

SILVER LEAF WHITEFLY IN THE CENTRAL HIGHLANDS

- A GROWERS PERSPECTIVE -

By Greg Jensen

Cotton Grower, Emerald, Queensland

Introduction

What started as a normal season in Emerald soon became one of the most challenging for quite a while. Not only did we have low commodity prices, extremely hot weather and the normal contradictions of an average season, we also had for the first time in our industry in Australia, the Silver Leaf Whitefly (SLW). This insect can be a problem to the production of cotton, but it is their excretion (honeydew) that is the major problem. It creates classing problems and very large discounts on the P&D sheets. In the marketing arena, the perception of an area having honeydew is nearly as bad as having it exist physically. The insect problem at the moment only affects the Central Highlands but they have already been detected in most other cotton growing areas.

The Problem

Whitefly has been in Emerald for some years. Bernie Franzmann (DPI) has been finding them on shrubs and plants around the town of Emerald for the last 6 years, but it wasn't until April / May in the previous year (2001) that they were noticed in significant numbers in late planted cotton crops. This alerted the agencies and CRDC contracted Paul DeBarro from CSIRO Brisbane to more intensely monitor populations for the 2001/02 crop.

What Happened

Monitoring started earlier, but it wasn't until December that the numbers were increasing at a rapid rate and it appeared we would have a problem. The numbers of whitefly were still

variable around the Highlands. All areas were experiencing number build-ups, but the highest populations were found in crops that were close to other host crops (eg. melons and pumpkins) or fields that had substantial standing cotton plants from last years crop. Right through the season the whitefly kept on breeding in the cotton. By late December every field of cotton in the district had whitefly, and it was the late planted and hailed affected farms that wore the brunt of the population when the older cotton became unattractive to the whitefly and they went in search of more attractive hosts.

Early mornings around defoliation time they appeared to be at their worst as they were in flight in huge numbers and were moving around the whole district. Right until the last, they were even in paddocks when the picker went through.

What We Did

A series of field days and meetings were held around the area trying to educate all industry personnel about the insect and also the seriousness these insects posed to our industry. The field days were very well attended as the level of whitefly was already becoming significant, and it didn't take much imagination to realise they were going to get worse.

No pesticides are currently registered for whitefly on cotton in Australia. Therefore, in mid December the CRDC, on behalf of the cotton industry, applied to the National Registration Authority (NRA) for emergency use permits for a number of products. By early January permits had been approved for diafenthiuron (Pegasus®) and buprofezin (Applaud®) for use in the Emerald Irrigation Area.

Through January and early February populations continued to escalate and crops were being treated regularly for the pest. Pegasus® was used quite widely achieving adequate results, although given the nature of the pest the effects of the product were short-lived. Pegasus use was also limited by a 35 day withholding period and a label requirement of six weeks between applications. Pyrethroid mixes (with PBO or OP), used to control heliothis offered limited

control of whitefly adults but provided very little residual or activity on nymphs. Some growers applied three or more applications of pyrethroids to manage the adults, but some of those sprays were starting to fail, indicating the ability for the pest to develop resistance. The average cost of controlling SLW was approximately \$110/ha in the Central Highlands and with 22000ha of cotton produced the total bill is \$2.4 million. Applaud® was used on a few fields, but with not being able to measure the levels of honeydew that would create a discount (approximately \$100/ bale) it is hard to justify \$170/ha.

Why this Year?

It is hard to understand what the switches were to make this the season they got active, especially after being in the area for a number of years.

- Was the excessive heat the major factor to escalate the breeding cycle? We had 80 days over 38° C. At times we had to put up with very low and also extended periods of high humidity.
- Was the seemingly static population over 3-4 years actually building up to a point that something triggered the explosion?
- Other host crops grown through winter, but not ploughed in after harvest, might have let numbers get to a critical level.
- Could the early use of OP's to address the high mirid numbers have flared the SLW numbers?

It was most likely a combination of these factors that contributed to the outbreak.

What is Happening Now?

