

Graze Guide

Sensor-controlled grazing of dairy cows (virtual fencing)

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Seminar: Future Farming; Smart Dairy Farming

Jaarbeurs Utrecht, Thursday 21 June 2018



Research is financed by:

- Courage
- Dairy Campus innovatie fonds
- Melkveefonds

Increasing attention for grazing

Animal welfare organisations:



Pas op: kaas zonder weidemelk!

Stalmelk in Chocomel en Fristi



Technical developments:



Drie digitale meetsystemen toegelaten om weidegang

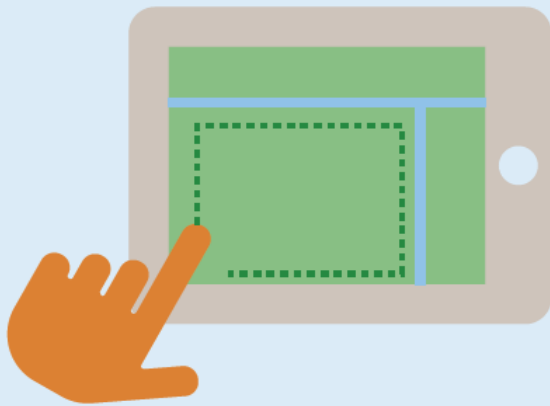
16 februari 2017



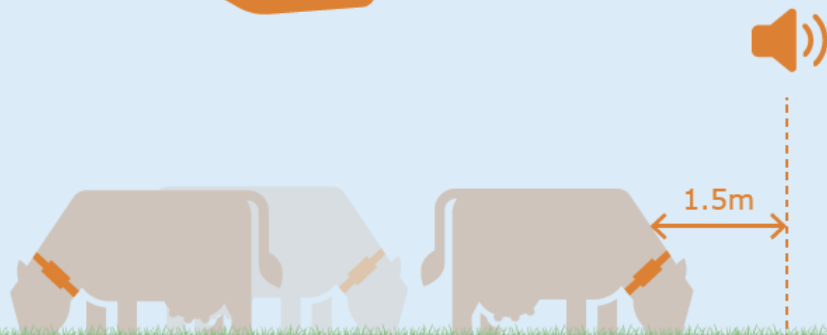
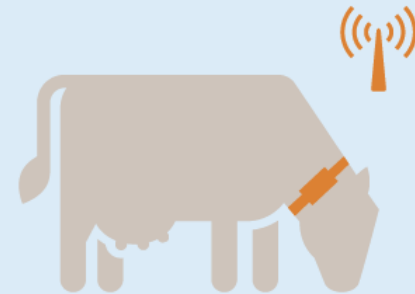
De Duurzame Zuivelketen heeft drie meetsystemen toegelaten die melkveehouders kunnen gebruiken om hun weidegang per koe digitaal te registreren. De meetsystemen van fabrikanten GEA, VSM en Het Internet Huis zijn op de witte lijst hiervoor geplaatst.

Virtual fencing

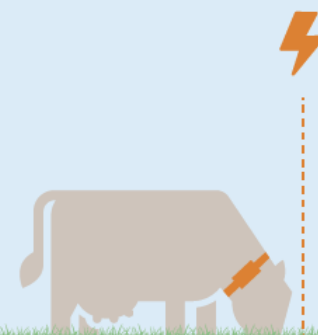
Farmer draws virtual fence with app on tablet or smartphone



