

Integrated Management of an Invasive Species - Dodder (*Cuscuta*) on Avocado

KALRO E-mimea Plant Clinic

KALRO/NAVCDP Factsheet No. I28/2024

Other crops:

Various crops including coffee, tea, mango, ornamental plants



A healthy avocado plant
Source: Lusike Wasilwa, KALRO



Avocado tree infested with an invasive weed - dodder
Source: Lusike Wasilwa, KALRO

Description	<p>Dodder is a widely distributed parasitic annual plant found in temperate and tropical regions. The weed has slender, thread-like bright stems called haustoria that vary from pale green to yellow or bright orange. The stems are twinned against the foliage of the host plants. When Dodder gets in contact with a host, it continues to re-attach to the host forming a dense mat of intertwined stems which can grow and cover an entire tree or shrub. The slender stems penetrate the host's vascular tissue and extract nutrients and water from the host. This gradually leads to large economic loss on many flowering plants as they weaken, wilt or complete die.</p>
Diagnosis/ Identification	<p>Symptoms</p> <ul style="list-style-type: none"> • Slender, thread-like bright pale green to yellow or bright orange stems twinning the foliage of the host plants. • When infestation is severe, the slender stems continue to re-attach to the host forming a dense mat of intertwined stems which grow and cover an entire tree or shrub with some hanging downwards.
Conditions prevailing that contribute to success	<ul style="list-style-type: none"> • Production of thousands of viable seeds per plant in a season • About 95% of the seeds remain dormant in the soil and can be viable for over 20 years depending on the species and environmental conditions • Many species propagate vegetatively through tiny stem cuttings • Dispersal by vectors e.g. birds, animals/ human from host to host • Water surface run off from infected to non-infected areas • Failure to observe field hygiene such as use of infested tools, compositing and improper disposal of infected material, mud attached to tyres or shoes, etc.
Conditions prevailing that contribute to failure	<ul style="list-style-type: none"> • Planting tolerant plant / crop varieties such as Valencia and Bitter oranges • Removal of hosts e.g. bindweed (<i>Convolvulus arvensis</i>) around field edges • Prevention of surface run off from infested to non-infested areas • Observing good field hygiene practices.
Management Strategy	<p>The following management options are suggested:</p> <p>Prevention:</p> <ul style="list-style-type: none"> • Clean clothing and farm equipment before moving from infested to “clean” areas • Remove hosts such as bindweed (<i>Convolvulus arvensis</i>) from the plant and around field edges. <p>Cultural practices:</p> <ul style="list-style-type: none"> • Practice crop rotation when establishing orchards • Till the land repeatedly to kill germinating dodder seedlings • Delay sowing of crops by 2-3 weeks after tillage to ensure that there are no suitable hosts for dodder attachment

- Plant clean seedlings without host plants to deny dodder a host to attach. This reduces the seed bank in the soil
- Mow and weed early to destroy potential suitable hosts for dodder
Monitor the orchard for early detection and timely management of the weed.

Mechanical control

- Manual/ hand removal before producing seeds to prevent further spread
- Prune the host branches below the point of attachment to prevent further spread if only a small portion of the crop is infested
- Clear all the alternate weeds such as lucerne, Alfalfa from and around the orchard
- For dense infestation, cut and burn the crop plus dodder simultaneously and remove the stems of the weed using rakes.
- Avoid throwing dodder fragments onto other vegetation. Ensure that dodder seed does not fall on the ground by putting infected dodder in a bucket or sack
- Burn all removed dodder material.

Biological control



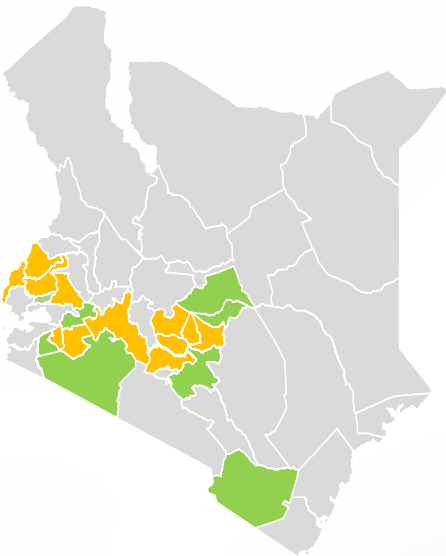
- Research is underway in Kenya for dodder control using natural enemies (bio-control agents)

Chemical control:

- Brush with herbicide e.g. round up (glyphosate), herbikill, gramoxone before the weed spreads
- Apply post emergence non-selective, broad-spectrum herbicide registered by PCPB on dense actively growing weeds.

Note

- ✧ *Use the right pesticide to manage the intended pest by continually consulting recent list of registered pesticides at PCPB (www.pcpb.go.ke)*
- ✧ *Keep unprotected persons, livestock and pets out of treated areas for the specified duration on the pesticide label*
- ✧ *Always consult Agro-chemicals and professional practitioners on existing cautionary/ safety measures, particularly the manufacturer's instructions.*

Mandate Centres	<p>More information can be obtained from: KALRO-NARL Kabete Email: cd.narl@kalro.org; info@kalro.org Address: P. O. Box 14733-00800, Nairobi</p> <p>HRI KALRO Kandara Email: director@hri.org Address: P.O. Box 220-01000, Thika</p> <p>Website: www.kalro.org</p>
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Editor	Lusike Wasilwa and Miriam Otipa
Geographic Coverage	The weed has been reported in almost all regions in Kenya. On avocado it has been observed in Murang'a, Nyamira, Bomet, Bungoma, Busia, Embu, Kakamega, Kajiado, Kiambu, Kirinyaga, Nakuru, Nandi, and Nyeri Counties
<p>Geographic Coverage</p> <p>The project counties for avocado are Bomet, Bungoma, Embu, Kakamega, Kiambu, Kericho, Kirinyaga, Kisii, Machakos, Meru, Muranga, Nandi, Narok, Nyamira, Nyeri, Uasin Gishu, and Vihiga</p> <p> Project counties</p> <p> Counties where dodder has been observed on avocado</p>	

Disclaimer: The content of this publication is for general information to avocado farmers and technical staff only and no person should act, or fail to act on the basis of the information herein without professional advice from crop health experts affiliated to Kenya Agricultural & Livestock Research Organization (KALRO).

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