CHANGE IN FARMER PRACTICES FOLLOWING SPRAY APPLICATION FIELD DAYS

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Summary. Field days are an important part of the diffusion of new ideas and technology. Frequently the benefit from the field day is gauged by an evaluation sheet completed by participants. The long term benefit of the field day is more difficult to judge. The Agriculture Protection Board of W.A. (APB) organises annual field days that combine a basic theory of spray application with commercial innovation. To place a value on the field day two surveys were established, the first immediately following the event and the second more than 2 years later. The results of the two surveys are discussed.

INTRODUCTION

The general acceptance of chemicals for weed control in Western Australia is a relatively recent development. In 1968 only 100,000 ha (approx.) were sprayed with ground sprayers (612,000 ha from the air) Moore (1). The need for equipment to apply the chemicals prompted the development of a wide variety of applicators. In Western Australia this included a ground drive boomspray. A survey by Newman (2) reported 67% of wheatbelt farmers owned and operated ground drive boomsprays. The simplicity of the machines which did not need calibration by conventional methods or require specialist knowledge of application technology is believed to be the reason for their rapid adoption in the market place.

The same survey showed farmers had a poor understanding of the need for regular overhaul of important components on spraying equipment. This may be in part a legacy of using a simple boomspray which did not require technical knowledge to operate.

Field days are held by the APB in February-March each year to demonstrate the finer points of calibration and chemical application to hard to reach farmers. The field day is organised and promoted by the local APB District Officer. The author has conducted more than 30 field days since 1984. The field day is held on a farmers property using boomsprays in current use and any condition to demonstrate how any equipment can be put into good working order by efficient checking and a regular parts replacement/repair policy.

In addition there are discussions on improved operational efficiency followed by a display and demonstration of new equipment which can be added to a boomspray. This equipment is loaned by manufacturers and distributors in the metropolitan area. To maintain impartiality manufacturers and distributors of all boomsprays and spraying equipment are invited to loan equipment for display.

In Western Australia manufacturers and distributors are centralised in Perth with country agents for client contact and advertising purposes. The APB field days are another form of advertising and promotion of new technology. Field day organisers and presenters provide an important link between city based commercial organisations and farmer clients, a form of personal contact considered highly important in accomplishing change by Rogers (3).

In work done by Simmons (4) it was found farmers had the following order of preference when seeking information on the best machine for the job.

Rank Order	Source	Median
1.	Your own judgement and experience	1.16
2.	Other farmers	2.23
3.	Machinery field days	2.75
4.	Machinery firms and agents	2.86
5.	Farm magazines, newspapers	3.00
6.	Contractors	3.13
7.	Royal show	3.57
8.	Local demonstrations	3.80
9.	Local shows	8.25
10.	Government advisory officers	10.87
11.	Advertising leaflets	10.90
12.	Radio, TV	

Simmons suggested this order would change as equipment became more sophisticated.

Field Day Planning and Evaluation. All farm service groups whether Government, commercial or farmer education organisations hold information days to promote their endeavours or special interest. At certain times of the year, particularly between "seasons", field days proliferate to the point where farmers face a difficult choice when these events coincide. It could almost be described as information overload. Similarly organisers of these events have a difficult choice deciding the timing, the venue, and how to attract the target audience. After the event there should be an evaluation of the proceedings to determine the degree of success in reaching the projected goal.

Questions to be asked are:-

1. What was the value of the day, did the participants take home the message?

2. How much of the information that has been transferred will achieve the desired change?

3. What was the success of the various advertising methods used?

4. What type of farmer attends the field days?

5. What are the sources of information used by the participants and what is the confidence in the source.

In addition Chamala and Keith (5) posed an important question in their paper on the adoption of new weed control technology which can be equally applied to the adoption of better chemical application techniques: Who would work with small and hard to reach farmers who use inappropriate weed control (chemical application) technology?

For commercial organisations the measure of success is demonstrated by an improving sales record. For government and farm education groups the measure of success is less tangible and it may be some years before a change in attitude or adoption of a technique becomes apparent.

