

Recommendations for an optimal start of rearing

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International Product Manager

milk repacers for rearing

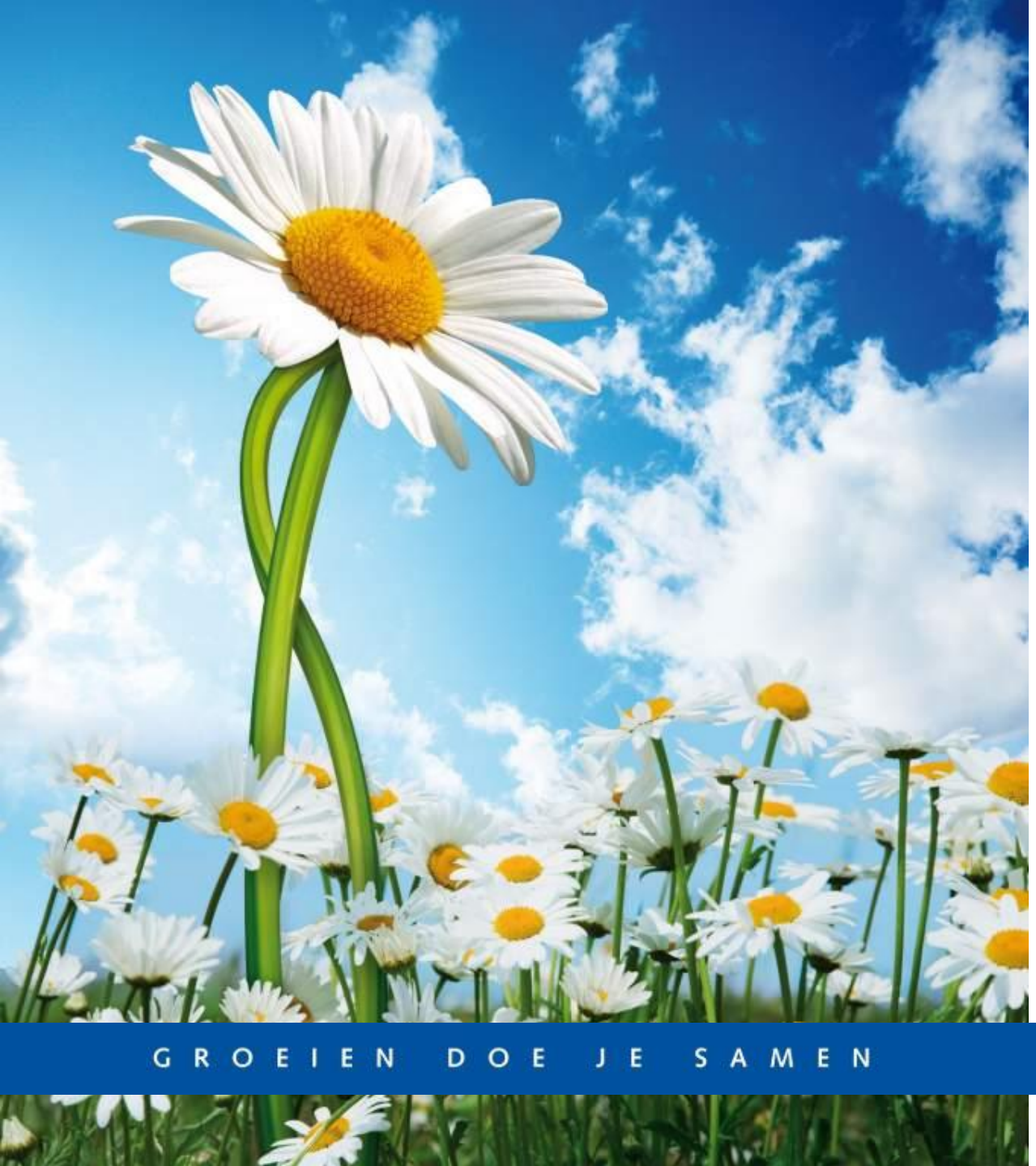
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What is your approach ?



Do you already have all pieces for rearing of goat kids correctly arranged ?





Goat kids as a basis of your operations

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Objectives

- Genetic improvement of goats
- Genetic programming of goat kids
- Low mortality and high uniformity
- Minimum requirement of medication
- Well-functioning immune system
- Sound respiratory and intestinal system
- Well-functioning rumen
- Balanced growth
- High efficiency of labor
- Economically sustainable
- Pleasure



Hidden losses

- Rearing of unnecessarily high number of goat kids because of too high mortality and/or bad results of rearing

- Low annual and lifetime production of dairy goats because of introduction of goat kids with poor production capacity, vitality and immunity





Preparation: 4-way commitment !

