HOW AREA WIDE MANAGEMENT WORKED ON MY FARM

By David Coulton,
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In a nutshell the answer to this question is profitability.

Area Wide Management (AWM) has worked very well on my farm. One of the reasons I know this is because of the bench marking used in Michael Boyce & Co comparative analysis. Our farm is continually in the top 20% for low growing costs and the top 20% for yields.

Profit and sustainability is what really drives us all otherwise I wouldn't have kept going since 1978. Profit at the expense of sustainability is short sighted to say the least. AWM is a tool that helps to keep costs down and keep our farms sustainable.

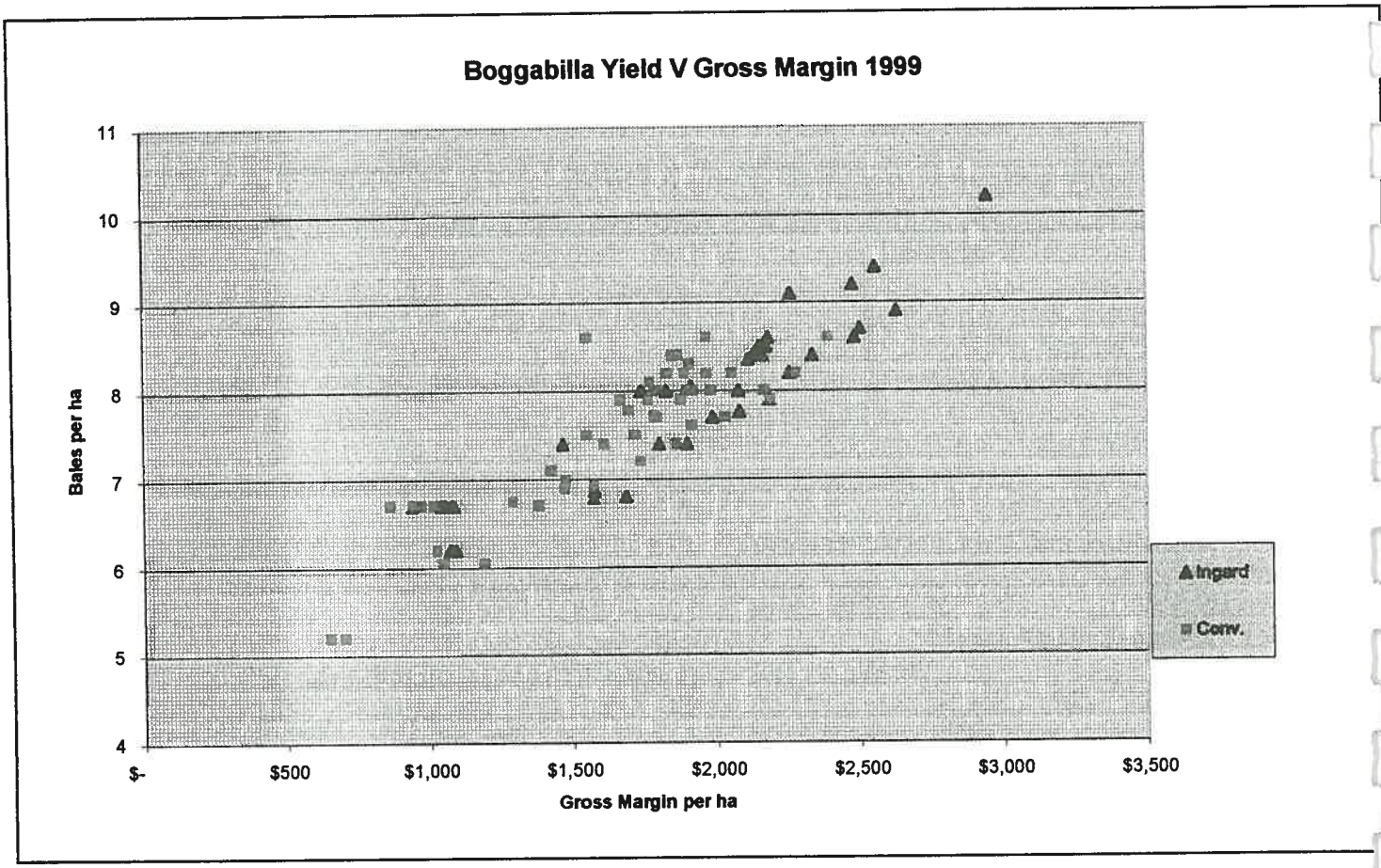
AWM is really well suited to Integrated Pest Management (hereafter called IPM) it should be remembered that IPM is not only about insect control it is about varietal selection, positioning of ingard fields, trap cropping, nitrogen rates and timing, maximising beneficials, product selection and evaluation.

