NIBIO

NORWEGIAN INSTITUTE OF
BIOECONOMY RESEARCH

NIBIO
NORWEGIAN INSTITUTE OF
BIOECONOMY RESEARCH

MILKING ROBOTS IN NORWEGIAN DAIRY INDUSTRY

Pacioli 24, Pristina September 26th 2016

Jostein Vasseljen

Robot milking in Norway

- Highest density of milking robots among the Nordic countries
- 200 - 250 new robots per year
- About 1 500 robots in Norwegian dairy farms (2015)
- More than 1/3 of produced milk runs thorough a robot
- Most of new farm buildings on dairy farms are equipped with robots
- Most important arguments for robots are welfare aspects
- High investments
- Uncertain economy

Why robot ?

- «Large» Norwegian dairy farms fit for one robot
- The robot can be more ergonomical than other milking systems
- Wages in Norway are high, the robot can replace hired labour
- Second hand robots are popular among smaller dairy farms
- The robot gives a lot of information about animal health (and other things)
- Let the farmer have a «normal» family life
- The robot is a highly esteemed member of the staff

Methodology

- 2013 first year of identifying robot milking in the Farm Business Survey
- 48 holdings identified with robots in 2013
- 61 holdings in 2014, 7 are organic holdings
- About 320 dairy holdings in the database
- Selected benchmarking group consisting of the same number of cows and other milking systems. Note that the organic holdings are taken out of the groups

- Compared top third and lowest third of robotic farms

Comparison milking systems 2014

	Robot	Other system
Holdings	54	37
Number of cows	40,4	40,1
Hectares	48	56
Rented land, hectares	25	28
Milk sold litres	298 900	271 400
Quota litres	331 000	288 300
Kilogram milk per cow	8 100	7 400
Kilogram meat per cow	195	262
Capital assets 1 000 NOK	8 080	5 976
Working hours per cow	97	107

Financial Results 2014

1 000 NOK	Robot	Other system
Output per holding	2 771	2 724
Variable cost	1 056	977
Gross margin	1 714	1 747
Fixed cost	831	802
Depreciations	365	278
Net income	519	666
Interest paid	274	173
Return om labour and own capital	431	736
Return om labour and own capital per man year	204	316
Earning capacity NOK per hour	108	160

Results robotic farms

- More milk and less meat produced caused a higher output
- Higher variable costs
- Lower gross margin
- Higher fixed costs
- Higher assets value and depreciations
- 58 per cent more interests paid
- 35 per cent less profitability

Best and lowest third among robot holdings, characteristics

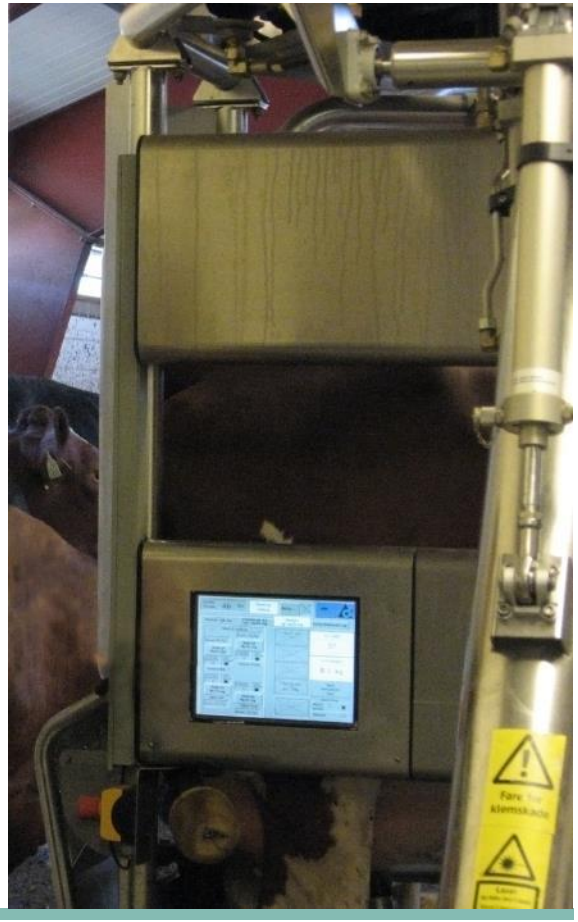
	Top third	Lowest third
Holdings	20	20
Number of cows	40,0	37,9
Hectares	50	42
Rented land, hectares	26	24
Milk sold litres	305 800	273 400
Quota litres	321 300	318 200
Kilogram milk per cow	8 500	7 800
Kilogram meat per cow	191	164
Capital assets 1 000 NOK	7 001	8 413
Working hours per cow	93	96

Best and lowest third, financial results

1 000 NOK	Top third	Lowes third
Output per holding	2 871	2 517
Variable costs	930	1 095
Gross margin	1 940	1 422
Fixed costs	794	855
Depreciations	342	378
Net income	804	189
Interest paid	125	353
Return on labor and own capital	874	-10
Return on labor and own capital per man year	433	-5
Earning capasity per hour	207	10

Characteristics top third

- Higher number of cows
- More land hectares
- More rented land
- Higher quota and milk sold
- Higher percentage of quota filling (95/86)
- More milk per cow
- More produced meat (16 per cent)
- Lower asset value (17 per cent)
- Less labour input (3 per cent)



Financial results top third

- Higher output caused by more produced meat and better milk quality (better paid)
- Less costs (all over)
- Less depreciations and interests paid
- Top third got profitability, lowest third have no profitability

- Paper in Norwegian only, web-side:
  - https://brage.bibsys.no/xmlui/bitstream/handle/11250/2395869/NIBIO_POP_2016_2_22.pdf?sequence=3&isAllowed=y

–Thank you for your attention!