FACIAL ECZEMA – A STRATEGIC APPROACH

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ABSTRACT
Advisory Services Division has promoted and co-ordinated a problem solving approach to facial eczema. Results from the workshop provide a good example of the achievements possible when experience skills and knowledge are pooled. The support enthusiasm and action of the workshop participants has resulted in a strategic plan to arrive at a clearly defined goal. Objectives have now been selected to substantially reduce losses for the Region’s most serious animal disease.

Keywords: Facial eczema, damage, attitudes, control strategies, problems

INTRODUCTION
In 1981 the national loss from facial eczema damage was estimated to be $58 million. In the Auckland Region loss production from sheep alone has been calculated to range between $1 million and $5 million according to seasonal conditions. Facial eczema damage is obvious when clinical symptoms appear but it is the sub-clinical or “unseen” damage which masks the major cause of loss in animal production. Researchers have presented farmers with a range of control methods however field observation reveals that adoption rates remain low. This paper reviews present knowledge and attitude to facial eczema and discusses results from a facial eczema workshop. A co-ordinated industry strategic plan to reduce the present unacceptable loss from facial eczema is presented.

SITUATION REVIEW
Facial Eczema Damage
Information about facial eczema damage to livestock in Northland can be obtained from AFFCO Moerewa Freezing Works reports, Animal Health Division reports (field and laboratory), and farm records. Preliminary assessment of this information revealed that:

1. Freezing works reports provide an indication of the incidence of facial eczema in sheep. During the facial eczema season each line of lambs killed has a sample of the livers assessed and the percentage of damage livers noted. However only affected lines are recorded and no indication of the total lambs killed from each farm is known. Analysis of Lands and Survey lamb killing for the 1984/85 season would suggest that works reports can be misleading. For example, some blocks had sent a high proportion of lambs to the works before the facial eczema season.

2. Animal Health Division Reports are based on spore levels at their core sites, freezing works data, laboratory reports from animals and specimens submitted and field observation. The reports are as thorough as they can be with existing monitoring methods. Improved methods for assessment of the incidence and severity of the disease would be necessary if an accurate account of facial eczema is sought.

3. Farm records could give an indication of the deaths and wastage associated with facial eczema but would only provide limited information. No account could be given to sub-clinical effects.

The information gathered by Animal Health Division would indicate that the incidence of facial eczema over the past six years was medium in 1980, high in 1981, low in 1982, 1983, 1984, and high in 1985. It appears the disease could follow a three year cycle of low, medium, high. Campbell and Wesselink (1973), Towers and Stratton

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Moore and Sumner (1983) and Smeaton et al. (1982), have all reported sheep production losses at sub-clinical levels as a direct result of a facial eczema outbreak. Combined with records of clinical cases and deaths an overall picture of the effect of facial eczema can be derived. This has been summarised by Squire (1985) in Table 1 and effects of on sheep gross margin estimated.

<table>
<thead>
<tr>
<th>Average Liver</th>
<th>Damage Score</th>
<th>GGT Level</th>
<th>Average gross margin/Su</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
<td>40</td>
<td>$34.96</td>
</tr>
<tr>
<td>0.1</td>
<td>Minor</td>
<td>40-80</td>
<td>$33.24</td>
</tr>
<tr>
<td>1-2</td>
<td>Mild</td>
<td>80-140</td>
<td>$31.30</td>
</tr>
<tr>
<td>2-3</td>
<td>Moderate</td>
<td>140-250</td>
<td>$28.64</td>
</tr>
<tr>
<td>3-4</td>
<td>Major</td>
<td>250-450</td>
<td>$25.33</td>
</tr>
<tr>
<td>4-5</td>
<td>Severe</td>
<td>650+</td>
<td>$18.48</td>
</tr>
</tbody>
</table>

**TABLE 1**

By applying the financial effects of facial eczema to the incidence of the disease in Northland and the Auckland region an estimate of the economic loss can be calculated (Table 2) taking into account the following assumptions on the incidence and damage pattern for sheep affected with facial eczema:

- **Incidence**: low, medium and high; 10%, 25% and 50% sheep affected respectively.
- **Damage pattern**: 60% minor, 25% mild, 12% moderate and 3% major damage.

The damage pattern used would relate to an estimated two per cent of the sheep affected showing clinical signs of facial eczema.

