

# BIOFUMIGATION IN GREENHOUSE FOR THE CONTROL OF ROOT-KNOT NEMATODES



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**Intensive vegetable cropping systems enhanced infestations of root-knot nematodes (*Meloidogyne* spp.) and related damages in Salento region, southern Italy. Sustainable alternatives to chemicals for the control of these pests may be represented by nematicidal green manures or plant-derived formulations. Biofumigating green manures of Brassica plants may be limited by the need to insert a brassica crop within intensive rotations with short intervals among the crops.**

## Cropping systems under investigations

Conventional control of root-knot nematode in intensive horticultural cropping systems is compared with actually available control strategies that allow an effective and environmentally sustainable alternative:

- Cultivation of green manuring crops (*Brassica juncea* and *Eruca sativa*);
- Application of commercial amendment from brassica oil panel meals (pellets);
- Association of pellets and *E. sativa* green manure;
- Application of commercial formulations of aqueous extracts of quillay and tagetes
- Application of chemical nematicides (a.i. cadusaphos).

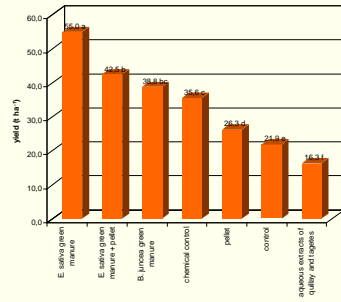
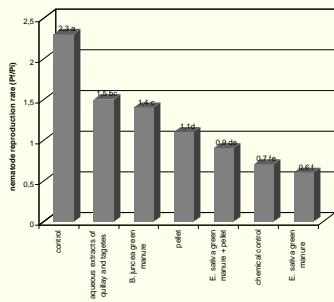


## Main results



### Tomato

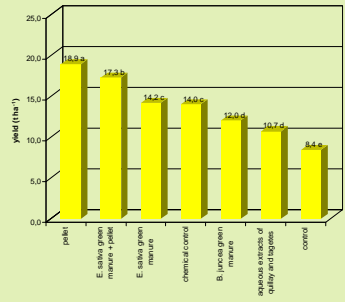
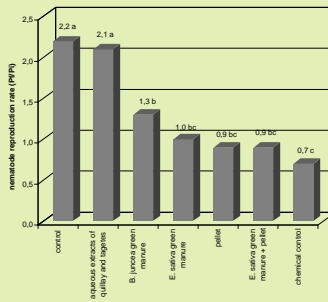
- Green manure of *E. sativa* resulted in the lowest *M. incognita* population densities, as its results were not significantly different from chemical but lower than *B. juncea* green manure, the pellet and quillay formulation.
- *E. sativa* green manure, either alone or combined with the pellet, provided also a tomato yield two-three times higher than control, (55.0 and 42.5 t ha<sup>-1</sup>) whereas *B. juncea* and cadusaphos almost doubled the yield of untreated soil.



### Melon



- The lowest nematode densities were recorded in soil chemically treated. Green manure of *E. sativa*, alone or combined with the pellet, resulted in a higher suppressivity than *B. juncea*, whereas a limited nematicidal activity emerged for the quillay formulation.
- The highest melon yield were provided by the seed meal pellet (18.9 t ha<sup>-1</sup>), followed by the combination of *E. sativa* green manure and pellet (17.3 t ha<sup>-1</sup>) and by both single green manures.



### Acknowledgement

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### References

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## Conclusion

This study showed that biofumigant crops or plant-derived formulations are factors that can directly impact its ability to suppress infestations of root-knot nematodes.

*E. sativa* used in rotation or integrated with pellets has the highest potential in greenhouse for contributing to nematode management in tomato and melon crops. However, nematode suppression are not the only potential benefits of brassica green-manure for tomato and melon crops where have been recorded also an improving in the yield.



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