

Lamb carcass examination in New Zealand

Background

The Meat Industry Association stated in its 2005 presentation to the NZFSA Verification Agency that one of the strategic goals of the meat Industry in Towards 2006 is....." *To be at the forefront of international food safety.*" This goal is thoroughly supported by NZFSA and is unarguably an approach that will assist New Zealand in maintaining its deserved reputation as the world's largest exporter of sheep-meat of the highest quality.

New Zealand still practices a high level of carcass handling during post mortem meat examination. These procedures were introduced to New Zealand in the early twentieth century and were appropriate for the times when all export carcasses were frozen. The removal of visual defects was of prime importance and cross contamination of carcasses was not an important consideration. Since those freezing works days, technology and processing techniques have evolved to the stage where in the 21st century the transformation of live animals to packages of chilled cuts with a shelf life of up to 12 to 14 weeks is now an industry expectation.

In contemporary settings, scientific studies have shown that food-borne risks to human health are almost entirely due to asymptomatic carriage of enteric pathogens such as *Salmonella* spp., *Campylobacter* spp. and *Escherichia coli* O157:H7. Limiting contamination of the carcass and viscera during dressing and subsequent handling to the lowest level practicable is now recognized as being by far the most important meat hygiene activity. Against this activity, palpation of carcasses to detect gross abnormalities provides virtually no return in terms of reducing risks to the consumer.

From a meat hygiene perspective, the European Union has never required routine palpation of the lamb carcasses, while Canada, the United States and Australia moved to "hands-off" examination over 6 years ago. These changes were prompted by recognition of the high level of cross-contamination resulting from routine handling and palpation of carcasses but were been made in the absence of field trials that quantify non-detection rates of faecal (and wool) contamination and palpable abnormalities.

In keeping to its stated philosophy of basing all food standards on robust science and risk assessment, NZFSA has carried out trials to determine non-detection rates of grossly-visible contamination and gross abnormalities if a "hands-off" approach to examination of the carcass is implemented and those trials have demonstrated that palpation of the lamb carcass cannot be justified under New Zealand conditions.

The intent of NZFSA with respect to post mortem lamb examination is to implement an examination standard that provides appropriate assurances of food safety while facilitating industry efficiency and cost-effectiveness. In the latter context, NZFSA will establish a flexible standard in terms of industry requirements for the control of contamination and presentation for examination as long as meat hygiene is assured.

As a consequence of the trials undertaken, NZFSA believes that a combination of reduced post mortem examination procedures, new industry presentation standards and partial industry responsibility for examination for contamination will achieve the above goal.

It must be noted that without attention to presentation standards, the trials carried out by NZFSA show that adoption of a "hands-off" carcass examination alone would result in a certain level of gross faecal contamination not being detected at the final examination stand.

Proposed changes include:

1. Company having a prescribed role in identifying and removing (or ticketing) visible faecal contamination at specific carcass sites
2. Removal of tail prior to examination
3. Removal of pizzle prior to examination
4. Inguinal incision(s) in abdominal wall (5-8cm)
5. Brisket split prior to examination

1. Forequarter contamination

NZFSA has recognized that internationally there is a growing movement towards the separation of responsibilities within the meat processing industry for the responsibility for detection of pathology to be assumed by examination agencies while the responsibility for detection and removal of contamination is directed towards the processor since contamination is often a function of processing failure and expeditious removal of contamination reduces the likelihood of further contamination. This responsibility is outlined in the US OMAR: Amendment 6 5 Sept 05. Australia has separated these responsibilities since moving to hands off examination in 1998 .

It is proposed that companies will be required to identify, detect and remove any contamination immediately after the Y-cutting operation while the forequarters are still on the spreaders and presented to the worker before the change over. The company would be expected to identify and detain any carcass that requires more trimming than can be completed at chain speed. The advantages of the removal of any contamination of the neck and forequarters prior to the change over include:

- a. easier to detect while on the spreaders than at the examination station
- b. prevents an opportunity for redistribution that may occur at the change-over
- c. prevents the likelihood of redistribution by examiners
- d. allows companies to meet their responsibilities of US OMAR Section 3.4.4.6
- e. removes the need to routinely inspect this area by lifting the carcass at the post mortem examination stand

This process can be achieved in the same manner that urine contamination and milk spillage is currently treated.

2. Tail off

The tail is usually a significant impediment to viewing the sides and dorsal section of the rectal cavity.



Fig 1: Tail on Carcass

Currently the tail is required to be grasped and pulled down to enable the examiner to view the rectal cavity along with palpation of the ischiatic lymph nodes.



Fig 2: Current examination of the rectal cavity and ischiatic lymph nodes

To facilitate the hands-off examination of the rectal cavity for faecal contamination, the tail should be removed prior to examination.



Fig.3 : Examination of carcass with tail removed

3. Pizzle off

There is much variation within the industry with regard to the removal of the pizzle in lambs. Some establishments remove the entire pizzle prior to examination, others clip and leave the stump until after examination which would be acceptable, while yet other establishments leave the pizzle in situ for examination and remove all of the pizzle prior to grading. The pizzle may be a significant impediment to viewing the pelvic cavity.



Fig 4 : Obstruction to viewing the pelvic cavity that may result from the pizzle left in situ



Fig.5 : Pizzle removed

One advantage of removing the entire pizzle prior to examination is that this allows the abdominal walls to retract and permit the pelvic cavity to be more easily viewed.

4. Opening of inguinal abdominal wall

This operation has a profound benefit to the viewing of the pelvic cavity by allowing more light into the area as well as the opportunity for the meat examiner to see the entire area



Fig 6 : Standard abdominal opening



Fig 7 : Improved abdominal opening

This operation is standard procedure in Australia with hands off examination and may be achieved by one of at least four methods.

1. A transverse incision immediately under the supramammary or superficial inguinal lymph nodes of about 5-8cm prior to the vertical opening cut similar to the standard method of opening the abdomen of bobby calves.
2. A scallop cut through the abdominal wall.
3. A question mark-shaped opening that opens the abdominal cavity as well as providing for viewing of the pelvic cavity in one motion. This method requires a purpose made knife.
4. Incision of the abdominal wall after the initial vertical opening (two cuts)

The first method appears easily achievable by almost all companies.

5. Brisket splitting

This procedure is required to facilitate viewing of the thoracic and abdominal cavities.



Fig 8: Demonstration of ease of viewing when brisket split

NEW ZEALAND STANDARD

Current lamb carcass examination procedures:

View and palpate external surfaces, including joints

View the front of the hind legs

View pelvic cavity

View the rectal cavity by inserting two fingers into the cavity and pull tail back; view muscular groove on both sides of tail

View the internal iliac lymph node

View and palpate abdominal and thoracic cavities

Palpate popliteal lymph nodes

Palpate ischiatic lymph nodes

View and palpate the subiliac lymph nodes

View and palpate the superficial inguinal or supramammary lymph nodes

View axillae

View and palpate the back of the carcass

View ventral surface of the abdomen

View the brisket

View and palpate the diaphragm (if present)

Palpate superficial cervical lymph nodes

View the forelegs

View the neck

Procedures proposed to be removed from current code:

Palpation of all external surfaces

Insertion of two fingers into rectal cavity and pulling tail back

Palpation of thoracic cavity

Palpation of ischiatic lymph nodes

Palpation of subiliac lymph nodes

Palpation of popliteal and superficial cervical lymph nodes

Palpation of superficial inguinal or supramammary lymph nodes

Palpation of back of the carcass

Lifting of forelegs