A GPS-collar gives cow signals and communicates data to the farmers-app



At a distance of 1.5m of the virtual fence cows receives a sound signal



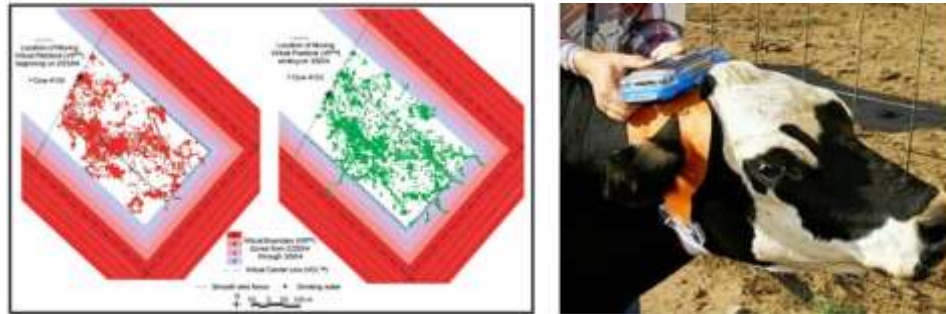
When continuing walking in same direction the cow runs against virtual electric fence

Motivation

- Efficient & labour extensive grazing method:
 - Adaptive grazing area
 - Position information of individual cows (GPS)
 - Lead cows with (sound) signals
 - Correct cows with electric signals
- First questions:
 - Is sensor-controlled grazing possible?
 - Wat is the effect on behaviour and health?

