KNOWLEDGE CENTRE FOR AGRICULTURE
Cattle

Challenges in identifying animals in everyday handling

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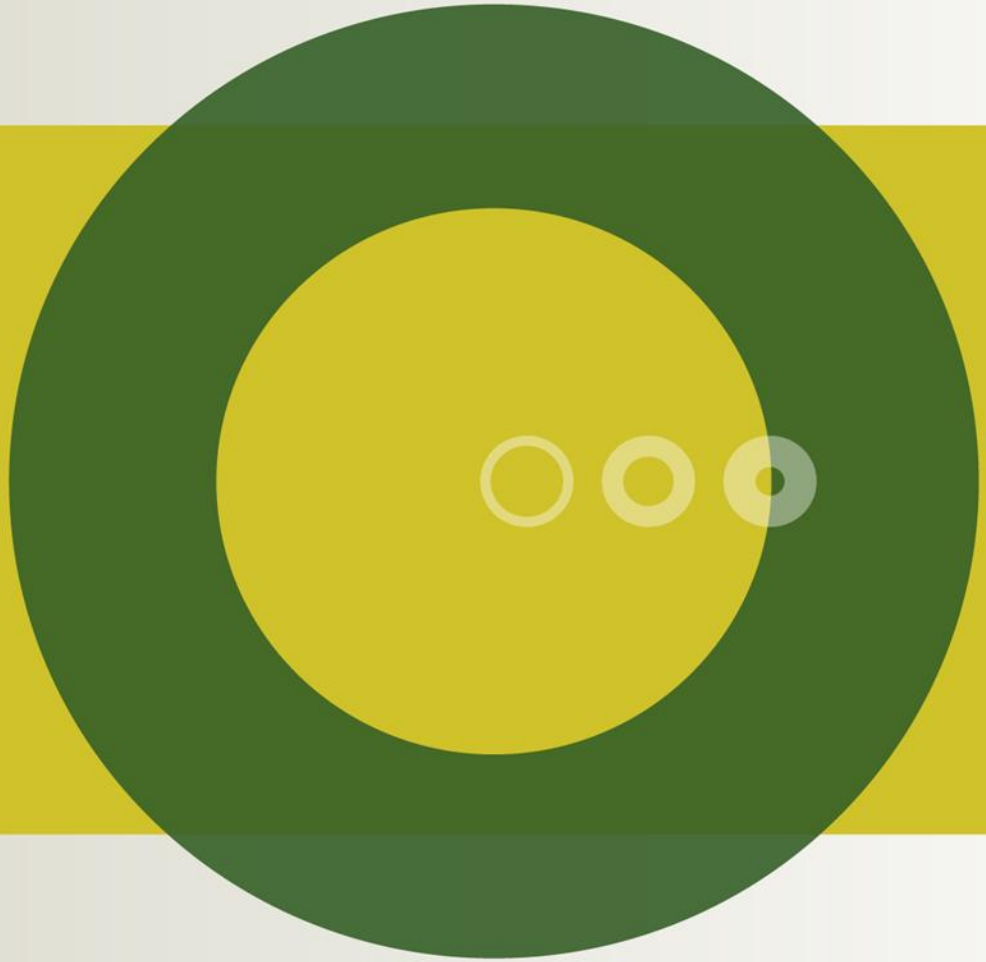

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Identification: Intended focus topic

- Identify important issues for ICAR Technical Workshop 2013
- Inspiration group
  - Farmers
  - Animal Science
  - Advisory services
  - Animal breeding services
  - Laboratory
- Identification, Functional Traits, Health Data Recording

Developments

- Identification announced as a focus topic
- Health Data Conference arranged by SC Functional Traits
- Special seminar on carry-over issues in milk sampling arranged by SC Recording Devices
- A rather complete program

Which animal is which

Herd size

- 10 cows
  - Owner knows each animal (by name) even without tags and handles each animal
  - Few events, one calving per month, easy to remember
- 100 cows
  - Owner and staff know some of the cows but not all
  - Hired personnel to help handling the herd
  - More events, two calvings per week, not easy to remember
- 600 cows
  - Owner and staff do not know each animal
  - Staff shifting (time of day, tasks)
  - Many events, 2 calvings per day, impossible to remember

