Building IPM capacity for Soybean Break Crops in the Bundaberg/Isis Regions of Coastal Queensland

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Abstract

In early 2006, Women in Sugar organised two IPM workshops at Bundaberg and Childers. We took this IPM initiative to improve the profitability and sustainability of our cane farming system, by maximising the productivity of our soybean break crops. IPM training was identified as a priority as insect damage and poor pest management were seen as threats to break crop productivity. The group recognised that it needed to upgrade its insect management skills, and saw IPM training as an opportunity to address another major IPM problem, namely ‘a shortage of local labour to implement IPM’. In essence we wanted to differentiate between the good and the bad bugs and to better manage the latter in our soybeans with a minimum of pesticides. The IPM workshops have greatly boosted our confidence in all aspects of farm management in general, and in pest management in particular. A measure of the course’s success has been the greatly improved soybean seed quality in the 2005/06 crop, with the majority of crops meeting ‘edible’ standards. The workshops would not have been possible without project funding secured from SRDC by Angela Williams (Sugar Executive Officer, Wide Bay Consultative Committee), the provision of workshop venues by Cane Growers, and the technical expertise of DPI&F and BSES scientists, as well as the enthusiastic participation of our members.

Introduction – Coral/Jenny

Women in Sugar took this Integrated Pest Management (IPM) initiative to improve the profitability and sustainability of our sugar farming system, by maximising the productivity of our soybean break crops. We wanted to maximise not only soybean’s rotational benefits, but also to maximise the cash returns from their harvested grain, in order to make all our extra effort worth while. Our interest in IPM was heightened by a SRDC-funded IPM study trip to the Cotton Cooperative Research Centre at Narrabri, NSW.

Many farmers in our vicinity were growing soybeans but simply “flying by the seat of their pants”, spraying when they believed it necessary but not really basing this practice on any solid evidence. IPM training was therefore identified as a priority as insect damage and poor pest management were seen as threats to break crop productivity. We recognised we needed to upgrade our insect management skills.
We also saw IPM training as an opportunity to address another major farm management problem, namely the shortage of local labour to implement and champion IPM. As farming enterprises lose employees, the workload on family members becomes more intense and therefore more and more women are taking up the challenge of taking on farm work and filling the void created by workers moving into these other industries.

In essence our IPM objectives were to better understand the crop, to differentiate between the good bugs and the bad bugs and between cosmetic and serious damage, and to manage our pests with a minimum of toxic pesticides, and (importantly), with a minimum of cost, while at the same time maximising crop returns.

**Strategy/Methods – Coral/Jenny**

Women in Sugar determined that the best method of gaining practical knowledge of IPM practices was to run two workshops in both the Bundaberg and Isis districts using soybean break crops as a case study. The aim of these courses was to build the IPM skills of 50 industry personnel (with at least 25 women) in our region. The knowledge gained would be extended to other cane growers through productivity groups and communication opportunities.

After planning meetings with DPI&F scientists Hugh Brier, Austin McLennan and Andrew Dougall, the course format agreed on followed that used for the successful ‘Accredited Mungbean Agronomist’ courses developed by DPI&F. Each course was broken up into two sections. The one-day theory component addressed such topics as basic soybean agronomy, common pests in coastal break crops, insect identification, monitoring and thresholds, plus chemical intervention options. The second component consisted of two half-day field courses, the first immediately after the theory, the 2nd field course one month later. To ensure a broad farming systems perspective, the courses discussed pests common to soybeans and horticultural pests (input from Ian Kay, DPI&F), and cane grub management in break crops (Keith Chandler, BSES). Hugh Brier, Austin McLennan and Andrew Dougall,

Funding for the workshops (course preparation, course materials, catering, transport etc) was secured from SRDC, with invaluable assistance from Angela Williams (Sugar Executive Officer, Bundaberg) who wrote the workshop project proposal. Course venues and insurance were provided by CANEGROWERS at Bundaberg and Isis.

