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A case study of group learning — Pasture cockchafer at Pine Creek Valley

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In this paper we present a case history of group learning, following initial involvement steps. We have outlined some of our experiences in this regard in a previous paper (Blencowe *et al.* 1974). This case is noted because we believe that it highlights a number of important principles in structuring group learning processes.

The group concerned consisted of dairy farmers at Pine Creek Valley who had been helped to identify a common farming problem and had committed themselves to a learning programme. The nature of the group and the preliminary involvement steps are described by Potter and Blencowe (1976). The problem identified was damage to pastures caused by larvae of pasture cockchafer (*Aphodius tasmaniae*, Hope). The specific request was for more information on the life cycle and control of cockchafer.

In developing a programme to meet this stated need we followed the steps of Pesson's (1966) programme planning model.

Situation analysis

A farm survey was carried out early in 1972 by an extension specialist and an entomologist to:

1. Determine whether damage by pasture cockchafer larvae was occurring and to assess its seriousness.
2. Gain an understanding of the farm context in which the problem was occurring.
3. Diagnose the cause(s) of the problem.
4. Maintain the farmers' involvement and interest in the programme and enhance their confidence in the extension personnel.

A two-page questionnaire was developed, based on hypotheses derived from our knowledge of the farms from two previous visits (Potter and Blencowe 1977) and the entomologist's knowledge of the behaviour and treatment of pasture cockchafer.

The questionnaire together with an explanatory letter was posted to 11 farmers. Two weeks later the extension specialist and entomologist called at each farm to collect the forms. Ten were collected; the eleventh farmer was ill and could not be contacted.

The results of the survey are summarized in table 1.

Setting objectives

From the survey data we confirmed that pasture cockchafer larvae were damaging pastures on all farms. All farmers were treating the larvae with the correct insecticide at the recommended rate but they lacked essential information on the life cycle and did not know the best time to treat. Some had treated prophylactically and many were treating late in the season after much damage had occurred and when

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Table 1: Results of initial pasture cockchafer survey in Pine Creek Valley – February, 1972.

Question	Farmers									
	1	2	3	4	5	6	7	8	9	10
1. Have your pastures been damaged by pasture cockchafer larvae?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. What months were adult beetles seen?	a [†]	a	a	a	a	a	a	a	a	a
3. Did you survey paddocks for larval activity?	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
4. What month did you first see larval activity?	c [†]	c	b	b	b	b	b	c	b	?
5. Have you carried out any treatments?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6. What influenced your decision to treat?	2 [‡]	4	5	3	1	1	2	2	1/2	6
7. Have you treated prophylactically?	No	No	Yes	Yes	No	No	No	No	Yes	Yes
8. Have you treated the whole farm?	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes
9. When did you apply treatments?	h [†]	i	d	e	f	g/h	f	g/h	g	d
10. What insecticide did you use?	L	L	L	L	L	L	L	L	L	L
11. What rate of insecticide did you use?	R [¶]	2R	R	R	R	R	R	R	R	R
12. What method of application did you use?	R	R	R	R	R	R	R	R	R	R

[†] a Dec.-March, b April-May, c June-July, d March, e April, f May, g June, h July, i August.

[‡] 1 soil casts, 2 bare patches, 3 recommendation of adviser, 4 recommendation of neighbour, 5 damage previous year, 6 heavy beetle flights previous year.

^{||} L = Lindane. [¶] R recommended. 2R double recommended.

larvae were well developed and difficult to control (see table 1, questions 3,4,6,7 and 9). The farmers had correctly identified the need for this information at the problem census meeting (Potter and Blencowe 1977).

We also defined a corollary to the problem: milk from some of these farms would probably have lindane residues which could jeopardize export markets for cheese. Farmers were not aware of this possibility.

During the period 1968-69 to 1970-71, samples of cheese with lindane residues in South Australia increased from 9 per cent to 16 per cent; none of the lindane residues were above the acceptable level for cheese at the time. This increase had been attributed to farmers failing to withhold stock for sufficient time following the use of lindane for control of pasture cockchafer.

Our prediction that lindane residues could be present in milk from Pine Creek Valley was based on the fact that six farmers were treating the whole of their farms with lindane at the one time (table 1, question 8), and therefore could not be withholding milking stock from treated paddocks for the required time.