Requirement for data validity

Error type	Seriousness of errors
Milk, fat or protein	Problematic
Somatic Cell Count	Severe
Johnes Disease, Salmonella, PCR, Pregnancy, Ketosis	Critical

Current situation

- Herds are getting bigger
  - Less human knowledge of each animal
- Ever more sophisticated laboratory tests
  - With ever more consequences on specific individuals
- Errors have directly individual effects
  - Decision making for treatment or culling
- Correct and easy identification ever more important

Levels of misidentification

Country	Misidentified	Source
Denmark	2 – 15 %	Christensen et al, 1982
Germany	4 – 23 %	Geldermann et al, 1986
Ireland	8 – 20 %	Beechinor and Kelly, 1987
Netherlands	12 %	Bovenhuis and Van Arendonk, 1991
UK	10 %	Visscher et al, 2002
Israel	12 %	Weller et al, 2004

Retention rate in Kenya trial

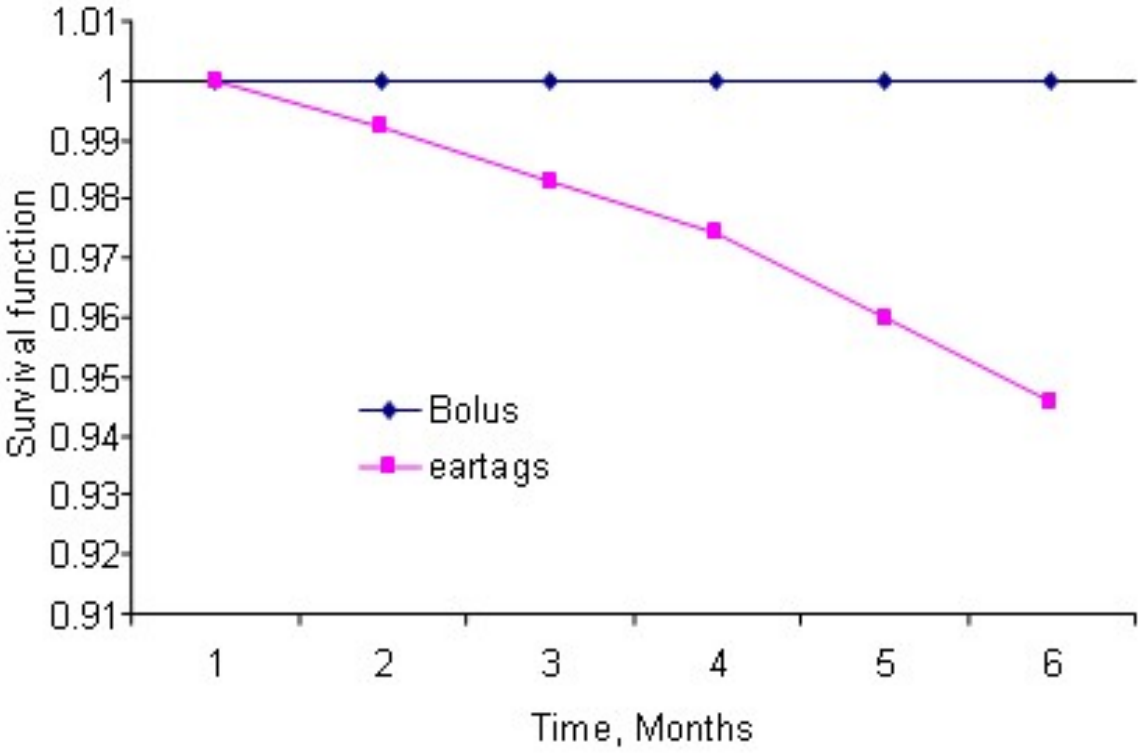


Figure 3. Survival distribution function of electronic tags verses body site

G.O. Matete et al, 2010

Reading visual ear tags

“What looks like a 7 is a 2, what looks like an 8 is a 6, and 6’s look like 5’s.

