Cotton Catchment Communities CRC
Queensland Government

COTTON *TALES*

Central Queensland

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2010/11
No.6
08/12/11

Day Degree Accumulation to 07 Decmeber 2011.

District		Season 11/12	Season 10/11	Average	Hot Shock	Cold Shock
Emerald	From 15/09/11	997	889	1074	5	10
Theodore	From 28/09/11	706	656	792	4	16

Day degree accumulation has been adjusted by 5.2°C for each cold shock day.

Crop Stages versus Day Degree Accumulation.

Emerg.	5th leaf	1st Sq	1st Flow	Peak Flow	Cracked Boll	60% open
80	330	505	777	1302	1527	2050

Smell of apples in the air? Apple Dimpling Bug

Recently there have been a number of reports of high numbers of apple dimpling bug (ADB) in early squaring cotton throughout the major cotton growing valleys. Also known as the yellow mirid, ADB adults (about 3mm long) are about one third the size of green mirid adults. They are yellow-green, have dark spines on the legs, hairy wings that are folded flat on the back, a distinctive apple smell when squashed and are capable of moving quickly.

Pest or predator?

ADB are well known as predators of helicoverpa eggs and mites. However, they are also plant feeders and on young cotton will feed on small 'pin' squares, causing shedding of the squares. Damage at seedling stage is unlikely to affect yield but will delay maturity by 4-5 days.

When do they need controlling?

Dr Moazzem Khan (QDEEDI) studied the responses of cotton to ADB. Based on his findings the current recommended economic threshold is ten ADB per metre row of cotton along with 50% fruit retention at the squaring stage. Visual counts early in the morning or late afternoon should be used to assess ADB populations in the field with assessments being conducted in the top half of cotton plants. The decision to control should carefully consider fruit retention as well as ADB numbers as feeding can be variable and the plants ability to compensate for loss of pin squares, by retaining other squares that may otherwise have been shed, is usually quite good.

Control options

If the decision to control is warranted, it is essential to consider the risk of flaring secondary pests. As ADB are also predators, there is a risk that a decision to control them may increase mite population build-up. As an occasional pest there are few products registered for their control. A low rate of fipronil is the softest registered option. The only other registered options, OPs, are not available in the IRMS until late in the season and would be highly disruptive to beneficials in crop.

What is Pix (mepiquat chloride)?

When warm temperatures, ample water supply and high soil fertility combine, rapid vegetative growth (leaves and stems) outpaces reproductive growth (squares and bolls). This results in the size of the crop becoming unmanageable for operations like pesticide applications and harvesting.

Pix's mode of action is to lower the plant's production of gibberellin hormones. Gibberellins are a class of 'promoter' hormone. They stimulate cell division in the shoot apex and internode growth, as well as promoting cell growth and increasing leaf size. Lowering gibberlins causes cell expansion to slow and thus internode growth to slow and leaves to become smaller.

When fruit is lost, such as shedding during prolonged cloudy weather or due to insect attack, there is nowhere for assimilates that are being produced by photosynthesis to be taken up. The plant responds by growing more leaf and stem instead. Similarly, when lush growth conditions occur there may also produce an excess of assimilate above the needs of the fruit growth.

The action of Pix in these situations is like a brake on vegetative growth, where it allows the fruit growth to catch up and re-establish the crop's ability to once again regulate its own vegetative growth and meet the needs of further fruit growth.

Excessive vegetative growth can be a symptom of too much nitrogen or water. If continual use of Pix is needed,changes to nutrition or water management could be a better alternative. If vegetative growth is not excessive, or if environmental conditions cause stress after the application, the benefits of Pix disappear.

Because gibberellic acid is needed in other plant growth processes, complete inhibition of the hormone is not desirable. Too high or too low rates can result in too much or too little plant control. A high rate at an inappropriate time can result in yield reductions. In some situations a taller crop is needed to ensure there are enough fruiting positions to maintain yield potential.