It is interesting to note that in 1999 –2000 the Macintyre Valley as a whole has had an average of 6 sprays on the conventional cotton and 1.5 sprays on INGARD®. I know there is a lot of different reasons for this outcome but it must be noted that this was the first year that IPM and AWM have been widely used.

The history behind AWM on my farm really started in 1997-98. Insect numbers were low and fruit retention was high within our land care group area. Growers did not need to spray at all. Worms were not surviving due to the beneficial activity. This came to an abrupt halt on December 15, when a small area had a pyrethroid applied. Within three days all non sprayed crops lost their beneficials and required a spray for heliothis. This really highlighted both the disruptive nature of pyrethrins and the significance of even a minor spray drift. So, in the winter of 1998 the landcare group gave birth to the Boggabilla area wide IPM plan.

Since then the group within the AWM have had 2 growing seasons. The 1998-99 season was a very heavy season for tip worm and heliothis. The 1999-2000 season was a light year for heliothis. As a group we have kept information and have employed Wicks Consulting from Toowoomba to collate our data so we can evaluate results.

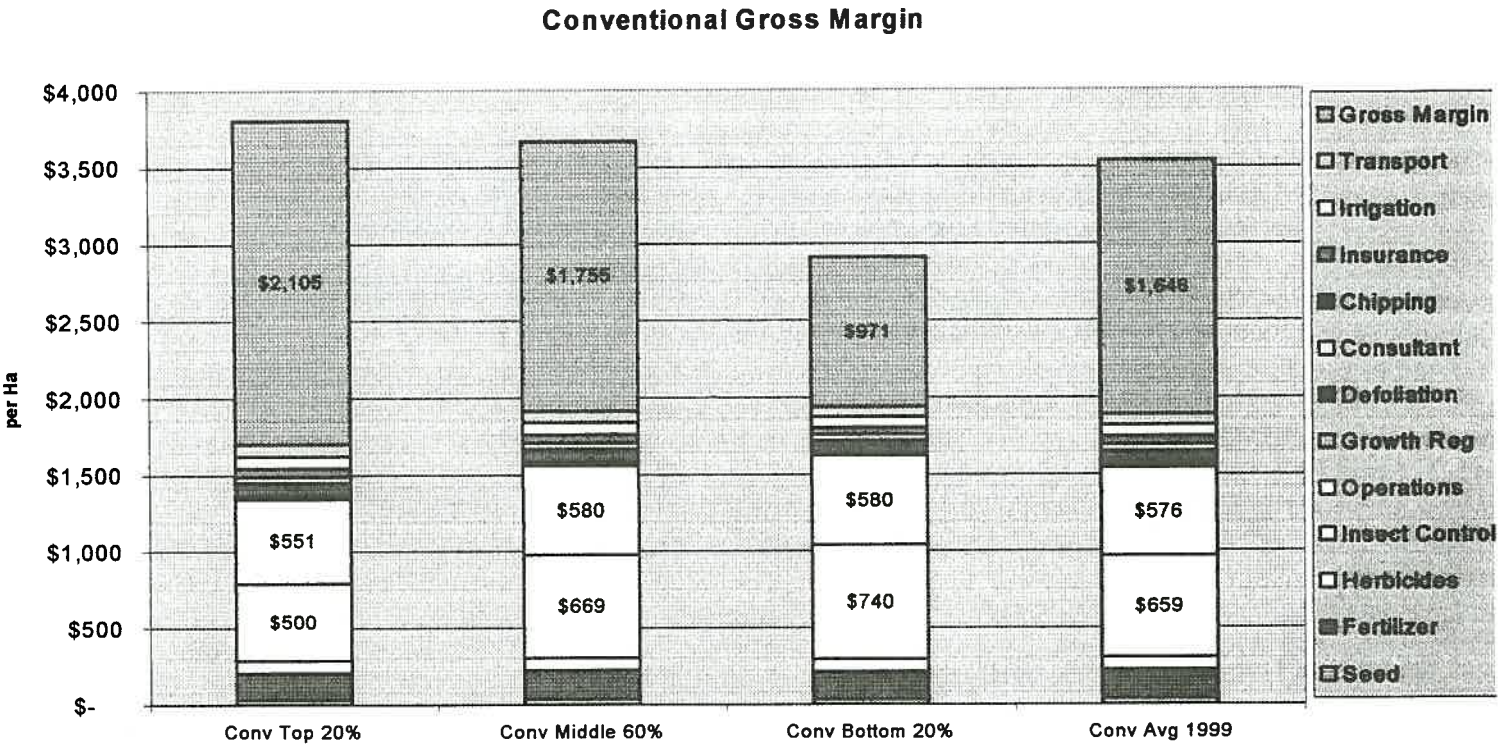
From this information some extremely interesting facts have come to light. For instance in the graph below, why are there 3 fields with the same yields having a gross margin range from $1500 to $2500/ha??



