



Animal Health Matters.
For Safe Food Solutions.



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO



Establishment of a risk-based food safety control system in the Ukrainian dairy value chain

Component 3

Training of Trainers (ToT), focus: small producers
Milking hygiene, quality and safety

Activity 3.1.1.2

Jorge Pinto Ferreira

Kyiv, 12-16.09.2016

Milking hygiene, quality and safety

It`s a lot...better think about it in pieces...:

- 1) The beginning of the «story»
- 2) Milking hygiene
- 3) Milk quality
- 4) Once you have the milk...milk safety



Milking hygiene, quality and safety

Remember: It all starts with the calving...

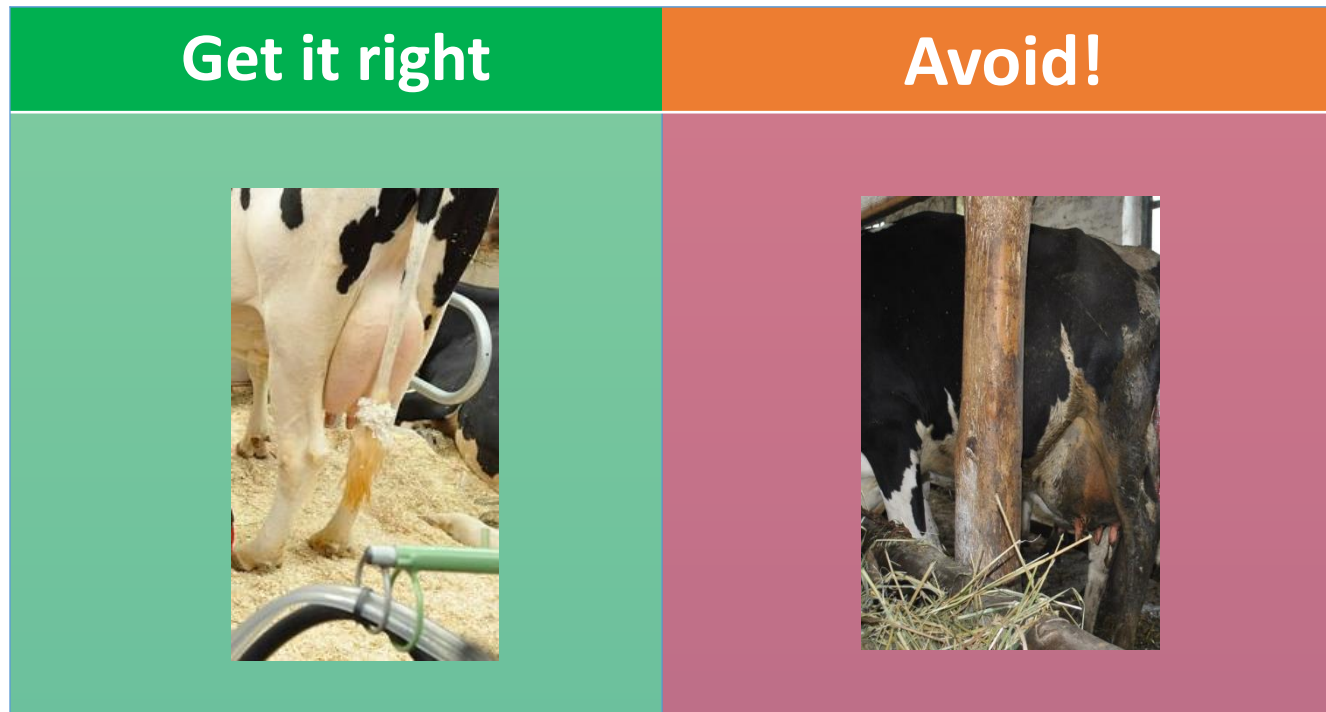


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Milking hygiene, quality and safety

it «helps» when the starting point is a clean udder!



Milking hygiene, quality and safety

The *milking technique* connects all the «dots».



Milking hygiene, quality and safety

The milking technique connects all the «dots».

And should *gloves* be used or not?



Milking hygiene, quality and safety

And should towels be used or not?



