Farm Advisory Service

National Advice Hub
T: 0300 323 0161
E: advice@fas.scot
W: www.fas.scot

Improving Lamb Carcass Quality

CT Scanning

SAC CONSULTING

Scottish Government
Riaghaltas na h-Alba
gov.scot

What Is CT Scanning?

CT (Computerised Tomography) is an imaging technique used to look inside objects and take measurements in a non-invasive and non-destructive way using low dose X-rays to produce images. As the x-rays pass through the body, they highlight tissues according to their density A higher density tissue such as bone shows as white, muscle shows as light grey, fat as dark grey and low density gas or air show as black.

What Information Does it Gather?

3 sets of reference scans are taken and used to predict carcass traits using measurements taken from these images to an accuracy of around 96%.

The 3 scans taken are distributed over the body at the back of the pelvis (ischium), LV5 and TV8.

Figures are produced using specifically designed software which involves removing non-carcass parts of the images and calculating the areas of the different tissues in the remaining “carcass” image.

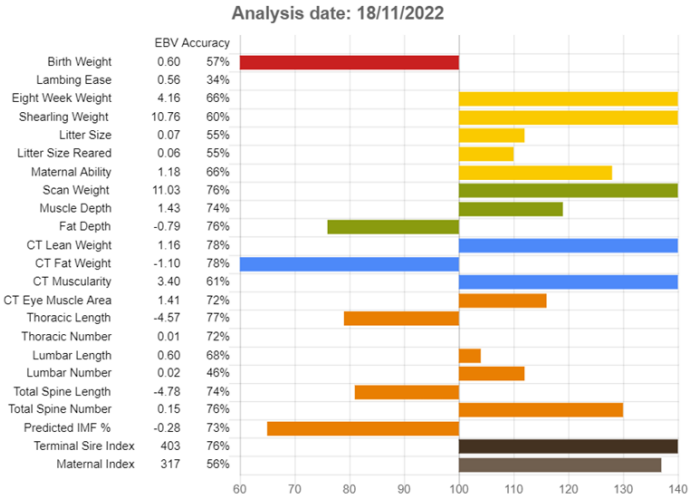
Prediction equations allow the weight of fat, muscle and bone to be predicted along with KO%, intramuscular fat etc.
We also take measurements of eye muscle, gigot and spine length to give an idea of muscle size and shape.

All data is sent to the breeders and also either Signet Breeding Services or Texel Society depending on who the farm does their performance recording with. The data is then further analysed along with information from on farm back fat scanning, 8 week weights etc., and data on relatives to produce estimated breeding values (EBV’s) for different traits and ultimately breeding indexes that can be used for marketing tups for sale on farm and at sales.

The lambs are also scanned with what is called a spiral scan where images are taken along the length of the body from the tibia to the neck. This enables, with permission from the breeders, to use the images to investigate new traits that might be of interest in the future e.g. rumen volume, maternal traits etc.
In most cases it is carcass traits that are being assessed although the capacity to look for and measure other things is always there.

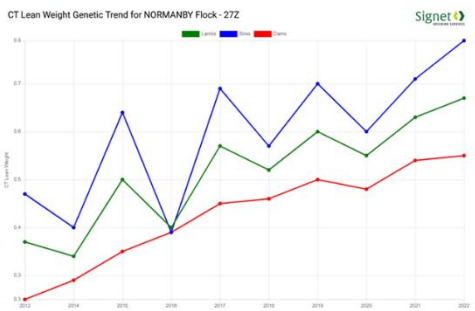
What are the Benefits of CT Scanning

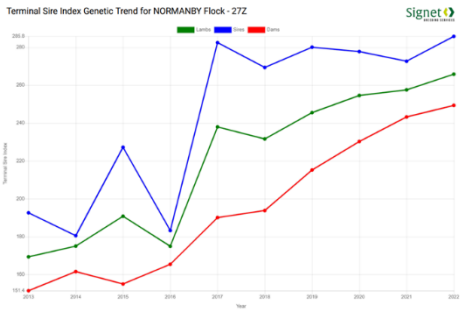
One of the main advantages of CT data being used in producing EBVs is that the accuracy is very high with near perfect measurements from the images. The benefits of this highly accurate data are also passed on to genetic relatives of the animal, so even those animals which have not been scanned benefit. In the example opposite, all the information in the red box has been gathered from CT scanning information with an accuracy of around 98%. The information corresponding to the yellow and red bars is collected on farm, which while still reliable is less consistent between farms. Scan weight, fat and muscle depth are gathered at on farm ultra-sound scanning.

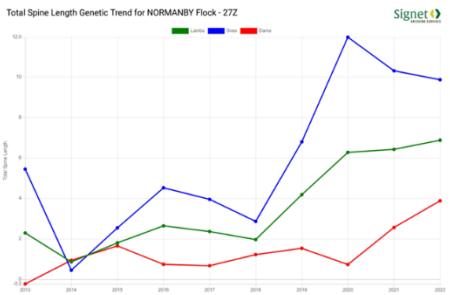


Case Study – Normanby Flock

Ed Brant of the Normanby flock has been using CT scanning as part of his breeding programme for his flock of Hampshire Downs since 2013. He is aiming to breed commercial tups with a focus on lambing ease, lamb vigour, growth, carcass yield and conformation. He relies on the CT scanning information to influence his breeding decisions on carcass yield and conformation and speed up the progress he makes in these traits. This is demonstrated in the graphs below which show the improvement in lean weight, Terminal Sire Index and Spine Length since the farm started recording.







Key Take Home Messages

- CT scanning provides more accurate data for EBV's.
- It allows breeding focus to be on improving carcass quality in terms of yield and conformation.
- Should build confidence both for pedigree and commercial buyers in the tups they are buying.
- The technology is continually developing to record other traits which may be beneficial in the future.

Further Reading

https://www.sruc.ac.uk/media/8d8ea45c2864548/ct-scanning-services-brochure.pdf

RamCompare | AHDB

Profiting From Terminal Sire EBVs at Thistleyhaugh | Information helping farmers in Scotland | Farm Advisory Service (fas.scot)

Breeding And Feeding For Sustainable Sheep Systems | Information helping farmers in Scotland | Farm Advisory Service (fas.scot)

Using Estimated Breeding Values In Sheep | Information helping farmers in Scotland | Farm Advisory Service (fas.scot)