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MILKING ROBOTS IN NORWEGIAN DAIRY INDUSTRY

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AGENDA

- Introduction
- Comparing robot milking with other systems
- Methodology
- Results in Farm Business Survey 2013
- Summary

NORWEGIAN DAIRY INDUSTRY DURING THE LAST DECADE

– Structure and Development

	2003	2013
Observations survey	412	313
Cows per holding	16,2	24,6
Milk, kg per cow	6 479	7 385
Total production, mill. litres	1 526	1 528
Dairy cows at end of year	280 234	229 634
Farms with dairy cows	16 908	9 363

ROBOT MILKING IN NORWAY

- Highest density of milking robots among the Nordic countries
- About 1 500 robots in Norwegian dairy farms
- 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
- 313 dairy holdings in the database (265 with other systems like tie-stall barn, group milking parlour, etc.)
- Selected benchmarking group consisting of the same number of cows and other milking systems
- Compared top third and lowest third of robotic farms

COMPARISON MILKING SYSTEMS

	Other system	Robot
Holdings	43	48
Number of cows	40	40
Hectares	50	50
Rented land, hectares	23	25
Milk sold litres	263 500	286 200
Quota litres	275 900	310 200
Kilogram milk per cow	7 300	7 900
Kilogram meat per cow	287	189
Capital assets 1 000 NOK	5 281	7 802
Working hours per cow	109	104



FINANCIAL RESULTS 2013

1 000 NOK	Other system	Robot
Output per holding	2 634	2 653
Variable costs	928	936
Gross margin	1 706	1 717
Fixed costs	818	782
Depreciations	232	361
Net income	657	573
Interest paid	156	247
Return on labour and own capital	733	524
Return on labour and own capital per man year	311	235
Earning capacity NOK per hour	160	123

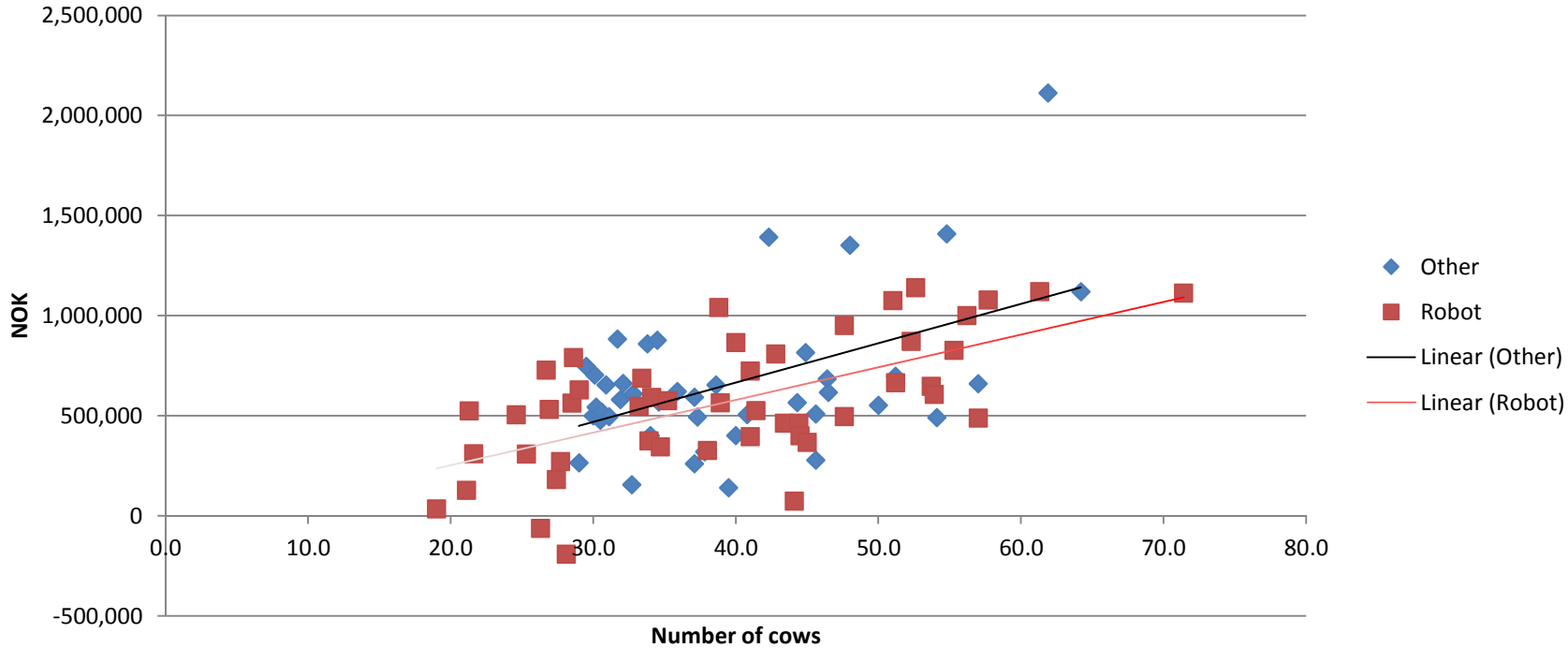


RESULTS ROBOTIC FARMS

- More milk and less meat produced caused about the same output
- Small differences in variable costs
- Gross margin on the same level
- Less fixed costs (labour)
- Higher assets value and depreciations
- 58 per cent more interests paid
- 25 per cent less profitability