Cottassist's Crop Development Tool (CDT) allows crop managers to monitor both vegetative and reproductive growth of their crops compared to potential rates of development. www.cottassist.cottoncrc.org.au

Thanks to Mike Bange (CSIRO) & Tracey Leven (CRDC). This Cotton Tale article is based on an upcoming CRDC Spotlight article. Don't get free Spotlight mailed quarterly? Go to: www.crdc.com.au/index.cfm?pageID=167

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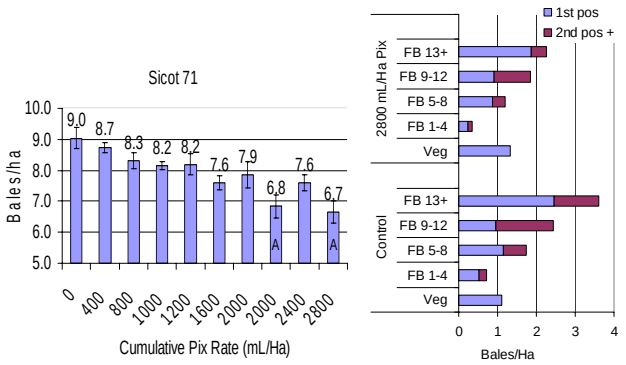
Northern Pix experience – Think Like a Plant

With Central Queensland seasons oscillating somewhere between southern climate and the tropo north, there is potential that recent northern research may have some application in CQ.

Based on problems with the traditional VGR method to determine timing and rates of Pix in the Ord, Steve Yeates & Paul Grundy have investigated responses in the Burdekin.

Experiments in 2011 compared ten treatments of increasing doses of Pix, 200, 400 or 800 mL/ha/application, creating cumulative rates of 0-2.8L/ha. Treatments were applied to three cotton varieties, Siokra 24, Sicot 71 and Sicot 74, between the seven nodes & cut-out growth stages. The three varieties were chosen for their generally strong performance in the region & the differences in their determinacy.

Increasing cumulative doses of Pix reduced the total number of fruiting sites, predominantly second position bolls, and also reduced lint turnout. The most dramatic impacts were observed with Sicot 71, which was the most determinate of the three varieties with the least impact observed on Siokra 24.



Yields from a Pix experiment on Sicot 71 in the Burdekin during 2011 are shown above. Increasing dosages of Pix resulted in decreased yield potential. These treatments were applied in cumulative doses of 200mL or 400mL every 5 nodes except the two treatments marked with (A) where cumulative doses of 800mL and 400mL were used to achieve the combined totals. Yield loss in this experiment is due predominantly to a reduction in canopy expansion (total biomass) and resultant decline in upper canopy P2 fruit. The most surprising result from each of the experiments was the decrease in lint turnout with increasing Pix application. The impact of Pix on the lint turnout was significant for all varieties of which the impact on Sicot 71 was the most pronounced.

A tool is being developed for determining the most appropriate Pix timing in Northern climates. Rather than being based on changes in internode length over time, the northern model combines measurements of total crop height, node number, nodes above white flower (NAWF) and early season fruit shedding each week to determine whether or not Pix is required.

When Pix is required, only low doses of 200-500mL/ha per application are recommended. This is because weather conditions change very rapidly in the Burdekin. Low rates triggered by the tool keeps vegetative growth in check while still allowing the crop manager to retain the flexibility to respond to situations as they develop. The determinacy of the variety influences the rate chosen.

While caution is needed in selecting both the application rate and timing for Pix, research has identified some advantages for crop management, but neither maturity, nor limiting crop height are among them. Interestingly, in all the experiments under Burdekin conditions there has been no maturity advantages derived from Pix usage,

Tall crops can be high yielding crops in the Burdekin. In a wet year, a plant may need 30 nodes, or 140-160 cm, in order to maximise yield potential, thus regulating early crop height allows room for growth later in the season.

Ultimately there is nothing magical about Pix. Research to date shows Pix cannot overcome the impacts of low radiation experienced during cloudy weather in the Burdekin.

Thanks to Paul Grundy (QDEEDI), Steve Yeates (CSIRO) & Tracey Leven (CRDC). This Cotton Tale article is based on an upcoming CRDC Spotlight article. For more information please refer to the article.

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Date claimer- Emerald - Wednesday 21/12/11

- **Bug checker training**
- **Field walk - guest speakers Paul Grundy & Melina Miles**

Venue & times for events TBA

Cottonmap

Don't forget to map your cotton at www.cottonmap.com.au