Red Spider Mite Namibian crop pests # 37

Tetranychus spp. **Order: Acarina** **Family: Tetranychidae**

Tetranychus evansi - the tobacco spider mite
Tetranychus urticae - the two-spotted spider mite
Tetranychus cinnabarinus - common red spider mite

Right click the icon to download the Acrobat file (.pdf)

This page is brought to you courtesy of **Menno Keizer** and **Jantien Zuurbier**, presently working at the Kavango Horticultural Production and Marketing Project. For further information please email them directly at: KHPMproject@mweb.com.na

Tetranychus evansi

T. evansi
(Courtesy ICIPE, Dr. M. Knapp)

Symptoms on a tomato plant

Common names:

Red Spider Mite (English), **Rooispinmyt** (Afrikaans), no other local names are recorded.

Host:

A wide range of wild and cultivated plants are attacked by this pest. In Namibia red spider mite forms a major problem on tomato and other members of the Solanaceae family (eggplant, Irish potato). The pest also occurs in citrus and cotton and can be found on ornamentals such as roses. Among the reported wild-occurring hostplants are apple of Peru (*Nicandra physaloides*) and castor bean (*Ricinus communis*).

Pest status:

Red Spider mite is a very serious pest in tomato crops. Because of their great reproductive capacity, they are able to destroy plants within a short period of time. When left uncontrolled the farmer can loose his production within a week time. Eggplant (aubergine) seems less susceptible and is, although the leaves are effected, still able to produce reasonable quality fruits. In Namibian infestation is most serious during the hot summer months from October to February.

At present, the mite specie which is causing most damage in Namibia is *T. evansi* (tobacco spider mite). This species is accidentally introduced in South Africa during the 80's and originates from Brazil, South America. In Brazil the mite does not affect the tomato production since natural enemies keep the mite population under control. Due to the fact that the mite is an introduced pest to Southern Africa it is likely that the natural enemies are not present. In any case, they have not yet been found or identified.

Since its' introduction in South Africa the mite is slowly moving northwards. Nowadays it is one of the major constraints in tomato production in Mozambique, Malawi, Namibia, Zimbabwe and Zambia.

Description:

Description of *T. evansi*:

The 0.1 mm eggs are whitish and laid singly on the underside of the leaf. They hatch after 4-7 days. The larva is six legged, pinkish and slightly larger than the egg. This stage last 3-5 days. There are two nymphal stages, they have four pairs of legs and are reddish. The total nymph period lasts 6-10 days. Adult females are oval, orange red with an indistinct dark blotch on each side of the body and 0.5 mm long. Males are smaller and straw to orange coloured. Fine strands of silk are spun by the adults which form an open web above the leaf surface. The adult female may life for 7 days and lay up to 200 eggs. All active stages feed together on the lower sides of the leaves.

Damage:

Mites generally sting single plant cells and suck out the cell content. Feeding causes small yellow patches on the upper side of the leaf especially between the main veins, near the leaf stalk. Latter the affected area spreads: the whole plant turns yellow to bronze coloured, then brown, leaves are dropped and the plant eventually dies. The mites and its webbing, just visible to the eye, can be seen on the underside of the leaf. Spider mites may also cause spots on the fruits.

The mites can spread by the wind and experience learned that the infestation often starts on the outside (border rows) of a plot. Therefore other adjacent (tomato) crops, wild plants and weeds can serve as a source of infestation. The mites can also be spread passively by irrigation water, dust storms, clothing and implements.

Control:

Biological control

At present no natural enemies have been found in Namibia or other Southern African countries. Biological control of mites by predatory mites is the most used method in greenhouse cultivation. In nature there is usually a balance between pests and their natural enemies. When these natural enemies are not present the balance is disturbed and the pest can become a serious problem. Natural enemies are not present because the pest was introduced from another continent, and/or by the overuse of chemical pesticides, which also kills the useful mites, spiders and insects.

