



Can dairy herds be in a positive colostrum stock balance?

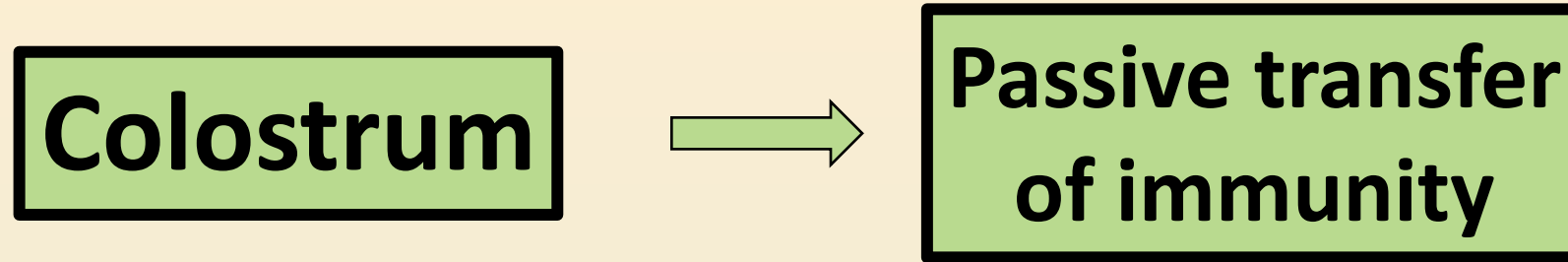
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