**The Courses – from a Participant’s Perspective - Jenny**

The theory component of the course was intense with a huge amount of information being presented to a group with varying amounts of prior knowledge. While extremely informative, the course material was heavy to absorb in such a short time. However the
course ‘heaviness’ was offset by the light-hearted and extensively illustrated delivery by the DPI&F presenters (the bug busters). Participants were provided with a comprehensive (85-page) ‘Pulse Break Crop IPM Reference Manual’, and the lectures were broken up with exercises and group discussions. The practical component, which followed later, was extremely beneficial and allowed us to put the theory into practice, including sampling with a beat sheet, and identifying key pest and beneficial insects. Everything fell into place so to speak.

Specific aspects and messages of the course that ‘stood out’ included the differences between immature and adult insects, similarities between many pest and beneficial insects, soybean’s tolerance to pest attack during the earlier stages of crop development, the importance of thorough insect sampling with beat sheets, the risk of creating pest problems with ‘hard’ non-selective pesticides, and the value of pest thresholds in rationalising pesticide use and costs. In the field we were able to match the insects we saw under our magnifying glasses, with the images in our manual, and felt more confident in making management decisions based on our bug counts, the crop stage, and the risk of damage or lack thereof.

Pre and Post Course Evaluation Results - Angela

Pre and post course evaluation surveys were used to measure a change in knowledge of workshop participants in IPM practices and determine if the workshop program delivered the projected outcomes of the project. Specialist presenters were also surveyed post course to determine the effectiveness of the project.

Forty-five people, predominately growers, participated in the workshop program (59% from Isis, 41% from Bundaberg). Pre-evaluation surveys indicate that 46% viewed themselves as unprepared to manage insects, 32% with average or moderate preparedness and only 22% were well prepared. This indicated a training need or gap, which this short course attempted to fill. Post survey results showed 94% of respondents indicating a moderate to large improvement in managing insects since the pre-course assessment.

The post evaluation showed that 75% of respondents thought that the IPM course helped them a great deal and a further 19% indicating a moderate improvement in managing insects in their break crop. All respondents indicated they had referenced their IPM manuals, the most referenced sections being insect identification and biology (75%) and pest thresholds (56%).

Specific areas where ongoing assistance is required (as indicated by >50% of respondents) include; insecticides (types and timing of – 69%), pest and beneficial insect identification (63%), and pulse break crop agronomy (53%).

Post Course Outcomes and Observations - Sandra
It has become widely recognised in the Isis and Bundaberg districts that women are now much more actively involved in farming enterprises. Many of the participants from the IPM workshops have gone on to utilise and incorporate their newly acquired knowledge of pest management into their farming practices. Many who have not, or do not currently grow soybeans, are transferring their knowledge of pest management to other break crops such as industrial hemp and peanuts, and also into general small crop production. Some are practicing their skills by bug checking on other people’s farms. Others, whilst not growing soybeans at the time of the IPM course, have subsequently entered the soybean market for the first time this year, undoubtedly encouraged by their newly acquired knowledge.

We are all now more aware that pests such as whitefly that can be transferred from one crop to another. This is a major concern with the much higher incidence of small crops in the district since the diversification push. We are also better able to differentiate between major damage, e.g. by heliothis, and cosmetic damage, e.g. by legume webspinner, which in most crops, has little impact on the actual bean crop yields.

Even busy farmers, who previously did not closely monitor their soybean crops in the past, are recognising the importance of monitoring and are incorporating “a quick look at the soys” into their irrigation schedules. Overall, participants who were involved in the IPM course have embraced the importance of effective and responsible farming practices in relation to the successful production of rotational break crops.

And to demonstrate the acceptance of this practice, some of the participants from the course have been approached by industry bodies to be a part of a consultancy service for growers who do not have the time to monitor their own crops. This has been a great step forward, as in previous years many farmers expressed concern that they did not know when or how often they needed to spray to maintain a healthy crop. Often crops were sprayed two or three times simply because “the bloke next door was spraying”.

