

EFFECTIVENESS OF BIOFUMIGATING BRASSICA TREATMENTS FOR THE CONTROL OF ROOT-KNOT NEMATODE *MELOIDOGYNE INCOGNITA* ON MELON AND WATERMELON



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Root-knot nematode (*Meloidogyne* spp.) infestations may cause heavy yield losses in the intensive horticultural cropping systems of Salento region, southern Italy, due to favourable climate and highly susceptible crops. Among these crops, melon and watermelon are cultivated in large areas either for export and national market.

Phase-out of methyl bromide and other chemical nematicides raised many technical problems for the control of root-knot nematode attacks. To overcome these technical aspects investigation on feasibility and effectiveness of Brassica green manure, i.e. biofumigation, for the control of root-knot nematode on melon and watermelon crops have been conducted in the two year 2006-2007 in farmers' fields at Carmiano (Lecce).

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



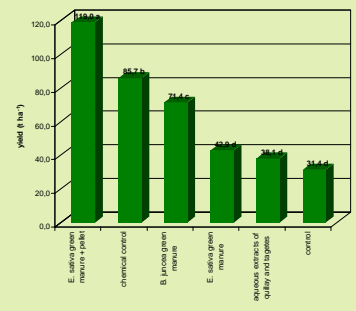
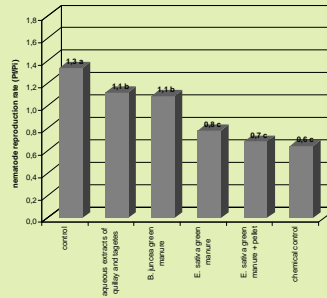
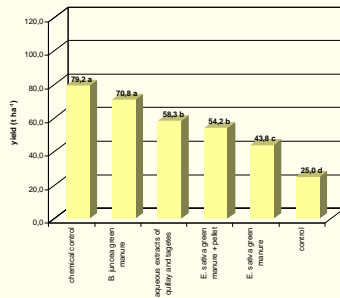
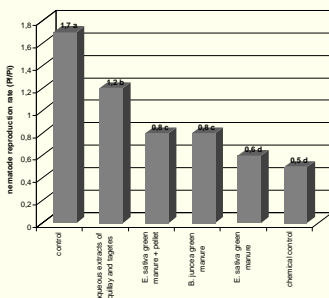
Melon

- *E. sativa* green manure resulted in a nematicidal effect statistically similar to cadusaphos and higher than *B. juncea* amendment, whose effect was not improved by combination with pellet
- Melon yield recorded for chemical treatment and *B. juncea*, 79.2 e 70.8 t ha⁻¹, respectively, were 3 times higher than untreated control.



Water melon

- The lowest population densities of *M. incognita* were recorded after the combined treatment with *E. sativa* green manure and pellet and after chemical control, followed by *E. sativa* green manure alone.
- Most effective treatments for nematode control provided also the highest watermelon yields, 119.0 and 85.7 t ha⁻¹ for *E. sativa* manure plus pellet and chemical control, respectively.



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References

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Conclusion

Vegetables production suffer losses due to root-knot nematode (*Meloidogyne* spp.) infestations and the shortage of technical alternative to the methyl bromide, phased out.

B. juncea and *E. sativa* alone or in combination with pellets have been the most effective for their ability to reduce losses caused by root-knot nematode attacks in melon and watermelon crops.

According to these results biofumigation will be incorporated into an integrated pest management package for dissemination throughout the intensive horticultural cropping systems of Salento region.



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