Other initiatives

Anderson, US 2007



CSIRO, Australia 2016



Nofence, Norway 2018



Umstätter et al, Scotland 2015

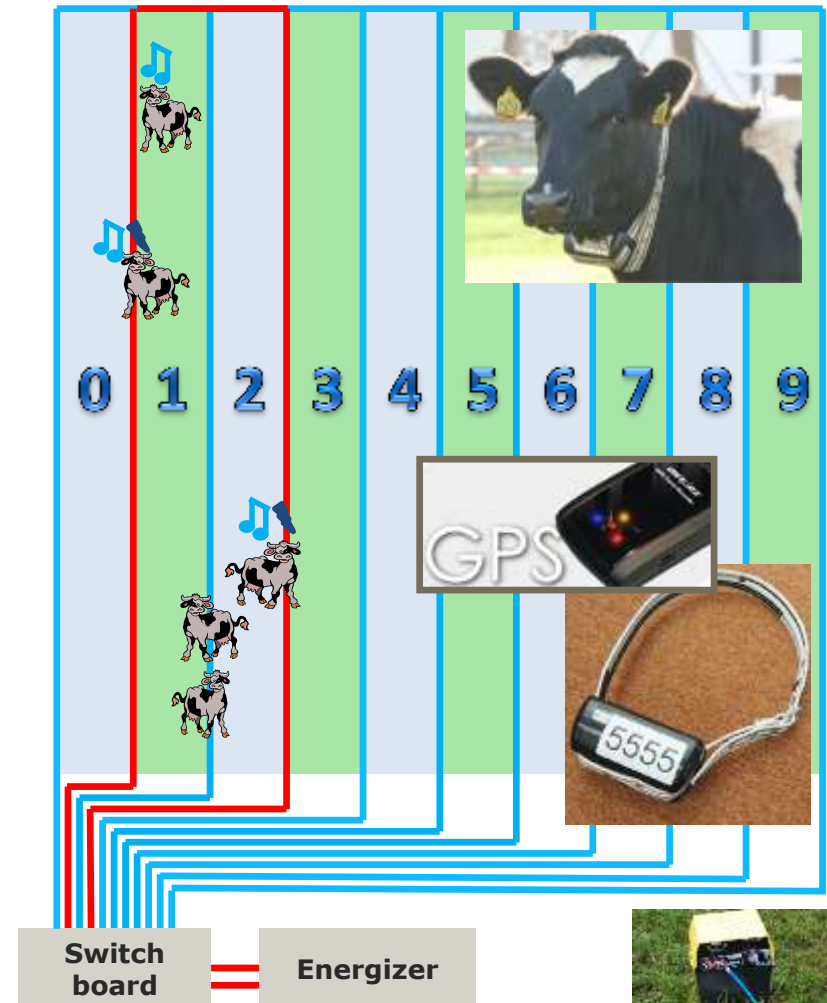


Piggott, New Zealand 2017



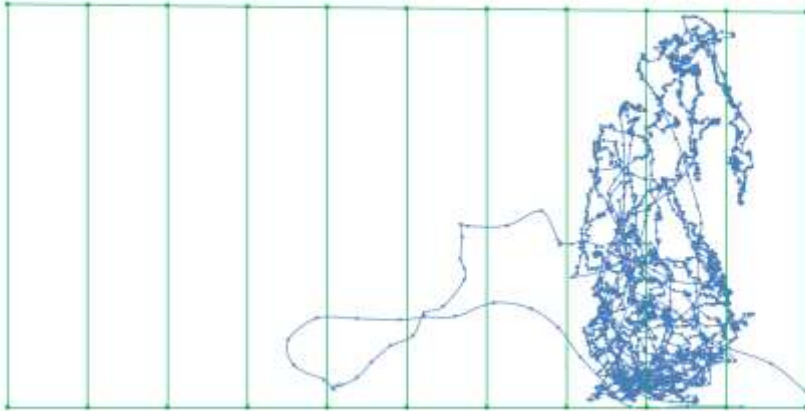
2015 (Carus) BoviGuard + GPS

- Approval animal welfare commission
- Inductive loop
- Strips
- BoviGuard actuator
 - Warning (sound) / Correction (shock)
- Heifers (4x4)

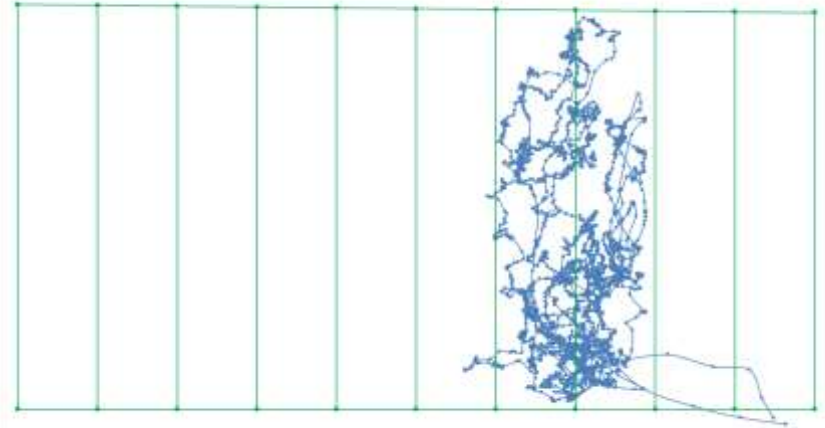


Carus 2015

koe 1 - veldjes 2&3 op 21/10



koe 1 - veldjes 3&4 op 22/10



Conclusions:

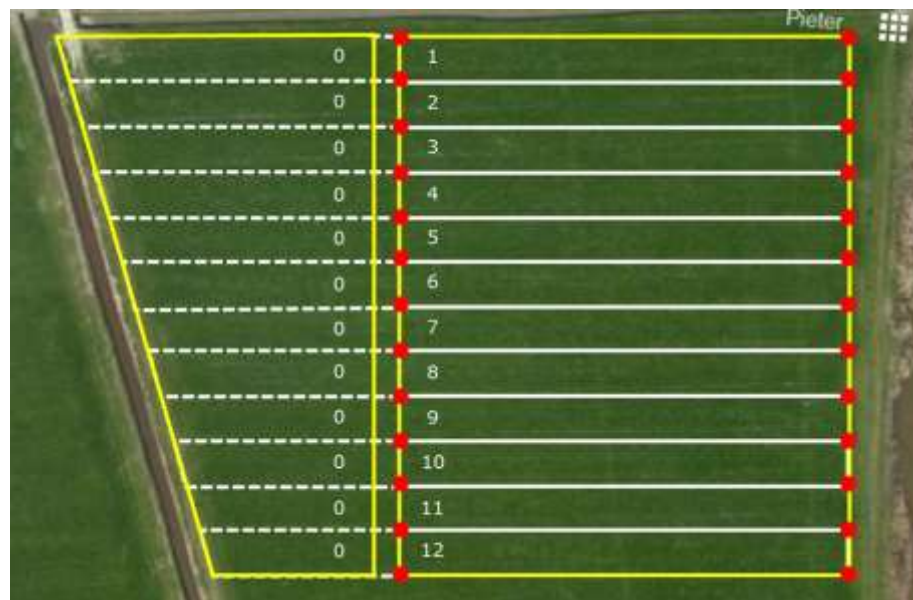
- Cows learn quickly
- Herd behaviour beats virtual fence
- Some escapes recorded
 - Mostly the same cows
- Virtual fence can have impact behaviour
 - Especially with small strips (10 m)