Farmer

Feed supplier



Veterinarian

Milk replacer supplier

Features of goat kids

- Vitality
- Hygiene status
- Iron / Vit. E status
- Immune system



- Oesophageal groove reflex
- Development of rumen and abomasum
- Ruminant
- Feed and water intake

Birth – care for the goat kid

Focus → Minimum infection

- Problems affecting the goat reduce the vitality of the lamb
- Check for blockage of respiration by mucus or foetal membranes
- Ensure proper hygiene around lambing: manure, goat and environment contain all causative agents for diarrea (e.g. E. coli, Cryptosporidium)
- Correctly disinfect the umbilical cord
- Disinfectants prevent diarrea and umbilical infections



Birth – care for the goat kid



Dry place for parturition

Minimal assistance

Immediate separation from the mother

Disinfection of the umbilical cord

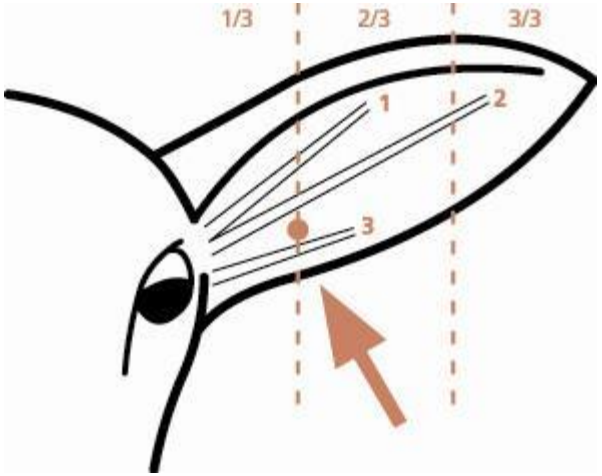
Disinfection of the umbilical cord





Ear tagging and disinfection!





Reception facilities 1st day

Reception fist day

- Hygiene
- Climate
- Labor efficiency

Reception protocol

- Prevention of infections (e.g. of navel)
- Colostrum supply
- Medication?
- Vitamins/Minerals/Trace elements



