The potential Cost Savings from Reduced SCC

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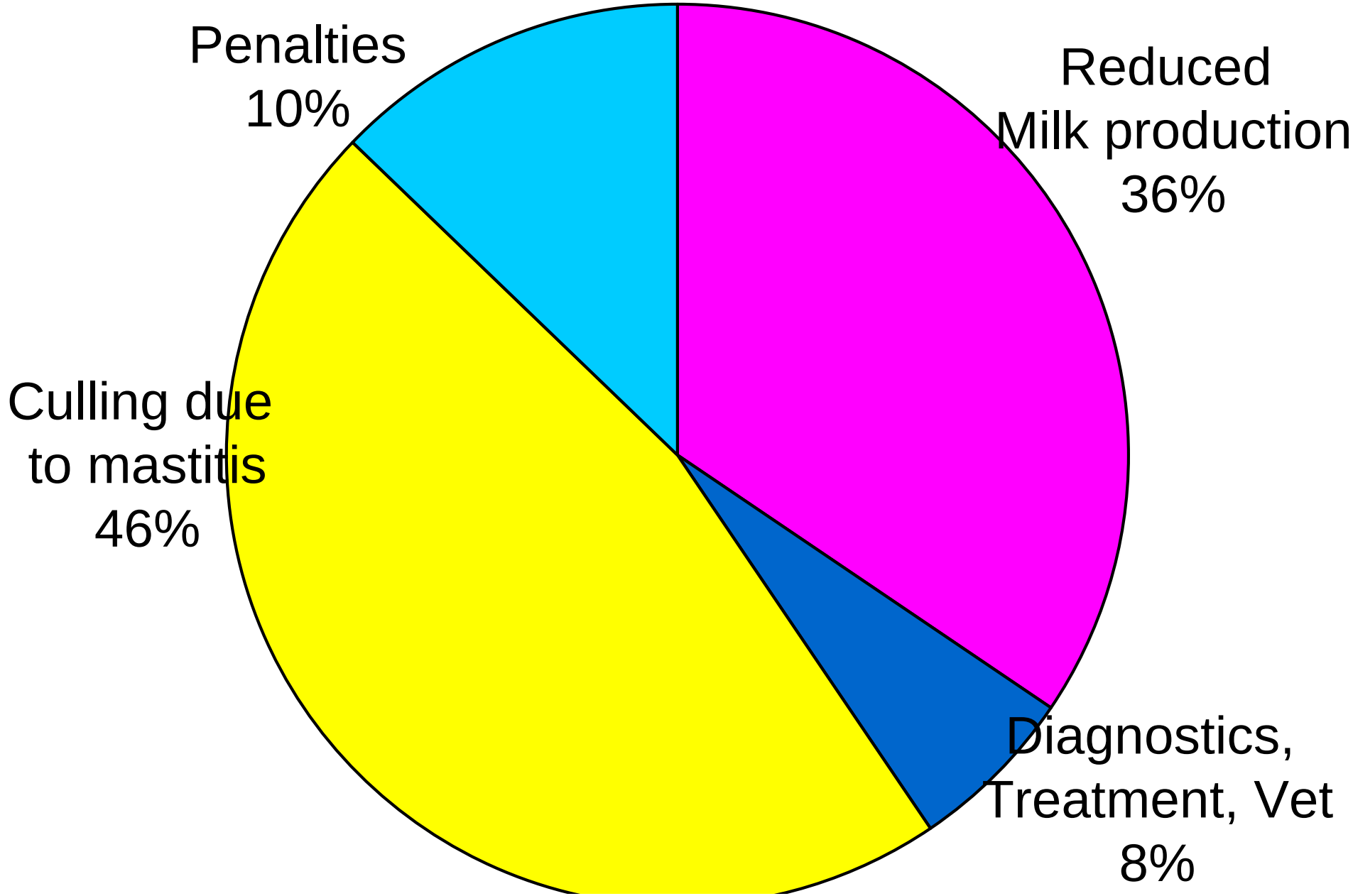
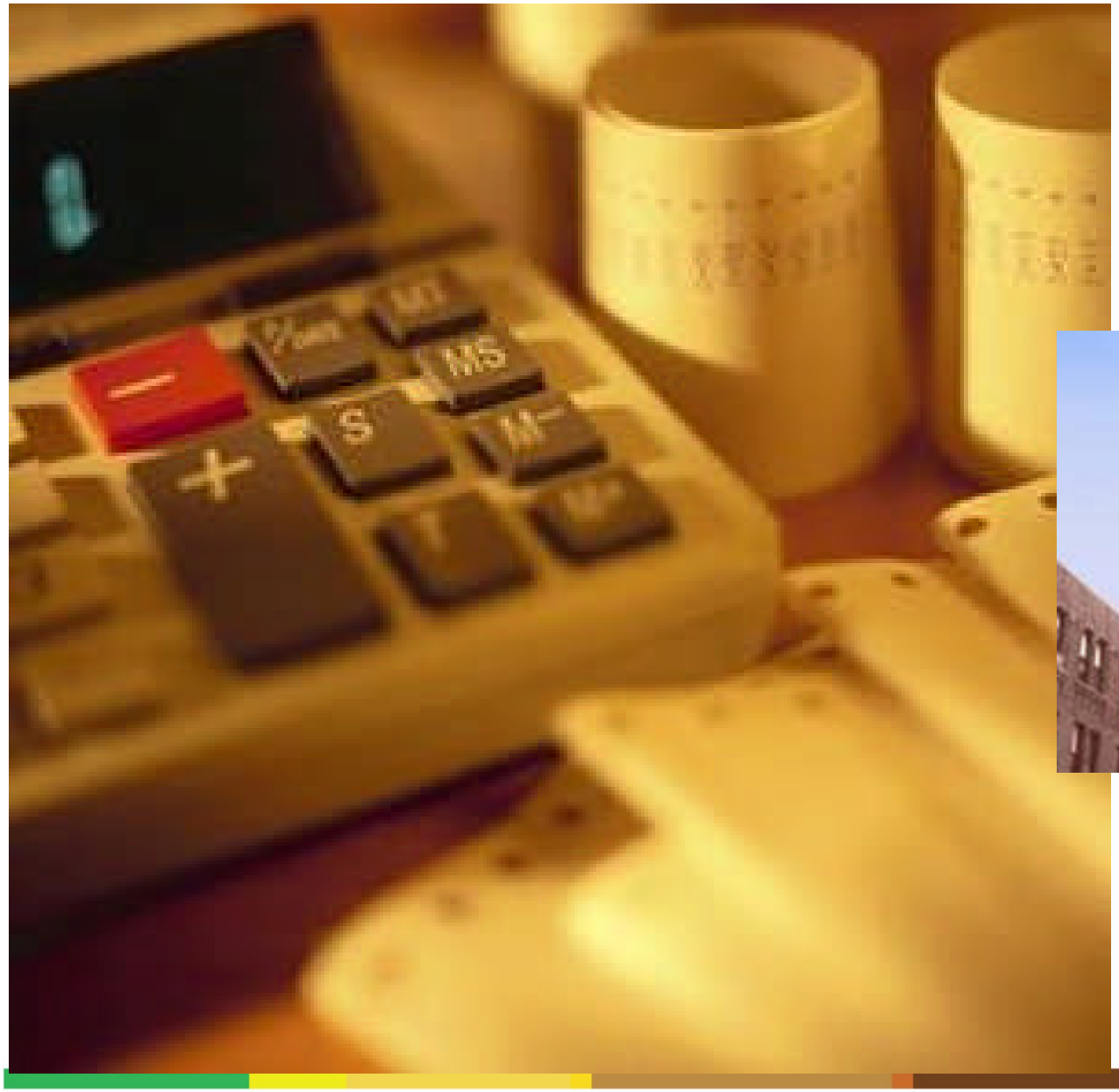
Overview