Research spring 2016 on Dairy Campus

Questions

- Works Graze Guide also for dairy cows
- Is a short training period possible
- What happens if fence is moved during day
- What happens if cows are in heath
- Impact on welfare
- Cows (15) early lactation



Conclusion research spring 2016

- Works the system for group dairy cows?
 - 15-20 per group? No problem
 - Training of the cows? Within 4 hours
 - Problems with cows in heath? No problem
 - Adjustment of fence during day? No problem
 - Effect on behaviour and production? No issues??



Research October 2016 on Dairy Campus

Question (with 2x2x8 cows):

- Keeping High Productive (HP) and Low Productive (LP) apart with Graze Guide
 - LP: 2 strips where cows grazed previous days
 - HP: 2 strips where cows grazed previous days
1 additional strip with fresh grass
- What is impact on production, behaviour & welfare



Conclusion October 2016

- Graze Guide can be used for separating groups
- Impact on production, behaviour and welfare:
 - Remarkable: 2 groups of cows
 - Behaviour: no impact recorded
 - Production: no effect recorded

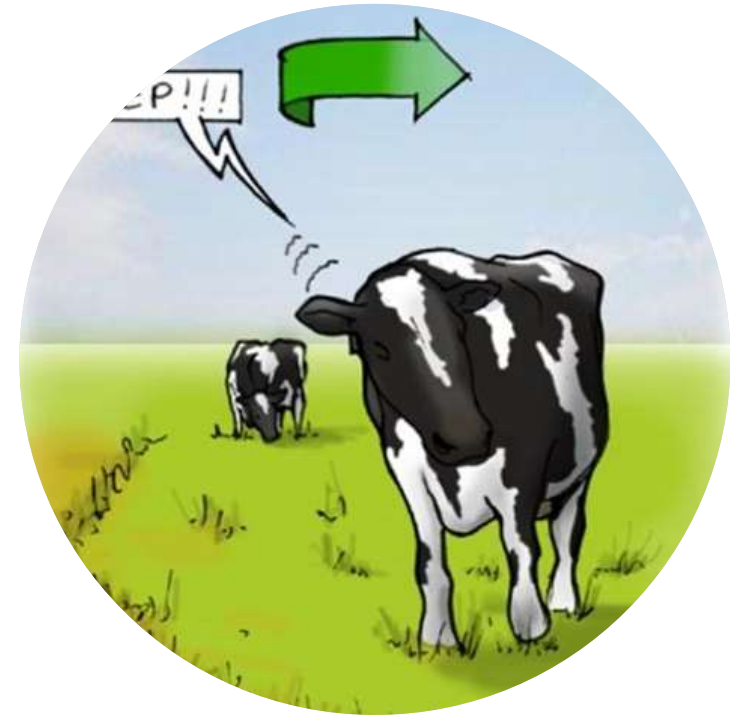


Conclusions

- Sensor-controlled grazing of cows is possible
- Preconditions to dimensions of the grazing area
- System consistency is crucial
- Graze Guide offers new grazing possibilities
- Areas of interest in development
 - Public opinion
 - Animal welfare
- Financially interesting
 - Supplier
 - Dairy farmer



Next step!



- Commercial GPS based system
- Technical & economic feasibility
- Integration in farm management
 - Secure grazing (time a day & days a year)

Questions!