Dry towel	Wet towel	Pré-dipping	Manual Drying	% bacteria decrease
X				-4 %
	X			-40%
	X		X	-77%
		X	X	-85%
	X	X	X	-85%

David M. Galton and William G. Merrill.
Department of animal science Cornell University

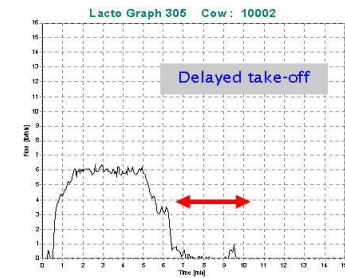
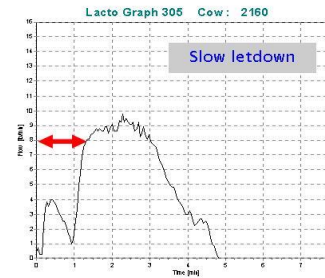
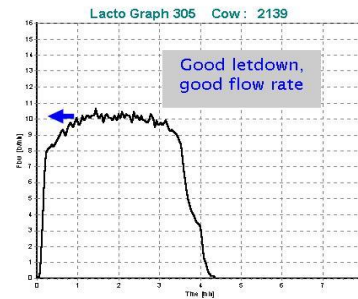


Milking hygiene, quality and safety

The importance of the milking technique timings...



Lactocorder



■ Sphincter prolapse



Milking hygiene, *quality* and safety



Quality parameters:

- Fat
- Protein
- Somatic Cell Count (SCC)
- Total Microbial Count (TMC)

www.nastol.com.ua



Milking hygiene, *quality* and safety

Changing *fat content* via the feed

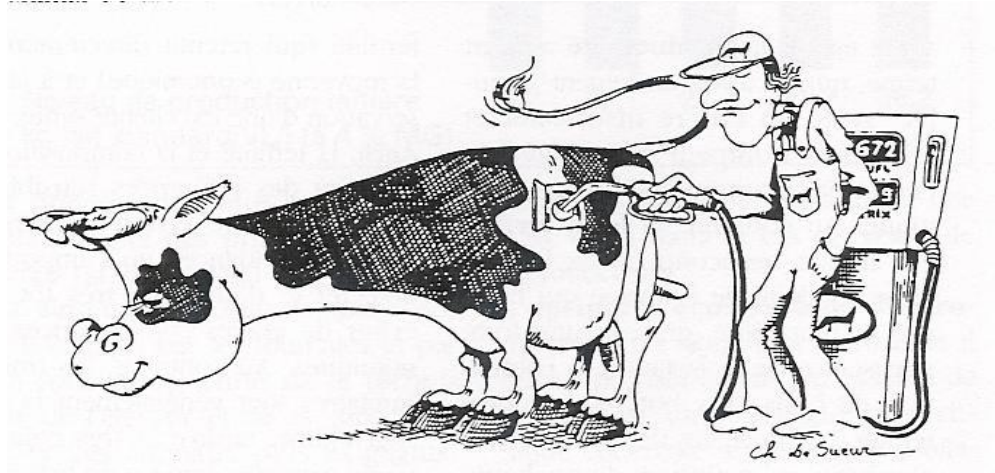
Different diets

Changes in the
flora of the rumen

Changes in the
rumen pH

Different production of VFA
(Volatile Fatty Acids)

Different production of fat or protein



Milking hygiene, *quality* and safety

How is the *protein content* usually “managed”?



