

# Key changes to the 2004–05 insecticide strategy

By Louise Rossiter\*

The Insecticide Resistance Management Strategy (IRMS) is a voluntary strategy that for 20 years has been providing guidance to the Australian cotton industry in chemical usage that manages and minimises resistance and its development in a number of key insect pests. Following consultation and feedback from the industry, the Transgenic and Insect Management Strategy (TIMS) committee has formulated the strategy for 2004–05.

It is important that all users of the IRMS understand the principles behind it and the changes from previous years. Adherence to the strategy is imperative not only for resistance management but also for assessment of the success or failure of the strategies taken.

## GENERAL CHANGES

### 1. Change in areas covered by individual strategies

Previous strategies have grouped the cotton growing regions into hot, warm and cool areas. In order to satisfy the requirements of individual valleys without compromising effective resistance management these have been regrouped:

- **Northern:** Central Highlands, Dawson and Callide Valleys;
- **Central:** Balonne, Macintyre, Gwydir, lower and upper Namoi, Macquarie and Bourke;
- **Southern:** Lachlan and Murrumbidgee Valleys.

It is recognised that some valleys within the central grouping may have slightly differently timed seasons. The strategy has been formulated to provide sufficient chemical options both earlier and later in the season to account for these variations. These groupings are considered a compromise between the strategies initially proposed based on most effective resistance management and the requests of some valleys.

### 2. Darling Downs specific strategy (including Burnett, Clifton, Millmerran, Condamine — not Surat)

This strategy differs from the central areas strategy primarily in the placement of Tracer and Affirm. The Darling Downs

region has shown over several seasons that *Trichogramma* parasitism plays an important role in *Helicoverpa* control which requires careful soft chemical usage, particularly in relation to Tracer. The Darling Downs has demonstrated a valley wide commitment to providing egg collections for resistance monitoring purposes and this is a requirement of TIMS in approving this strategy.

### 3. Division of the season into five stages

Previous strategies have been divided into three stages (four for the hot strategy). These windows were originally based on the generation time of *Helicoverpa* to restrict chemical use and hence selection pressure to one generation. Over the years, these windows have been lengthened in response to the requirements of the industry, and have become essentially irrelevant with pesticide use periods beginning and ending outside the window boundaries.

In an attempt to simplify and reduce the number of dates to be observed in following the strategy, there are now five stages with three main dates to remember regard-



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ing chemical usage. The date given in each window refers to the start date of that window, with windows ending at midnight the day before the start of the next window.

### 4. With the registration of Tracer for use in chickpeas

No use of Tracer or Steward in chickpeas after:

- **Northern:** September 15;
- **Central and Darling Downs:** October 15; and,
- **Southern:** October 30.

### 5. 'Mectins' group available for use from start of season

Restriction on abamectin and the Affirm start date have been removed (except Darling Downs, see later) as it was considered unnecessary.

### 6. Maximum of two total foliar neonicotinoid applications

With the registration of two additional foliar neonicotinoids for aphid control (Confidor plus Actara and Intruder), this restriction is necessary to avoid selection of resistance to this group. This restriction does not include neonicotinoid seed dressings. That is, neonicotinoid seed dressing plus two total sprays is allowed, although selection for resistance in aphids should be taken into account and the first foliar spray cannot be a neonicotinoid if such a seed dressing is used.

### 7. Aldicarb separate from other Group 1A and 1B insecticides for aphid control

Research by Grant Herron and Emma Cottage (NSW Dept of Primary Industries) has found that there is no cross resistance in aphids between the carbamate aldicarb and other Group 1A and 1B insecticides (carbamates and organophosphates). The separation of aldicarb from other carbamates and OPs allows for a foliar carbamate or OP to be the first aphicide applied following the use of aldicarb in-furrow at sowing.

### 8. Reduction in the withholding period for Pegasus to 14 days (previously 35)

This label change will increase the options available for late season aphid/mite control.

## 9. Mirids: Chemicals used to control mirids may have adverse effects on resistance management in other pests

Of particular concern is the use of omethoate/dimethoate early season, which through cross resistance may result in the loss of pirimicarb for early season aphid control. In addition, early season use of broad spectrum disruptive chemistry may cause flaring of other pests. The following warning has been added to the 2004–05 IRMS:

- Avoid early season omethoate/dimethoate use as it may compromise their efficacy and pirimicarb efficacy against aphids as well as flare other pests including silverleaf whitefly.

