BARLEY GRASS SEED: ITS EFFECTS ON THE VALUE OF SHEEP PRODUCTS

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Summary

Barley grass (*Hordeum* spp.) seed damage to the sheep and lamb products of freezing companies, insignificant prior to 1955, has reached serious proportions in recent years. The main product affected is the pelt but its effect on the value of wool is now significant. This paper discusses the financial losses to one company (Waitaki Industries Limited) from all its products and discusses the financial loss to New Zealand from pelt damage. For 1971/72 the estimated loss to New Zealand due to seedy pelts was \$517,000; \$362,000 of which was due to barley grass. The actual loss due to seedy wool at Waitaki for the 1971/72 season was \$26,700 and hence the loss to New Zealand through seedy skins (wool and pelt) has been assessed at \$800,000.

INTRODUCTION

IN spite of considerable publicity given by the Ministry of Agriculture and Fisheries over recent years to the adverse effects of penetrating seeds on stock and, in particular, to the control of barley grass (*Hordeum* spp.) the incidence of seed damage to lambs increased at a disturbing rate during the 1960's. Some efforts are being made to eliminate barley grass to prevent the increasing losses not only in the value of pelts but also in meat and wool. It is the aim of this paper to show the extent of financial loss with pelts, wool and meat. Records of pelts are provided by all units of the New Zealand freezing industry and other sheep and lamb products by Waitaki Industries Limited.

It is appreciated that the elimination of barley grass from New Zealand farms could be a very costly, if not impossible, task. It is also recognised that barley grass seed can cause losses to the farmer which must be substantial yet are very difficult to estimate (Loughnan 1968).

PELT DAMAGE BY PENETRATING SEEDS

It is normal practice in all New Zealand freezing works to grade pelts after pickling, a preservation treatment which has been designed so pelts can be exported in casks or on pallets to Europe and to America. Pelts which show puncture holes in the grain and those which show seeds penetrating the grain are graded as "seedies". The puncture holes, easily

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detected, are where seeds were but have been freed by prolonged washing during fellmongery and pelt house processing.

The seedy grade does not identify the type of seed. Some freezing companies contend that the incidence of storksbill (*Erodium* spp.) seed damage is greater than the incidence of barley grass seed damage. However the effect of storksbill seed is not so dramatic and is possibly of less concern to the tanner. The seeds of needlegrass (*Stipa* spp.) and brome grasses (*Bromus* spp.) are known to penetrate pelts but the number of such affected pelts is very small.

Twenty years ago, the incidence of seed damage was insignificant. In the mid-1950's some freezing works in particular those located on the east coast of the South Island, graded out up to 2% of pelts as being punctured by seeds. Since 1960, the incidence of barley grass and storksbill in pelts has increased at an alarming rate (Table 1).

TABLE 1: SEEDY PELTS
(Percentage of Total Production)

District	1960/61	1964/65	1967/68	1971/72
South Otago	13	23	21	22
North Otago	12	40	50	29
South Canterbury	5	17	30	21
Mid & North Canterbury	8	18	35	30
Marlborough	17	37	34	43
Wellington	1	5	4	5
Hawke's Bay	4	10	9	8

These figures are compiled from grading returns submitted by freezing companies and these have been grouped into the districts shown. Wellington includes Wanganui, Wairarapa and Manawatu while, Hawke's Bay includes Gisborne. The seed damage in Auckland, Waikato, Taranaki, Nelson and Southland areas was less than 1% for the 1971/72 season. Nevertheless all freezing works in these areas reported some incidence of damaged pelts and in many cases the actual loss due to such damage has been accurately assessed.

It is emphasised that there are slight yet significant variations in methods of grading from works to works. What is termed "light seed" may be graded in regular pelt grade particularly if the seed is confined to the belly and flank edges of the pelt. But if only one seed hole is in the body of the pelt, it is graded as a "seedy" as such damage will prevent a full panel for a garment being cut from the skin after conversion into suede or grain (nappa) leather. These variations in grading can account for some variation in the percentage of pelts actually graded out as "seedies".

The table clearly shows:

- (1) The incidence of seed damage increased substantially during the 1960s.
- (2) Damage is seen mainly on pelts processed by works on the East Coast of the South Island and to a lesser extent by works in the Hawke's Bay and Wellington areas.

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- (3) There has been some levelling off in the incidence of seed damage in recent years. Indeed in some areas there has been a marked decline indicating possibly the benefit of programmes of control — in some counties barley grass has been declared a noxious weed. In recent years the schedule for stock has included a separate value for the skin and this value is reduced for seedy skins. This penalty may have encouraged eradication programmes.

The loss in value of pelts due to penetrating seeds for the 1971/72 season has been estimated at \$517,000 or approximately 1.25% of their total value. It has also been estimated that 8 to 9% of all New Zealand pelts were downgraded in 1971/72 because of penetrating seed damage compared with 10% in 1967/68. It must be emphasised that the damage is confined principally to lambs probably because this stock only is killed at the time when storksbill and barley grass are seeding. Possibly, because lambs are shorter and rest on pastures more frequently than sheep, they have more contact with seeding grasses. It is possible also that shorn stock is less prone to penetrating seeds and possibly therefore the welcome increase in wool prices resulting in increasing shearing could further reduce seed damage.