CRDC bought a busload of researchers and industry representatives to Emerald in February where they were shown first hand the plight of some of the crops and they had a chance to

discuss with the locals how the season had progressed and what directions some of the research should be taking.

With the experience from their visit the CRDC board met in March and developed a contingency fund to establish a range of research programs on the following items:

1. Conduct a trial of knockdown products late in the season -
 - Results showed some difference between products but highlighted that control late in the season is difficult.
2. Establishment of a trial area of cotton planted on the Emerald Agricultural College to be used for extensive trials to be carried out in April/May. These trials will assess: -
 - Efficacy of current and new insecticides
 - Seed treatments
 - Use of bio-rationals (oils, soaps, biopesticides)
 - Impact of early season broad-spectrum chemistry on whitefly populations.
3. Application types and rates of water with chemicals and bio-rationals
4. Determine the effect of weathering on honeydew
5. The monitoring of SLW populations over winter to determine winter hosts
6. The size and distribution of the population that we will start with next season.

Next Season

The answer to managing whitefly is in Area Wide Management. To make sure we manage the pest sustainably we have to:

1. Coordinate our:
 - Plough down - Make sure of the destruction of all hosts over winter
 - Planting date - Keep the window as narrow as possible
 - Seed treatments - Rely on IRMS for choice
 - Early season pest control - Limit use of OP's
 - Use of I.G.R's - Critical timing and window

2. Meet regularly to discuss our successes and failures,
3. Encourage our neighbours to participate in decision making,
4. Ensure our consultants are in touch.

We have a mapping project in Emerald this year that will be using data from Weather Stations, Consultants, Growers, and Satellite Technology and land maps that will help us accurately follow the dynamics of whitefly. This could be very beneficial in timing the use of I.G.R.'s.

With whitefly I don't think we get the choice of going down the AWM road. It is being forced upon us as this insect is so hard to manage, and if we don't take a co-ordinated approach and the pest persists, the cotton industry in Central Queensland will become threatened from marketing discounts and increased control costs.

Overview of AWM

Approximately 22 000 ha's of irrigated cotton is grown in the Central Highlands. The majority of this is grown within a 30-km radius of Emerald. The Fairbairn Dam feeds water via a channel system and into the river to supply 18 500 ha's (50) farmers. The other areas are spread from Emerald to Rolleston (130 km South), Duarina (150 km East), and to Belyando (200 km North) and are water harvest operations. Up to 10 000 ha's of rain grown has been grown in these boundaries.

Eight commercial consultants and 3 employed consultants service Central Highlands Growers and of course their management strategies vary considerably.

In Emerald we have had a basic AWM since the start of Ingard. We have had trap crops (winter and in season) and voluntarily delayed of the use of S.P's until Christmas time- just prior to cutout. We have excellent adherence to I.R.M.S. Our communication between growers and consultants is excellent. The consultants meet once a week in season and are members of our Research and Technical Group, and also are welcome and regular contributors

at grower meetings. We have discussed planting windows every year and promoted the soft approach to chemical use. The exchange of ideas and the practicing of these philosophies is the basis of an AWM.

It will be extremely important to use every means of information sharing, and co-ordinate the consultants, growers and industry personnel so the most effective strategy and timing for control measures can take place. We have had similar challenges in the past, and through the input of personnel from all levels of our industry, and I am confident that we can economically manage this new pest. But we have to work together to achieve this.

Conclusion

CRDC and CCRC have to be congratulated on the recognition of the potential whitefly has to damage not only Central Queensland, but also the Australian industry. Some research projects have already started and the reactions from our research bodies and leaders should be commended for their swift action. The Central Highlands Growers deserve a pat on the back for committing to controlling something that there are no guidelines for controlling in Australia.

Our local Extension Officer Dave Kelly has been the leader in the progress we made in keeping this year as trouble free as it has been. He was the force behind the all the field days and continual education at grower meetings, and his attitude to this challenge has earned him the respect of all of us in the Central Highlands.

The long-term management of this insect will not be taken lightly for a long time, but I believe we are already on the right track.