

## REDUCING PESTICIDE COSTS

W.J.Watson, Kilmarnock, Boggabri, N.S.W.

Reducing the costs of pest management may be looked at in two ways. These are the actual reduction of chemical costs which must be balanced against the need to maintain or enhance yield. Any discussion of cost saving must admit that it is the gross margin we are seeking to hold or increase. This may not actually decrease chemical costs but it aims to improve profit. In my own shorter season area, the upper Namoi, I don't think we should consider reducing the number of sprays, except with Siokra. There appears to be potential to leave out one or two early sprays in the main cotton areas, and even increase yield.

## REDUCING INPUTS

A grower's ability to reduce costs will involve a physical reduction in use or price. It will also involve changed agronomic practices to achieve the same result. In this section I want to discuss the first option;

1. As growers, we must ask ourselves are we getting the best deal available, the biggest discount and the cheapest credit. Have we considered group purchase of chemicals or even the joint ownership of a top spray rig.

2. The use of cheaper chemicals must be considered. The hazards of the overuse of one particular chemical and the dangers of resistance have been detailed by Forrester (1985). Growers will obviously use the cheapest chemical. The entomologists at this conference should give us the 'least cost' changes, to the pyrethroid and endosulfan strategy, that will contain the development of resistance.

Is it time for Siratac to consider the cost of chemicals in its recommendations?

3. Ground-rigging, and especially banding, can reduce pesticide costs. The saving in chemical is obvious. It can be convenient to combine spraying with another operation. However there are two limitations. One is that Siratac estimates that forty percent of ground-rigging is ineffective. The other is the increase in yield obtained with some early insect damage. As most ground spraying is done in this early period, it is quite likely that a lot of chemical has been wasted in the past. Equipment and management will both have to be improved to make savings.

Spraying equipment can be upgraded in consultation with suppliers and chemical companies and their many excellent publications, e.g., Watt (1971). Western Australian experience should be called on in selection of equipment, for example, the Kondinin Farmers Group. Cotton growers could benefit by organising local research.

Aerial spraying technology is well documented, e.g. Watt (1980). There are still instances of failures, although

most can be traced to "human error". Growers should be wary of boom sprays on aircraft for pesticide application as droplet size is too variable resulting in lack of entry into the crop. Evenness of spray application by an aircraft is only achieved with a constant cross wind. Any action that improves chemical effectiveness and residual activity can help to spread the spray interval.

#### MANAGEMENT CHANGES

In changing agronomic practice to reduce pesticide cost there is a danger that yield potential will be reduced. It is now accepted that yield will probably be increased with a certain level of early damage although maturity may be delayed. World and local experimental data has been summarised by Brook (1984) at the last Cotton Conference. With personal losses of up to \$200/ha in one year in three with rain affected grades, the saving of \$25/ha by forgoing one or two early sprays is not warranted. It appears that the risk of delaying maturity in the the more marginal areas, such as the upper Namoi, may outweigh the advantage of possible higher yield.

The egg pressure at Boggabri is compared with the Namoi average in Graph 1. As the egg pressure is so high, (previous years have seemed to be as bad), I feel that it is a considerable risk to reduce early spraying. Without sufficient long term data we have to assume that upper Namoi Day Degrees vary between Myall Vale and Gunnedah figures. It will thus be less than the Namoi average and cotton will take longer to mature. Management in this area is aimed at preventing checks to the growth of the plant.

1. Use of Orthene treated seed. The cost of treatment per hectare is given in Graph 2. Cost savings can be calculated by reading up from the known cost of treated seed and comparing with estimated cost of one or two Dimethoate sprays.

2. Early tip feeders, such as tip worm, have been a problem in the past (1983\4) and grade losses because of late maturity have occurred. A delay in crop maturity means that the crop is still susceptible to insect attack in Stage 3 of the Control Strategy against Heliothis Species. A number of the experiments summerized by Brook (1984) suffered late insect damage when maturity was delayed and this has also happened in my own case. The cost of insect control in Stage 3 is considerably greater than in Stage 1 or 2. Table 1.

3. Experiments in the Namoi region (Brook and Hearn, 1984) have shown an increase in yield after simulated and actual insect damage. A delay in maturity occurred in some cases. Recent work indicates that the maturity of Siokra may not be delayed after early insect damage. Graph 3 shows recovery in square production after hail. Graph 4 shows delay in square production in DP 90 after the same hailstorm. Both crops were at Boggabri.