NET INCOME PER HOLDING TH1



FAMILY INCOME

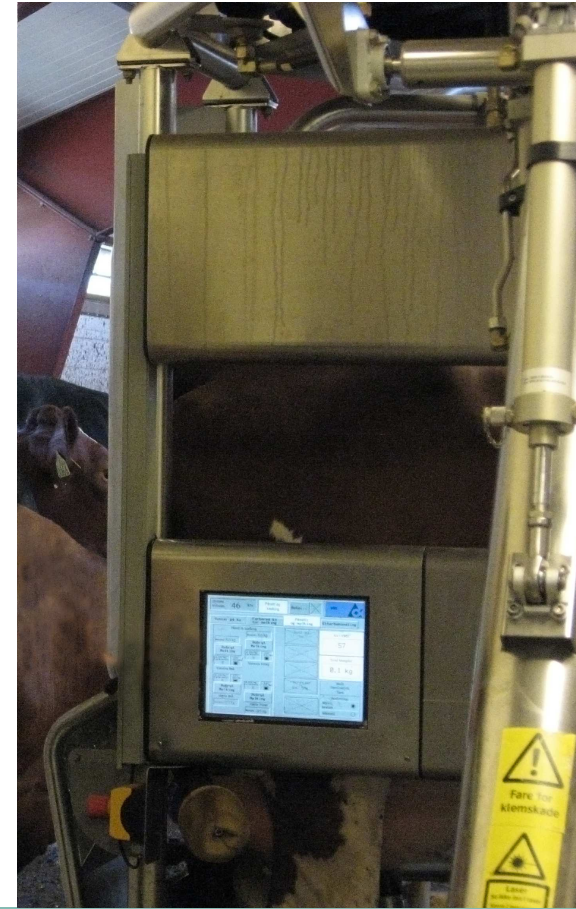
1000 NOK	Other system	Robot
Net income Agriculture	657	573
Net income Forestry	29	14
Net income Other Gainful Activities	39	59
Net income Off Farm Activities	27	35
Wages	192	265
Pensions and sick pay	16	30
Other income	36	57
Total family income	996	1 032

BEST AND LOWEST THIRD AMONG ROBOT HOLDINGS, CHARACTERISTICS

	Top third	Lowest third
Holdings	16	16
Number of cows	38	38
Hectares	48	47
Rented land, hectares	23	25
Milk sold litres	267 000	276 500
Quota litres	286 000	317 400
Kilogram milk per cow	7 800	8 000
Kilogram meat per cow	214	156
Capital assets 1 000 NOK	7 345	8 050
Working hours per cow	101	114

CHARACTERISTICS TOP THIRD

- Same number of cows and hectares
- Less rented land
- Less quota and milk sold
- Higher percentage of quota filling (93/87)
- More produced meat (37 per cent)
- Lower asset value (9 per cent)
- Less labour input (11 per cent)



BEST AND LOWEST THIRD, FINANCIAL RESULTS

1 000 NOK	Best third	Lowest third
Output per holding	2 583	2 429
Vaiable costs	816	971
Gross margin	1 767	1 457
Fixed costs	643	822
Depreciations	335	356
Net income	789	280
Interest paid	165	300
Return on labor and own capital	774	188
Return on labor and own capital per man year	371	81
Earning capacity per hour	183	53

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
- Profitability more than four and a half times the lowest group

FAMILY INCOME TOP AND LOWEST THIRD

1000 NOK	Top third	Lowest third
Net income Agriculture	789	279
Net income Forestry	0	12
Net income Other Gainful Activities	69	51
Net income Off Farm Activities	30	3
Wages	259	269
Pensions and sick pay	10	46
Other income	93	71
Total family income	1 250	731

SUMMARY

- The number of milking robots in Norwegian dairy industry is rapidly increasing
- There are few economic incentives behind this development
- Capital costs result in lower profits for robotic milking compared with other milking systems
- Robotic farms have about the same family income as other systems
- Advantages related to welfare and social life will continue the expansion of milking robots in Norway



–Thank you for your attention!