

## Improvement Management Strategies for Silverleaf Whitefly in Vegetable Crops

### Milestone Report – 3 (VX02016)

#### Summary

#### 1. Screening of native whitefly from host specificity testing list continues – results of host testing of *Eretmocerus hayati*

The following whitefly species have been tested

*Lipaleyrodes euphorbiae* - no parasitism

*Lipaleyrodes atriplex* – less than 20% parasitism, adult parasitoids die upon emergence

*Bemisia afer* – no attack

*Bemisia gigantea* – no attack

*Bemisia* sp (saltbush) – test running

Additional whitefly tested,

*Dumbletoniella eucalypti* – no attack

*Aleurocanthus spiniferus* – no attack

*Bemisia subdecipiens* – site detected, bushfire destroyed site

*Bemisia giffardi* – source detected, collection in progress

It is expected to have all testing completed by December. The draft application to release has been prepared and is awaiting final data.

#### 2. Economic threshold level (ETL) tested and validated for IGR in tomato - Best Management Option (BMO) and Economic Threshold Validation in Tomato

A large scale tomato trial was conducted to evaluate the best insecticide options combined with the use of damage thresholds. The two best management options (BMO) were tested with two industry standard practices.

The management options and threshold level area listed in the Table:

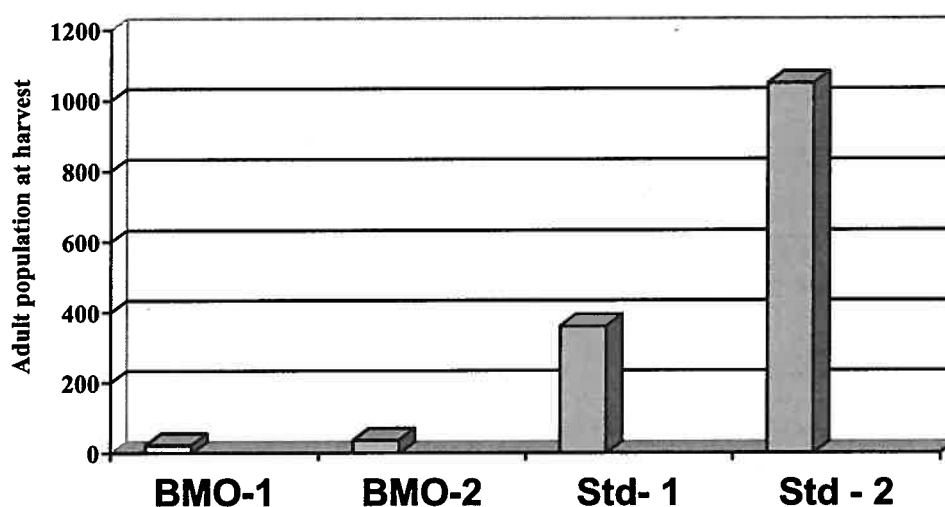
Management Options	First spray	Second Spray	Third Spray	Fourth Spray	Clean –up After harvest
Threshold Level	3-4 nymphs /leaflet + 3-5 adults/ leaf	3-4 nymphs /leaflet + 3-5 adults/ leaf	1-3 adults/ leaf for oil 5-10 adults/ leaf for other treatments	1-3 adults / leaf for soap > 10adults/ leaf for SP mixture	To prevent adult migration
BMO- 1	Pyriproxyfen + Pymetrozine	Bifenthrin	Petroleum Oil	Soap	SP mixture-1

BMO- 2	Pymetrozine	Pyriproxyfen	Pymetrozine	Petroleum Oil	SP mixture- 1
Std Pract –1	Imidacloprid	Petroleum Oil	Imidacloprid	SPmixture-1	SP mixture- 2
Std Pract –2	Bifenthrin	Imidacloprid	Bifenthrin	SP mixture-1	SP mixture- 2

## Results

- This trial results demonstrated that the insect growth regulator, pyriproxyfen combined or alternated with pymetrozine provided better SLW control than the other two standard options.
- Imidacloprid and bifenthrin have been used extensively for SLW control in the past 5 years. We suspect high level resistance within SLW population for both chemicals.
- Timing of application at the correct threshold is very critical in achieving the best results. The spray decision must be taken based on crop monitoring results.