The 1986 CSD variety trials (CSD 1986) show that Siokra yielded approximately 2.5 bales\ha more than DP 90 at Narrabri, Breeza and Boggabri, and about 1 bale more at Condamine Plain. Given the ability of Siokra to compensate for early square loss at Boggabri, a small area of Siokra with a reduced number of early sprays should be tried in our area. Normal spraying practice should be used for the main crop. DP 90 does not appear to compensate for early square damage in the upper Namoi.

#### COST SAVINGS

The use of Orthene treated seed to reduce spraying costs for thrips will be a benefit in most situations where thrip spraying is carried out. It can be used to reduce chances of checks to crop growth in short season areas.

A saving of two early season sprays could amount to a minimum of \$18\ha, assuming endosulfan at a fifty percent band and \$5\ha cost of application. A yield increase of .25 bale\ha is possible looking at experimental results. Checking of these results on an individual basis is difficult and counting of modules in different fields is not sufficient. This is probably the time to put consultants to the test.

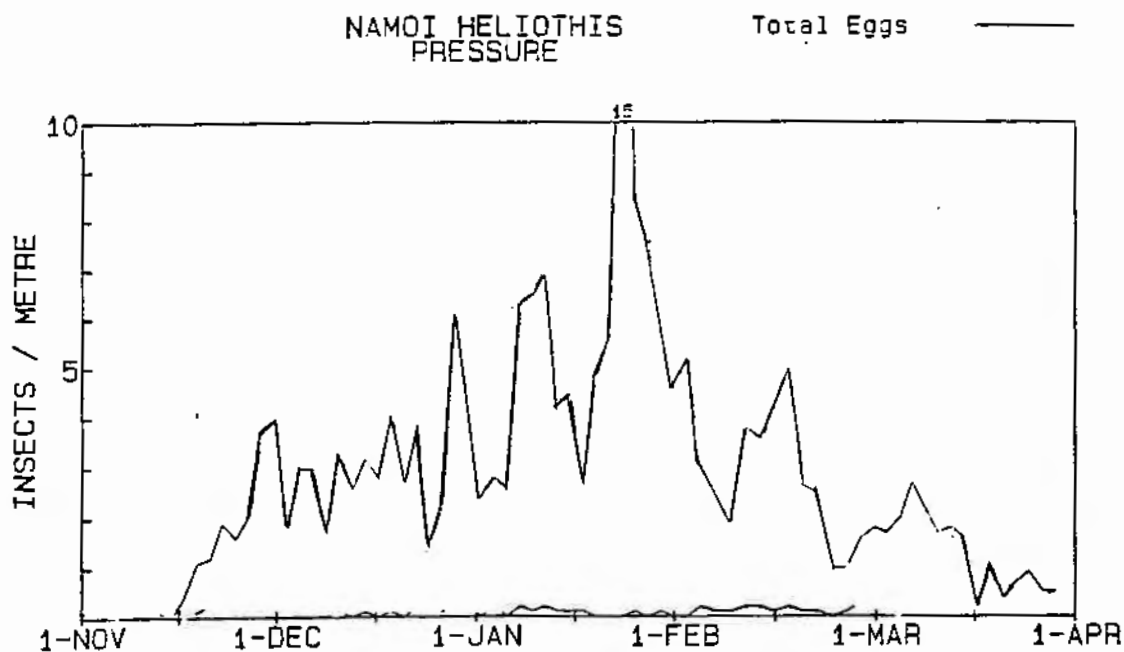
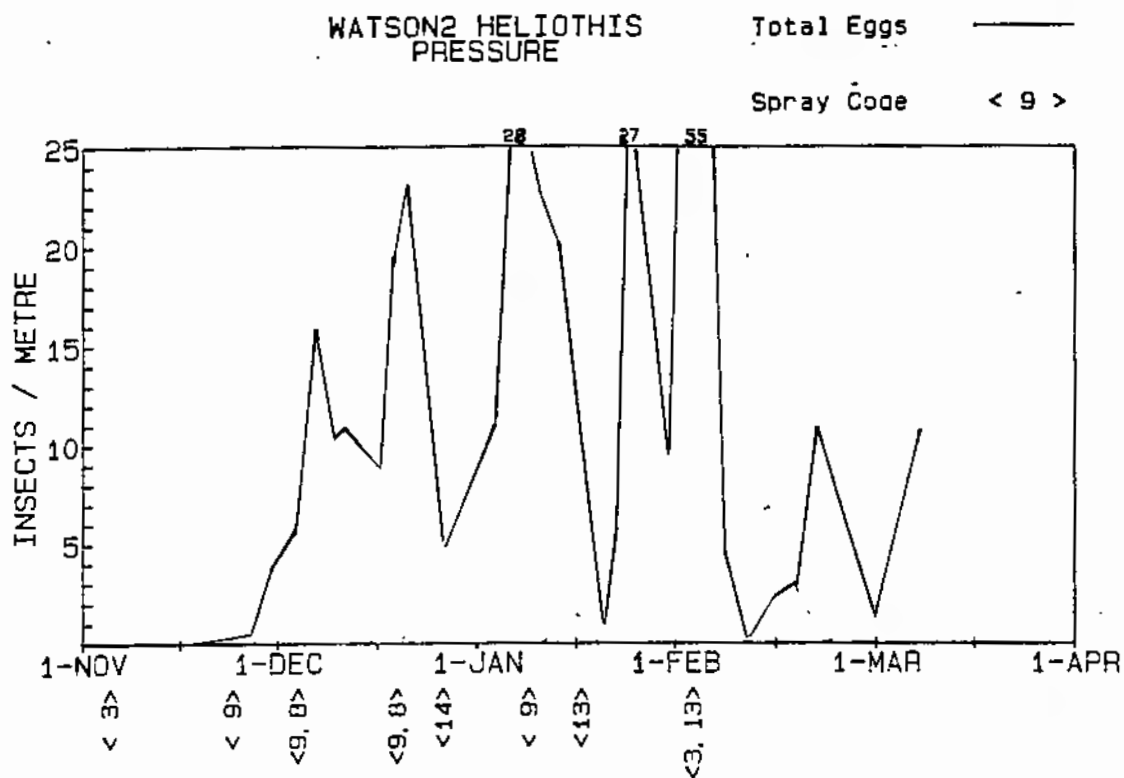
#### x CONCLUSION