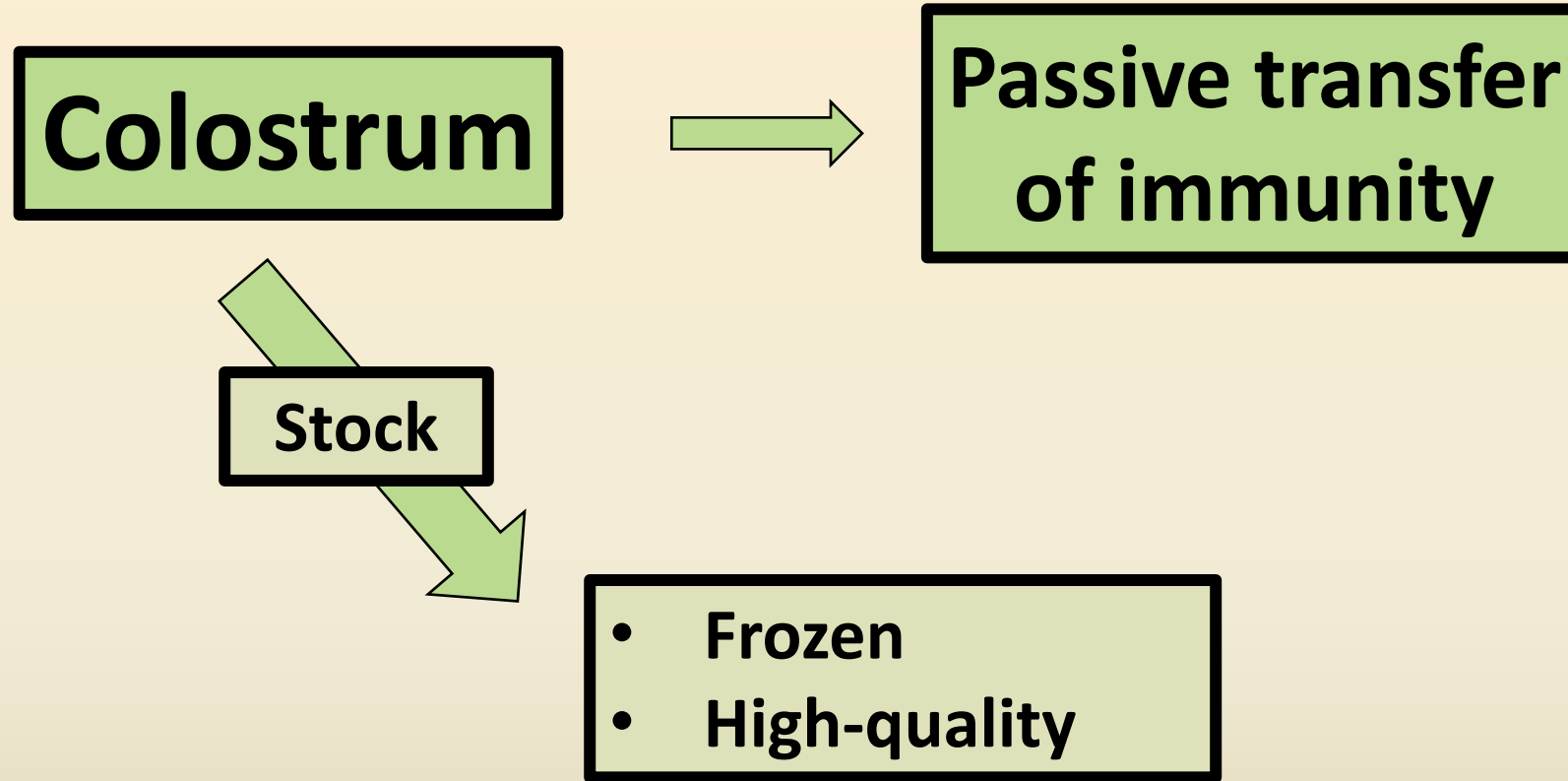
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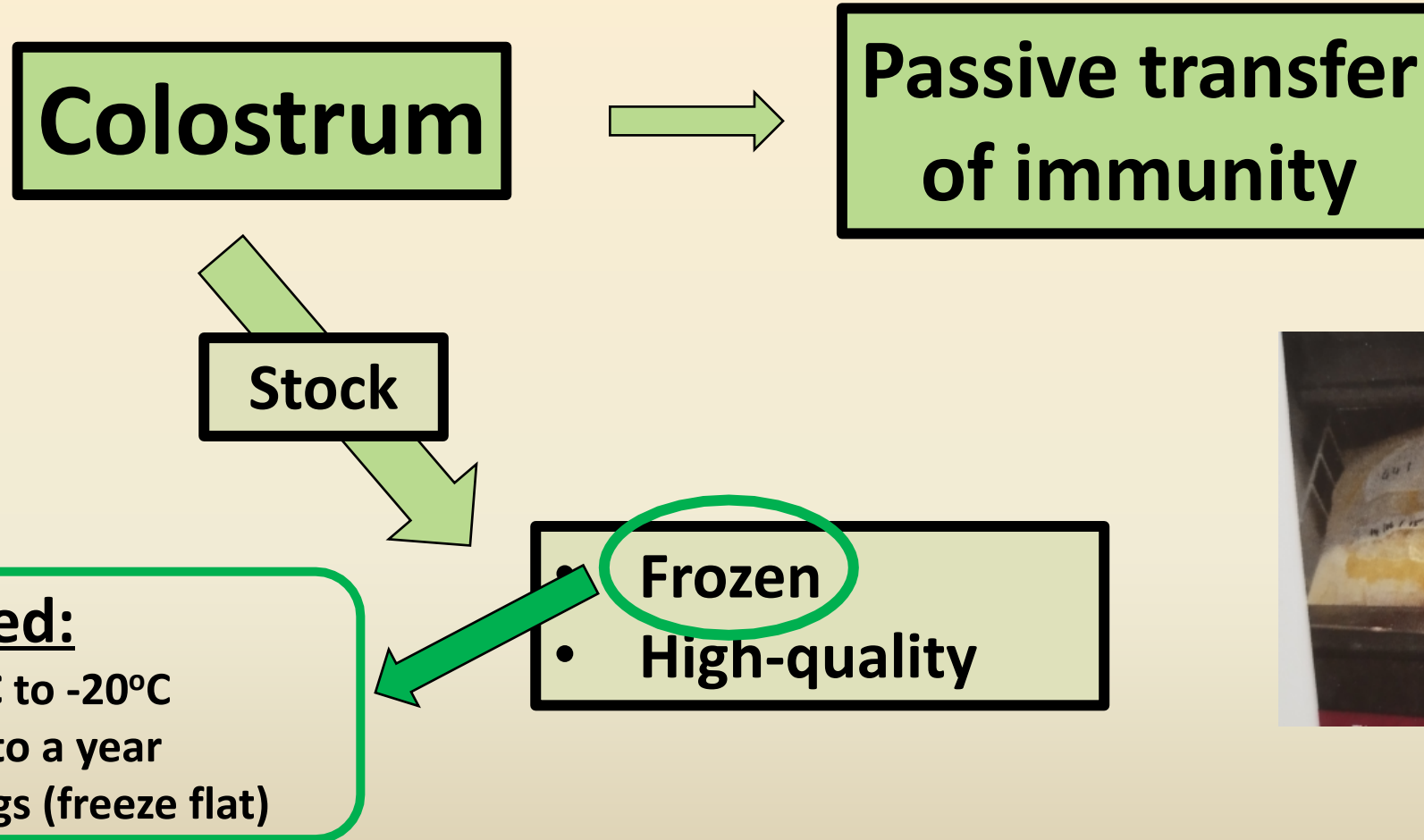
Introduction