METHODS

In an attempt to answer these questions, the extension group of the APB established a long term survey to discover if there had been a change of technique or attitude toward chemical application with boomsprays following field days.

Two surveys were conducted, the first immediately after the APB field day and the second at least 2 years later to assess change. In 1986/87 all participants at 4 field days were asked to complete a questionnaire, to provide the base data on attitudes, technique, information sources and the value placed on those sources.

Forty six of the participants at the field days held in the southern agricultural area completed the questionnaire. This was 82% of the total attendance. Forty one indicated they could be contacted in 2 years for a follow up survey to assess change.

The second survey was conducted in 1990 by telephone by an APB District Officer not connected to the field day programme. 33 of the original group of farmers who attended the field day were able to be contacted.

RESULTS AND DISCUSSION

Field day presentation. The first question of value to the organisers is "Where did the participants hear about the field day ?". 53% of respondents indicated they heard of the field day from the APB officer. 24% heard from a neighbour or other farmer. 20% read about it in the newspaper. 13% heard a radio announcement. 7% from other sources. The results show success in attracting farmers is due to the effort expended in communicating personally with prospective participants. This supports a generalisation made by Rogers (3), that change agent success is positively related to the extent of change agent effort in contacting clients.

Type of farmer. The farmers attending the field day appeared to be drawn from a wide range of socio-economic groups. Property sizes ranged from 550ha to 6300 ha with an average of 2650 ha. These farmers cropped between 100 and 2600 ha with an average of 898 ha or about 34% of the property size. 82% of the cropped area was sprayed once and 58% twice.

From the first survey 7% of respondents attended any type of field day monthly, 18% quarterly, 33% bi-annually, and 2% annually, 40% occasionally, and 16% did not usually attend field days. The results suggest farmers attending APB field days do not attend events regularly. 58% attended annually or less, supporting one objective of the field days to service hard to reach farmers.

A further indication the audience used mainly local field days was revealed by the fact that 51% attended only local field days. 29% also traveled to other districts while 4% included the metropolitan area to take part in farmer interest events.

Reasons for attending. Participants indicated their reasons for attending and scored the reasons on a scale of 1-5, with 5 for the most important reasons. The majority regarded learning of new developments as being of most importance with an average score of 3.81. Improving knowledge of spraying operations scored 3.77 and improving equipment efficiency 3.69. Some attending considered the day a social event and scored 2.14 for meeting with friends. Other unspecified reasons scored 2.

Specific problems indicated by participants as reason for attending were:- Need for greater accuracy in application rates 22%. Nozzles with better wear characteristics 22%. Greater boom stability 12%. Stronger equipment frame 17%. Improved pump 12%. These perceived

shortcomings had led to the following actions by participants before attending the field day. 27% had replaced nozzles with improved types, 20% had changed or added a gauge. 12% had changed the pump for a better model, 12% had added a spray monitor. From this information it appears the objective of learning of new developments as stated by the majority of respondents stems from dissatisfaction with existing equipment.

Modifications planned by respondents. After the first field day respondents indicated they planned to take the following action. 45% would change their field operations to achieve greater efficiency. 62% would change their calibration methods. 62% would change the nozzles to reduce wear. 40% would check the pump on the sprayer. 29% indicated they would modify the liquid pressure.

SECOND SURVEY

73% had not attended a chemical application field day since the APB event. The remaining 27% had attended a spray field day run by private consultants (15.5%), chemical companies (6.5%) and local merchandisers (6%).

This appears to provide further evidence that hard to reach farmers are attending APB field days. Data from the two surveys produced the following comparisons. The respondents were asked first to evaluate the field day in terms of usefulness to their spraying operation. On a scale of 1 to 5 the average score was 3.6. This falls between quite useful to very useful.

Comparison of stated to actual changes. 85% of respondents indicated they had changed or modified some part of their operation. 18% had purchased more sophisticated boomsprays, some with electronic monitors and controllers.

At the field day 62% of farmers indicated they would upgrade nozzles to a better type, but in the second survey 34% had changed nozzles. 67% indicated they would alter their calibration techniques in practice 16% had changed.

