ANTE AND POST MORTEM INSPECTION OF SLAUGHTERED FARMED DEER

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INTRODUCTION

Farmed red deer are an interesting mixture of total domestication and a collection of uninhibited moving muscle. This mixture added to the inexperience of some Deer Slaughter Premises (DSP's) in handling and holding deer in pens and yards has led to some strong beliefs on what can be done and what can't be done. In the past DSP's have tended to extrapolate on-farm behaviour to predict on-premises behaviour. Examples of this include, the darker the pens the better, you must be as quiet as a mouse, you can't put deer in a strange yard without them continually walking and wearing a deep track around the perimeter which will turn into a mud bath in wet weather. DSP's are finding red deer increasingly easier to handle, with the odd exception of course! The trend now is to design pens and yards more to suit the DSP than the deer, as the deer become more adaptable. A small number of fallow deer are slaughtered too. These deer are quiet and move extremely well, providing the yardman avoids sudden movements from the still position. Incidentally, deer tolerate washing with the high pressure hose almost as well as cattle.

HISTORY OF DSP's AND ASSOCIATED PACKING HOUSES

Most of the DSP's were built in the early 80's. As farmed deer slaughtering was a new industry, each DSP built was a prototype. Each generally was built with limited finance, and each had a minimum of meat industry expertise in the design team. The end result is small compact (and sometimes congested) premises with some design features more attuned to saving capital expense rather than in the interests of efficiency and future expansion. These design limitations, whether on the slaughter floor or in the yards, have become more obvious as the total daily slaughter increases. These limitations tend to affect the production rate more than the Meat Division's ability to perform meat inspection duties. As the total daily slaughter increases and the prospect of further increases in the future loom closer to reality, major plant alterations, relocations or new DSP's and PH's seem likely. I would expect the majority of premises to remain relatively small as a small workforce seems an ideal unit to produce a high quality up-market product.

ANTEMORTEM

TRANSPORT

This begins with the muster on the farm. The farmer should make every endeavour to have clean deer for transport. The advantage of clean deer is discussed in the section on Dressing. Two areas of concern relate to holding in the yards and the loading of the deer. Recently we had a classical example of stupidity. The farmer mustered the night before, one large stag with antlers (not in the velvet), and several spikers all of which were penned together. Next day they were taken, stag and spikers separated, by commercial transport to the DSP. This separation continued at the DSP overnight. The next morning one spiker was dead and at slaughter, seven spikers were severely bruised and exhibiting penetrating wounds. Two spikers in particular, had many deep wounds in the hind leg area, flank, belly and chest. These two carcases were down-graded to local grade after very heavy trimming and the removal of one hind leg. In all, the farmer's failure to separate the stag would have cost him in excess of $700.00. Many farms have inferior loading races. We hear horrific stories from the transport operators about dangerous or rickety loading races. These inferior races can damage limbs, add to bruising problems, create major delays in loading and cause needless stress in the deer.

Truck design is very important. All commercial operators in the Waikato/Bay of Plenty region have excellent units. Their design enables easy flow of deer both on and off the unit, the pens are the right size, the ventilation efficient, and the floors offer excellent footing. Some farmer owned vehicles are a disaster on wheels. All of the transport problems have occurred with non-commercial transport. This is one area that the veterinary profession could take an interest. Most problems have arisen through lack of appreciation. Taking three or four deer down the road a few kilometres in an enclosed box is a far cry from taking ten deer 30 or 40 km in heavy traffic in the heat of the day in the same container. Whereas a farmer may have used commercial transport in the past, the present economic climate may tempt him to use the same box to transport his deer to the DSP. What happens? During the long trip the deer urinate and defecate frequently on the layer of hay placed on the smooth wooden or steel floor. The hay is pushed to the side and the floor becomes very slippery. If the pen is too big or has too few deer in it, deer go down and get bruised. Those that are down and those still struggling to find a secure foot hold use a lot of energy and generate large amounts of heat. Fighting also produces large amounts of heat. Any deficiency in the ventilation system allows heat stress to develop. The end result for some, is "dead on arrival" at the DSP. The efficiency of the ventilation system should be assessed at normal highway speed and also at normal hill climbing speed. We have had deaths from heat stress through a slow trip up a long hill. The absence of problems with commercial transport emphasises that it is not the total distance that is travelled, but rather the conditions under which the deer travel that are important.

ANIMAL WELFARE

Animal welfare issues arise from many circumstances.

