrounding water.

→ Confirming successful infection and reproduction.

✓ EPN TREATMENT

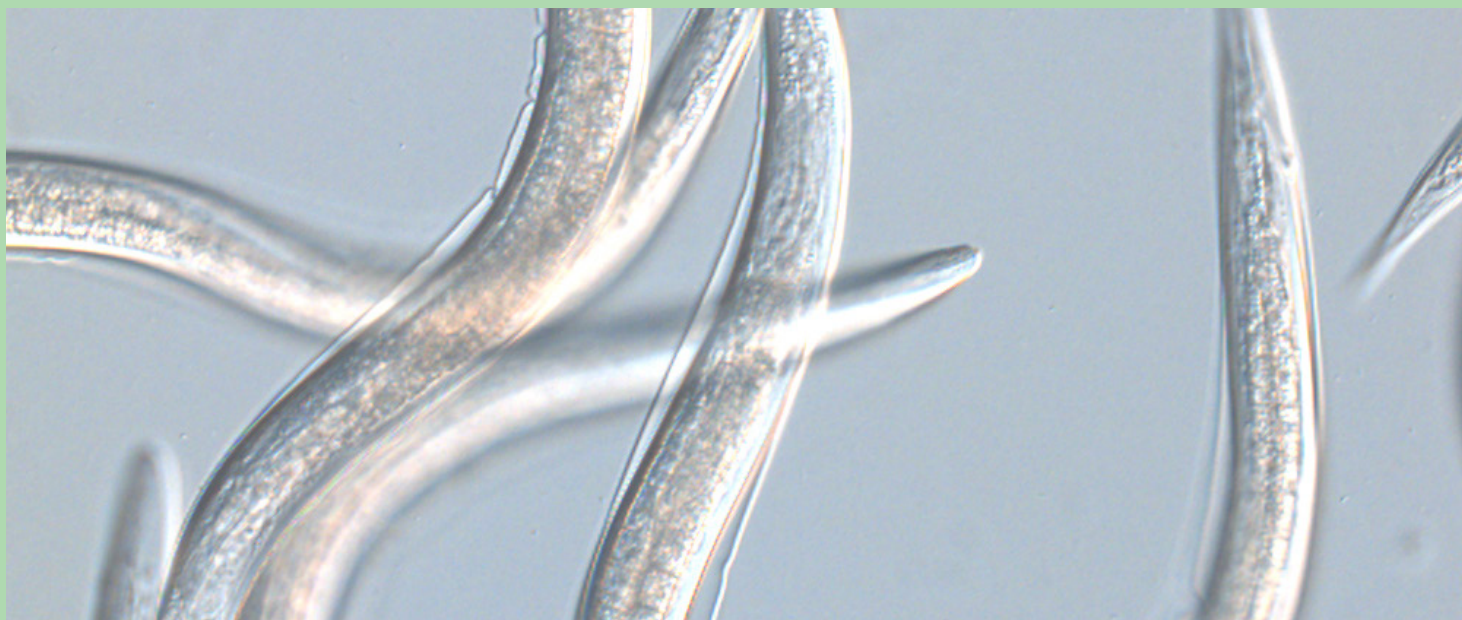
- 3 out of every 4 pupae were successfully infected by nematodes
- EPN-only treatment gave the strongest infection rate, indicating EPN's were highly effective at attacking the FCM pupae in soil.

✓ EPN+EPF

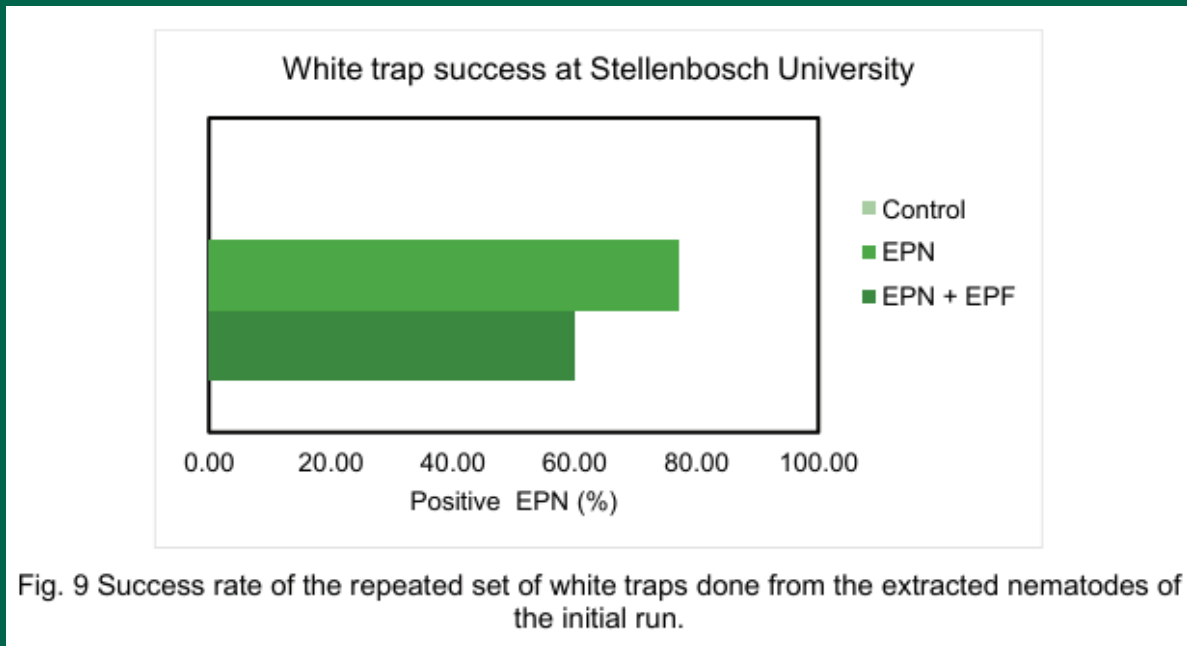
- 6 out of every 10 pupae were infected by nematodes
- Reduced success rate: 1) Competition between fungi and EPN's 2) Environmental conditions

✓ CONTROL

- 40% of white traps indicated nematodes, identified as naturally occurring EPN's



RESULTS EPN's



To determine whether the nematodes were in fact EPNs, mealworm larvae were inoculated with the suspensions collected from the white traps.

Results

- Repeated White Trap Test to confirm that newly produced nematodes remain infective.
- The results showed that:
 - ✓ EPN-only treatment again produced the highest success rate
 - ✓ EPN + EPF treatment also showed successful nematode activity
 - ✓ The control treatment showed much lower activity
- ✓ Nematodes in Control suspension tested negative for *Heterorhabditis bacteriophora*.
 - *Steinernema khoisanae* was detected in this sample, which shows that it occurs naturally in the block where the trial was done.
- ✓ All the other samples from the EPN and EPN + EPF treatments sent for sequencing tested positive for *Heterorhabditis bacteriophora*.

Conclusion

- Temperature, moisture, and application method are critical factors influencing EPN performance and overall success. Product quality must be maintained through correct storage and handling practices to ensure viability.
- Adequate water volume should be applied to effectively move nematodes into the soil pest zone, while continuous agitation of the suspension is required to prevent settling in the spray tank.
- EPNs actively seek out and infect soil-dwelling pest stages, and successful infection enables reproduction and the release of new infective juveniles. EPNs are a highly effective tool for integration into existing IPM programmes.