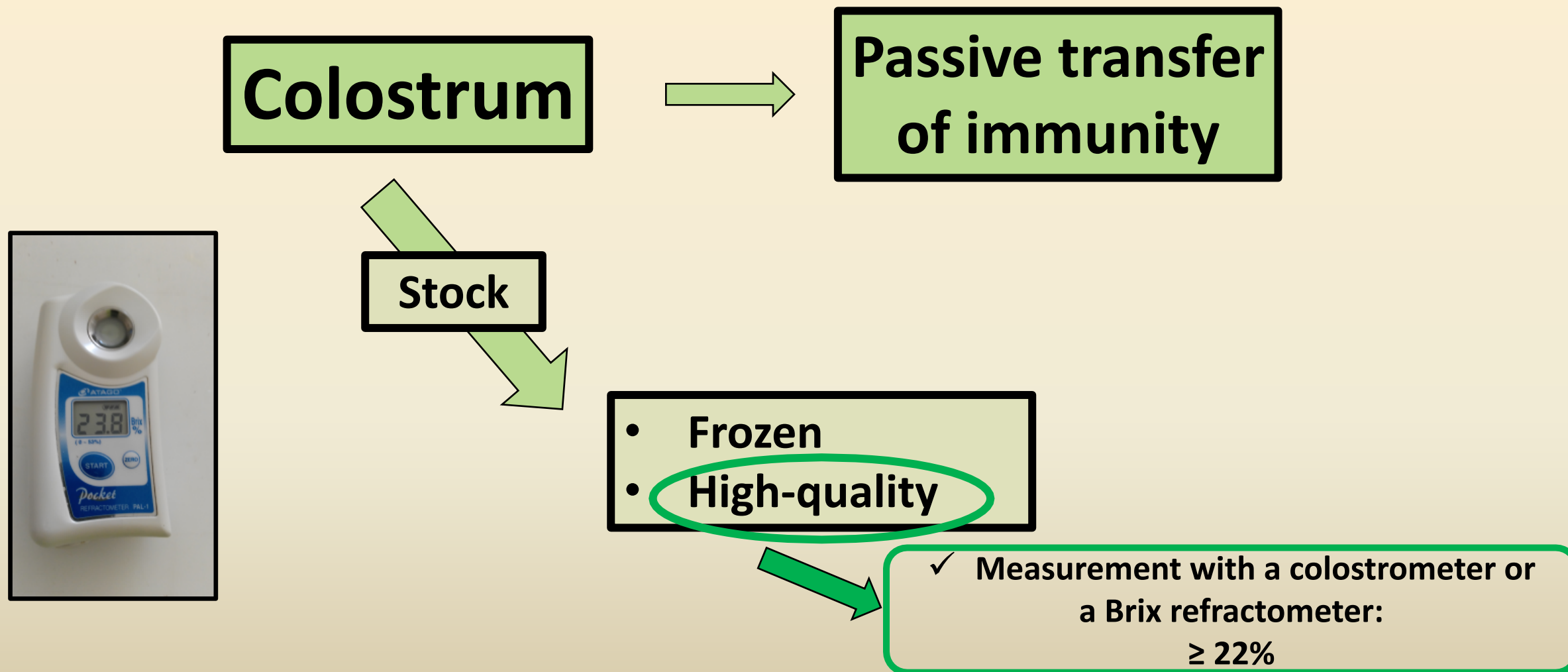
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