Application of the financial analysis prepared by Squire (1985) and adjustment of the gross margins according to local returns provides the basis for estimation of the financial loss for Northland and the Auckland Region (Table 2). Although base data on the incidence and severity of facial eczema is scant for sheep production and almost non-existent for other livestock species it should be appreciated the financial loss is substantial.

**Farmer Attitude**

In general terms it seems farmers are well aware of facial eczema and the effect it could have on their flock or herd. Dairy farmers appear more receptive than sheep and beef farmers to advice and adoption of control measures. This observation is logical when you consider dairy farmers are in daily contact with their stock, have more intensive, easier contoured farm land and have the milk vat as a barometer of production. On the other hand sheep and beef farmers have generally not adopted control measures despite there being a number of options available. The applicability of present control options on sheep and beef farms are questioned. The extensive nature, difficult terrain, labour and associated expense all contribute to the hill country farmer opting to ignore the problem. Control methods depend on application before the facial eczema challenge and are invariably an increased cost. Farmers often choose to ignore the problem, take the chance, write off losses to clinicals and deaths, and look for other reasons for lowered animal performance.

<table>
<thead>
<tr>
<th>Percentage of Flock Affected</th>
<th>Northland</th>
<th>Auckland Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>$0.50 million</td>
<td>$1.00 million</td>
</tr>
<tr>
<td>25%</td>
<td>$1.25 million</td>
<td>$2.50 million</td>
</tr>
<tr>
<td>50%</td>
<td>$2.50 million</td>
<td>$5.00 million</td>
</tr>
</tbody>
</table>

**TABLE 2**

**Financial Loss**

| Average Loss | $1.42 million | $2.63 million |

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Advisor Attitude

Farm advisors have promoted prevention measures and provided farmers with up-dated control methods in line with research findings. Dairy farmers have been responsive as already noted however the main concern is with the hill country sheep and beef farmer. As more data becomes available on the financial impact of facial eczema, adviser concern has increased, especially in relation to the low level of adoption of prevention measures. With increased knowledge of the sub-clinical effects it becomes even more obvious that the major financial loss is “unseen”.

The whole facial eczema scenario has been questioned as advisors become more aware that advisory effort to promote management and breeding systems for increased product quantity and/or quality is being undermined by losses through facial eczema.

The situation review as outlined resulted in four key areas being identified:

1. Effectiveness of the facial eczema Warning System.
2. Applicability of control measures (especially on hill country sheep and beef farms).
3. Research and research needs.
4. Procedures for assessing the effect on facial eczema on livestock damage.

Responsibility for facial eczema control must be shared by farmers, veterinarians, Research Division, Advisory Services Division and Animal Health Division. Clearly there was a need for representatives from these groups to address the key issues and prepare guidelines for a strategic approach to facial eczema control.

THE FACIAL ECZEMA WORKSHOP

Thirteen selected representatives with facial eczema responsibility were invited to attend a two-day workshop in July 1985. The purpose of the workshop was to develop a co-ordinated approach to the issues mentioned. A consensus was sought when preparing a term-6 of reference for future action.

Problems and Solutions to the four key issues were debated and summarised as follows.

1. Effectiveness of Warning System.

<table>
<thead>
<tr>
<th>Problems</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring method</td>
<td></td>
</tr>
<tr>
<td>Based on spore counts</td>
<td>Pasture toxicity versus spore counts</td>
</tr>
<tr>
<td>Geographical generalisation and</td>
<td>Review warning base</td>
</tr>
<tr>
<td>extrapolation</td>
<td>Less MAF dependency</td>
</tr>
<tr>
<td>Same basic system for 20+ years</td>
<td>More farmer involvement</td>
</tr>
<tr>
<td></td>
<td>Predictive modelling</td>
</tr>
<tr>
<td>Over frequent warnings</td>
<td></td>
</tr>
<tr>
<td>Answer phone lets MAF off question</td>
<td>Change name of service</td>
</tr>
<tr>
<td>Close down over Christmas</td>
<td>Full media coverage (including TV)</td>
</tr>
<tr>
<td>Dependancy on warning system</td>
<td>Regional co-ordination</td>
</tr>
<tr>
<td>Spore counts only; no follow up results</td>
<td>Include results of F.E. damage</td>
</tr>
</tbody>
</table>