From these diagnoses we set the following education objectives:

1. Ensure that the Pine Creek Valley farmers understand the life cycle of the pasture cockchafer and the best time to treat.

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2. Teach them how to decide whether there is a need to spray for pasture cockchafer larvae.
3. Ensure that the farmers are aware of the dangers of indiscriminate use of lindane.

It was hoped that the attitudes and behaviour of the farmers would change as a result of their learning. Specifically:

1. That all farmers would treat pasture cockchafer only when and where numbers of larvae warranted it.
2. That timing of treatment on all farms would be close to that required for maximum effectiveness.
3. That prophylactic and whole farm treatment with insecticide would cease.

Programme development

The programme we devised consisted of the following:

1. A group meeting in autumn to present the information required to meet the educational objectives.

A variety of teaching methods was planned for the meeting to ensure adequate learning (table 2). We concluded that the best practical answer to the problem was to get farmers to regularly inspect paddocks for the presence of larvae just after the opening rains. Most of the teaching was aimed at helping them see the relevance of adopting this behaviour.

Table 2: Plan for meeting – April 1972.

	Matter	Method	Aids
Preparation:	<ol style="list-style-type: none"> 1. Collect information from group members on property size, pastures, pasture cockchafer, damage, treatment, etc. 2. Prepare chart showing life cycle of pasture cockchafer. 	<p>Questionnaire to group members. Collect and summarize information on wall sheet.</p> <p>Wall sheet.</p>	<p>Questionnaire</p> <p>Wall sheet</p> <p>Wall sheet</p>
Introduction:	They are aware of technical information but are uncertain of some facts involved in timing of control measures.	Tell	
Presentation:	<ol style="list-style-type: none"> 1. Summarize and comment on answers to questionnaire. 2. Discuss life cycle of pasture cockchafer and relate recommended control measures to various stages of cycle. 	<p>Wall sheet</p> <p>Wall sheet</p>	<p>Wall sheet</p> <p>Wall sheet</p>
Group exercise:	Relate what members now know back to previous answers given in questionnaire. Get members to reconsider answers and come up with correct answers.	Place survey questions alongside life cycle chart on wall. Go through questions one at a time and mark down new answers.	Wall sheets
Pollution aspect:	<ol style="list-style-type: none"> 1. Present figures showing lindane pollution in dairy products. 2. Discuss possible restrictions on the use of lindane and higher costs of alternative insecticides. 3. Discuss prophylactic and whole farm treatment from pollution angle. 	<p>Write figures on board.</p> <p>Tell</p> <p>Tell</p>	<p>Blackboard, chalk, etc.</p>
Research:	Discuss current pasture cockchafer research activities being carried out to help farmers improve prediction of need for treatment and best timing.	Tell	
Group exercise:	<ol style="list-style-type: none"> 1. Display soil cores infested with pasture cockchafer larvae to familiarize members with burrowing habits. 2. Relate development stage of larvae by showing type of material stored in burrows. (Organic matter or green material.) 	<p>Display core samples on trays.</p> <p>Get members to break up cores and note larvae present and type of material being eaten by larvae.</p>	<p>Core samples containing larvae.</p>
Farmer involvement:	Get farmers to agree to assist in research work by finding infested areas on their farms, take core samples, count larvae and send in results.	Tell	3 soil augers.
Continuing programme:	Advise farmers that results of pasture cockchafer counts will be summarized and forwarded. Advise that a field day on pasture cockchafer control will be held in the spring.	Tell	

We believed that motivation for adoption would develop from:

- their own dis-satisfaction with their previous attempts at control
- their discovery that lindane residues could seriously affect export cheese markets and that this could lead to restrictions on the use of lindane, the cheapest effective insecticide
- their motivation deriving from their involvement in the programme.

2. A practical exercise to involve farmers, reinforce their learning, and test the usefulness of the information we gave them for assessing the presence of larvae in a pasture.

We simply left three soil augers with the farmers and asked each to survey one paddock for larvae and forward the results to the entomologist. Because the number of augers was limited they had to be passed around; this action helped to keep up communication and interest among the farmers.

3. A field day in spring to allow the group to inspect the results of these activities.

On this day we hoped to find improved control of pasture cockchafer, and that the farmers would be satisfied that they had sufficient information to control cockchafer and yet avoid lindane contamination of milk.

