

New Project

PC 302c

Optimising the Macrolophus-based
Tuta absoluta IPM strategy: Phase 1
– Identification of species on UK
nurseries

Project Number:	PC 302c
Project Title:	Optimising the <i>Macrolophus</i> -based <i>Tuta absoluta</i> IPM strategy: Phase 1 – Identification of species on UK nurseries
Project Leader:	Jennifer Hodgetts
Contractor:	Food and Environment Research Agency (FERA)
Industry Representative:	Philip Morely, Technical Officer at British Tomato Growers Association
Start Date:	01 December 2012
End Date:	31 March 2013
Project Cost (total project cost):	£5,992.00

Project Summary:

- HDC Project PC 302b has designed and developed a new strategy for the control of *Tuta absoluta* within the existing tomato IPM programme. The strategy is based on the predatory bug, *Macrolophus* spp., which is the only macro-biological control agent available for use against this pest in the UK.
- In some cases, the strategy has been completely successful. However, in other cases, the predators have failed to establish and it has been necessary to apply numerous applications of chemical pesticides. The latter has not been compatible with the overall IPM programme in tomato.
- We must improve our understanding of the biology and behaviour of *Macrolophus* spp. in order to improve the robustness and reliability of the *Tuta absoluta* IPM strategy.
- There has been considerable debate about the taxonomy of the *Macrolophus* complex of species. It is possible that the inconsistencies in the IPM results have been because we are dealing with more than one *Macrolophus* species.
- As the first step, it is important to compare the species / strains of *Macrolophus* spp. currently being supplied by the main biocontrol suppliers with those predators which have been established on commercial nurseries for 17 years.
- This information is a prerequisite to the further fine tuning of the *Macrolophus*-based control strategy and will pave the way for further studies aimed at optimising the IPM programme.

- Experienced molecular biologists at Fera will investigate the species / strains of *Macrolophus* using DNA barcoding. This technique can be used for both identification and diagnosis, and is becoming a common method of invertebrate identification.
- The TGA Technical Committee ‘fully support’ this evolving aspect of the PC302b studies (Minutes of TGA TC meeting 20 June 2012).

Aims & Objectives:

(i) Project aim:

The overall aim of the project is to study the genetic diversity of *Macrolophus* spp. and begin to consider the implications to the successful IPM of *Tuta absoluta*

(ii) Project objectives:

Objective 1: Collect a range of *Macrolophus* spp. specimens

Objective 2: Perform molecular analysis using DNA barcoding to establish the genetic relationship between collected samples

Benefits to industry

- If larvae of *Tuta absoluta* are detected inside tomato fruit by retailers, then the produce will be rejected and it is highly likely that further supplies from that source will be put on hold until the grower can provide assurance that the infestation has been completely controlled. It will be very difficult for the grower to find another outlet for that produce at short notice and this could result in very large quantities of produce being dumped. The financial loss could be over £300k per hectare depending on the time of year that the infestation is first detected (Jacobson & Morley, 2010).
- UK tomato growers desperately require a reliable method of controlling *Tuta absoluta* which can be integrated into the existing IPM programme.
- In the short term, this project will guide UK growers on the benefit gained from the annual expenditure on *Macrolophus* spp. (up to £1.6k/ha/season).
- In the longer term, the studies will contribute to a robust IPM control strategy and thereby minimise losses in tomato crops. This will have particular benefit for organic growers who have very limited options for interventions with chemical pesticides. Furthermore, new IPM compatible control measures will have knock-on benefits to conventional tomato production, particularly to those growers attempting ‘pesticide free’, and will therefore be advantageous to the whole UK tomato industry.
- The project team have regular direct input into the TGA Technical Committee and progress will be updated at each meeting. In addition, Dr Jacobson has been a regular speaker at the annual Tomato Conference where he will present the results to the whole industry.

Disclaimer

AHDB, operating through its HDC division seeks to ensure that the information contained within this document is accurate at the time of printing. No warranty is given in respect thereof and, to the maximum extent permitted by law the Agriculture and Horticulture Development Board accepts no liability for loss, damage or injury howsoever caused (including that caused by negligence) or suffered directly or indirectly in relation to information and opinions contained in or omitted from this document.

No part of this publication may be reproduced in any material form (including by photocopy or storage in any medium by electronic means) or any copy or adaptation stored, published or distributed (by physical, electronic or other means) without the prior permission in writing of the Agriculture and Horticulture Development Board, other than by reproduction in an unmodified form for the sole purpose of use as an information resource when the Agriculture and Horticulture Development Board or HDC is clearly acknowledged as the source, or in accordance with the provisions of the Copyright, Designs and Patents Act 1988. All rights reserved.

AHDB (logo) is a registered trademark of the Agriculture and Horticulture Development Board. HDC is a registered trademark of the Agriculture and Horticulture Development Board, for use by its HDC division. All other trademarks, logos and brand names contained in this publication are the trademarks of their respective holders. No rights are granted without the prior written permission of the relevant owners.

Further information

Email the HDC office (hdc@hdc.ahdb.org.uk), quoting your HDC number, alternatively contact the HDC at the address below:

HDC
AHDB
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2TL

Tel – 0247 669 2051

HDC is a division of the Agriculture and Horticulture Development Board.