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Benefits of ultrasound and CT scanning

Neville Jopson

Breeding objective (2)

- Decide what production traits are important for genetic gain in your herd
- Remember the more traits selected, the less progress made in individual traits

The stag breeder (4)

- **Know that selecting the right breeder is the most important step in the process**
- The breeder's herd must show genetic gain in the production traits important to your herd
- The breeder's herd must be genetically superior to your own herd
- Your herd's production will track the genetic improvement of your breeder's herd



Background

- Main focus of genetic improvement programmes for venison has been improving growth rates
- High growth rate animals achieve slaughter live weights at an early age
- The amount of carcass that can be turned into meat cuts for sale is also important
- Weight of saleable meat at a given carcass weight (meat yield) is not necessarily improved under selection for growth rate

Measurement of meat yield

- Need to be able to measure it to improve it
- Ultrasound and CT scanning technologies from human medicine allow us to look inside the body of a live animal
 - ▣ Both widely used in sheep, but some issues in deer
- Use ultrasound to measure the loin
- Use CT to measure the whole animal/carcass



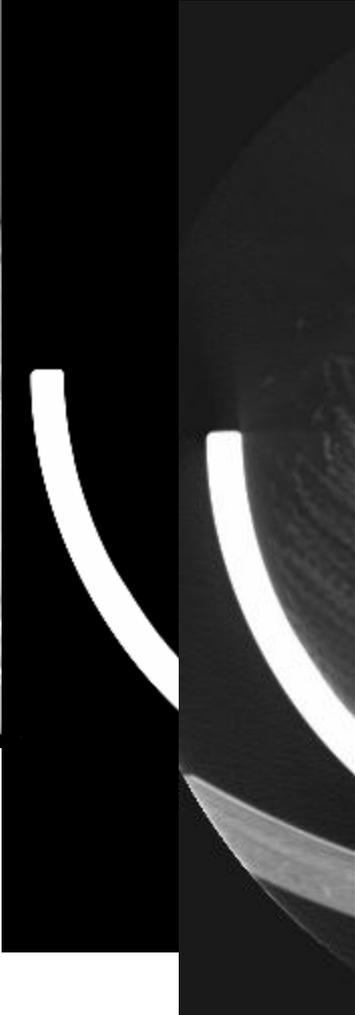
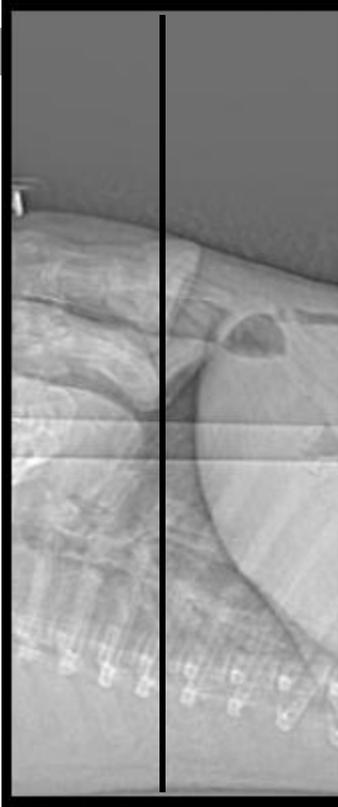
Ultrasound scanning

- ❑ Small and portable meaning it can be used on-farm
- ❑ Deer can be measured in a crush without needing to use drugs
- ❑ Can only measure the loin (EMA)
- ❑ Relatively inexpensive and fast so large numbers can be measured
- ❑ Winter coat is a big problem