Sometimes I mistake a three-digit number for a two-digit one because the number in the hundredths place is hidden behind a cow’s ear hair.

Some of the white numbers have faded so much that they’re barely visible even from 10 feet away -- with binoculars held up to my eyeballs.

There are cows with long ear hair that covers most of the numbers, or a tag is kitty-wampus and hidden under ear hair.

After being proven wrong several times, I now state my uncertainty first then announce numbers I read.”

Amy Kirk, The Daily Republic 24 March 2013, South Dakota, USA

Reading Electronic Identification

- Antennas and antenna position
- Electronic background noise

- Cows who never had a transponder
- Cows who lost their transponders
- Malfunction of transponder

- ID never entered into farm PC
- ID entered incorrectly into farm PC

- Nearby cows
- (Shifted neckbands)

Eicker, Stewart and Rapnicki, 1999

What to do ?

- Tagging of animals is on farm
- Reading of tags is on farm
- Sampling is on farm
- Correct answers only when identification is correct

- **How can we help the farmer / herdsman ?**

Identification at birth

- Denmark 2008
- 1000 calves tested in herds >200 cows
- 10% misidentified

- 33% of errors: Correct dam - Wrong bull
  - More frequent with DIY insemination
- 67% of errors: Wrong dam – and often wrong bull
  - Cow isolated vs. Group of cows: No significant difference
  - Mixing up calves and ear tags in tagging and registration
- Almost half of the herds had no errors
  - Problems can be avoided if you want to !!

Fogh, Byskov, and Nielsen, 2011

SOP instructions

Standard Operation Procedures

Farmer and staff can adapt and optimize everyday procedures

To do things easy and yet appropriate

To always do things in the same way

To cross language barriers

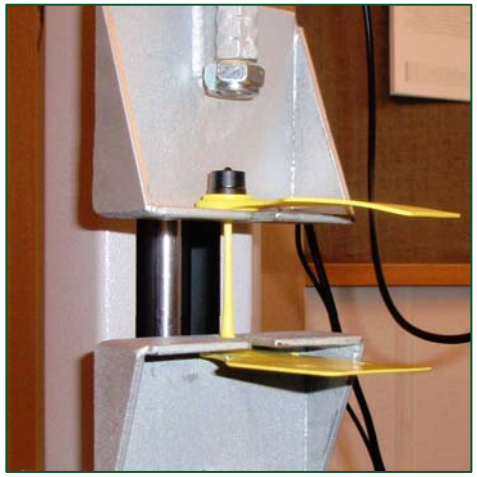
(WRITE NAME OF THE FARM)

6. Calving - The calfs first minutes

6.1	**Check calf's breathing** Tickle its nose with a straw ➔ the calf will sneeze out mucus If lots of mucus in air passages – strap up the calf by hind legs possibly using the housing equipment	
6.2	**Rub/dry the calf with clean straw** **Disinfect the navel with** _____(spray bottle, iodine dip)	
6.3	**Calf of a Para TB Yellow or Red cow is moved to a calf pen immediately** **Other calves are moved after ___(1) hour**	
6.4	**Find ear tack** **Put ear tacks in ears** **Register CHR-number**	

Lost tags and replacing of tags

- ICAR test of locking mechanism in plastic tags



- Application and break force
- Normal use and fraudulent use
- Readability, visual and electronic

Reading and recording, visual tags

- Read distances are different between persons
- After reading you have to manually record the number (handwriting, read of handwriting, tipping of data etc.)

