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# POSSIBLE HERBACEOUS HOSTS FOR *XIPHINEMA INDEX* IN VIRUS TRANSMISSION EXPERIMENTS

by
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**Summary**. Reproduction of an Italian, Californian and French population of *Xiphinema index* occurred only on *Chenopodium amaranticolor, Nicotiana rustica* and *Petunia hybrida* in a first experiment and *P. hybrida* and *Lycopersicon esculentum* cv. Moneymaker in a second. Some herbaceous plants may be suitable as host/test plants in virus transmission tests.

*Xiphinema index* Thorne *et* Allen has a limited host range but reproduces well on fig (*Ficus carica* L.) and on grapevine (*Vitis* spp.). In virus transmission experiments, however, woody hosts are not generally convenient and herbaceous plants are preferred as infector, bait and test plants. The following data are from tests in which a range of herbaceous plants were tested against populations of *X. index* from Italy, USA (California) and France.

## Materials and methods

In a first test, young (not gravid) females or 4th stage juveniles from Italian or Californian populations of *X. index* were added singly to 25 ml plastic pots containing steam sterilized sandy soil and a single seven-day old seedling of the different plant types to be tested (Table I) was planted in each. The 15 pots of each treatment were maintained for 10 weeks in a growth chamber at a constant 22 ± 1°C and at 3000 lux for 12 hours per day. Then the nematodes were extracted from the pots by a sieving and decanting technique.

In a second test, five young females from a French population of *X. index* were added to 250ml pots containing steam sterilized sandy soil and seven-day old seedlings of the various plant types (Table II) planted singly in each. There were 10 pots of each treatment and these were maintained in a glasshouse at 24 ± 1°C for 10 weeks after which the nematodes were extracted.

TABLE I - *Reproduction of two populations of* Xiphinema index *on different plants*

| Plant | Total number of nematodes from 15 pots Population from: | |
|---|---|---|
| | Italy | California |
| *Chenopodium amaranticolor* Coste *et* Reyn. | 12 ♀ + 5 J2, J3 | 5 few moulted |
| *C. quinoa* Wild. | 11 NM* | 10 NM |
| *Gomphrena globosa* L. | 7 NM | 7 1 moulted |
| *Nicotiana bentamiana* Domin. | 6 NM | 10 NM |
| *N. clivelandii* Gray | 7 NM | 10 NM |
| *N. glutinosa* L. | 8 NM | 7 few moulted |
| *N. langsdorfii* Weinm. | 8 NM | 9 few moulted |
| *N. megalosiphon* Henrck. *et* Muell. | 8 NM | 10 NM |
| *N. rustica* L. | 9 ♀ + 23 J2, J3 | 5 NM |
| *N. tabacum* L. cv. White Burley | 7 NM | 10 NM |
| *Petunia hybrida* Vilm. | 14 ♀ + 74 J2, J3 | 12 ♀ + 20 J2, J3 |

* NM = not moulting of 4th juvenile stage to adult female.

TABLE II - *Reproduction of a French population of* X. index *on different plants.*

| Plant | Botanical name and Cultivar or line | Total number of nematodes recovered from 10 pots | |
|---|---|---|---|
| | | No. ♀♀ recovered | New juveniles |
| Carrot | *Daucus carota* L. cv. Vilmorin 92 | 18 | 15 |
| Chenopodium | *Chenopodium quinoa Wild* | 14 | 3 |
| Cucumber | *Cucumis sativus* L. cv. Delicatezza | 9 | 0 |
| Onion | *Allium cepa* L. cv. White of May | 27 | 9 |
| Pea | *Pisum sativum* L. cv. Progress 9 | 18 | 10 |
| Petunia | *Petunia hybrida* Vilm. | 34 | 82 |
| Sugarbeet | *Beta vulgaris* L. cv. Monohil | 22 | 12 |
| Tomato | *Lycopersicon esculentum* Mill. cv. Moneymaker | 24 | 192 |
| Trifolium | *Trifolium pratense* L. line 198 | 10 | 14 |
| » | *T. repens* cv. Regal | 16 | 4 |

**Results and conclusions**

Nematodes from the Italian and the Californian populations reproduced on *Petunia hybrida* and to a lesser extent on *Chenopodium amaranticolor* and *Nicotiana rustica* (Table I). Many of the original nematodes were recovered from pots containing other plant species, but there was no evidence of 4th stage juveniles having moulted or having fed on the roots. These nematodes were returned to pots with new seedling plants but all were dead when extracted 10 weeks later.

Fresh juvenile stages of the French population of *X. index* were extracted from the pots of all the plants tested, with the exception of cucumber (Table II). Most reproduction occurred on tomato and *P. hybrida*.

*P. hybrida*, therefore, was a host for *X. index* from the three populations and tomato cv. Moneymaker was also a good host for the French population. It is concluded that some herbaceous plants may be suitable as bait plants in virus transmission experiments with *X. index*; but differences in host status are likely between different populations.

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