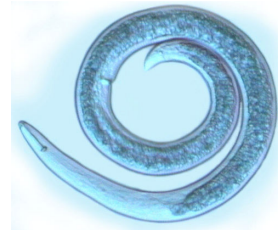


UC Cooperative Extension Fresno County

Nematode fact sheet -

English/Hmong



Most important species = Root Knot Nematode
Microscopic – attack over 5,000 plants
Female nematode can produce 500 eggs
New adults made in 1 month in summer
Can move 2- 3 feet upward in soil in 1 season
Most species are not active below 65° soil temperatures

Symptoms

Plants grow slowly, wilt, and will have fewer and smaller fruits. If root knot nematodes are present the plants will have swellings and/or distorted roots.

Kinds

Endoparasitic nematodes live and feed within the roots and stems etc. Examples include root knot, cyst, and lesion nematodes. A single endoparasite can kill a plant or reduce its productivity significantly.

Ectoparasitic nematodes feed externally from outside the plant. Plants can withstand small numbers of ectoparasites. Stubby-root, dagger, and pin are examples.

Control

Rotations and Cover crops – using plants that are not hosts. For example from a broadleaf to a grass (corn, wheat, barley etc). Asparagus, corn, onions, garlic, small grains, and certain vetches are good for reducing populations. Crotalaria, velvet bean, and grasses like rye are usually resistant to root knot.

Some plants produce compounds toxic to nematodes (allelopathy). Sudangrass and sorghum contain dhurrin which degrades into hydrogen cyanide. Other allelopathic plants include brassicas (rapeseed, mustard, broccoli, cauliflower), castor beans, chrysanthemums, marigolds (dwarf French), and sesame.

Botanical Nematocides – extracts from plants can be concentrated and sold as products: Neemix®, Margosan-O®

Biocontrols – microbial pathogens such as bacteria, fungi, mites, and insect-attacking nematodes (*Steinernema riobravis*).

Plant Resistance – if a variety of tomato is resistant it will have an “N” designation by the variety name. Certain fruit tree rootstocks, and a number of tomato varieties have resistance to root knot.

Red Plastic – Red plastic mulch was shown to suppress root-knot nematodes at a USDA experiment station in 1997, however little work has been done since then.

Solarization – effectively suppresses nematodes in areas where summer temperatures reach 100° + and the moist soil is covered with a clear plastic for 4-6 weeks. The solar heat “cooks” the nematodes, as well as weed seeds and many pathogens.

Flooding – where water is available and allowed to pond for 7-9 months kills nematodes by excluding oxygen, however it may take 2 years to kill egg masses, and if not done properly, may only result in dispersing the nematodes.

Chemical Control Measures – fumigants are one of the most commonly applied chemicals.

Methyl bromide plus chloropicrin has always been one of the most reliable but rising costs have resulted in growers looking for alternatives. In 1998 the cost was \$1,200 to treat one acre, while in 2003 the costs were around \$1,800. By 2005 most methyl bromide uses will be phased out in the United States. Many growers have started using metam sodium (Vapam®) or In-Line® (a mixture of Telone and chloropicrin). Treating only the plastic covered beds gives partial control but the furrows remain untreated and nematodes eventually migrate back into the beds.

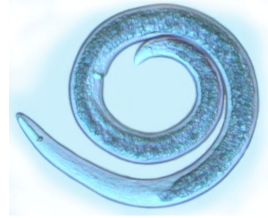
Oxamyl (Vydate®) is registered for certain crops and can be injected into the drip line. Rather than killing, it has more of a paralyzing effect on the nematodes.

Richard Molinar
Farm Advisor

Michael Yang
Program Rep

November 2003 (revised June 2007)
sf 1727

Nematode Fact Sheet



Nws su tej thooj nyob hauv tsob qoob cov cag
Cov kab me heev li – txov cov qoob tshaj 5000 tsob
Tus maum kab nod nws muaj taus 500 lub qe
Cov kab no nws nyob sib tshov li ib lub Hlis thaum caij ntuj sov (summer)
Cov kab no nws mus tau deb li (3 feet) ib lub caij twg

Mob Tshwm Sim

Tsob qoob hlob qeeb heev, ib txhia tuag lawm, cov ciaj txi txiv me heev. Cov cag qhuav los yog nws su tej thooj, ces ua rau tsob qoob tuag, los yog cov cag hlav tsis taus.

Hom Twg

Cov endoparasitic nws nyob hauv cov cag thiab cov kav. Piv xam tias cov root knot, cyst, thiab cov lesion nematodes ntawm nod. Yog muaj li ib tug cab endoparasite nod xwb los nws yeej txov tau tej qoob thiab yeej ua rau cov qoob txi txiv tsis ntau tuaj lawm.

Cov ectoparasitic nematodes noj sab nraum tsob qoob xwb. Cov cab no tsob qoob tseem thev taus thiab tiv thaiv tau yog tias tsis muaj cov ectoparasites coob. Piv txwv rau cov stubby-root, dagger, thiab pin.