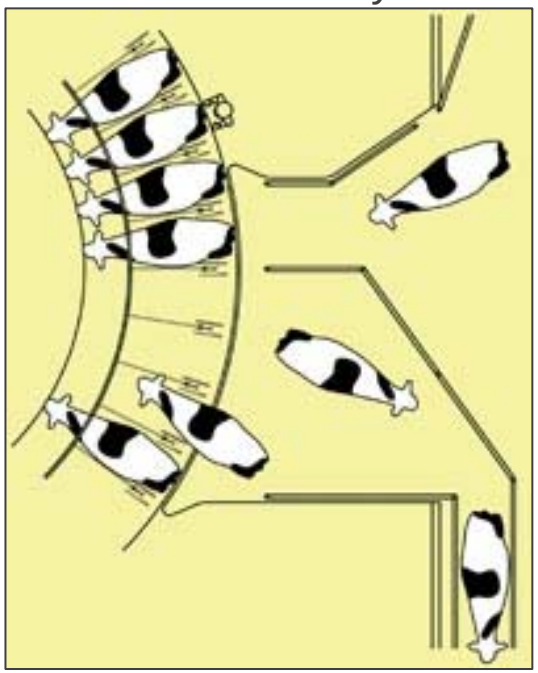
EID performance requirements

- ISO 24631-3 tested transponders
  - Minimum Activation Field Strength
    - EU, Sheep and goat: 1,2 A/m or less
    - CCIA, Cattle: 1,0 A/m or less
    - **DK, Cattle: 0,6 A/m or less**
  - Modulation Amplitude:
    - **10 mV** or higher at the indicated MAFS
  - Same readability expected from transponders with same ISO 24631-3 test results (HDX and FDX-B)
  - Some readers might not read HDX and FDX-B at equally high levels