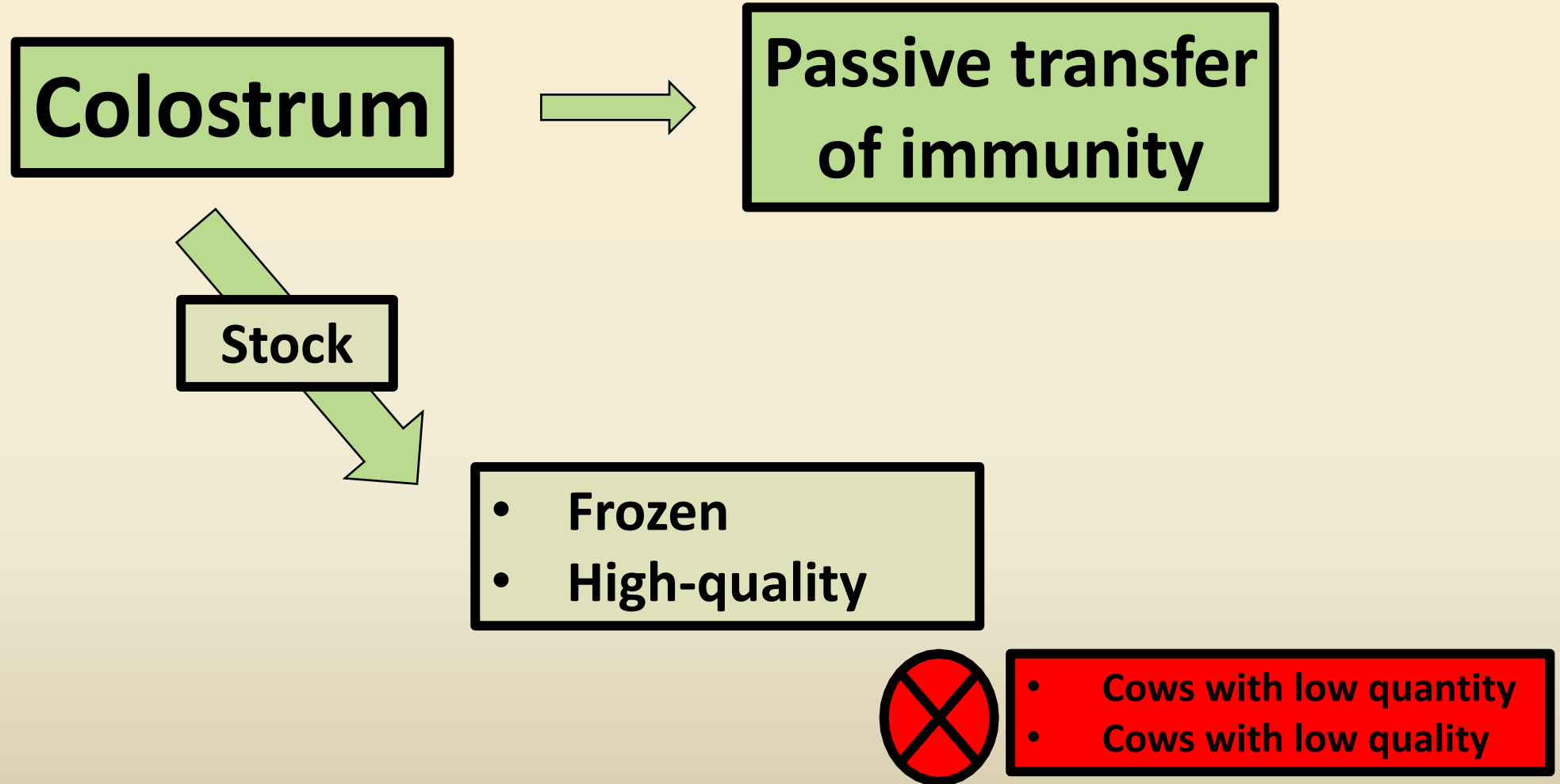
Introduction