Yuav tswj licas:

Cog qoob tshiab rau txhob cog yam qub tas li xwb thiab cog cov (cover crops) – siv tej yam qoob uas cov kab tsis nyiam muab cog rau. Piv xam li tej yam xws li (pob kws, nplej qus, barley etc.) Asparagus, pob kws, dos, qej, tej noob nplej, thiab tej yam li cov taum mog qus (vetches) cov no yuav ua rau cov cab kom tsis muaj coob tuaj. Crotalaria, velvet bean, thiab tej yam xws li nplej qus cov no yog cov yuav thev taus cov cab root knot.

Muaj tej yam khoom cog kuj txov tej kab phem nematodes nod thiab, xws li (allelopathy). Cov sudangrass thiab sorgum, nws muaj dhurrin yog thaum nws lwj lawm kuj ua tau cov hydrogen cyanide. Lwm yam allelopathic xws li cov brassicas (rapeseed, zaub ntsuab, broccoli, cauliflower), castor beans, chrysantemums, marigolds (dwarf French), thiab cov sesame.

Botanical Nematicides – Tej yam khoom li nod nws yog muab los ntawm tej ntoo thiab yeej muab coj los siv tau: Cov Neemix®, Margosan-O®

Biocontrols (Tej Kab Zoo) – microbial pathogens xws li tej kab (bacteria) me heev, cov fungi, mites (tej hmob), thiab tej kab uas nws yog cov nematodes los tiv thaiv (Steinernema riobravis).

Plant Resistance (Siv cov yub thev taus) - Cov txiv lws suav, yog tias hom yub twg thev taus cov cab nod nws muaj tus ntawv hais tias “N” nyob nrog lub hnab noob noob. Muaj ib txhia ntoo luag siv los txuas tej yub ntoo nws thev taus cov cab root knot, luag hu tias resistance.

Red Plastic (Cov Ntaub Yas Liab) – Ntaub yas liab raws li USDA tshawb fawb mas nws kuj ua rau cov root knot nematodes tsis nyiam nyob rau thiab nyob rau xyoo 1997, tab sis tsuas yog pom tau me me xwb tsis tau muab tshawb fawb kom ntau.

Solarization (Ncu Av) – Cov no nws yeej pab tau kom tsis muaj cov kab nematodes, tab sis yuav tsum yog nyob rau lub caij ntuj sov (summer) nws kub li 100° + tshaj rov sauv thiab cov av los yuav tsum ntub dej ces muab cov ntaub yas los npog kom tsis pub nws dim pa li 4-6 (weeks) asthiv. Cov solar heat tshav kub nod nws “ncu” cov cab nematodes me me nyob hauv av thiab tej noob nroj mus rau tej kab mob ua rau tej yam xws li hais los no tuag.

Flooding (Tso Dej Nyab) – Yog tias muaj dej siv ntau thiab tso tau dej los teev ib cheeb tsam ntawv kom ntev xws li 7-9 lub Hlis nws yeej tua tau cov cab nematodes nod thiab vim dej nyab rau ces cov kab nod ua tsis taus pa vim yog tsis muaj cov oxygen, tab sis tej zaum yuav siv li 2 xyoos los mus tua cov qe cab nod, thiab yog tias yus ua tsis raws li kev qhia ces nws haj yam yuav ua rau tej kab nematodes nce tuaj coob heev xwb.

Chemical Control Measure (Siv Tshuaj Tua Kab Los Tswj) – Cov tshuaj fumigants muaj ntau yam uas sawvdaws ib txwm siv coj los tso rau los yeej tau.

Cov tshuaj Methyl bromide nrog rau cov chloropicrin yeej ib txwm yog tej uas sawvdaws siv thiab nyiam, tiam sis nws tus nqe nce siab zuj zus ua rau sawvdaws yuav tsum nrhiav kev tshiab saib pus muaj yam ua yuav los hloov tau. Nyob rau xyoo 1998 cov nqe yog li \$1,200 tso rau li ib evkawj teb (one acre), hos nyob rau xyoo 2003 ces tus nqe twb nce mus rau \$1,800 lawm. Thaum xyoo 2005 los no cov tshuaj methyl bromide tau raug nom tswv muab tshem tawm zuj zus kom tsawg nyob hauv teb chaws United States. Muaj coob leej neeg ua liaj ua teb tau siv cov tshuaj metam sodium (Vapam®) los yog cov (In-Line®) tej tshuaj no muaj sib txuam xws li Telone thiab cov Chloropicrin). Tej qhov av saum tus ntswg txuam tshuaj rau lawm nws kuj pab tau me ntsis, tab sis tshuav hauv tus kwj tsis muaj tshuaj rau ces ntev mus cov kab nematodes nce zuj zus mus rau saum tus ntswg teb.

Oxamyl (Vydate®) yeej registered rau tej yam qoob thiab nws yeej muab tso tau nrog dej mus rau tej hlua dej. Cov tshuaj no nws tsis yog tua cov kab xwb, tab sis nws ua rau cov kab nematodes nod txhav ces nws mus tsis tau qhov twg lawm.

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