Answer: Because they had a different spray regime. Of course, the less we spray the less trouble we should have with resistance.

Another dilemma was why was one field able to average 8.1 bales/ha at a cost of $600/ha and another field averaged 8.1bales/ha at a cost of $1400/ha?? The AWM group may never be able to answer all these questions. What is coming to light is that by having this information from the AWM group and some control of what is sprayed and when it is applied maybe able to help us to be both profitable and sustainable in the years ahead.

So in answering the question how has AWM work on my farm? I would have to say it has worked well, due to my profitability as a sustainable cotton grower. But moreover it has given me a greater insight into the use of beneficials and using the softer options. AWM has probably provided me with more questions than answers but it has also given me greater resolve to answer these questions.



In closing I would like to congratulate the other members of the Boggabilla AWM for their courage, commitment and their cooperation over the past 3 years. Communication channels between neighbours and agronomists has been the foundation for our success. Being on the same wave-length ultimately benefits not only cotton growers but the wider community as a whole. This is what AWM is about, encouraging the exchange of information and rapidly speeding up the application of new technology.

BOGABILLA IRRIGATION LANDCARE GROUP
IPM PROGRAM

Background Information for Boggabilla AWM
Prepared in conjunction with agronomist Iain MacPherson

(1) BACKGROUND

The Landcare Group was formed in 1994 and consists of eight cotton farmers and Iain MacPherson. The Group covers approximately 15,000 acres of cotton production and is bordered by Goondiwindi, Boggabilla and the Newell Highway and watercourses.

The original objectives of the group was to develop buffer zones and shelter belts around the cropping area while connecting any remnant vegetation up to the water courses.

Surge areas are also being developed to minimise the chance of any pollutants entering the waterways.

This group has now developed further to set up an area wide Insect Management Plan for the 1998-1999 season.

(2) HOW IT EVOLVED

In the 1997/1998 season pest numbers were low and fruit retention levels were high. Within the Landcare Group area growers were not needing to spray at all, worms were not surviving due to beneficial activity.

This came to an abrupt halt when one farm on the upwind side applied a Pyrethroid on 15th December. Within three days all non sprayed crops lost their beneficials and required a spray for Heliothis, highlighting both the disruptive nature of Pyrethroids and the significants of even minor drift.

The following winter discussions within the Landcare Group gave birth to the area wide IPM Plan.

Greg Kauter and Iain MacPherson put together a draft proposal to the Landcare Group out lining the basis for IPM and soft options while also promoting a trial with trap cropping.

The group committed to this program for three years to give it a fair go, but we are all aware there may be changes in approach from year to year as the practicalities are realised.

AIMS

- **To reduce the reliance on chemicals**
- **To utilise and promote beneficial insects**
- **To reduce resistance selection**
- **To reduce secondary pest problems (Whitefly, Mites &Aphids)**
- **To lead by example**
- **Improve communication between growers on spray selection and drift management.**
- **To encourage the use of softer products for as long as possible.**
- **Use trap crops to help reduce Heliothis pressure.**
- **Use cultivation after all crops to control pupae.**

REQUIREMENTS

- **A commitment from growers to plant and manage trap crops.**
- **A commitment from consultants to use soft options**
- **Chemical applicators recognition of drift, and spray contamination if their application equipment is not clean.**
- **Technical assistance from researchers and CRC**
- **Possibly increased monitoring (crop, pest and beneficial)**
- **Some funding - Landcare – Sponsorship, resellers, chemical manufactures.**
- **Data collection.**
- **Careful planning of Nitrogen inputs and timing.**

METHODS

- Trap cropping - Plant 1% of the 15000 acres of cotton production on the Landcare area to trap crops, ie.-
  - **Plant** to Chick Peas in June/July.
  - **Plough** out end October.
  - **Plant** Pigeon Peas in December.
  - **Cultivate** flowering Pigeons peas every week or prior to water or rain to control pupae
  - **Apply** a program spray of virus.
  - **Plough** out if pupae start surviving

- **Insect Management**

  - Reduce early season sprays as long as possible.
  - Use only soft products early season - BT, Endosulfan, Tracer,
  - Gemstar.
  - Possibly use Temik or Gaucho to stop O.P. usage
  - Delay SP usage until really necessary.
  - Plant map weekly to ensure the crop is on track and to set thresholds
  - Ensure a late cultivation to control Pupae in crop.
  - Possibly use Food sprays to attract beneficial insects.
  - Control pupae under all crops ASAP after harvest.
  - Apply Other cultural Methods to Manage Insects :-

a) Pix - Obviously manage the crop height for an efficient plant.
A high rate of Pix in late January will help give the crop an even finish and can reduce the crops attractiveness to insects.

b) INGARD® - Is a very good base for IPM. It does reduce your reliance on chemicals and is a good nursery for predators. Position Ingard blocks upwind from conventional cotton to get the maximum benefit. Avoid any drift onto Ingard that is unsprayed.

c) Planting Date - Avoid late planting at all costs. Soybeans may be a better late crop as they build up beneficials. November is too late!!