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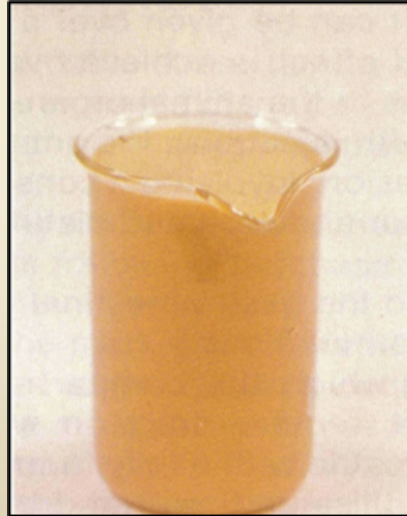


Introduction



Aim of the study

Investigation whether it is practically feasible for all farms to have adequate stock of high-quality colostrum and the factors associated with it



Materials and methods

- **9 commercial dairy cow farms in Northern Greece**
- **1,067 Holstein cows**
- **Sampling covered on average a period of 8-9 months**
- **First milking colostrum**

Materials and methods

Cows

- Milking 232 ± 195 min after calving & **colostrum collection sample**

Colostrum total solids
determination
using a digital
BRIX refractometer



Materials and methods

Cows

- Milking 232 ± 195 min after calving & **colostrum collection sample**

Indirect but reliable
assessment
of immunoglobulin
concentration

Colostrum total solids
determination
using a digital
BRIX refractometer



Materials and methods

Steps of simulation:

Farms with zero colostrum stock at the starting day of the study

Materials and methods

Steps of simulation:

- a) 4L of good quality colostrum (Brix \geq 22%) were “fed” to each calf born (twins included) and any excess quantity was stored

Materials and methods

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- a) 4L of good quality colostrum ($\text{Brix} \geq 22\%$) were “fed” to each calf born (twins included) and any excess quantity was stored
- b) If colostrum quality was poor ($\text{Brix} < 22\%$), it was “rejected” and 4L from the colostrum stock were used

Materials and methods

Steps of simulation:

- a) 4L of good quality colostrum (Brix \geq 22%) were “fed” to each calf born (twins included) and any excess quantity was stored
- b) If colostrum quality was poor (Brix $<$ 22%), it was “rejected” and 4L from the colostrum stock were used
- c) If quality was good but quantity was $<$ 4L per calf, it was supplemented from stock

Materials and methods

Steps of simulation:

a) **“Colostrum stock balance” after every calving**

b) If colostrum quality was poor (Brix<22%), it was “rejected” and 4L from the colostrum stock were used

c) If quality was poor, calf, it was supplemented

**Positive or negative
(continuous variable)**

Materials and methods

Steps of simulation:

a) **“Colostrum stock balance” after every calving**

b) If colostrum quality was poor (Brix < 22%), it was “rejected” and 4L from the colostrum stock were used

c) If quality was poor, colostrum was supplemented

**Positive or negative
(continuous variable)**

➤ Hypothetical supply:
6L per calf

➤ Quality threshold:
≥26%

Materials and methods

Records:

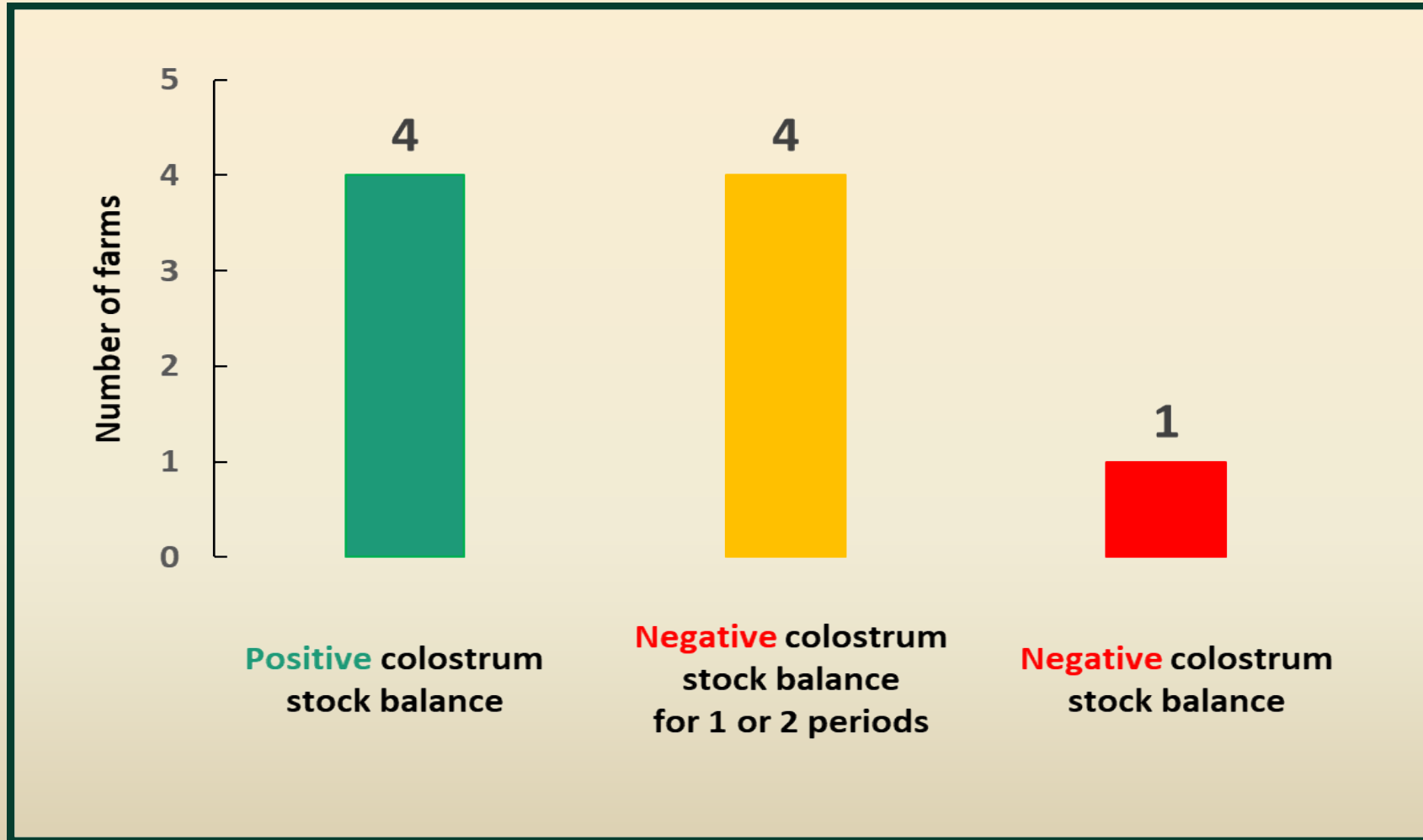
- Colostrum yield
- Parity
- Calving calendar season

