

Precision Agri-Food Technology: Developing Ontario's Vision and Strategy

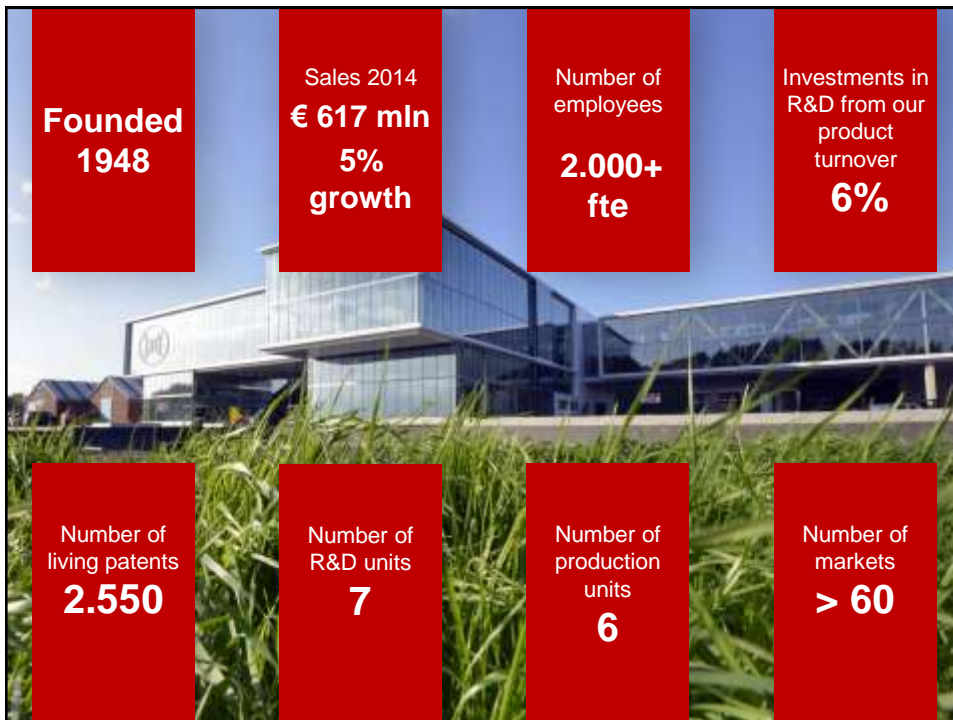
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A Precision Robot Dairy Perspective

Ben Smink
Lely North America
Farm Management Support

'ON Ag Organizations: educate & protect'

www.lely.com





A Precision Robot Dairy Perspective:



In this presentation:

- What milking robots measure and present
- Decision support already used today
- What do producers expect in the future
- Future considerations for Ontario



> 120 Values/cow/day from the robot:

Observe

Activity*
Rumination*

Feed intake

Weight*



Milk Yield
Milk Fat
Milk Protein
Milk Lactose
Milk Speed
Milk Temperature
SCC*
Robot visits
Box times

Per Quarter:
- Yield contribution
- Teat position
- Pre Milk Time
- Milk Time
- Conductivity
- Color

+ combinations of all of the above ...
+ combinations with calendar + health events
+ combinations with external data points

* = option



Automatic Analysis and Attention:

Observe


Aggregated data from sensors + cow calendar

- ⇒ Automatic Analysis:
- ✓ Production
- ✓ Udder health
- ✓ Body health
- ✓ Reproduction



- ⇒ Meaningful actions
- ⇒ Decision Support
- ⇒ Automatic Steering

Producers: Thoughtful of resources



Vision

1. Get the best out of land and herd
2. Unused production talents cows
3. Secure cow's health
4. Utilize genetic potential
5. Capitalize on genetic evolution

⇒ Precision monitoring

⇒ Precision handling

⇒ Precision decision support

⇒ Smart affordable efficient resource management.

Combining real time on site data with reliable external info!





Figure 1. World Population (1965 - 2050)
Department of Economic and Social Affairs of the United Nations (2007)

How could that look like?

Video: "Farm Management Vision"



Decision Support used today:

90% Lely milk robots connected to internet

⇒ For remote technical support

80% Robot farms connected to Lely Benchmark

= Global data cloud aggregated data

= Incl. data from all robots in Canada



Decision Support used today:

⇒ Producers: Dynamic milking and feeding

⇒ Producers: Compare results with others and learn

⇒ Producers: Automatic web advice based on own data

⇒ Advisors: Monitor results, compare and improve

⇒ Dealers: Monitor equipment for pro-active maintenance

⇒ Dealers: Field Intelligence showing farms going up/down

⇒ Lely Int.: Field Intelligence to improve quality equipment/services

⇒ Lely Int.: Field Intelligence to optimize settings

⇒ CRV NL: Compare Sires suitable for robots

⇒ Inseminator: Insemination + cows ready in barn.



Decision Support tomorrow:

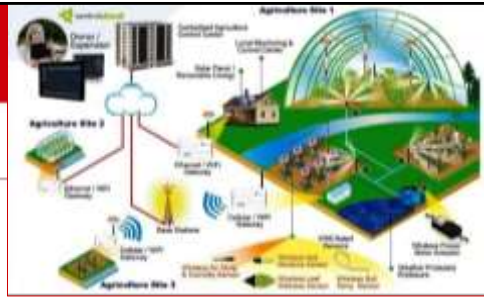
- ❑ Cluster Analysis:
 - ⇒ Enhance Decision support
- ❑ A.I. / Fuzzy logic:
 - ⇒ Auto tune output
- ❑ Connection producer partners:
 - ⇒ Seamless planning activities
- ❑ Genomics & Genetics
 - ⇒ Disease prevention / optimize yield
- ❑ External market info:
 - ⇒ Adjust to environment & resources



Many initiatives ... :



Future considerations:



Three connection platform layers:

- 1) On-site for sensors ('Internet of things')
 - 2) Over-site for system data ('Internet of systems')
 - 3) Global for aggregated data ('Internet of clouds')
- Ultimately, only few main providers will remain
 - Connected to generic cloud solution
 - Pay as you use

Future considerations Ontario:



- ⇒ Take the lead in Canada ...
- ⇒ Look over the border ...
- ⇒ Don't 'own' precision ag platforms ...
- ⇒ Team up with existing strong initiatives ...
- ⇒ Stimulate initiatives brought up by industry partners ...
- ⇒ **Educate producers**
- ⇒ **Educate consumers**
- ⇒ **Protect producers**
- ⇒ **Protect consumers**