- **Mastitis and farm profitability**
  - Impact of mastitis on farm profitability
- **Mastitis and processor returns**
  - Relationship between SCC and (i) milk composition, (ii) cheese production and (iii) cheese composition
  - Impact of mastitis on processor returns
- **Mastitis and milk price**
  - Milk pricing and its reflection of value
- **Impact at Industry Level**
  - Farm and Processor together

Mastitis and farm profitability

Farm specific costs of mastitis





Teagasc
Agriculture and Food Development Authority

The Irish Agriculture and Food Development Authority

Results: farm scale

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Estimating the effect of mastitis on the profitability of Irish dairy farms

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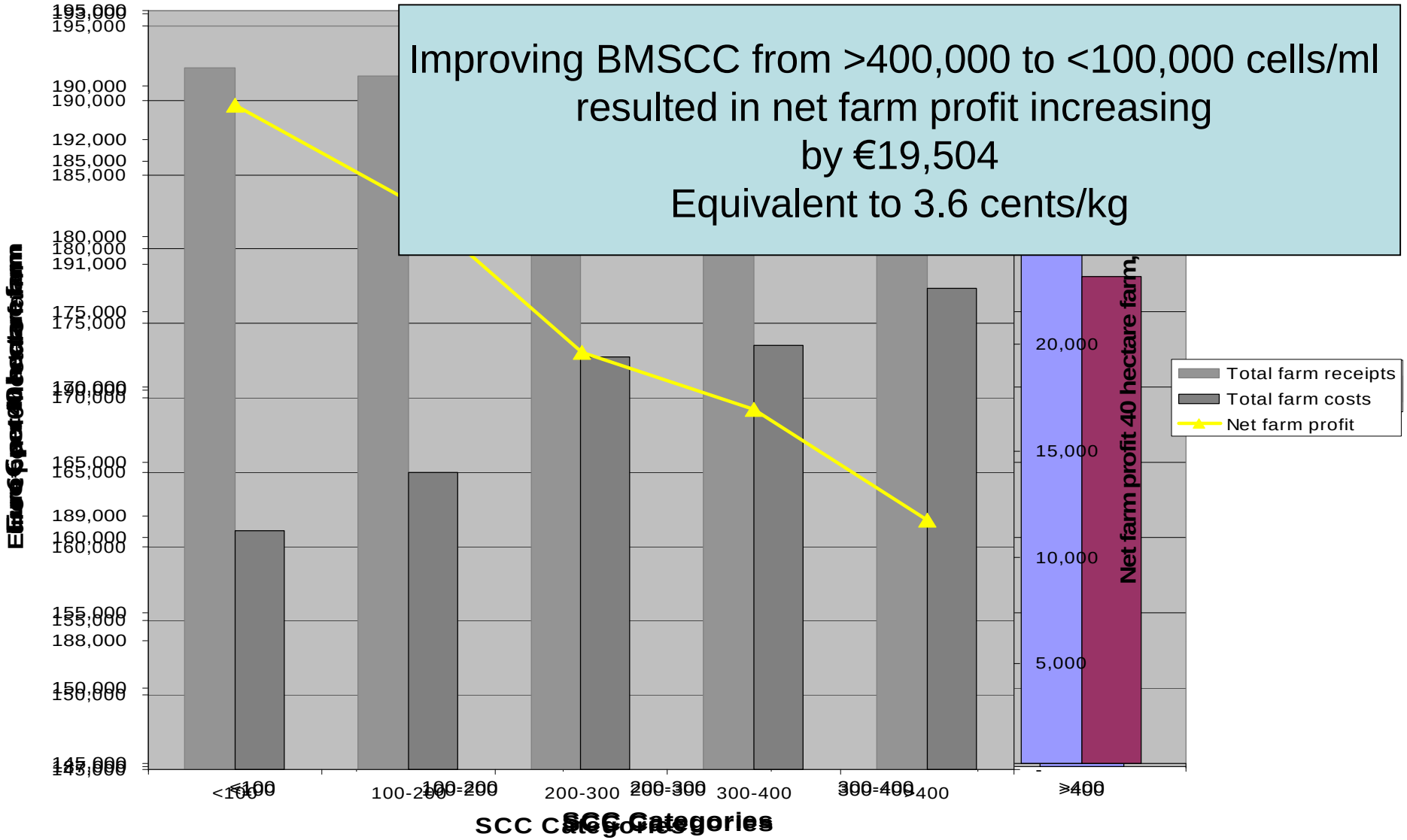
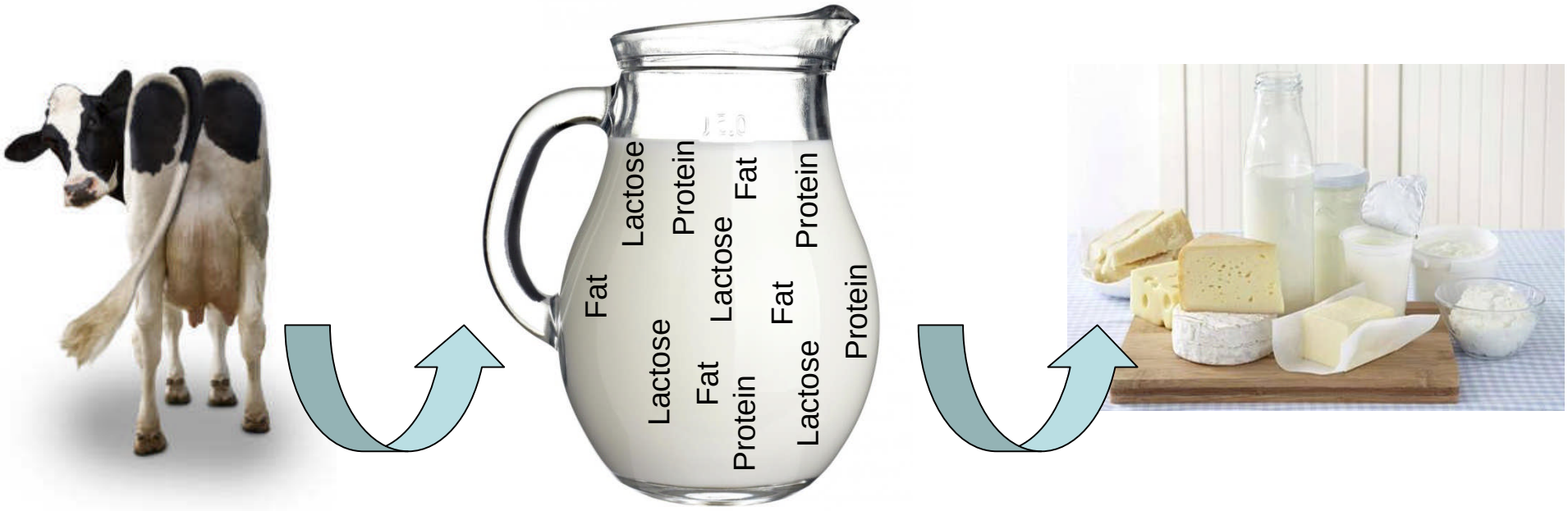
Improving BMSCC from >400,000 to <100,000 cells/ml resulted in net farm profit increasing by €19,504
Equivalent to 3.6 cents/kg