35 days
gestation

50 days
gestation



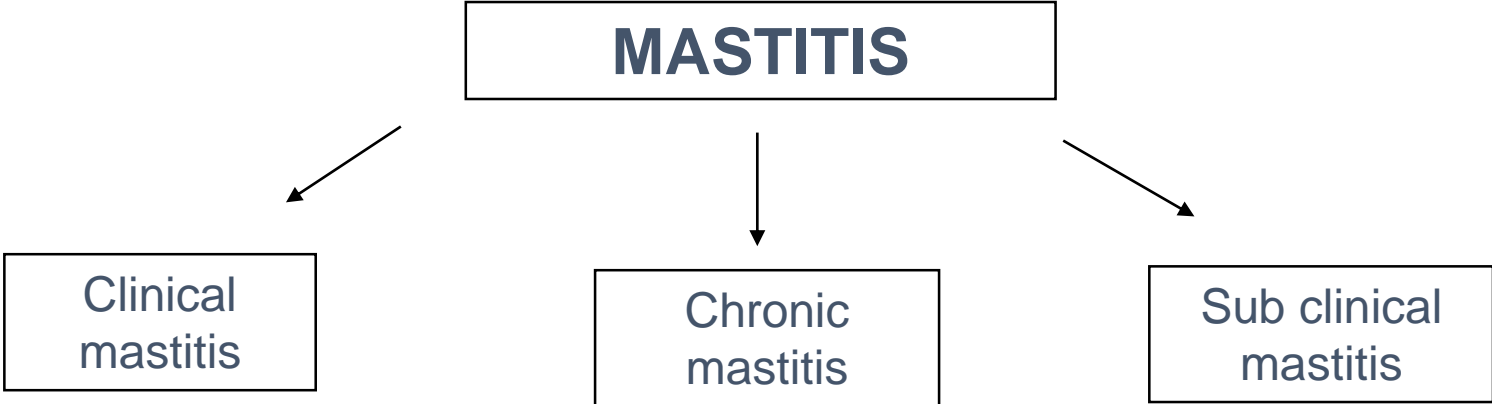
Milking hygiene, *quality* and safety

Quality parameters:

- Fat
- Protein
- **Total Microbial Count (TMC) – (Milking) Hygiene**
- **Somatic Cell Count (SCC) – Mastitis – Udder Health**



Milking hygiene, *quality* and safety



Milking hygiene, *quality* and safety

Sub-clinical mastitis

- Californian Mastitis Test



Milking hygiene, *quality* and safety

Sub-clinical mastitis

Tank SCC	% Production losses	% Infected quarters
200 000	0	6
500 000	6	16
1 000 000	18	32
1 500 000	29	48



Milking hygiene, *quality* and safety

Costs of clinical mastitis

275€/case
Suécia
Nielson
(2009)

146€/case
EUA
Bar *et al.*
(2008)

205€/case
Holanda
Huijps *et al.*
(2008)

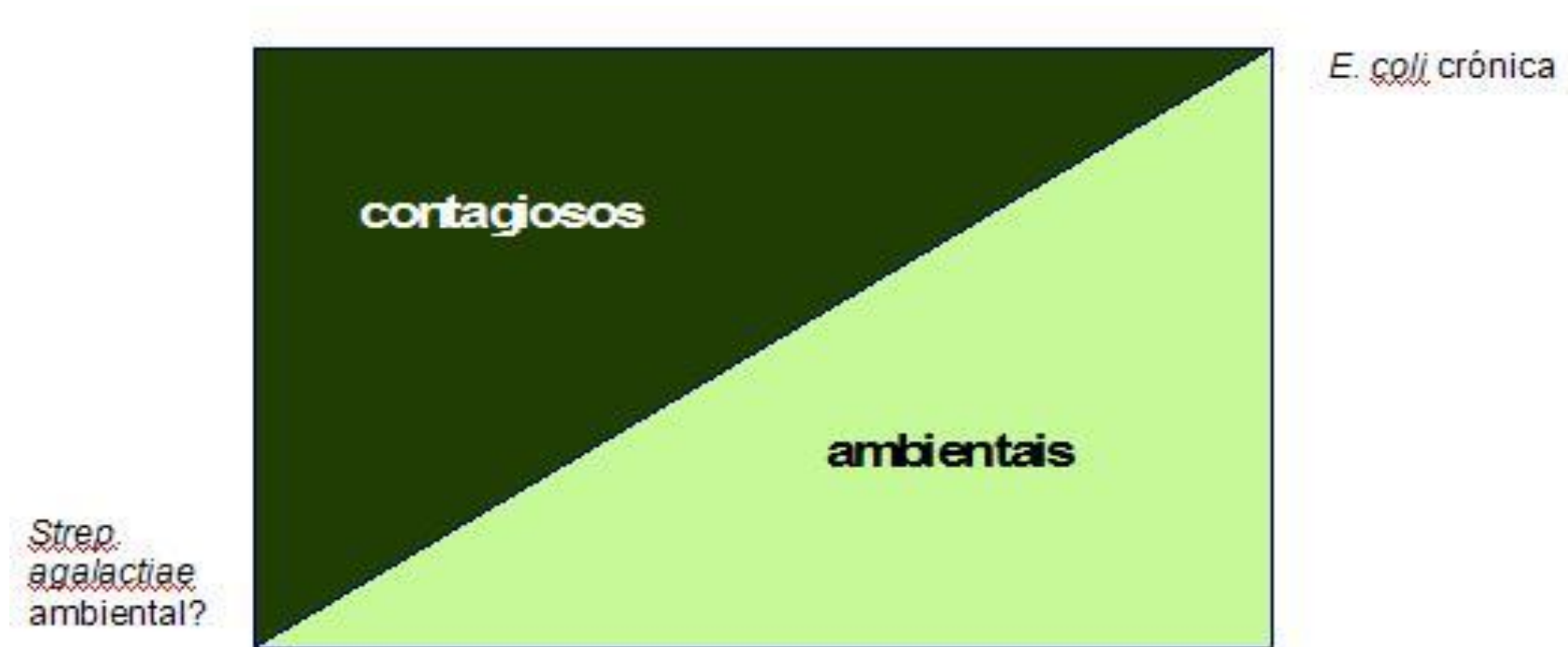
69€/case
Rep. Checa
Wolfová *et al.*
(2006)