4. An evaluation of learning and changes in behaviour.

Activities

1. Meeting

Nine farmers attended to hear the results of the survey and presentation of information. The extension specialist led the meeting informally and he and the entomologist shared the teaching tasks.

The meeting took 2½ hours and went to plan; the highlights were as follows:

- After the explanation of the life cycle and diagnostic tools for identifying the best time to treat pasture cockchafer, the farmers were able to answer the survey questions correctly.
- The presentation of data showing the increase in percentage of cheese samples with lindane residue created surprise and much discussion.
- The examination of soil cores infested with pasture cockchafer larvae was entered into readily; the farmers enjoyed it and seemed to learn a great deal.
- The farmers readily agreed to take part in the survey of larvae.
- The farmers became much more confident in the group

setting as the meeting went along. Interaction was particularly strong during the examination of the soil cores.

- Several farmers volunteered the information that they had ordered lindane following beetle flights earlier that year but intended to cancel these orders until they had looked around their properties. We concluded that there had been a change in attitude as a result of the meeting.

2. Survey of larvae

Six farmers sent in results without further urging by the extension officer.

3. Field day

The larval survey data were presented and the entomologist explained how the data could be interpreted from the results of his research programmes. After the inspection and discussion the farmers said they were satisfied they had the information they required, but stated that they wished to be informed of the results of experiments as they came to hand.

Evaluation

In October 1974, another survey of Pine Creek Valley farmers was conducted. Questionnaire forms were posted out and collected by the extension specialist. The results are summarized in table 3. Regrettably only six of the original ten farmers were available for interview — three had sold out and the fourth was absent from the property for a long period at the time of the survey.

Table 3: Results of evaluation survey in Pine Creek Valley, October 1974, showing behaviour of farmers for three seasons following the learning programme.

Question	Farm 2			Farm 5			Farm 6			Farm 7			Farm 9			Farm 10		
	1972	1973	1974	1972	1973	1974	1972	1973	1974	1972	1973	1974	1972	1973	1974	1972	1973	1974
Did pasture cockchafer damage occur?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No
Did you survey for larvae Yes/No Time	Yes A [†]	Yes A	Yes A	Yes O.R. [†]	Yes O.R.	Yes O.R.	Yes O.R.	Yes O.R.	Yes O.R.	Yes M [†]	Yes M	Yes M	Yes A-M	Yes A-M	Yes A-M	Yes M	Yes M	Yes M
Did you treat for pasture cockchafer?	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	No	No	No
What insecticide did you use?	-	-	-	L	L	L	L	-	-	-	-	-	L	L	L	-	-	-
Did you treat the whole farm?	-	-	-	No	No	No	Yes	No	No	-	-	-	No	No	No	-	-	-
What made you decide to treat?	-	-	-	Soil casts			Soil casts/ bare patches			-	Soil casts/ bare patches			-	-	-	-	

[†] A April
O.R. opening rains
M May

Discussion

While only six farmers were available to supply data in the evaluation we were confident that the data and our observations at the meeting and the field day supported the view that the educational objectives were met and there had been a change in attitudes and behaviour toward the use of lindane in the area. In this sense the exercise was successful – the farmers and we were satisfied that our objectives had been achieved.

The study also highlighted a number of useful notions in extension planning and activity. Farm problems are best defined when farmers and extension personnel pool their knowledge and skills. The Pine Creek Valley farmers knew they had a problem treating pasture cockchafer but were unaware of the possibility of lindane residues in dairy produce.

Careful data collection and diagnosis are valuable prerequisites for the development of a learning programme. The involvement of a research officer in an extension programme proved to be mutually rewarding. This type of integrated approach where farmers, extension officers and research officers work side by side is, in our view, an effective way of solving farm problems.

The teaching methods used at the meeting proved effective. The practical exercise devised was particularly successful not only in reinforcing learning but also in leading naturally into the continuing programme. The need for care and imagination in planning such a meeting cannot be overstressed.

The common difficulty of evaluation of farms which have changed hands was encountered. While the results from six farmers are convincing, sterner critics may ask whether we were successful in the other cases. We could have measured change of attitude during the meeting but we believed behavioural change was the most convincing criterion for satisfying ourselves that the educational objectives had been met.

References

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