6% had changed the pump but none had altered liquid pressure. In the initial survey 40% and 29% respectively had indicated they would change these aspects. 28% had upgraded their existing boomspray.

In the initial questionnaire 45% indicated they would change or modify their field operations. In practice 33% were now achieving faster turnround time, 30% indicated less down time with blockages by using improved filtration and 42% had increased the amount of chemical applied to the target at the optimum time.

Less measurable but important achievements from the growers point of view was better weed control (39%) and more efficient use of chemical (51%).

Calibration. In the first questionnaire 50% of respondents indicated they calibrated their boomsprays. In the second questionnaire this had risen to 96%. When asked to indicate a level of confidence in the calibration the results from both surveys are listed in Table 1.

Table 1. Calibration confidence levels.

	1st Survey	2nd Survey
Highly confident	48%	50%
Moderately confident	39%	43%
Not confident	9%	6%

From the figures alone it could be assumed little had been learnt from calibration. However what must be taken into account is the increase in the number of farmers who now calibrate. When a comparison of the two survey forms is applied to individual respondents it is found

there has been a 50% increase to highly confident and a 71% increase to moderate confidence in their calibration exercise.

Information sources. Value placed on sources is shown in Table 2.

Table 2. Information source for equipment modification and confidence rating.

	Use patterns %		Confidence rating (score 1-5)	
	1st Survey	2nd Survey	1st Survey	2nd Survey
Govt. organisation	20	51	3.44 (3)[a]	4.4 (2)[a]
Private consultants	26	33	3.83 (1)	4.5 (1)
Fellow farmers	26	33	3.5 (2)	3.5 (5)
Manufacturers	22	24	2.1 (6)	3.1 (6)
Commercial organis.	20	21	3.1 (4)	2.8 (7)
Press	22	21	3.1 (4)	2.7 (8)
Farm improvement groups		12	2.25 (5)	4.2 (3)
Own experience				3.7 (4)

[a] Numbers in brackets are rankings.

In the initial survey the respondents indicated they used all available information sources fairly evenly. In the second survey use patterns show a preference for government, private and farmer advice. There is also an increased confidence rating for government and private consultants followed by a large increase for farm improvement groups. This would appear to demonstrate a preference for advice that is impartial, giving information from an informed standpoint rather than a company sales pitch.

The rise in the use of government sources shown by the second survey is due in part to the field day. Personal experience and reports from District Officers showed increased farmer contact for advice on spray application and equipment. Although only 12% used farm improvement groups they were given a high credibility rating.

Farmer preference for advice on chemicals and their application is shown in Table 3. A comparison shows a fall in the use patterns for all sources and a rise in the confidence rating of the most frequently used advice source.

Table 3. Information source for chemical application and confidence rating.

	Use patterns %		Confidence rating (score 1-5)	
	1st Survey	2nd Survey	1st Survey	2nd Survey
Govt. organisations	82	64	3.7	4.3
Private consultants	60	48	3.7	4.7
Fellow farmers	69	37	3.6	3.5
Manufacturers	56	47	3.0	4.0
Farm improvement groups	29	3	2.4	4.0
Own experience	13	3		4.0

The lower use of all sources and rise in confidence of the information received would seem to indicate there is less "shopping around" for information.

CONCLUSION

The surveys have shown that 85% of the participants at the field day responded to information received by modifying some part of their spraying equipment or application methods. This suggests this type of field day is effective in changing farmer spraying practices.

The high value placed on the field days by farmers indicate that the APB has achieved a link with commercial sources of technology without loss of credibility in the eyes of farmers. The small and hard to reach farmers who use inappropriate technology are best served through individual contact by a network of change agents acting as links to provide a local source of reference. Such a network exists within the APB.

The figures from the second survey show a change in ranking, confirming Simmons (4) suggestion that given the increasing technical innovation and new equipment available, sources such as fellow farmer and own experience are inappropriate for decision making.

ACKNOWLEDGEMENT

The author thanks B.L. Uren for assistance in the preparation of this document.

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