347€/case
Dinamarca
Ostegaard *et al.*
(2005)

519€/case
Inglaterra
Kossaibaiti *et al.*
(1997)



Ethiological agents of mastitis



SAG – *Streptococcus agalactiae*

SAU – *S. aureus*

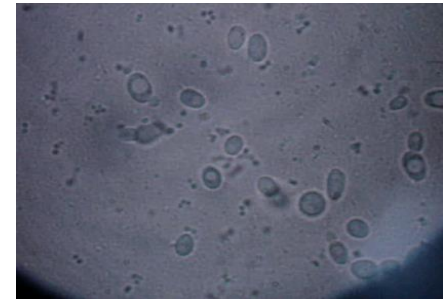
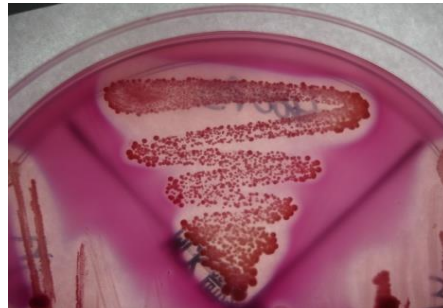
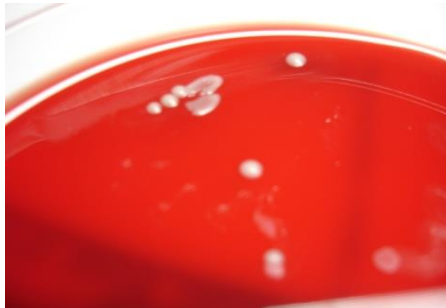
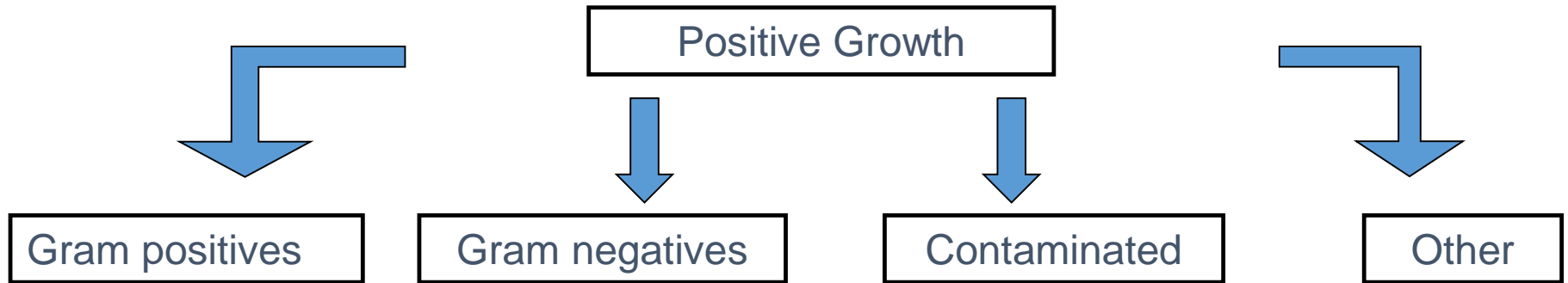
SDY – *Streptococcus dysgalactiae*

