Changes in the Social Network when Separating High- and Low-productive Dairy Cows

Koene, Paul and Hogewerf, Pieter

Wageningen University & Research
Current: Production ~ Social network data

Questions that need answers:

- Is the individual dairy cow producer? Or scrounger?
- Has it a positive effect on production? Or negative?
- Is its welfare OK? What is its influence on others?
Cow-Calf relations

Experience

- Scottish Highland, Galloway, Heck cattle
- Hider and follower diversity (more hiders)
- Creches (first month after 4 days)
- Cow calves and bull calves
- Flexible organisation (Fusion-fission, family bond?)

My aim to promote and analyse

- Approach-Avoidance behaviour not Bonding
- Social Network that monitors Natural Behaviour
- Management Systems that follows the Social Network
But now for the Introduction

- Dairy cows may graze more efficiently when allowed grazing in predefined areas with predictable sward height and grass quality.

- According to literature separating High- and Low yielding (HY and LY) dairy cows may have advantages for efficient grassland use, by allowing HY-animals to graze on a new grass strip first.
October 2016 at Dairy Campus
BoviGuard

- BoviGuard actuator
  - Warning (sound)
  - Correction (shock)
Group reaction on signal
Individual reaction on signal
Methods

- GPS and NN and NND
- Milk production was recorded (liter per day)

- Data were recorded in three periods, i.e.
  - P1 (learning),
  - P2 (basis) and
  - P3 (cross-over, i.e. experimental and control group were switched).
Methods

- In the control group 8 cHY and 8 cLY cows were grazing on a fixed area with every day a new strip of grass.

- In the experimental group 8 eHY-cows (matched with cHY) were also free to graze in the same fixed area, but

- **8 eLY cows (matched with cLY) were potentially stopped at a virtual fence that reduced the grazing area with**

- Possible social, welfare and production consequences.
Period 2 Day 1
Exp and Control switched
Milk yield

HY-cows (23.5 l/day) and LY-cows (19 l/day) in P1, P2 en P3 (all P=0.000).
No difference between virtual fence and control.
Results

- The virtual fence was successful in preventing eLY-cows to reach the fresh grass.
- A reduction in their locomotion was found that might be related to a reduced welfare.
- However, no effect of the virtual fence and the restriction of the LY experimental group on milk production was found,
- Preliminary analysis of the Social Network showed a strong separation between eHY- and eLY-cows induced by the virtual fence.
- In the cross-over this separation initially remained, but extinguished in 3 days.
Conclusion

- Low and high yielding dairy cows are easily separated by a virtual fence.
Thanks!

Questions?