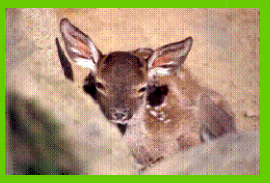
Venison Supply Systems

'research for a profitable and sustainable industry'



Project Delivery Progress

1 October 2007 – 20 February 2008

Geoff Asher (Programme Leader)
Invermay Agricultural Centre, Mosgiel

agresearch Farming, Food and Health. First
Te Ahuwhenua, Te Kai me te Whai Ora. Tuatahi

DEERresearch

Objective 1:
Venison market supply systems

Projects:

(a) Oestrous cyclicity of Eastern/Western genotypes

(b) Genetics of seasonality

(c) Rumen development

(d) Immunological control of antler growth

(e) Strategies to achieve early calving

Objective 2:
Enhance on-farm productivity from venison systems

Projects:

(a) Diagnosis and pathogenicity of parasitism in deer

(b) Focus Farms

Objective 3:
Environmentally responsible deer systems

Projects:

(a) Muddy deer (completed)

(b) Extensive (high-country) of deer systems

(c) Urination sensing tool

1(a) Oestrous cyclicity of Eastern/Western genotypes

Status : On track

Aim : Characterise differences in the onset and cessation of the breeding season between genotypes.

- Oestrous cyclicity of Eastern (*hippelaphus*), Western (*scoticus*) and F_1 hinds
- Year 1 : Pubertal hinds (2007) … completed
  Year 2 : Adult hinds (2008) … underway
- Year 1 plasma progesterone profile completed and oestrous cycle data characterised.
- ISSUES : Clinical Johne's Disease (Easterns)

1(b) Genetics of seasonality

Status : On track

Aim : Understand the genetics of early conception traits in red deer

- Conception date scanning for early breeding hind phenotypes is continuing in 2008 across 4 pedigreed herds
- Large database in preparation for SNP-chip technology
- Early analysis indicates a heritability of conception day of 0.41….very exciting !
- MTRR1A gene has been sequenced in English, Eastern, Wapiti & Pere David's deer – 5 single nucleotide polymorphisms (SNPs) identified but not discriminating within European red deer strains

1(c) Rumen development

Status : On track

Aim : Influence early rumen development to improve red deer calf growth in their first autumn.

. Year 1 study completed….GI tract development characterised (Kirsty Hammond ; Gerben Hofstera)

. Year 2 study underway….manipulation of early rumen development (soluble fibre , long-chain sugars and appetite stimulants)….to enhance the ability of calves to utilise nutrients before and after weaning.

1(d) Immunological and genetic control of pedicle/antler growth

Status : On track

Aim : Inhibit pedicle/antler development in venison-producer stags to obviate the need for antler removal before slaughter

- Anti-GnRH vaccine (Improvac Improved) licensed in NZ for use in cattle….immuno-castration (reversible)
- Immunisation of weaner stags to suppress/delay testis function to ablate pedicle formation prior to slaughter
- Trial protocols/IAEC approvals for a mid-March start.
- Measurement of phenotypes exhibiting late pedicle development to start in May/June (Landcorp)

1(e) Strategies to achieve early calving

Project completed : Final report filed

Aim : Examine the impact of management and genetics on early conception/calving of red deer.

Conclusions….

. Limited scope for management interventions when farms are not production limited

. Complex long-term interactions exist between the animal and its nutritional environment….particularly in relation to foetal development and calving date

. A major effect of conception date on gestation length exists that partly mitigates the effects of early conception

. Genetics = key opportunity for advancing calving.

2(a) Diagnosis and pathogenicity of parasitism in deer

Status : On track (future alert)

Aim : Determine clinical and subclincal effects of parasitism on young deer and develop diagnostic markers.

- All field work on Massey and Hindon Station completed
- Laboratory work completed
- Data analysis pending
- ALERT : Jonna Swanson (PhD candidate) has returned to USA (family reasons) – this will delay data analysis.

2(b) Focus Farms

Status : On track

Aim : Improve on-farm productivity through improved knowledge/technology adoption.

- Three new Focus Farms establish
  - Rotorua, Hawkes Bay, South Canterbury
  - Fourth Focus Farm (Mid Canterbury) still undergoing selection
  - Two existing Focus Farms (SFF funding) in Otago/Southland in operation for another year.

Tony Pearse has provided update

3(a) Muddy deer (Effects of wintering management of deer on water quality)

Project completed : Final report filed

Aim : To examine the effects of different wintering systems on muddy deer and contamination to waterways

- Overland flow from grazed areas during winter has potential to adversely impact water quality.
- *E. coli*, ammoniacal-N and DRP are of greatest concern.
- These issues are not restricted to deer farming alone.

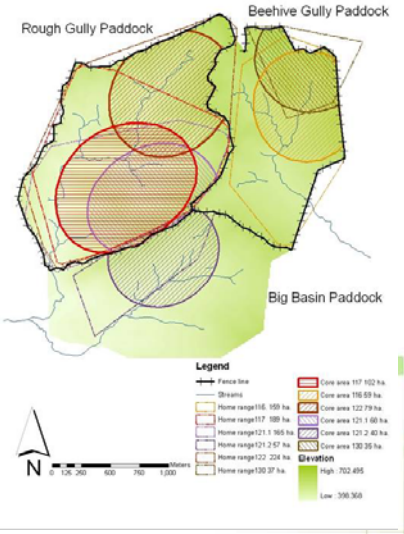
3(b) Extensification of deer systems

Status : On track (new project leader)

Aim : Understand habitat utilisation of extensive high-country rangelands by farmed deer.

- 2006/07 calving season data from Haycock's Station analysed
- Lay publication in The Deer Farming Annual
- MSc thesis completed (Michael Netzer, Otago)
- GPS collars placed on hinds in October 2007 for recovery in April 2008…How does social ranking of hinds influence their home-range over calving ?
  - We will review the methodology of this project

GPS Study at Haycocks Station



3(c) Urination sensing tool

Status : Struggling to stay on track.

Aim : Develop an intra-vaginal device that logs urination events of red deer hinds.

- Major technical hurdles
- Go/No Go point on 31 March signalled
- If 'No Go', what alternative methodologies will we use to measure urine/nitrogen deposition within the environment ? .....or **discontinue** and **reallocate** resources to other projects.

Programme Highlights 2007/08

- FRST re-contracting for 6 years !!!!!!!!!
- Higher profile of science within the industry
- University collaborations….very positive outcomes
- Publication outputs are high (despite FRST bidding)
- End of the EOI era (phew)
- A feeling of being fully connected with industry

Issues (not problems)

- Capability growth and retention within agricultural sciences
  …graduates not moving into post-graduate studies
  …reliance on overseas students to 'do the work'

- Staff turnover…normal event but can leave small teams struggling to meet project commitments

- Staying ahead of inflation with a fixed budget
  …allocation of some staff time to 'non-deer' projects

- Loss of venison processing research from FRST contract
  …keep interaction with Eva Wiklund

New opportunities

Science is forever moving forward…new opportunities spring up overnight.

- 6-year planning of milestones is indicative of outputs
- How flexible are we ?

New genetic technologies arriving at a stunning pace.
New breakthroughs in fundimental science.

eg. 'kisspeptin' (human C-terminal Kiss 1 decapeptide)
….newly discovered peptide that seemingly regulates GnRH release , thus controlling seasonality in mammals