Care, colostrum & heat for a perfect start





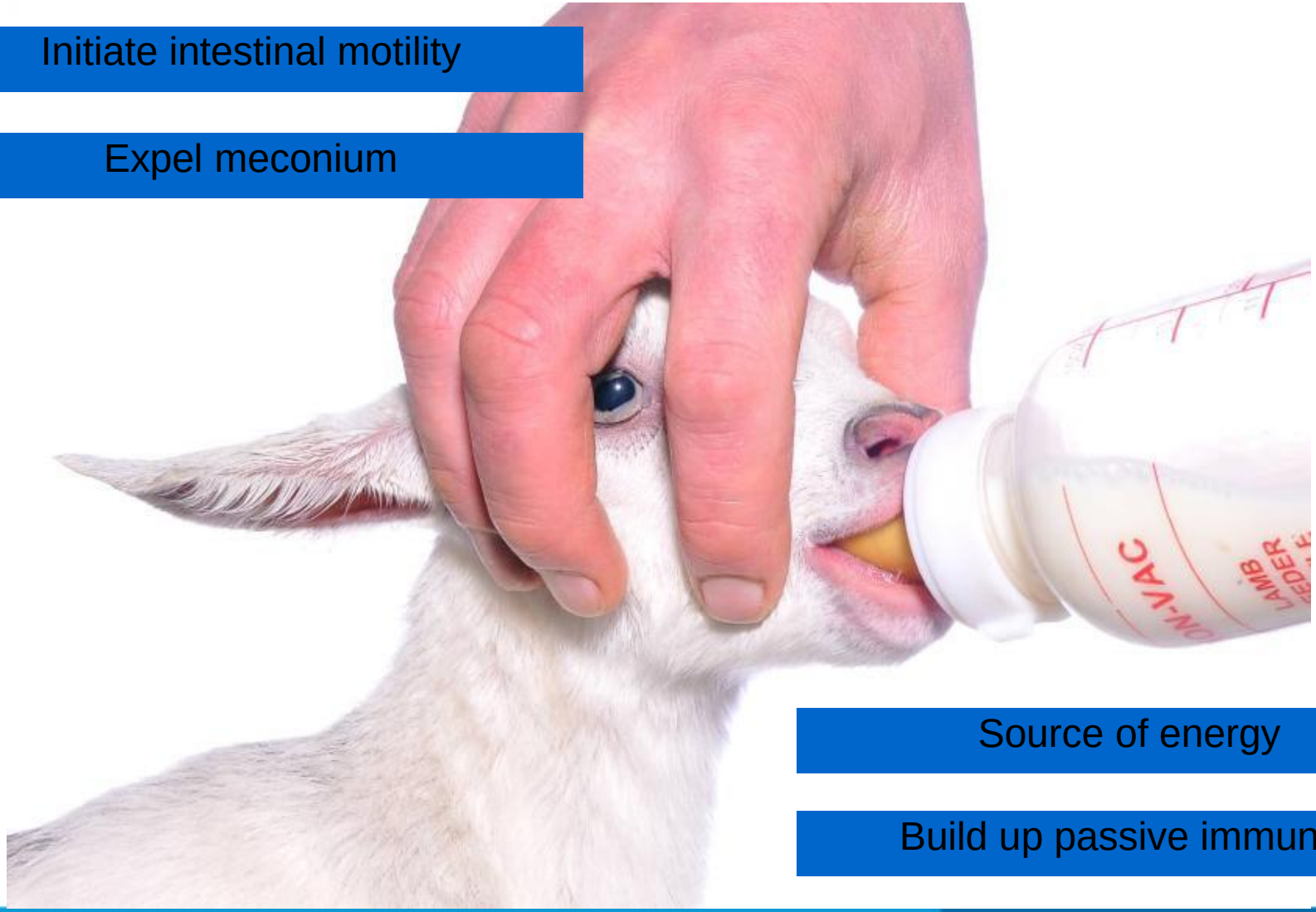


Or even better cardboard boxes on a heating floor

Functionality of colostrum

Initiate intestinal motility

Expel meconium



Source of energy

Build up passive immunity



Fast	As early as possible
Fit (high) volume	Total of 15 % of BW
Frequent	3 times daily
Fresh	Check quality

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Check quality









Method of application



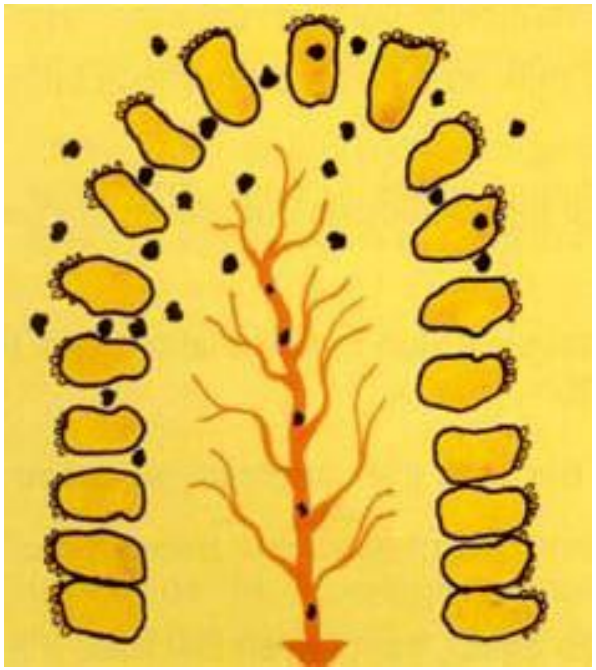


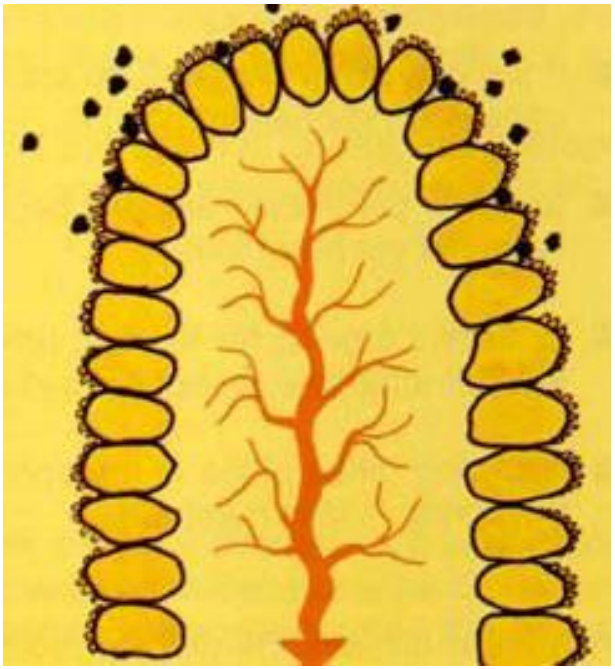
Heating of colostrum: Be careful!