Materials and methods

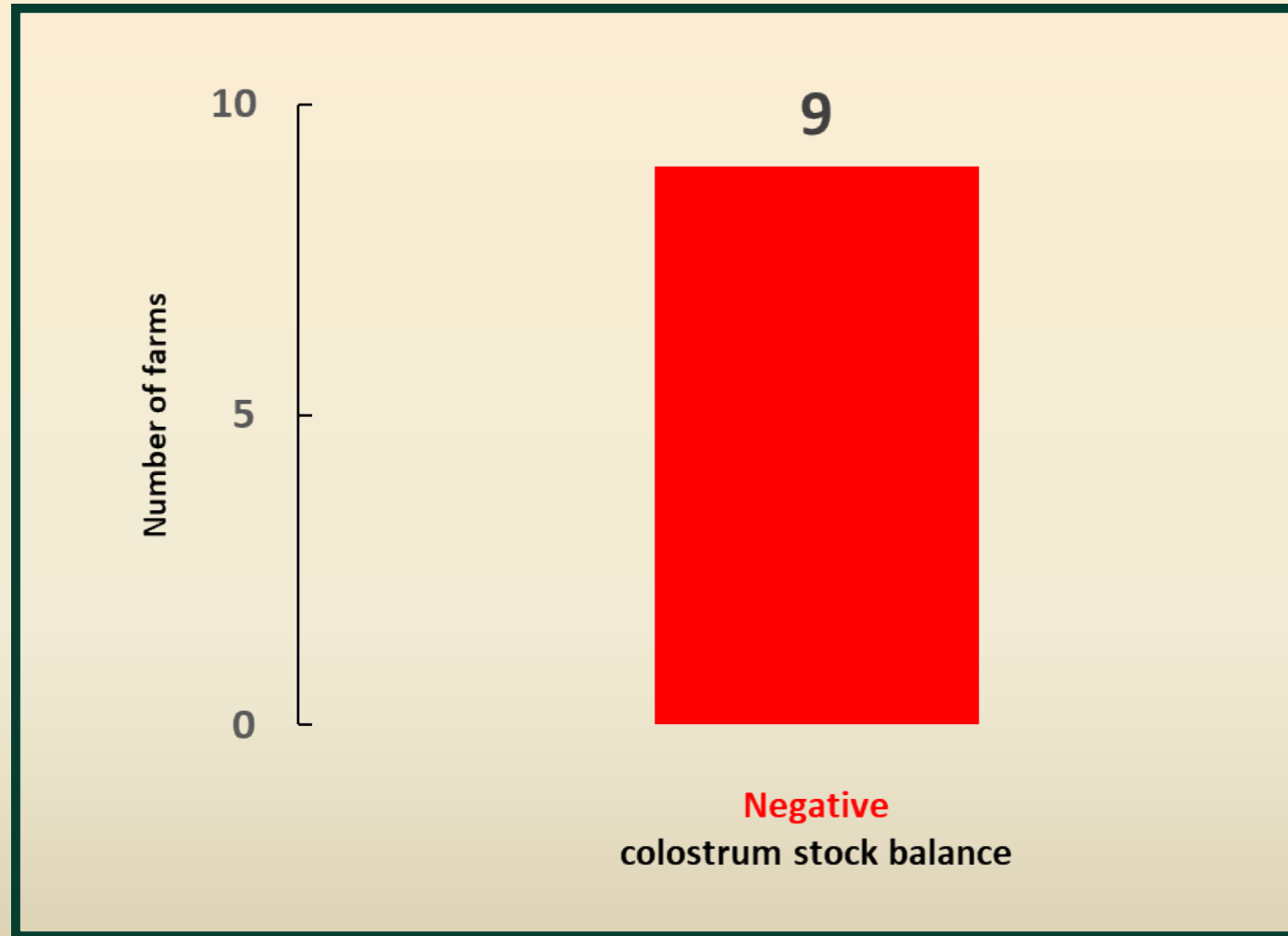
Statistical analysis:

- Effects of calendar calving season, parity, colostrum yield and quality and the interactions between them on “colostrum stock balance”
- Univariate general linear model
- Significance level $P \leq 0.05$