Mastitis and processor returns

Impact of mastitis on processing

- Impact of mastitis on processing
- Need to understand what effect mastitis has on:
  - milk composition
  - cheese production and composition
  - other products production and composition



Meta-analysis

What is meta-analysis?

- Meta-analysis combines the results of many studies
- Meta-analysis has greater power, than individual studies, to detect small but significant effects

Analysis carried out

- Created 2 databases from the available literature:
  - Database 1: 32 published articles on raw milk composition
  - Database 2: 13 published articles on cheddar cheese composition
- The analysis examined the relationship between SCC and raw milk composition, cheese production and cheese composition

Meta-analysis results

As somatic cell count increased:

Significant change	Raw milk composition
Significantly increased	Crude protein
	True protein
	Total nitrogen
	Non protein nitrogen
	Whey protein
	Fat
Significantly decreased	CN/TP
	Lactose

Meta-analysis results

As somatic cell count increased:

Significant change	Raw milk composition	Cheese processing
Significantly increased	Crude protein True protein Total nitrogen Non protein nitrogen Whey protein Fat	
Significantly decreased	CN/TP Lactose	Fat recovery Protein recovery

Meta-analysis results

As somatic cell count increases:

Significant change	Raw milk composition	Cheese processing	Cheese composition
Significantly increased	Crude protein True protein Total nitrogen Non protein nitrogen Whey protein Fat		Cheese moisture content
Significantly decreased	CN/TP Lactose	Fat recovery Protein recovery	Cheese protein content