ECO – *E. coli*

SUB – *Streptococcus uberis*



Mastitis



Milking hygiene, *quality* and safety

Mastitis 5 key points plan

Desinfection of the teats after milking

Dry therapy in all the quarters

Antibiotic treatment of the clinical mastitis

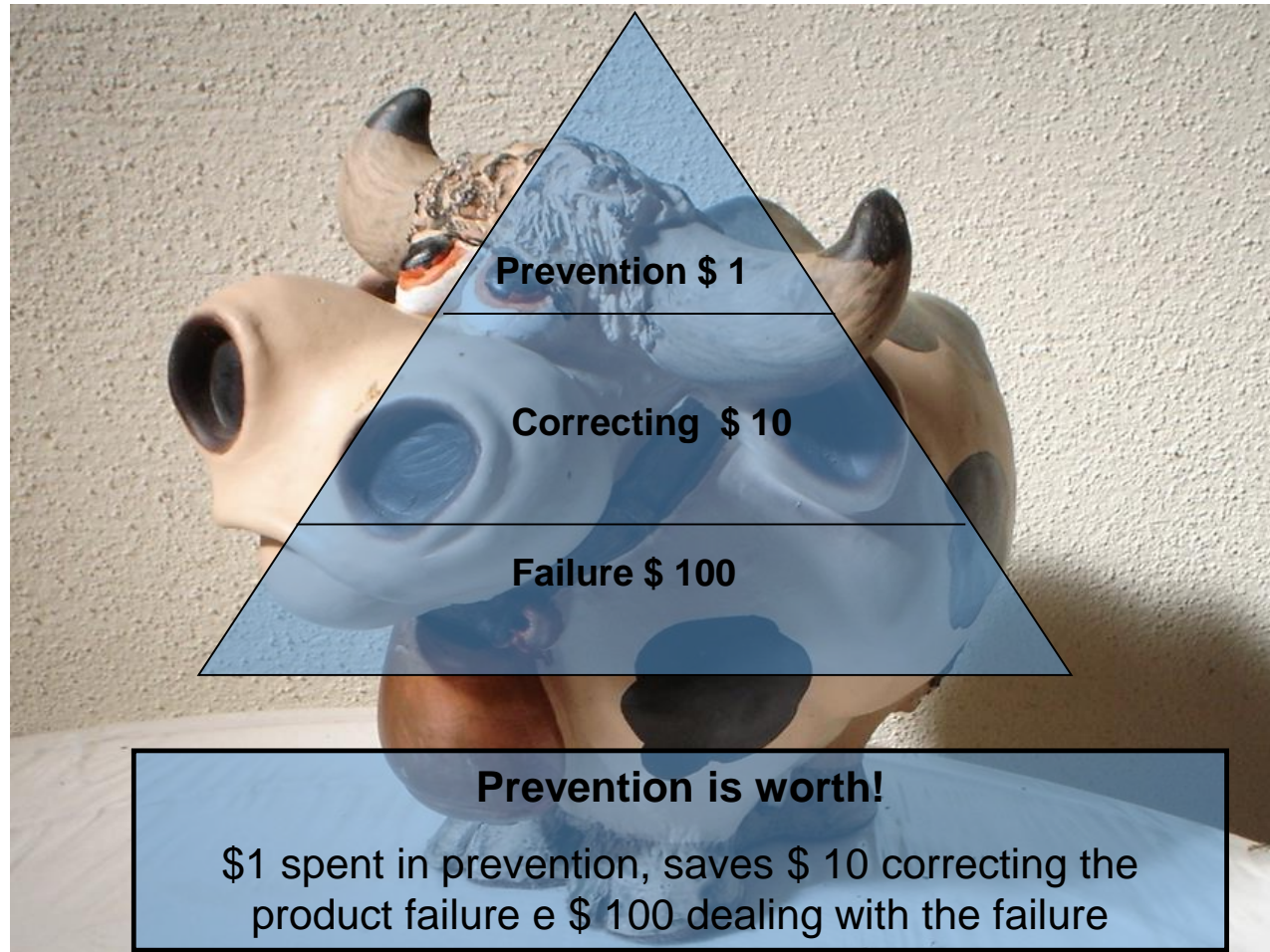
Culling of cows with chronic mastitis

Regular check-up and maintenance of the milking machine



Milking hygiene, *quality* and safety

Mastitis – key word - PREVENTION



Milking hygiene, quality and *safety*

HAZARDS

PHYSICAL



CHEMICAL



BACTERIOLOGICAL



Chemical hazards that can be found on raw milk can be connected with:

- Improper safety of feed



- Residues of veterinary drugs



- Improper disinfection



Qualitative falsification of milk and milk products can be carried out via...