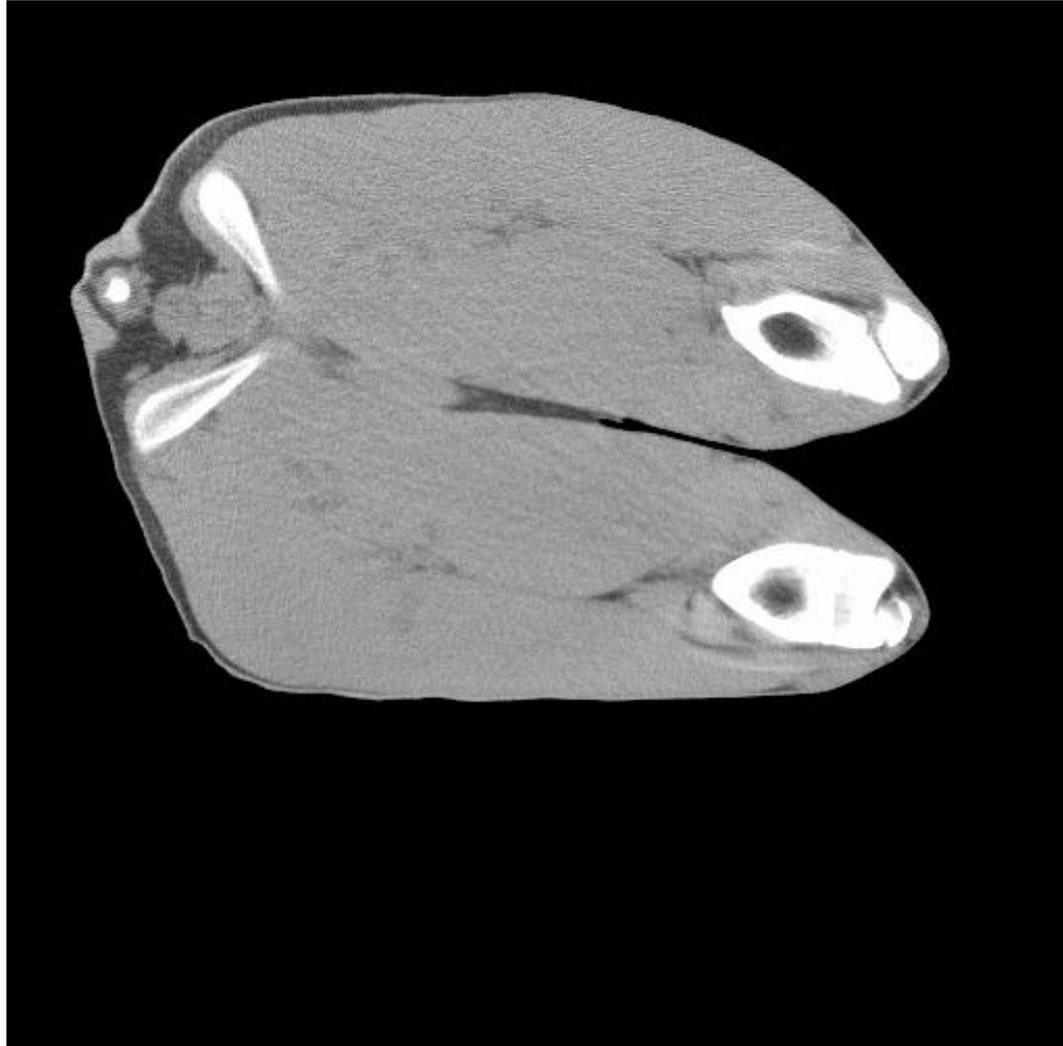
CT scanning

- Very accurate measurement of muscle, fat and bone in the carcass
- Scanning is expensive, slow and animals have to be transported to the scanner
- Maximum size restriction (100 – 110kg)
- Use two-stage selection
- Benefit is in selecting the very best stags to use as sires in the stud

Example CT images



Hindleg



Loin



Shoulder



Benefits

- Gains from using CT and ultrasound estimated at an additional 510 grams of meat per round of selection, including
 - 270g additional in the hindleg primal
 - 70g additional on the loin primal
 - 150 grams additional in the shoulder primal
- Genetic gains are permanent and cumulative



Amount of variation

- Difference in striploin weight measured at slaughter in red deer was around 1.1kg between top and bottom 5% at same carcass weight
- At \$9/kg carcass weight, this equates to a difference of \$9.90 per head in the loin alone
- Overall value much greater – include shoulder and hindleg and the difference is \$54 FOB/animal

Summary

- Ultrasound and CT scanning can be used to improve carcass yields over time
- Good progress can be made with ultrasound scanning
 - Inexpensive, fast, large numbers of animals but can only measure part of the carcass
- Greatest progress with CT
 - However very expensive so only a small number of animals measured each year