- yarding on farm and loading as previously discussed.
- spikers with their hard antler left on.
- vehicle floors with inadequate footing for deer.
- vehicles with poor ventilation.
- older deer with hard antler regrowth.
- stags in the velvet, transported in vehicles with too low a roof line.
- a wide mixture of ages and sizes in the same pen in the vehicle or yard, especially if they are strangers to each other.
- chronic injuries associated with continual pain or discomfort. Large wounds and untreated fractures are examples.
- abuse during loading, transport or at the DSP. This is fortunately very uncommon.
- excessive wear on the soles of the feet. This extremely painful condition is caused by a combination of one or more of the following:
  - abrasive or uneven footing surface.
  - long periods of confinement.
  - excessive movement, pushing or struggling of the deer.

PRE SLAUGHTER INSPECTION

Our major objective is to be assured that the deer are healthy enough to be slaughtered. Incorporated in this objective are animal welfare considerations. Contagious diseases such as salmonella or systemic viral infections are looked for as well as any other disease that would make the animal unfit for human consumption. Identification of all lines, their origin, and the name and address of their owners is made in case traceback is required. Stress is included in the overall view too. All deer are looked at individually for sickness in general, injury, contaminating conditions such as abscesses or open wounds, or any other factor deviating from the normal, such as panting. These animals depending on the severity of the condition, can be detained for a more detailed examination and a decision whether to condemn, pass for slaughter or hold for further consideration.

We also assess the animals for cleanliness. While cleanliness is a Company responsibility, we also note the state as it has a direct bearing on the contamination rate during dressing.

The ante mortem inspection as well as being required by New Zealand regulations, is an essential component to satisfy Overseas import requirements and subsequently the Certification of product.

POST MORTEM INSPECTION

DRESSING

The maintenance of hygienic dressing standards is an important part of the veterinarian's job in the DSP. Carcase contamination comes from dirty deer in the first instance. Give a slaughterman defective material (dirty deer) and he is most likely to produce defective product even with a good dressing technique. Faulty dressing techniques with lack of hygiene considerations is the second reason causing carcase contamination. Contamination includes hair, dirt, faeces, or ingesta on the carcase. Full paunches present no real problem. Areas in the dressing operation where contamination is likely to occur are:

- bleeding and opening up the neck and brisket
- reflecting the prepuce and cutting a triangular section of the pelvic bone to allow the complete removal of prepuce, penis, testicles and scrotum.
- opening the skin along the belly
- freeing the anus and rectum and tying off
- removing the abdominal and thoracic contents.

Trimming the carcase to remove contamination, wastes time, wastes venison and often damages the high value cuts with subsequent loss of value.

THE INSPECTION

Having been closely involved in the DSP/PH industry for over two years I have come to the conclusion that the deer that have passed through this DSP have been remarkably healthy. Diseases and conditions encountered, some of them regularly, include;

- arthritis
- pyogenic conditions
- hydronephrosis
- nephritis
- chronic facial eczema
- livers with marked fatty infiltration
- liver fluke
- liver capsule damage originating from migrating parasitic larvae or unknown aetiology.
- tuberculosis
- wounds and bruises
- pleurisy
- actinomycosis
- emaciation

Interpretation of the disease statistics can be difficult at the moment. For example, only major contamination was recorded. Minor contamination was trimmed normally. Only major wounds and bruises were recorded. A healed broken rib although excised was not recorded, but several broken ribs were. Any cirrhosis of the liver regarded as typical of facial eczema was recorded as such. Other Causes, include peritonitis, jaundice (not facial eczema), anaemia, etc. In all, the standard of recording has been consistent throughout the two years in this DSP. We (the Meat Division) are looking at ways of providing more meaningful data which will be of use to the farmer, the local practitioner, the deer industry and the premises processing deer.

From March 1984 a record has been kept of most of these conditions. The figures represent the number each month.

1984

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
EMAC			1	-	1	2	-	-	1	1	-	1
W & B			12	-	25	17	17	10	22	8	-	-
T B			1	-	1	-	-	2	-	2	-	-
PYO			1	1	1	-	1	1	-	2	2	2
PLEURISY			4	-	10	-	10	11	10	12	8	7
ACTINO			1	1	1	-	--	1	1	-	-	-
OTHER CAUSES			4	-	1	-	1	3	1	2	2	1
CONTAMIN			7	4	1	3	8	4	7	5	1	1
FAC ECZ			1	-	5	-	-	4	3	3	1	-
CONDEMN			4	1	4	2	1	2	2	3	1	2

1985

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
EMAC	-	1	4	-	-	-	5	-	1	5	-	3
W & B	2	19	15	4	5	7	15	14	11	5	6	6
T B	-	-	1	-	4	-	1	-	-	5	1	2
PYO	-	-	6	-	-	1	4	-	-	1	1	1
ARTH	-	1	-	-	1	-	1	-	1	2	1	-
PLEURISY	-	6	4	1	2	1	3	2	9	3	9	3
ACTINO	-	-	1	-	-	-	1	-	-	1	-	-
OTHER CAUSES	-	1	1	-	1	-	-	2	-	1	1	-
CONTAMIN	4	7	7	2	2	2	5	15	2	10	-	2
FAC ECZ	-	-	1	-	1	-	6	-	5	8	7	3
CONDEMN	-	1	4	-	2	-	6	-	1	6	1	6