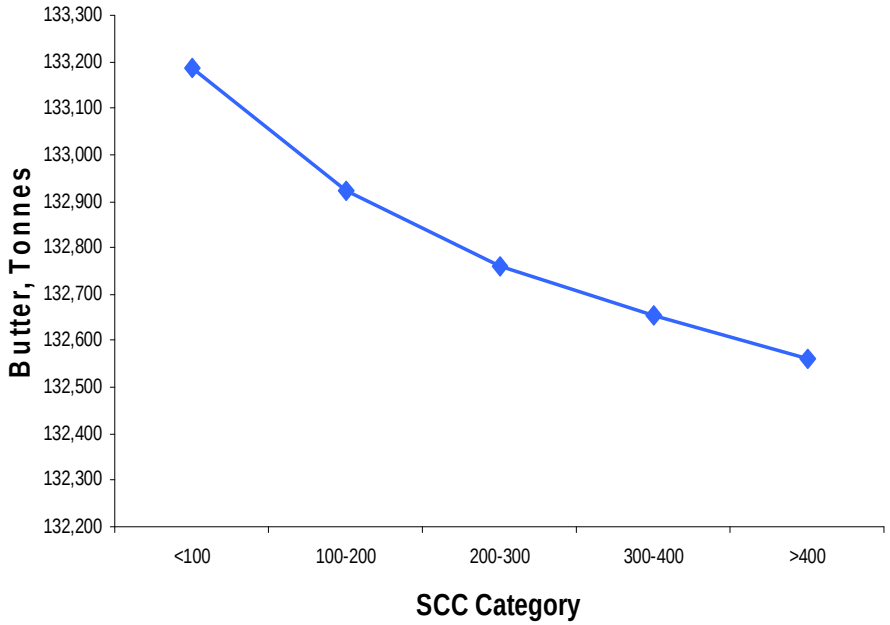
Summary: Meta-analysis

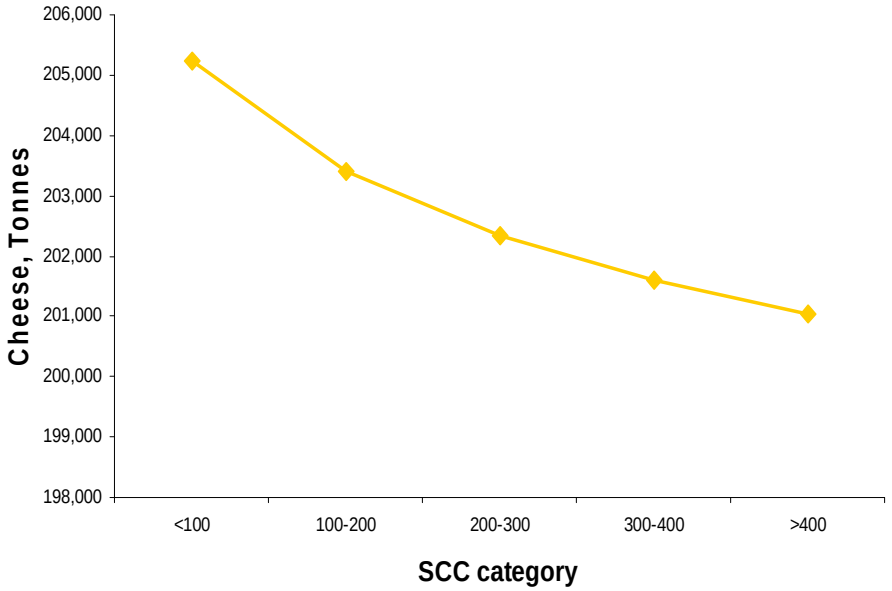
- As SCC increases there are a number of changes occurring to:
  - Milk composition
  - Cheese processing & cheese composition

- To understand how each of these changes due to SCC effects processor profitability the meta-analysis results were incorporated into the Moorepark milk processing sector model

Impact of mastitis on processor returns

Impact of mastitis on processor profitability – National product yields





620 tonnes
Reduction in quantity of **butter** produced

4,220 tonnes
Reduction in quantity of **cheese** produced

Results: Financial

Difference between <100,000 and >400,000 cells/mL categories

	<100	100-200	200-300	300-400	>400
Net revenue, €m	1,617.2	1,591.2	1,571.4	1,559.8	1,565.9
				€51.3m	
Milk price, cents/litre	30.08	29.59	29.22	29.01	29.12
				0.96 cents/L	
Value per kg of fat, €/kg	3.03	2.99	2.95	2.94	2.99
				€0.04/kg	
Value per kg of protein, €/kg	5.99	5.89	5.83	5.74	5.75
				€0.22/kg	

Geary et al., JDR Accepted

Summary: Processor mastitis

- Despite the increase in milk solids content the usable fat and protein decreases, ultimately decreasing cheese yield in particular

- Mastitis is a high cost to the processing sector:
  - Product yield
  - Product quality
  - Product market values

- Not included in this analysis
  - Any effect on butter processing
  - Product value downgrades

Does Milk Pricing currently reflect this effect?