### SLW population level at different management options



### 3. Temporary Permits

QFVG and QDPI jointly worked to achieve temporary permits for silverleaf whitefly (SLW) control. Four new insecticide permits (pymetrozine, pyriproxyfen, imidacloprid- soil application and buprofezin) were extended until 30 August 2004 to use on tomato, cucurbits and eggplants in QLD.

### 4. Progress on Insecticide Registration

**Confidor soil application registration** – Confidor soil application techniques and its efficacy against SLW were evaluated on tomato, capsicum, zucchini and eggplant. Reports covering the four crops were submitted to Bayer Crop science. The full set of data was compiled by Bayer and submitted to APVMA for full registration. The results and implications of the experiments were presented at growers meetings at Bundaberg, Bowen, Ayr and Gatton.

## **5. Technology Transfer Activities - Information sessions and grower meetings**

Due the silverleaf whitefly expansion in other vegetable crops and outbreaks in commercial production regions in Qld, the industry has requested meetings and information sessions. For that reason technology transfer activities (listed in Milestone-5) were brought forward to Milestone-3.

Four large silverleaf whitefly meetings and information sessions (each 3 to 4 hrs) were conducted in Qld covering the major vegetable production regions. The subject areas covered in the meetings included insecticide permits, best chemical use strategies, information on new chemistry, crop monitoring, spray threshold, resistance management, parasitoids and best farm practices. All these meetings were well attended by the industry and the participants included vegetable growers, crop consultants, chemical company representatives, resellers, researchers and extension officers. Presentation notes, permit information and handouts (Best use of IGR against SLW in vegetable crops) and sample spray programs were distributed to participants. The meeting details as follows:

### **1. Bundaberg – 19 Feb 2003, facilitated by Iain Kay , QDPI, Bundaberg.**

Number of people attended - 36.

Presenters –

- Garry Webb –Sumitomo Chemical, Insect Growth Regulators (IGR) – Admiral
- Geoff Messer – Dow Agro Science, IGR – Applaud
- Peter Holmes – Syngenta – Anti-feedent – Chess
- Rob Vitelli – Bayer Crop Science – Confidor Soil Application
- Siva Subramaniam – QDPI, Bowen – Permits, Effective chemicals & Best Management Strategies
- Paul De Barro – CSIRO, Brisbane – Parasitoids & Resistance management

### **2. Bowen – 19 March 2003, facilitated by Sue Heisswolf, QDPI, Bowen.**

Number of people attended - 40

Presenters -

- Garry Webb –Sumitomo Chemical, Insect Growth Regulators (IGR) – Admiral
- Geoff Messer – Dow Agro Science, IGR – Applaud
- Pat English – Bayer Crop Science – Confidor Soil Application
- Siva Subramaniam – QDPI, Bowen – Permits, Effective Chemicals & Best Management Strategies
- Discussion – SLW resistance management strategy

### **3. Ayr – 20 March 2003, facilitated by Frank Covolo, Burdekin Growers Assoc.**

Number of people attended - 24

Presenters -

- Patrick Press–Sumitomo Chemical, Insect Growth Regulators (IGR) – Admiral
- Wayne Favier– Dow Agro Science, IGR – Applaud
- Pat English – Bayer Crop Science – Confidor Soil Application
- Siva Subramaniam – QDPI, Bowen – Permits, Effective Chemicals & Best Management Strategies

- Discussion – SLW resistance management strategy

**4. Gatton** – 21 August 2003, facilitated by Bronwyn Walsh, QDPI, Gatton.

Number of people attended - 70

Presenters –

- Siva Subramaniam – QDPI, Bowen- Permits, Effective Chemicals & IPM Strategies
- Garry Webb – Sumitomo Chemical, Insect Growth Regulators (IGR),- Admiral
- Geoff Messer – Dow Agro Science- IGR, Applaud
- Rob Vitelli– Bayer Crop Science - Confidor Soil Application
- Peter Walsh - Syngenta – Anti-feedent, Chess

**6. Research update informed to HAL & QFVG, and an article published in QFVG magazine.**

Based on the needs identified at the grower meetings, a paper is now in preparation that will be broadly submitted to a range of grower magazines.

**7. Collect baseline data on existing practices to allow evaluation of project impact**

This is ongoing. There has been a particular focus on the Lockyer Valley to ensure that information generated over the past 6 years is extended to growers. In particular the best practice guide has been distributed and there is continuous follow up via a number of HAL extension based programs already operating in the region.

**8. Report of 3rd Bemisia Workshop in Spain**

See Milestone 2