HAPLOTHRIPS ON TABLE GRAPES IN THE NORTHERN CAPE

Friend or foe?

Table grape production in the Northern Cape is primarily aimed at export, and markets set extremely high standards for the cosmetic appearance of grapes, as well as for agrochemical residue levels. By Elleunorah Allsopp and Michael Stiller (ARC Infruitec-Nietvoorbij and ARC-PHP Biosystematics)

Berry scarring due to thrips feeding (**Fig. 1**) and halo spots caused by egg-laying (**Fig. 2**) can render table grapes unfit for export. In recent years, reports of high numbers of large, black thrips on the new growth and inflorescences of grapevines have been received from growers and consultants in the Northern Cape. To avoid unnecessary spray costs and residue problems, it is critical for growers to know whether the thrips they see in their vineyards cause economic damage to grapes, and if they warrant control.

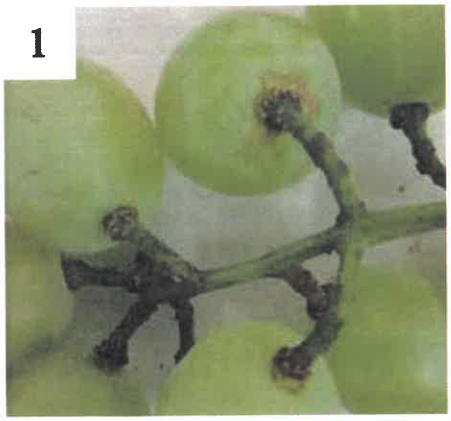
The black thrips were identified as *Haplothrips clarisetis* Priesner (**Fig. 3A**), which belongs to the sub-order *Tubulifera*. It is easy to distinguish this thrips from the other dark-coloured thrips like blossom or "kromnek" thrips that usually occurs in vineyards, because it is conspicuously larger and its last abdominal segment has a distinct tube shape (**Fig. 3B**). *H. clarisetis* is indigenous to and widely distributed in SA and Africa, but there are no records in literature associating it with any crop damage. Therefore, the ARC and SATI funded a project to determine if *H. clarisetis* causes any damage to table grapes, and if it poses an economic threat to the industry in the Northern Cape Province.

Thrips occurrence was monitored with blue and yellow sticky traps over three seasons, in four vineyards near Augrabies and four in the Blouputs Valley. The main species that occurred in vineyards were *H. clarisetis*, *H. nigricornis*, blossom or "kromnek" thrips (*Frankliniella schultzei*), western flower thrips (*F. occidentalis*) and citrus thrips (*Scirtothrips aurantii*). The numbers of all species peaked during flowering (Sept - Oct) and declined sharply from November to relatively low levels until the end of the growing season. Vineyard inspections during flowering and fruit set prior to and after harvest over two seasons, found no evidence of thrips feeding or egg-laying damage on leaves, shoot tips or berries. Very few *H. clarisetis* were present on shoot tips and flowering bunches, even though they were abundant on wild flowers adjacent to the vineyards, particularly on a yellow daisy, *Osteospermum microcarpum*, and crystalline ice plant or "soutslaai", *Mesembryanthemum crystallinum*.

In laboratory studies, adult *H. clarisetis* were confined to flowering grape bunches with a mixture of open flowers with pollen and berries beginning to set, leaves and a grapevine shoot tip (**Fig. 5A + B**) in an insectary with natural light at ±24°C. After 24 hours very few of the thrips were present on the flowering bunches, while most were sitting or walking on the walls and floors of the cages. Within three days all the thrips were dead, even though the flowering bunches were still looking fresh and turgid, with abundant pollen. Inspection under a dissection microscope revealed no signs of thrips feeding.

In the leaf cage trial, there was one surviving adult in one leaf cage and four in the other after three days. Inspection under a binocular microscope showed that some of the thrips were lethargic with shrunken abdomens, indicating that they had not been feeding. Despite probing the leaf surface with their antennae, none inserted their stylets to feed. After seven days there were only two surviving thrips out of 15 on the shoot tip, but they both had shrunken abdomens and died within another day. Inspection of the shoot and leaves under a microscope revealed no signs of feeding or egg laying.

Berry scarring due to thrips feeding and halo spots caused by egg-laying, can render table grapes unfit for export.



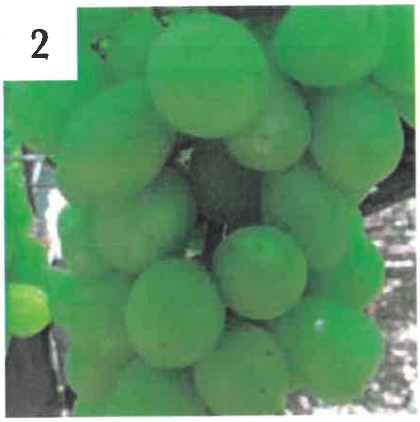


Fig. 1 Circular berry scarring due to thrips feeding, Fig. 2: During thrips egg-laying, eggs are partially inserted under the epidermis, and halo spots appear, Fig. 3A + B: *Haplothrips clarisetis* adult, showing tube-shaped last abdominal segment (A) Blossom or "kromnek" thrips (*Frankliniella schultzei*) with last abdominal segment more rounded (B), Fig. 4: Wild flowers on which *H. clarisetis* are found: *O. microcarpum* (A: the yellow flowers) and *M. crystallinum* (B), Fig. 5A + B. adult H. *clarisetis* confined to flowering grape bunches in an insectary with natural light, at ±24°C.

Conclusion

Vineyard inspections found no thrips feeding damage and *H. clarisetis* did not feed on grapevine leaves or flowering bunches in laboratory cage trials. Therefore, we conclude that *H. clarisetis* does not pose an economic threat to table grapes in the Northern Cape, and that growers need not apply insecticides when they notice these thrips.

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Thrips

Thrips belong to the order *Thysanoptera* ('fringe-winged') with two sub-orders, namely *Tubulifera* and *Terebrantia*. The last abdominal segment of thrips in the *Tubulifera* is tube shaped (Fig. 3A). Eggs are laid singly on plant surfaces or other substrates and no damage is caused. Species in the *Terebrantia* include all pest thrips, e.g. citrus thrips, western flower thrips, "kromnek" thrips and onion thrips. Females of these species have a well-developed ovipositor with which eggs are inserted wholly or partially into plant tissue. When the eggs hatch, pansy or halo spot scarring develops on fruits and vegetables (**Fig. 2**).

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