- Dilution by water
- Reducing of fat content
- Addition of foreign components
- Reducing of acidity of sour milk



*Малигіна В. Д. Основи експертизи продовольчих товарів: Навч. поос. / Малигіна В. Д. - К.: Кондор 2009. - 296 с.



Signs of diluted milk in appearance

- more transparent
- with a bluish tinge
- watery consistency
- formation of foam



gnpcompany.ru



Relationship between freezing point t⁰ and milk water content

Freezing point of milk t °C	Part of added water, %	Freezing point of milk t °C	Part of added water, %
— 0,55	0	— 0,49	10,9
— 0,54	1,8	— 0,48	12,7
— 0,53	3,6	— 0,47	14,5
— 0,52	5,4	— 0,46	16,4
— 0,51	7,3	— 0,45	18,2
— 0,50	9,1	— 0,44	20

*І.В. Яценко Ветеринарно-санітарна експертиза молока і молочних продуктів в Україні



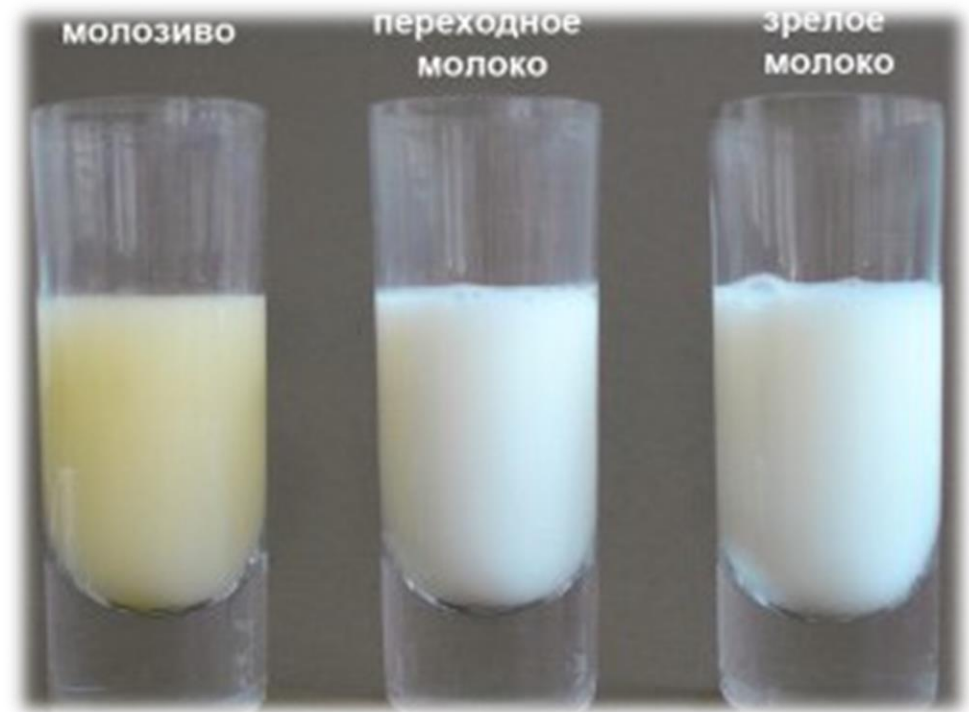
Additives that can mask the dilution of milk

- starch
- flour
- skimmed milk powder
- sugar
- chalk
- sodium carbonate
- calcium carbonate



Colostrum can also be added, causing...

- increase of
 - albumin
 - globulins
- Increased acidity
- changes in consistency
 - viscosity
 - density
- coagulation, when heated



Removing of fat

- full
- partial
- addition of vegetable (palm) oil



Quantitative falsification

- Dilution with water
- Adding of alkaline-like substances
- Adding of starch or flour
- Adding of salicylic or boric acid
- Mixing of pasteurized and raw milk



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Milking hygiene, quality and safety

- Brief presentation

- Group work

- 1) Problems/issues

- 2) Solutions

- 3) Key messages

- 4) Delivery method

- Presentation of results and discussion





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Thank you for your attention

jorge.pinto-ferreira@safoso.ch



Swiss-Ukrainian Project

“Establishment of a risk-based food safety
control system in the dairy value chain in Ukraine”

Tel.: [+38 044 279 87 12](tel:+380442798712) (13) Fax: [+38 044 279 88 45](tel:+380442798845)

Address: 1, 10, Malopidvalna Str., Kyiv, Ukraine

Web: www.safoso.ch; safoso.com.ua