Results

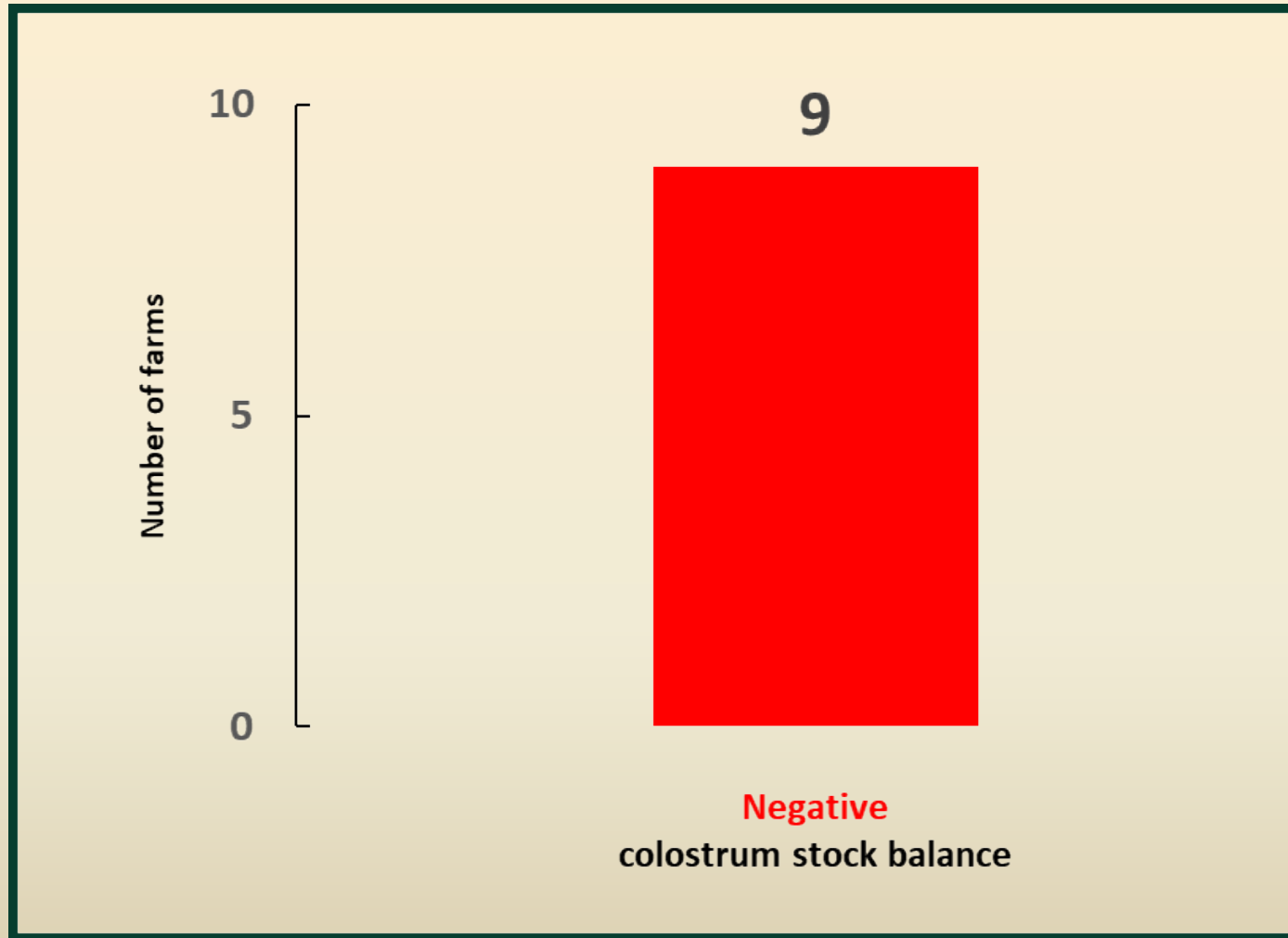


Results



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6L per calf

Results



➤ Quality threshold:
 $\geq 26\%$

Results

Variables	Factors and P			
	Calendar calving season	Colostrum yield	Colostrum yield X Quality	Calendar calving season X Quality
Colostrum stock balance	<0.01	<0.01	<0.01	<0.01

Results

Variables	Factors and P			
	Calendar calving season	Colostrum yield	Colostrum yield X Quality	Calendar calving season X Quality
Colostrum stock balance	<0.01	<0.01	<0.01	<0.01

Favorable:
Spring
Summer

Conclusions

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- Several factors have a significant effect
- Colostrum replacers should be used in certain circumstances

BUT

Colostrum is far superior regarding IgG levels
(cows are exposed to infections on the individual farm)
and nutritional components



**Many thanks
for your attention!**