Further guidance regarding mirid control and resistance management can be obtained through local Industry Development Officers.

### SPECIFIC CHEMICAL CHANGES

#### 1. Endosulfan

With the reformatting of the strategy into five stages, the endosulfan window has effectively been lengthened by 11 days to January 31 for those areas previously covered by the warm areas strategy. The window remains unchanged for other areas. Aerial application restrictions as detailed on the label remain unchanged.

#### 2. Prodigy

In response to almost unanimous requests from all valleys, the Prodigy window has been split for 2004–05, with availability for use early and then late in the season.

- **Northern:** Stages One and Two (until December 14) and Stage Five (February 15 to the end of the season);
- **Central and Darling Downs:** Stage One (until December 14) and Stages Four and Five (February 1 to the end of the season); and,
- **Southern:** Stage One (until December 31) and Stage Five (February 21 to the end of the season).

This placement provides an additional soft option early and late in the season. Late season use of this chemical may be expensive, but it was considered a potential option for pest control as previous costs incurred can be considered and decisions made as to the cost-effectiveness of a late season Prodigy spray.

There is a restriction of no more than three Prodigy applications during the whole season. A window greater than one *Helicoverpa* generation time divides the two windows of use to reduce the risk of early season survivors being re-selected late season.



An example of one 2004–05 strategy, the central areas strategy, illustrating major general changes.

While it is not prudent resistance management to end one season with a chemical and then have it available at the start of the next season, other factors such as the price should limit Prodigy use and this placement is currently considered low risk. This will have to be reassessed if use increases in the future.

#### 3. Steward/Tracer placement

The ideal placement of these chemicals during the season in the IRMS varies greatly between valleys. This season the TIMS committee received extensive feedback regarding these two chemicals and this largely determined the new structuring of valleys into northern, central and southern areas. Two factors were considered when determining their placement:

- Placement was for effective resistance management for these two chemicals as well as other chemicals. To try to encourage growers and consultants in individual valleys to apply the same chemicals around the same time, (to avoid mosaic effects of random chemical use) the positioning of the three most IPM friendly and hence most popular chemistries was staggered. This involved Affirm placement early in the season to correspond with abamectin placement (important for early season *H. punctigera* control), followed later by Tracer and Steward, the order depending on the requirements of specific valleys.
- Placement was according to valley preference in relation to when the chemicals are perceived to work most effectively. The TIMS committee is conscious of creating an IRMS that

addresses the practical needs of individual valleys while promoting effective resistance management. The strategy is voluntary, but non-compliance is a major threat to the effectiveness of resistance management. If individual valley requests for chemical placement do not fit with good resistance management for the industry as a whole, attempts are made to find middle ground to encourage compliance.

- **Northern:** Steward: November 15 — January 14, Tracer: December 15 — February 14;
- **Central:** Steward: December 15 — February 20, Tracer: January 1 — March 1
- **Southern:** Tracer: December 10 — January 31, Steward: January 15 — March 15. Tracer use has been brought forward in southern regions to coincide with spinosad (Tracer) use on sweet corn to avoid spinosad use and hence resistance selection potentially across the whole season.
- **Darling Downs:** Tracer: November 15 — January 20, Steward: December 15 — February 20. 'Mectin' use has also been modified to fit with these chemical placements. 'Mectins': December 1 — February 20.

#### 4. OPs/pyrethroids/carbamates

These chemistries have been brought into alignment with each other. These harder chemistries should be delayed as long as possible in an IPM system to minimise beneficial disruption and avoid flaring of aphids, mites and whitefly. These do have a role to play, but late season as resistance breakers for survivors of some of the more popular IPM-friendly products used earlier in the season.

- **Northern:** December 15 to the end of the season;
- **Central and Darling Downs:** January 1 to the end of the season; and,
- **Southern:** January 15 to the end of the season.

\*NSW Department of Primary Industries and Australian Cotton CRC on behalf of the ACGRA TIMS committee.

The 2004–05 IRM strategies are distributed through David Larsen at the Technology Resource Centre at the Australian Cotton Research Institute, Narrabri. They can also be accessed through the Cotton CRC website ([www.cotton.crc.org.au/publicat/pest/IRMS](http://www.cotton.crc.org.au/publicat/pest/IRMS)) and are printed in the 2004–05 Cotton Pest Management Guide (NSW Dept of Primary Industries and Australian Cotton CRC).

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