

A GROWERS PERSPECTIVE ON INSECT CONTROL

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Good average irrigated yields have been achieved on the Darling Downs by most growers this season while dryland crops on average did not fare so well due to the unseasonal hot dry conditions. The region had to contend with high heliothis pressure i.e. more than 15 eggs per metre for much of the season, and this coupled with high levels of resistance (starting with 80% H. armigera in mid November) has made control costs very high, with some yield forgone at the same time from insect damage. This combination of high pressure and high levels of resistance from early season onward makes for a very difficult outlook.

History has seen the downfall of DDT in the early 70's and the emergence of pyrethroid resistance in the early 80's because of overuse. We have seen the withdrawal of chlordimeform and Helix and the rundown in usefulness of endosulfan, pyrethroids (including Talstar), Larvin and some of the organophosphate group, i.e. pretty well everything we've got.

As a result it's getting costlier (and riskier) to produce each bale, e.g.,

YEAR	COST/HA INSECT CONTROL	BALE PRICE	BALES REQD. TO PAY FOR 1HA. PESTICIDE
1966	30	125	0.25
1972	40	125	0.35
1977	200	260	0.75
1988	355	425	0.83
1998	800	500	1.60

(Sourced from various DPI and Dept Ag notes and personal experience).

What has kept us in the game so far has been reasonably good \$A for returns for cotton and the steadily increasing yield potential of the varieties provided to us. We have also improved agronomic techniques such as land preparation, including controlling traffic thereby reducing the effect of compaction. We have a better idea of what to do if some compaction is

unavoidable, such as planting wheat to repair damage. I think we do a much better job of managing drainage with lasering and use of bed systems and we are able to schedule irrigations very accurately with the use of aids like neutron probes.

Twelve – fourteen years ago a typical pest control program for the Downs area was:

- 1 – 2 sprays Rogor/Folimat
- 5 sprays Endosulfan
- 4 Pyrethroids
- 1 Larvin
- 1 Curacron
- for a total cost of around \$250 / Ha.
- field performance of pesticides was quite reliable.

Last Season:

- 15 – 18 sprays
- two and three way mixtures almost every spray
- shorter interval spraying
- field performance of pesticides variable. The lifestyle of many consultants has changed, with frequent checking and rechecking now “normal” practice as there is reduced confidence in what the tools will do.
- cost in the \$700 - \$1000 /ha range

The resistance management strategy has been useful in slowing the rate of resistance buildup , but the Downs area with its range of different heliothis attractive crops is proving a difficult area to win the war in.

It is certain that our current practice is unsustainable.

To sum up, higher resistance means higher costs, and by that I mean pesticide costs, application costs, environmental costs (drift, and community resistance), as well as a more intensive management effort by consultants.

THE FUTURE

- approach with a healthy awareness of the risks involved coupled with conservative marketing strategies
- agronomically, we will be hoping for the continuing increase in yield potential of new genetic selections
- need shorter varieties! without compromising yield potential, maybe in okra form (with appropriate disease tolerance), these attributes being desirable for insect management
- may need to consider using less nitrogen to avoid prolonging crop growth any longer than necessary
- may need to consider being more aggressive with Pix. Taller cotton this year on the Downs generally copped more grub damage.
- double gene or stacked gene transgenic cotton could have a very important role to play given early indications of field performance here at Condamine Plains. Stunt virus material could be important too.
- a regional management strategy is being proposed for two pilot areas on the Downs in an effort to vastly reduce the numbers of moths laying in the crop, especially in spring. A significant research effort will be deployed this season and there is strong grower interest in the principle of the strategy.
- while predators and parasitoids have not had a great impact so far, I believe a great fit exists with transgenic material that can handle reasonable pest pressure in its own right. For example I understand that trichogramma has an important role to play in the Ord.
- Early season sprays – do we need them? Can we make more use of early season natural mortality? Do we need to keep a closer eye on fruit retention to make better choices? One less spray now means one more available for next year.
- better spray application equipment eg. air booms etc. especially under higher pest pressures should give better jobs and therefore less resprays and less exposure with respect to resistance
- ultra narrow row cotton should significantly shorten the growing season in areas such as the Downs and may not affect yield much. However it requires new harvesting technology. This is being developed in the U.S. Grades will probably be affected so there looms a compromise between quality and growing time for a short compact crop with lower pesticide costs and maybe survival.

BETTER OUTLOOK FOR COSTS

Anything that reduces pest pressure will be useful so:

- adherence to the pupae busting requirement very important
- regional management of heliothis is hoped to have a very useful impact
- “Envirofeast” and similar materials may have a fit for early season low pest pressure situations.
- a UV stable “Gemstar” product could be a big help
- maintenance of a pesticide strategy to keep the older, cheaper chemistry in use for as long as possible
- any season shortening strategies as mentioned above will help, so that time the period in which control is needed is reduced

WHAT ABOUT INGARD AND NEW CHEMISTRY

- Ingard has been a major disappointment in this region. If it had performed as we had all hoped, it would have been a big breakthrough, and maybe real IPM would have been an obvious possibility. Our hopes now rest with the stacked gene materials.
- The rising cost of new chemistry is a real concern. We know that as environmental issues impact on what gets through to registration, costs increase in a big way. New chemistry is needed urgently, to rotate with, and extend the life of existing products. We need all we can get at an affordable price – there is not an unlimited capacity to pay – or logically the high cost production areas will fall by the wayside. We have quite a challenge ahead of us and it is hoped that necessity will be the mother of invention.
- A combination of great science and practical ingenuity will be needed to overcome this most difficult pest.

- We need to send a clear message to the developers and providers (including new entrants) of new technology that we enthusiastically support their efforts and that we are prepared to pay for those innovations that deliver real benefits to the industry.