2. Farmer awareness

<table>
<thead>
<tr>
<th>Problems</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not know financial loss</td>
<td>Advisory package</td>
</tr>
<tr>
<td>Not receptive or interested</td>
<td>emphasising financial loss,</td>
</tr>
<tr>
<td>Do not want to get involved</td>
<td>control options, cost benefit</td>
</tr>
<tr>
<td>Do not want to know</td>
<td>and sources of advice</td>
</tr>
</tbody>
</table>

A need to inform farmers of the cost-benefit advantages/disadvantages of control options and to revise present warning system with the onus on farmers to take appropriate action.
2. Applicability of control methods

**Problems**  
Need to spore count  
Spraying fungicide, dusting zinc: difficult, expensive, high risk (weather) need to spore count  
Alternative fodder: need to budget/make before facial eczema challenge  
Less flexible and needs to have dual purpose role to warrant expense  
Grazing management: research lacking

**Solutions**  
Interim control measure  
Spore count to assess problem and identify safe paddocks  
Alternative safe, productive, pasture species  
Spore toxicity measure  
Cost/benefit analysis

**Zinc dosing**  
Crisis control method  
Use portable yards  
Measure spore level  
Cost benefit analysis  
Strategic approach: treat replacement stock, finishing stock

**Breeding for resistance**  
Long term control method  
Lobby dairy industry  
Need advisory package to convince ram buyer/breeder  
Simplified method to identify resistant sires

**Comment**  
Existing control methods can be categorised as follows:  
1. Interim control  
   ie, avoid toxic pasture  
2. Crisis control  
   ie, zinc dosing  
3. Strategic control  
   ie, dose replacement stock  
4. Long term control  
   ie, breeding for resistance

3. Research and research needs

**Problems**  
Delays getting results to field  
Available data under-utilised  
Zinc problem  
No multi-purpose vaccine/drench  
Pasture spore count but no toxicity measure  
No single dose or long term prevention  
No alternative to zinc

**Solutions**  
Data base  
Cost benefit analysis  
Promote results  
Multi-purpose vaccine/drench  
Alternatives to zinc  
Spore toxicity determination  
Treatment versus prevention  
Identify other fungal problems  
Data on indirect effects eg, shearing,
Concurrent fungal disease
Indirect effects
Efficiency of sporidesmin dosing in breeding programme
Method of identifying resistant sires
Limited data on production losses from sheep but almost non-existent for beef, dairy, deer etc

General
Analysis of all available data on facial eczema damage
Research according to greatest need

Comment
Emphasis on research effort for single dose prevention techniques, measurement of direct, indirect and carry-over effects for all major livestock species. Preparation of an accessible data base.

4. Assessment of damage to livestock

Problems
Existing data

- Data not collated and analysed
- No simple on farm measure of financial loss
- Data limited — sheep only
- Monitoring methods inadequate
- Losses not economically based
- Sub-clinical effects unknown
- Co-ordination poor

Solutions

- Collect, collate and analyse existing data
- Relate results to farm, district, region, country
- Co-ordinate effort

Proposed assessment

- No simple on farm test
- Limited financial resource
- Cost of survey to assess damage (3-5 years)
- Sampling procedure required all livestock and secure same
- No long term measurement technique
- Access to freezing works
- Carryover and cumulative effect

- Review and determine on-farm test and statistical requirements for regional assessment
- Determine funding requirements
- Need to know carry-over effects
- Co-ordinate effort

Comment
An on-farm monitoring programme is necessary to measure the incidence, severity and losses from facial eczema. Results from this could provide valuable information on all major livestock types for establishing priorities for:

1. Individual farms
2. Extension personnel
3. Research workers
4. New Zealand’s livestock industry

Workshop Summary
The final session of the workshop concentrated on defining objectives to meet a common goal. The goal and objectives agreed to are:

Goal
Improve animal production by reducing the impact of facial eczema.

Objective
1. Design a monitoring system to measure the effect of facial eczema damage,
2. Define the impact of facial eczema (cost/benefit analysis),
3. Review research and extension priorities.

Clear guidelines on strategies and direction to meet the goal have been agreed to
ACKNOWLEDGMENTS


REFERENCES

Squire, J., 1985. Internal Publication; Effects of Elevated blood serum GGT levels and/or liver damage scores on sheep productivity.