Figure 1. Adult Desiantha weevil feeding on canola leaf. Image: DPIRD.

Protecting WA Crops

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Contents

Managing desiantha weevils

At a glance:

- Desiantha weevil in now widespread in Western Australian canola crops.
- Bioassays confirm synthetic pyrethroids remain effective at registered rates; failures occur when desiantha weevil adults are inactive and sheltered.
- Control of this weevil is most effective after crop germination as adults are most exposed and actively moving in mid-autumn. Managing fenceline weeds also reduces weevils' numbers and risk.
- Field trials revealed that desiantha weevils reproduce on multiple crops and weeds, not just grasses.

Introduction

Weevils are a significant pest of canola crops, causing an estimated $1.8 million in annual production losses for Western Australian (WA) growers (Murray et al. 2013).

Key weevil species affecting canola in WA

Four main species are recognised as canola pests in WA: the vegetable weevil, desiantha (or spotted vegetable) weevil, Fuller's rose weevil, and small lucerne weevil. In recent years, the desiantha weevil has become one of the most prevalent species, with damage reported from Geraldton to Esperance (PestFacts WA). Its impact has increased significantly in the past 2 decades, with only one case reported between 2002-2004 compared to the multiple reports that are being received in recent years.

Biology and damage to crops

Desiantha weevils have a one-year life cycle, with adults laying eggs that hatch in autumn after opening rains. Larvae pupate in spring, and adults emerge during spring to early summer.

While the larvae of desiantha weevils cause damage to cereal seedlings and grass seeds, it's the adults of the species that damage canola crops. The adults are most active at night and chew crescent shaped notches on cotyledons and leaf edges, lop cotyledons and ringbark around stems – sometimes eating seedlings to ground level – leaving visible bare patches and areas of low surviving plant densities.

Current control methods and challenges

The recommended method for controlling desiantha weevil is the application of synthetic pyrethroids (SPs), which kill adults either on contact or after ingestion. However, control failures are reported to the Department of Primary Industries and Regional Development (DPIRD) every year. Historically, these failures have been linked to factors such as heavy stubble reducing contact, insufficient green plant material for ingestion, and low spray water volumes (below 50 L/ha) limiting coverage. Additionally, weevils often hide during the day under leaf litter, in soil cracks, and other sheltered areas, reducing their exposure to insecticides applied at registered rates. Spraying in the late afternoon, when weevils are more active, is recommended.

Investigating spray failures

In recent years, multiple spray failures in the Albany and Esperance port zones have raised concerns that the currently registered SP rates may no longer provide effective control. These applications were made under conditions expected to deliver good efficacy – late in the afternoon, using water volumes of at least 80 L/ha, and paddocks with minimal ground cover – yet control was still inadequate.

The department, with support from the Council of Grain Growers Organisation LTD (COGGO), conducted bioassays on four weevil populations from the Albany and Esperance zones to investigate the survival of desiantha weevil populations to SP's. Furthermore, another 4 paddocks were surveyed post spraying to see if any desiantha weevils survived. No populations survived exposure to registered SP rates. This indicates that spray failures occurred because applications were made when the pest was not actively moving in the paddock.

Weevil activity patterns and timing for control

To identify periods of peak activity by desiantha weevils, cameras were deployed in two paddocks. Camera footage showed that weevils were most easily detected in spring after pupation, with adults commonly observed moving during mornings and late afternoons. In contrast, surveys conducted in summer and early autumn – when first and second knockdown sprays were applied – found very few or no desiantha weevils. Adult weevils only became easy to find again in mid-autumn, after weeds or early canola germination had occurred. During summer, weevils sheltered under fallen leaf litter and logs, making detection difficult. By mid-autumn, dissection of female desiantha weevils found most females contained eggs, while by the end of August most adults had largely died, and larvae were readily found in the soil.

Host range and reproduction

Traditionally, desiantha weevil larvae have been considered pests of cereals, where root feeding reduces plant vigour and can lead to plant death. No effective insecticide options exist for larval control. However, following agronomist reports of larval feeding on canola roots, laboratory trials were conducted to identify host plants capable of supporting reproduction. Results showed that desiantha weevil successfully reproduced on barley, wheat, oats, lupins, vetch and the weeds capeweed, cudweed, clover, and sorrel. Although only one adult emerged from lupins, this confirms lupins can support development and that this weevil can reproduce on a wider host range than just grasses.

Integrated management strategies

Field surveys indicated that desiantha weevil numbers declined noticeably where fenceline weeds, particularly capeweed, were effectively controlled. Currently, as crops are being harvested, adult desiantha weevils are readily found. These adults will persist in paddocks into the next season, but they are most effectively controlled after crop germination, when adults are actively moving and therefore more exposed to insecticide contact.

Further information

For more information on desiantha weevils, refer to DPIRD's PestFacts Issue 3, 25 May 2025 or Cesar Australia's webpage Spotted vegetable weevil.