With trained people in the district the occurrence of such pests as heliothis, and GVB are being monitored and dealt with before they become a serious threat to soybean crops. As well, the widespread use of biopesticides in pre-podding crops against caterpillar pests, and the use of softer pesticides at podding, are conserving our beneficial insects, and have undoubtedly helped stabilise silverleaf whitefly, mites and soybean aphids in our region. This in turn is contributing to an increase in yield and higher quality crop coming from the district, thus increasing our profitability. In 2006, over 70% of soybeans in our region made culinary/edible soybean grade, a vast improvement from previous years.

Overall our district has now built a network of regional expertise that continues to grow as knowledge of IPM spreads throughout the Bundaberg / Isis community.

Conclusions and Future Directions - Dianne
Environmental issues are impacting on all farming practices. Outside political pressure and changing demographics in our region have encouraged farmers to embrace changes, including the adoption of legume (pulse) break crops, and softer more sustainable pest management practices for these crops. We believe that the IPM skills we have acquired as a result of the IPM courses are helping with this change.

Today we farmers are increasingly accountable for our micro environment and for sprays and water runoff that impacts negatively on the macro environment, e.g. the reef. It is important that one farmer’s practices do not interfere with neighbouring farming systems or with lifestyle dwellers. IPM is a way on ensuring that harmful effects are minimised.

A major measure of IPM’s adoption in our region has been the increased use of biopesticides which are safe for humans and only target the pests. Biopesticides don’t upset the delicate balance of nature, and while sometimes they only kill 60 to 70 percent of pests (we often have much higher kills), they leave the many predators in our crops to kill the pest survivors.

As mentioned previously, we now realize that through frequent monitoring and the correct identification of pests, excessive spraying can be reduced, thus cutting costs and boosting profits. Bug monitoring teams have been established in the Isis district to service local growers and raise awareness of importance of good bug management practices. We are anticipating that similar schemes will follow in the Bundaberg area. Lastly, improved pest management has resulted in greatly improved soybean seed quality in the 2005/06 crop, with the majority of crops meeting ‘edible’ standards.

Soy beans has been the major focus of this conference, but with farming women monitoring our crops, we believe successful IPM monitoring is being extended to other legumes including navy beans and peanuts plus industrial hemp and the numerous small and tree crops in this region. This is important, for as we have learnt at the courses, many pests attack a range of crops and successful IPM requires a multi-crop area wide approach.

Finally, it is important the IPM and break crop initiatives taken in our region are ongoing, to help ensure that future generations can inherit farms with healthy soils and crops that are protected from pests by natural enemies. It is hoped that updated IPM courses will be held in the future. The IPM workshops have generally boosted women’s confidence in aspects of farm management and in pest management in particular.

So look out for women in the field beating those beat sheets and with magnifying glasses in hand. Women can challenge the economic thresholds and decide if it is necessary to spray as a result of hot spots or ascertain that the ladybirds will counteract the baddies. Bugs Rule!

Acknowledgements
Women in Sugar acknowledges the invaluable work by Angela Williams (Sugar Executive Officer, WBBACC Bundaberg) in securing SRDC funding, SRDC for providing that funding, Cane Growers at Bundaberg and Isis for providing venues, insurance cover, and funding administration, and lastly to the following scientists who wrote the IPM reference manual and who presented so enthusiastically at the IPM courses; Hugh Brier, Austin McLennan, Andrew Dougall and Iain Kay (DPI&F), and Keith Chandler (BSES). We would also like to thank Judy Plath (CANEGROWERS Isis) and Matt Leighton (CANE GROWERS Bundaberg) for their assistance at the IPM workshops, and for their invaluable post-course IPM support. Lastly, special mention is due to Geoff and Maureen McCarthy for their IPM enthusiasm and initiative, particularly in the reformatting of extension material to better suit growers’ needs.