A summary of the above two tables follows:-

	1984	1985
	% prevalence for year	% prevalence for year
EMACIATION	0.2	0.4
W & BRUISES	3.3	2.4
TUBERCULOSIS	0.2	0.3
PYO (ABSCESS)	0.3	0.3
ARTHRITIS	0.6	0.2
PLEURISY	2.2	0.9
ACTINOMYCOSIS	0.2	0.1
OTHER CAUSES	0.5	0.2
FACIAL ECZEMA	0.5	0.7
CONDEMNATIONS	0.6	0.6

EMACIATION

There are three categories where emaciated deer may originate:

- chronic sickness which may or may not be associated with old age
- starvation
- recently captured (within the last six months or so) on a low/medium level of nutrition

WOUNDS & BRUISES

From the above summary it can be seen that wounds and bruises are the major problem. It should be mentioned that many injuries, especially in mature stags are long standing. Broken ribs abound and small hernias with omentum creeping through and damaged livers, indicate the magnitude of the battles some of the old campaigners survived.

PYOGENIC LESIONS

The pyogenic lesions are usually associated with old wounds or injection sites. These lesions are distinct from TB lesions.

ARTHRITIS

Usually it is in the stifle or carpus. Often it is associated with muscle atrophy.

PLEURISY

Pleurisy seems to be more often trauma orientated than from the traditional bacterial or viral origin.

ACTINOMYCOSIS

It is usually found in the head lymph nodes, and uncommonly in the mesenteric nodes.

CONDEMNATIONS

All emaciated carcases are condemned. Other reasons include septicaemic like lesions, wounds and bruises, generalised TB, and extensive pyogenic lesions causing gross contamination.

TUBERCULOSIS

These lesions are nearly always encapsulated and contain thick whitish pus. Occasionally the pus is caseated and/or gritty and invariably the lesion is within a lymph node. It should be noted that the TB lesions in deer look different to those in cattle. The now uncommon TB lesion in cattle, is usually yellow and gritty. Small yellow gritty lesions in deer lymph nodes have so far shown histological evidence of parasitic infection.

In the period from April 1982 to December 1985, all the confirmed cases (by Ruakura Animal Health Lab.) of TB are summarised below.

LYMPH NODE	NO OF CARCASES	ONLY LESION IN CARCASE
MESENTERIC	24	22
MEDIASTINAL	10	3
"PLEURA"	9	-
INT ILIAC	1	-
RETROPHARYNGEAL	18	14
SUBMANDIBULAR	4	4
PAROTID	1	1
ATLANTAL	1	-
PRECRUAL	3	2
NOT SPECIFIED	5	-

Over this period the prevalence of confirmed TB was 0.48%.
All suspected cases of TB were sampled and sent to the Animal Health Laboratory for confirmation.

TB REACTOR DEER

Reactor deer can be slaughtered in DSP's under certain conditions. Meat from reactor deer is ineligible for export. The judgement on whether they are suitable for human consumption is the same as for beef. In simplistic terms, any evidence of carcase involvement or generalisation means total condemnation, while lesions in the thoracic or abdominal organs or in the head may mean condemnation of parts but salvage of the remainder for the local market.

Relatively few reactors come through the DSP. To date, ten reactors have passed through. Six stags from five farms and four hinds from two farms. No TB like lesions were found in any of them. They came from farms in the Taumarunui, Taupo, Te Kuiti, Putaruru, Matamata and Morrinsville areas. Our Head Office is working on a system to provide feedback directly to practitioners on post mortem findings in reactor deer.

SPORADIC CONDITIONS CONFIRMED BY RUAKURA

Parasitic	- calcified liver lesion - gritty usually yellowish lesions in lymph nodes in head prescap precrual - white spots in mediastinal - liver spots and tracks - liver nodules (likely Taenia hydatigenia) - Cysticercus tenuicollis
Endocardial infarcts	- fatty fibrous areas in endocardium
Fat necrosis	- hard mineralised fat
Malacoplakia	- mineralised retropharyngeal node containing circular structures associated with collogen. Similar to Berylliosis in man.
Tonsilitis	- non specific
Liver abscess	- in region of hepatic lymph nodes
Hypoxic liver damage	- from haemolitic disease - fatty liver and similar to facia eczema
Mature liver fluke	- have seen approximately 10 cases

CONCLUSION

This paper outlines aspects of ante and post mortem inspection of slaughtered farmed deer in one DSP. Problems, disease conditions, and disease statistics are described.