The "seedy" grade does not distinguish seed type. In some areas storksbill is the cause of much more damage than barley grass although tanning trials by the Leather and Shoe Research Association indicate that storksbill has much less effect on leather quality compared with barley grass. This observation is reflected in the loss in value of seedy pelts. It is less before late December when the seedy grade contains only storksbill.

If the loss in pelt value is apportioned at 70% due to barley grass and 30% due to storksbill, the loss for 1971/72 due to barley grass was approximately \$362,000.

Monthly grading figures for two South Island freezing works distinguishing between storksbill and barley grass for the 1971/72 season are presented in Table 2.

TABLE 2:

	% Seedy Grade		% Storksbill		% Barley Grass	
	A	B	A	B	A	B
<i>Works</i>						
October	18	9	18	9	—	—
November	37	20	31	18	6	2
December	38	21	28	17	10	4
January	57	29	38	21	19	8
February	62	31	18	10	44	21
March	36	16	7	3	29	13
April	24	8	4	2	20	6
May } June }	6	4	1	1	5	3

The question of whether there is a correlation between breed type and incidence of seed damage was discussed at the Leather and Shoe Research Association's Conference for Fellmongers and Hide Processors at Oamaru in 1972. The opinion of all practical men was that if farms had barley

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grass or storksbill, the skin of lambs would be affected by the penetrating seeds. It was agreed that open wool breeds could be less affected than fine wool breeds but in grading pelts, 1 seed or 100 seeds in the body of the pelt constitute a seedy pelt.

The reason why the extent of seed damage is not differentiated when grading relates to the end use of the leather produced from New Zealand lamb pelts. This is made up into all types of fashion and utility garments which require panels of leather of maximum area for their manufacture. Skins with seed holes showing on the suede side must be cut to eliminate them and hence the panel size is substantially reduced thus accounting for their reduced value. Often seed holes have partially or completely healed when stock is slaughtered. This new tissue shows up as white pinheads in finished leather because it has not taken the dye used for colouring the leather. Again, panels for garments cannot include these uncoloured pinheads.

WOOL

The monthly percentages for seedy wool at Waitaki Industries Limited for the 1971/72 season are presented in Table 3.

TABLE 3: PERCENTAGE OF SEEDY WOOL AT WAITAKI

October		10.6
November		15.0
December		29.7
January		77.4
February		85.4
March		82.5
April		79.4
May		72.6

This table indicates when seed contamination to wool occurs.

Storksbill predominates until January, during January 50% storksbill and 50% barley grass, and mainly barley grass from February.

Wool removed in fellmongeries from skins after take-off is known as slipe wool. Stock farmed where the paddocks contain stands of barley grass will have seeds associated with the slipe wool. The bulk of slipe wool however is clean, high yielding, of good colour, even in quality and even in length because the skins are well washed immediately after take-off and because the wool is well graded when removed from the skin. The grading of body wools is usually into 5 quality grades, plus 3 seedy and 2 off colour lines. Two of these seedy lines are classified as light seed i.e. wool containing less than 2% seed. The yield difference on a clean scoured basis between a line of super half bred lambs wool and a line of half bred light seed lambs wool is approximately 2% but there is a price differential of 5%. This is due to the cost of decarbonising seedy wool which the processor has to meet.

At Waitaki the actual loss due to the production of lines of light seedy wool for the 1971/72 season was \$26,650.

Slipe wool classed as "heavy seed" is an insignificant grade at Waitaki. In 1971/72, 2 bales were produced; the total slipe wool was approxi-

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mately 8000 bales. This discount for heavy seedy wool is 15%. Two bales constitutes a loss of \$50.

The total loss due to seed in wool \$26,700 was somewhat less than the actual loss of \$37,000 due to seed in pelts. The total loss to Waitaki due to seed in skins (i.e. pelts and wool) was \$63,700. Based on an estimate already mentioned that 8 to 9% of all New Zealand sheep and lambs are affected by seed and using the Waitaki estimate for loss due to seed in skins, the total loss to New Zealand due to seedy skins is approximately \$800,000.

MEAT

If meat products on inspection for export show adhering seed whether or not penetrating the carcase they are required to be trimmed. However only in severe cases of seed damage which shows as an inflamed ulcer in the flesh are carcasses rejected for export. The actual loss due to seedy carcasses is very small. However individual farmer drafts have been known to be affected to the extent that 60 to 70% of the carcasses have been rejected. The rejected carcase means the farmer receives less than half the export value for the meat.

The seriousness of penetrating seeds cannot be over emphasised. The damage to pelts is serious; its effect on wool and meat and on the general health of the stock is immense. Control or elimination of barley grass is an urgent requirement.

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REFERENCE

Loughnan, R. J. M., 1968. Pelt damage by penetrating seeds. *Proc. Report 19th Annual Conf. Fellmongers & Hide Processors*: 62-69.