The most important question now is how to be confident that yield is not being sacrificed if early spraying is reduced. Confidence can be gained by spending more money on checking. This extra expense will, I feel, result in a greater profit and a greater knowledge of what is happening in the cotton field.

#### REFERENCES

- Brook, K. D., 1984. Review of the Effects of Damage on the Cotton Plant, Australian Cotton Growers Research Conference, Toowoomba, pp.228-237.
- Brook, K. D., and Hearn, A. B., 1984, A Comparison of Different Siratac Systems of Pest Management - Initial Results. Australian Cotton Growers Research Conference, Toowoomba, pp. 167-177.
- CSD, 1986, Variety Yield Trials, Cotton Seed Distributors Ltd.
- Forrester, N. W., 1985, Pyrethroid Insecticide Resistance, Cotton Pesticides Guide, pp.16-17, Department of Agriculture, N. S. W.
- Watt, J. W., 1971, Guide for Bayer Representatives on Spraying Equipment, Bayer Australia Ltd.
- Watt J. W., 1980, Aerial Application of Insecticides-Cranfield.
- Trouble Shooting in Australia, Bayer Australia Ltd.

GRAPH 1



GRAPH 2  
Cost of Orthene Seed Treatment versus Dimethoate Spray

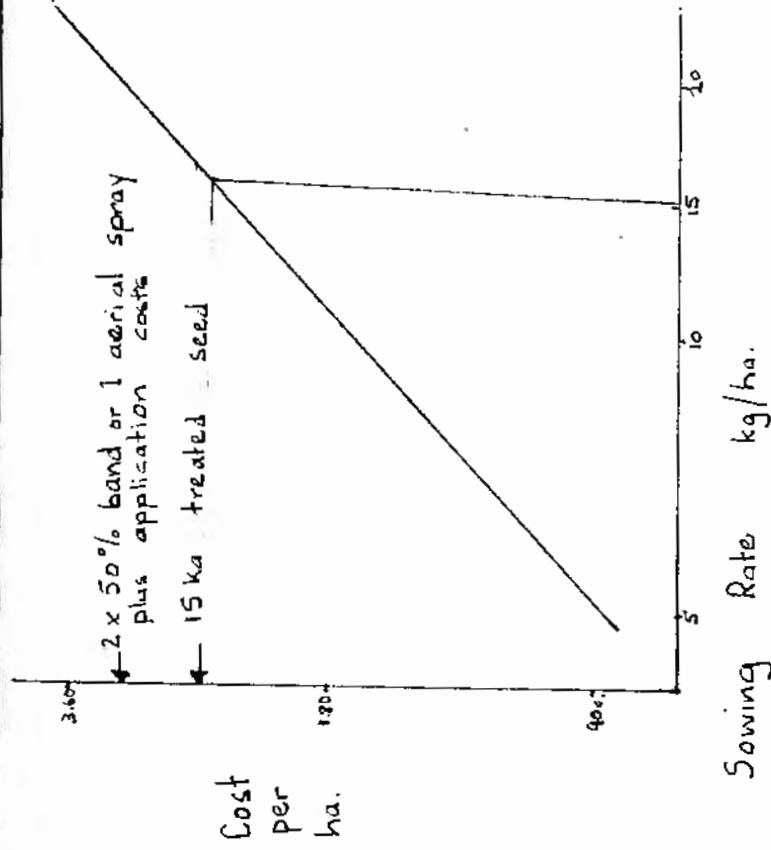


TABLE 1

Common Pesticide Costs

Dollars per ha. Chemical Only

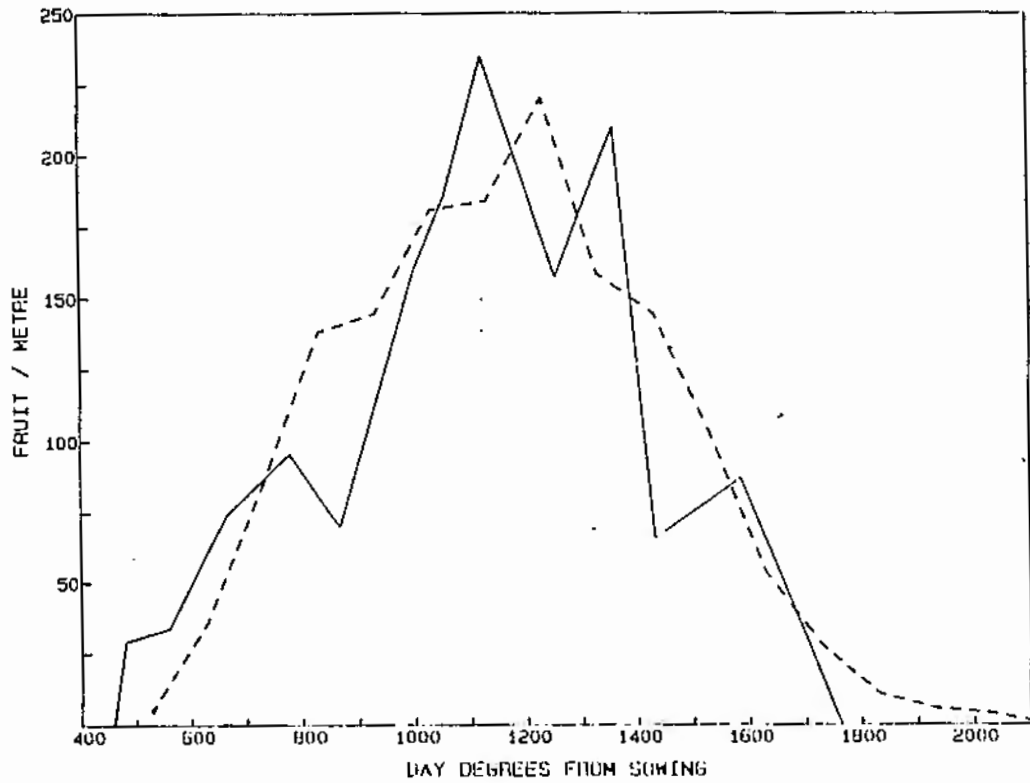
|         | Pesticide      | Cost/ha. | Av. |
|---------|----------------|----------|-----|
| Stage 1 | Endosulfan     | 12       | 12. |
|         | Chlordimeform  | 9        |     |
|         | Endo/ Methomyl | 16       |     |
| Stage 2 | Pyrethroid     | 16       | 16  |
|         | Endosulfan     | 12       |     |
|         | Endo/ Chl'd.   | 21       |     |
| Stage 3 | Curacrom       | 30       | 31  |
|         | Larvin         | 35       |     |
|         | Helithion      | 28       |     |

WATSON3 GRAPH 3

FRUIT COMPARISON

Counts for this M.U-SIOKRA  
 ——— Squares

Average for NAMOI-SIOKRA  
 - - - - Squares



GRAPH 4

WATSON1

FRUIT COMPARISON

Counts for this M.U-DP90  
 ——— Squares

Average for NAMOI-DP90  
 - - - - Squares