SPRAYS PRE - XMAS

Total sprays prior to December 25th averaged across all growers in the area wide I P M Group.

CONVENTIONAL AREA	=	**3045 Ha**
Endo Based Sprays	=	2.4
Endo & Dipel	=	0.7
Dipel sprays	=	0.92
Gemstar	=	0.1
S P Sprays	=	0.5
Mirids O.P's	=	0.3
		4.92 Sprays
INGARD® AREA	=	1688 Ha
Endo Sprays	=	0.63
S.P.	=	0.36
O.P's	=	0.69
Regent	=	0.1
		1.8 Sprays

FRUIT COUNTS - "MORELLA" EXAMPLE

On the 29.12.98 the Conventional cotton (Delta Emerald) has fruit count of 30 total fruit/m, and the INGARD® cotton (V2I) had a 50 % retention at flowering.

On the10.3.99 the Conventional cotton has 130 Bolls/m with 10% open.
and the INGARD® has 135 Bolls/m with 35% open
These crops are now harvested but not ginned and have comparable yields.

The crop recovery here was extremely good and highlighted the compensatory potential that cotton has.

d) Cultivation - We have been tending to inter-row cultivate less in past years. Is this the best approach or should we be giving a late cultivation to help control pupae under the cotton?

e) Spray Hygiene - All spray equipment needs to be clean of any SP or Op residues. Failure to have clean spray rigs will significantly reduce predators' numbers. Aircraft are included here.

f) Nitrogen- Don't over apply N and avoid late applications. Over watering and high nitrogen creates a highly attractive crop to Heliothis.

- **Crop Monitoring.**

In most cases the monitoring required is already being done on INGARD® and conventional crops - **Pest** monitoring is as per normal .

- **Predator** monitoring is essential to give a more informed decision. Visual counts are still the best, but must be a discipline for crop scouts.

- **Fruit retention** will give you the best guide to how the crop is going on a weekly basis. It is also the key to setting an appropriate threshold.

- **Lepton Testing** - will not change from conventional management but should be encouraged to avoid spray failure.

OUTCOME

- Hopefully a successful crop grown with less chemical input.
- The first truly IPM large working system in the cotton industry
- Provision of hands on experience for growers and consultants in IPM.
- A showcase for the cotton industry to promote to other growers and the community.

(4) RESULTS TO DATE

Compliance - Generally there has been good compliance with the program and a lot more communication between both growers and consultants. It has been a difficult year to start a soft option program due to the complex pest pressures. Tipworms have been the highest for 15 years, Mirids were high as were Aphids and Mites. This all compounded to give extreme tip damage and minimal fruit retentions.

However, the group did minimise early season sprays as shown below.

(5) TRAP CROP RESULTS

The trap cropping program has given variable results to date, but has had some significant setbacks which have not helped.

(a) The Chick Pea area was planted very wet and did well considering the 20 inches of rain they received. All Chick Peas were sprayed once and were then destroyed to control pupae.

The Pupae sampled by the CSIRO showed they were all Armigera, which we believed must help in reducing early numbers on seedling cotton.

However, the crop did not flower for as long as required due to poor root development.

(b) The Pigeon Peas had major germination problems with all seed only giving 20 % germination counts.

After numerous replants all but two blocks made a stand and were flowering in February. Two fields ended up planted to Koala Dolichos and didn't flower till March.

The Peas that had soil applied Nitrogen appeared to be giving the best results but as the season finished off we found the trap crops had better drawing power. From this seasons results it would appear that the trap crops cannot compete with cotton that have plenty of nitrogen and are still flowering, but as the cotton finishes off we can draw a lot of resistant moths into the trap hence being a useful tool in resistance management.

(6) WHY IT WORKS

The soft option approach and area wide management is critical to reduce the insecticide use. It is working in the Boggabilla Landcare Group for two reasons.

(1) The growers are driving it! By accepting lower fruit retention and higher tip damage they are taking the pressure off the agronomist to produce perfect plants and hence reducing sprays.

(2) Communication between consultants has increased considerably. This has helped in product selection, drift reduction and a reassurance your on the right track.

ACKNOWLEDGEMENTS

Thanks goes to Rhone -Poulenc, North West Seeds, Total Ag Services and Seed & Grain for giving financial support to the group to help cover the costs involved in the trap crop program.
Also Gary Fitt, Colin Tann and Martin Dillon for their help with pupae sampling.