Penalties

Processor	SCC Penalty Threshold (cells/mL)	SCC Penalty
Dairygold	> 400,000	400,000-450,000 - 0.25c/l 450,000-500,000 - 0.5c/l & Lose 5 points 500,000-600,000 – 2c/l & lose 10 points >600,000 – 4c/l and lose 20 points
Glanbia	> 350,000 Apr 2013 > 325,000 Apr 2014 > 300,000 Apr 2015	350,000 - 500,000 - 1.0c/l 500,000 – 600,000 – 2c/l >600,000 – 4 c/l
Lakeland	> 400,000 Currently > 350,000 Jan 2014 > 300,000 Jan 2015	
Carbery	> 350,000 July 2013 > 300,000 Jan 2014	
Kerry	> 400,000	400,000 - 500,000 - 1c/l 500,000 - 600,000 – 2c/l >600,000 – 3c/l
Connacht Gold	>250,000	250,000-300,000 – 0.14c/l 300,000 – 400,000 – 0.28c/l
Town of Monaghan	>500,000	>500,000 – 0.56c/l
Wexford	>400,000	400,000-500,000 – 1c/l >500,000 – 1.5 c/l

Irish Farmers Journal 2013

Bonuses

Processor	SCC Bonus Threshold (cells/mL)	SCC Bonus
Dairygold	<200,000 (20 points)	Score > 50 points – 0.4c/l >45 – 0.2c/l >40 – 0.1c/l
Glanbia	None	None
Lakeland	<200,000	1c/l
Carbery	<200,000	Mar-Oct – 0.5c/l Nov-Feb – 0.88c/l
Kerry	None	None
Connacht Gold	<250,000	0.28c/l
Town of Monaghan	<400,000	0.56c/l
Wexford	<200,000	0.3c/l
Tipperary	<400,000 <200,000	0.3c/l 0.4c/l

Irish Farmers Journal 2013

International Milk Pricing - Fonterra

- No Premiums for low SCC milk
- Under 400,000 – No Penalty

Cell Count Category	Points	Penalty
400,000-499,000	1 demerit point	1.5c/l@30c/l
500,000-599,000	2 demerit points	3.0c/l@30c/l
600,000 – 699,000	6 demerit points	9.0c/l@30c/l
>700,000	20 demerit points	30c/l@30c/l

>700,000 twice in a row results in milk pick up being suspended

Penalty and Bonus Schemes

- Huge variation in schemes operated
- Over half the milk has no incentives for farmers to reduce SCC levels
- Many are reducing the threshold where the penalties will apply
  - Should this be paid out in a bonus?
- No scheme is incentivising SCC levels under 150,000
- Should milk pricing reflect the value of milk?
  - A+B-C
  - Overall payout
    - No change for 2013
    - Increases over time as SCC reduces
- How could this be implemented with the various milk price comparison tools
  - Irish Farmers Journal Milk League?

Mastitis and industry profitability

Impact of mastitis on industry profitability

- Processing and Farm models with mastitis costs included

  AND

- National SCC profile were combined to calculate the industry profitability

- Potential industry gains through the improvement of national SCC levels were examined

National SCC profile

Proportion of producers in each BMSCC category	Current
<100,000 cells/mL	3.3%
100,000-200,000 cells/mL	25.8%
200,000-300,000 cells/mL	33.6%
300,000-400,000 cells/mL	21.9%
>400,000 cells/mL	15.4%
National average BMSCC (cells/mL)	270,300

Improvements in the national SCC profile

Facilitated by an increase in the number of producers that are producing milk in the lower cell count categories and a reduction in the number of producers producing milk in the higher categories

<100,000 cells/mL	3.3	5.9	8.5	11.2
100,000-200,000 cells/mL	25.8%	26.5%	27.1%	27.6%
200,000-300,000 cells/mL	33.6%	32.4%	31.3%	30.2%
300,000-400,000 cells/mL	21.9%	21.3%	20.5%	19.7%
>400,000 cells/mL	15.4%	13.9%	12.5%	11.2%
National average BMSCC (cells/mL)	270,300	260,630	251,218	242,072

Potential gain to the industry by improving the BMSCC profile nationally

Movement in one cell count category	Gain relative to the current
10%	€6.5 m
20%	€19.4
30%	€37.6

Conclusions

- Huge Costs associated with Mastitis
  - Reduction of 100,000 from current levels cells/mL would;
    - Result in an increase in milk yield per cow of 134L / lactation (2%)
    - Result in an increase profitability by 1.2c/l
      - Nationally worth €90 million annually based on 2020 milk output
    - Result in increased processing yields and returns
    - Result in an increase in milk price 0.37c/l
      - Nationally worth €28 million annually based on 2020 milk output
- Market access and product value downgrades not included in this analysis
- Requirement for more progressive pricing at farm level to incentivise positive behaviour change

Acknowledgements

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