Reference

Dave A. H. Murray, Michael B. Clarke and David A. Ronning, The Current and potential costs of invertebrate pests in grain crops, 2013 Grains Research and Development Corporation.

Acknowledgement:

Investigating systems for the control of desiantha weevil in relation to resistance and biology in WA has been made possible with support from COGGO.

Crop Protection's Top 5 Highlights in 2025

The Crop Protection team has delivered an outstanding year of innovation and impact across multiple projects and trials. From award-winning research to cutting-edge decision support tools, here are our top 5 highlights from 2025.

1. **DPIRD entomologist Svetlana Micic wins GRDC Western Region Seed of Light Award.**

The Grains Research and Development Corporation (GRDC) Seed of Light Award honours researchers who excel in communicating GRDC-supported research outcomes and is presented to the WA winner at the Grains Research Updates event in Perth. In 2025, DPIRD entomologist Svetlana (Svet) Micic received the GRDC Western Region award in recognition of her significant contributions over the years. Svet has led numerous DPIRD and GRDC projects focused on managing insect pests in crops and pastures and has played a pivotal role in developing innovative pest monitoring tools.

2. **Release of the NetBlotchBM app**

NetBlotchBM is a decision support tool designed to help growers and consultants identify the most effective management strategies to reduce net blotch disease (both spot and net forms) in barley and improve profitability. The tool can be tailored to reflect key risk factors for yield loss in individual paddocks and enables users to compare the likely economic outcomes of different management options, including paddock selection, variety choice, in-furrow fungicide, and foliar fungicide applications.

NetBlotchBM is the latest addition to a suite of decision support tools developed to assist in managing foliar crop diseases. For more information, refer to DPIRD's NetBlotchBM page.

3. **Connecting with growers and industry**

The Crop Protection team has had a busy and productive year! Managing 18 projects and contributing to four more, the team worked hard to share research outcomes across a variety of platforms. In 2025, staff presented at 9 workshops, 14 field days, and delivered over 20 conference presentations, along with 5 webinars, 10 radio interviews, and 4 GRDC podcasts. They also published 8 scientific journal papers and 6 conference papers, alongside numerous media articles and newsletters, ensuring growers and industry stakeholders stay informed with the latest in crop protection innovation.

4. **Crop protection team in the spotlight**

Our research scientists have been making headlines this year, showcasing their innovative work and reinforcing their reputation as subject-matter experts.

Senior Research Scientist Dusty Severtson, appeared on ABC TV News to discuss an exciting new three-year project, funded by DPIRD and the GRDC. This project aims to develop effective management strategies for scarab beetles (commonly known as cockchafers), a pest that continues to challenge growers. Catch the full ABC segment via GovNews.

Meanwhile, Senior Research Scientist Ciara Beard featured in a GRDC YouTube video sharing insights from a collaborative project that covered four seasons between DPIRD and GRDC on managing sclerotinia in lupins across Western Australia. Watch the video

on GRDC's YouTube channel: From Risk to Response: Managing Sclerotinia in Lupins in WA.

5. Successful completion of 4 research projects

The Crop Protection team successfully completed four major research projects in 2025, delivering valuable outcomes for the grains industry. These projects focused on:

- Management of spot form net blotch in low-rainfall zones of WA
- Scaling commercial technology for disease spore trapping
- Managing Rhizoctonia in low and medium rainfall zones
- Contributions to the Australian Fungicide Resistance Extension Network.

Each project provided practical solutions and insights to help growers manage crop diseases more effectively and sustainably.

Meet the Crop Protection Team – Sean Kelly

Figure 2. DPIRD Technical officer, Sean Kelly. Image: DPIRD.

Based in Perth, Sean Kelly is a Technical Officer working in DPIRD's nematology team. Born in Perth after his parents moved from New Zealand during the decimal currency changeover, Sean spent his early years between the two countries before settling back in WA.

After completing a Bachelor of Science in Zoology at the University of Western Australia (UWA), Sean worked at Curtin University studying insect populations in revegetated marri and jarrah forests, before joining Commonwealth Scientific and Industrial Research Organisations (CSIRO) Division of Fisheries to explore alternative lobster fisheries. Five years later, he returned to Curtin to complete a master's degree investigating the potential impacts of chemical pollutants from oil rigs on marine life.

While finishing his thesis, Sean accepted a short-term role with the then Department of Agriculture on an annual ryegrass toxicity project – a six-week job that turned into a lifelong career. Over the past 27 years, Sean has focused primarily on root lesion nematodes, with occasional work in foliar pathology and quarantine.

Outside of DPIRD, Sean enjoys playing hockey, Dungeons & Dragons, and tending to a garden that's more jungle than manicured. He's also considering adding another border collie to the family – though only after a few more hockey matches and adventures!