Use of botanical pesticides

Natural (botanical) control methods are currently tested for their effectiveness at Mashare ADI (Agricultural Development Institute) in the Kavango Region. Chilli, garlic and soap extracts are used and a mixture of buttermilk and flour. The results are not available yet, however for the latest information, contact the Horticultural Section at Mashare ADI. The researchers in Namibia are also collaborating with the GTZ IPM Horticultural Project in several Southern African countries. Botanicals such as Neem (*Azadirachta indica*) and *Tephrosia* sp. are currently evaluated in Malawi, Zimbabwe and Kenya.

Cultural practices

There are several techniques that can reduce the mite population. This is an important aspect of an integrated control approach.

Regular scouting of the crop to determine the presence of the pest and the level of infestation in an early stage is a substantial element of IPM (Integrated Pest management). Less experienced farmers sometimes have difficulties with early identification of the mites, since the symptoms seem to resemble a nutrient deficiency or plant disease. Burning of infested plants can be successful during the early stages of infestation when the mites concentrate on a few plants. The separation of infected crops and newly planted crops or nursery areas and the burning or removal of infected crop residues and weeds, also helps to minimise the problem.

Mites favour dry and hot conditions. Influencing the micro-climate by reducing the planting distance and applying overhead irrigation has said to repress the mite populations. However, this could also enhance fungal diseases, so care should be taken. Water and nutrient stress should be avoided since this certainly has proven to increase mite populations. Applying mulch and incorporate organic matter into the soil can improve the water holding capacity and reduce evaporation, thus avoid water stress.

Avoiding the hot summer months for tomato cultivation is another option. Late summer and late winter can be a suitable time for planting. However, care should be taken in those areas where night frost forms another threat to the crop.
At the moment there are no resistant tomato varieties available.

Chemical control

Care should be taken when considering chemical control. Thorough understanding of the different available chemical formulas and their cost-effectiveness is required (contact the Regional Extension or Farming Systems Office for advice). Some of the available systemic pesticides have shown to increase red spider mite reproduction. In addition, red spider mite species rapidly develop resistance against the most common used pesticides and acaricides. It is therefore recommended to rotate acaricides with different chemical compositions. Spraying should be done weekly and at an early stage of infestation to be effective.

Different acaricides specially designed for the control of red spider mites are screened at Mashare ADI. Farmers at Salem (Kavango) reported to have successfully used a cover spray of sulphur. Other, more expensive, are formulas of propargite (Comite), bifenthrine (Talstar) and abamectin (Vertimec). In any

case, farmers should use chemicals as a last resort and then only if the costs and risks involved do not outweigh the benefits.

Scouting your field:

Inspecting your field regularly is very important, since the population build up of the mites goes very rapid. At the beginning of the infestation the distribution of the mites is very patchily. If you are too late when you start taking control measures it is very difficult to control the mite population once they are established. A recommended scouting method for mites is:

Select randomly 20 tomato plants and access the level of damage caused by the mites of three leaflets/plant by using a damage leaf index ranking from 1-5 (1 is few yellow spots, 5 is leaf totally covered with spots, dry patches occur) (after Hussey and Scopes, 1985). Once the average damage level exceeds the first rank, control measures should start.

References:

Keizer, M., J.A.M., Zuurbier, Integrated Pest Management for Horticultural crops in Namibia, Proceedings of the National Annual Agricultural Research Reporting Conference, MAWRD September 1998.

Keizer, M., J., Zuurbier, Integrated Pest Management Manual for Extension Staff, Mashare Agricultural Development Institute, Rundu, Namibia, April 1999.

Knapp. M., Biology, pest status and control of mites in tomatoes in Eastern and Southern Africa, ICIPE, Nairobi, Kenya, May 1999.

Mtambo, M., The Fight against Red Spider Mites (Tetranychus) in Tomato, Horticulture in Malawi, a quarterly magazine, Malawi-German Project Promotion of Horticulture, no. 4, 1999.

Varela, A.M., A.A. Seif, Crop Protection Manual for Tomatoes, ICIPE, Nairobi, Kenya, June 1999. (Photo by GTZ-ICIPE IPM Horticultural Project).

Other pages by the same authors:

Diamond-back moth	Cabbage aphid	Bagrada bug