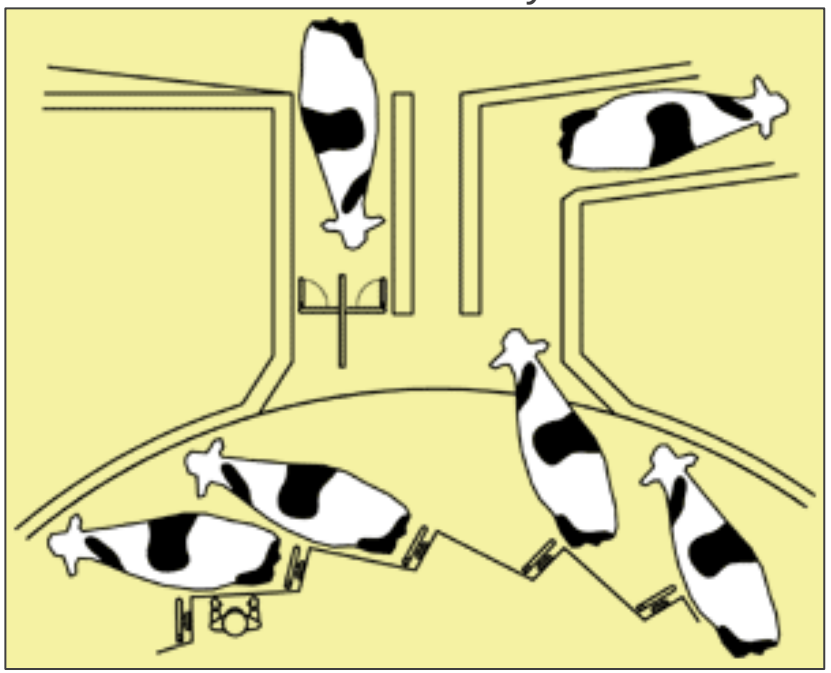
Identification point

- Access ways and reading point

Outside rotary



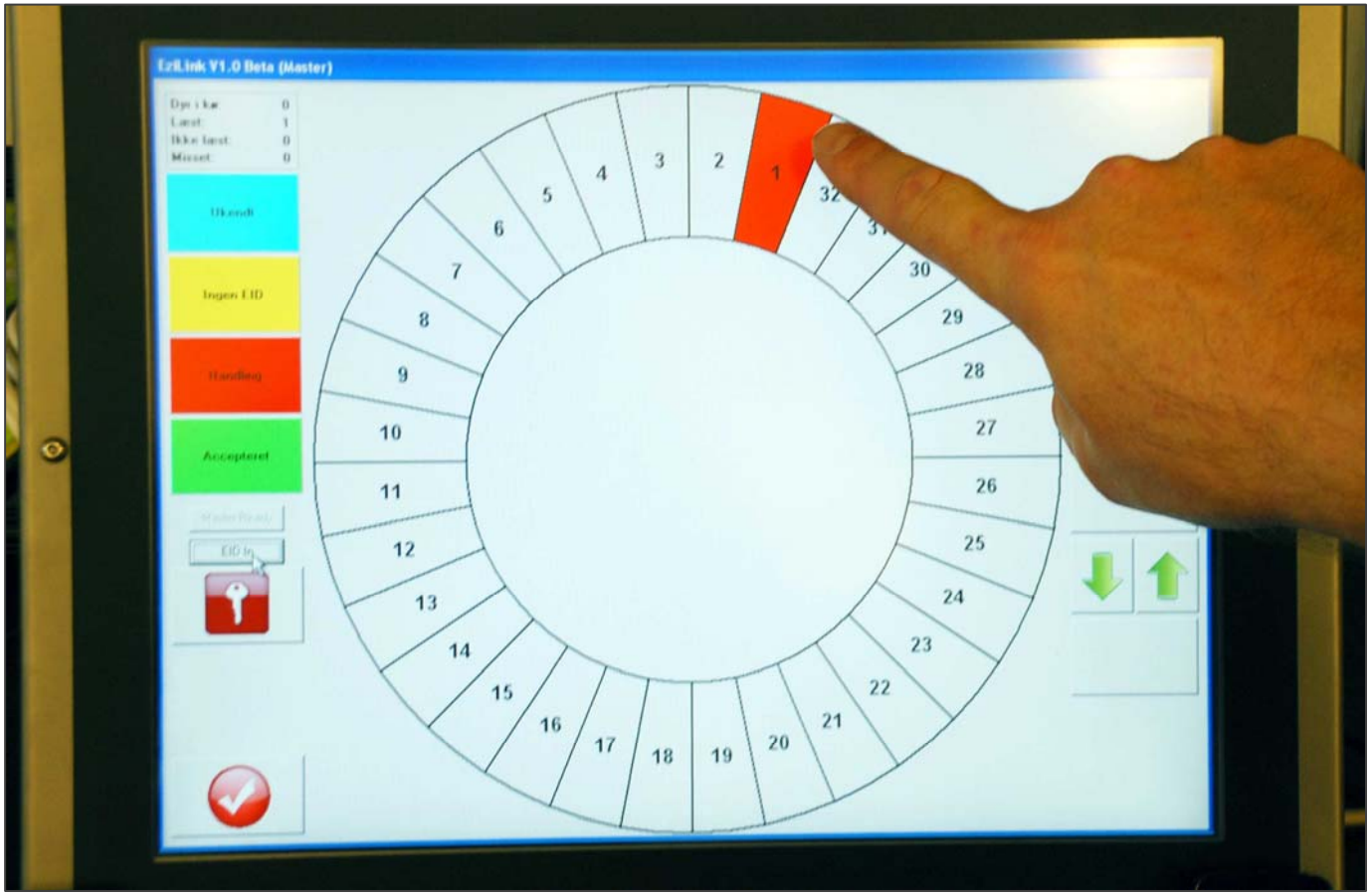
Inside rotary



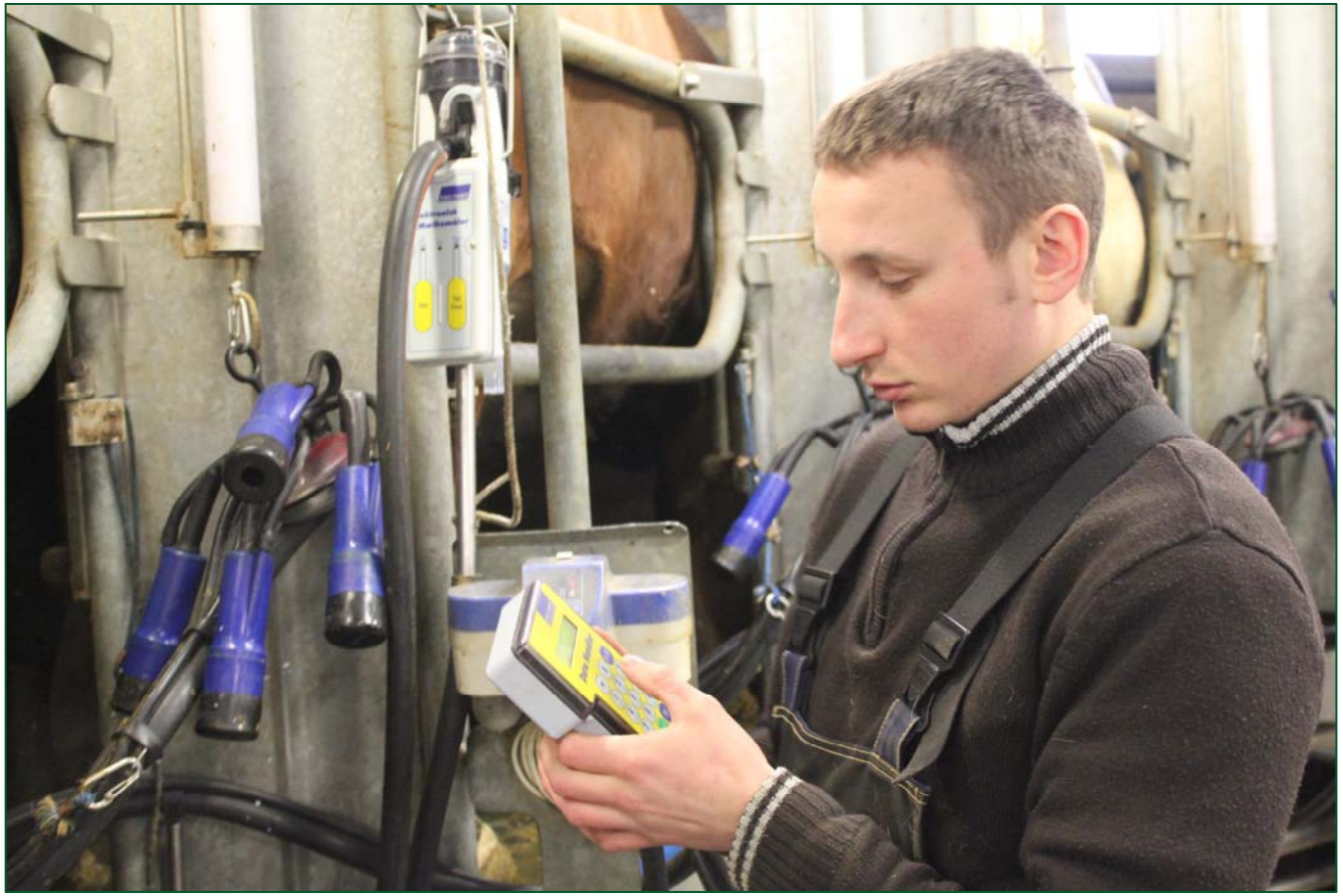
Display system for milking parlor

Numbers and alerts

Display system for milk rotary

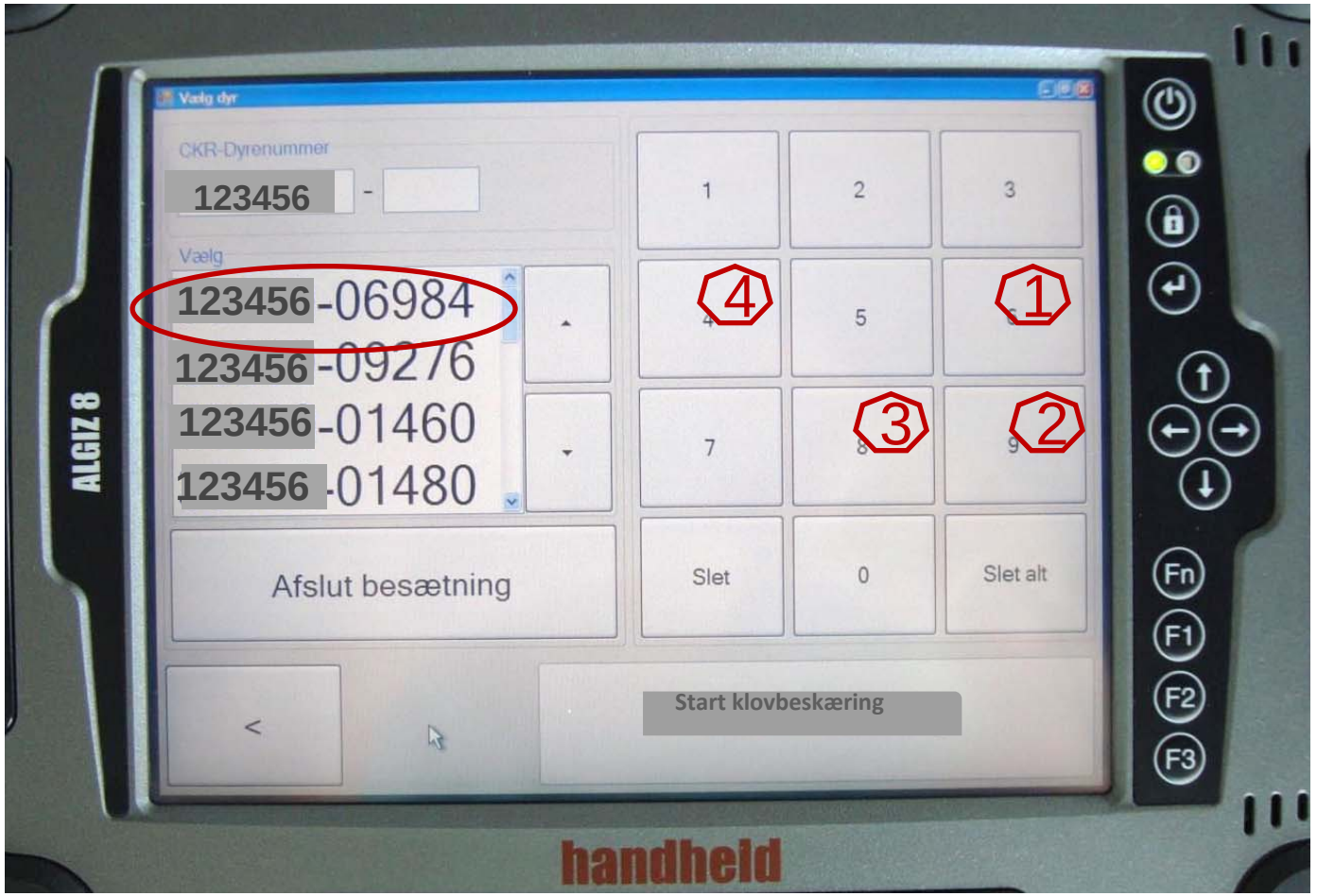


Verification in data handler



Hoof trimmer touch screen

Touch screen verification system



Electronic recording

- Smartphone / PDA
- Stickreader with memory
- All animals on farm in device register
- Logical checks possible
  - Insemination of bull calf
  - Insemination of pregnant cow
  - Animals not registered in herd
  - Etc. etc. …..
  - Correcting most misreadings - mishearings - misprints - mistypings

Can DNA typing help us ?

- Sampling easy (tissue sample tagging)
- Analysing getting ever cheaper
- DNA typing can help us decide if animal is correctly tagged and registered
- DNA typing cannot help us in everyday handling of animals.

Conclusions

- The basics of animal identification is on farm
- The herds are getting bigger
- Herdsman does not know most of the animals
- More specific individual tests on the milk sample
- Requirement for more focus on animal identification
- Recording organisations should:
  - Keep herdsmen focusing on proper identification
  - Provide easy to use and properly fit identification systems
  - Provide easy to use and properly fit registration systems
  - Be aware of quality of basic identification at each client

Thank you for attention