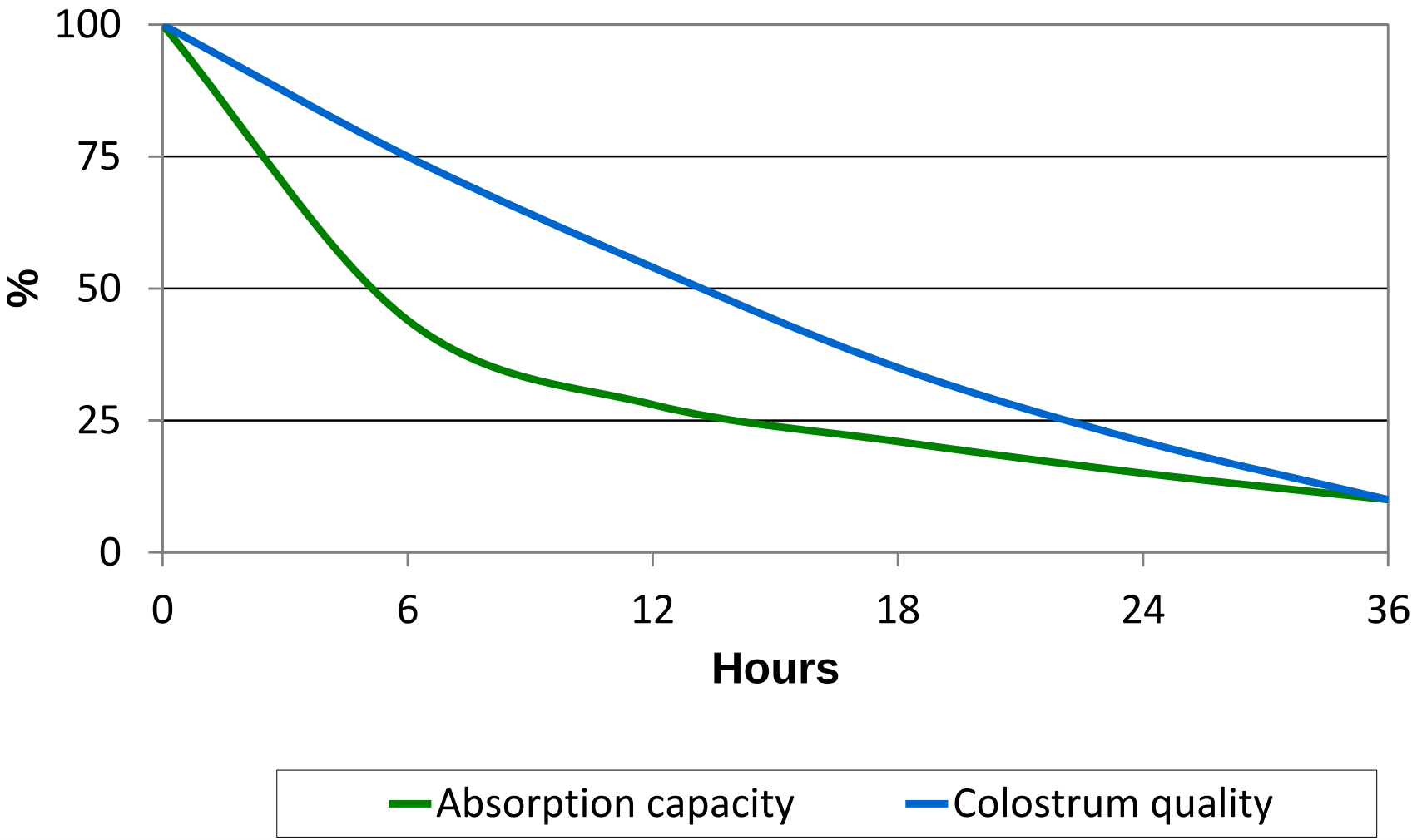


Permeability of the intestinal wall



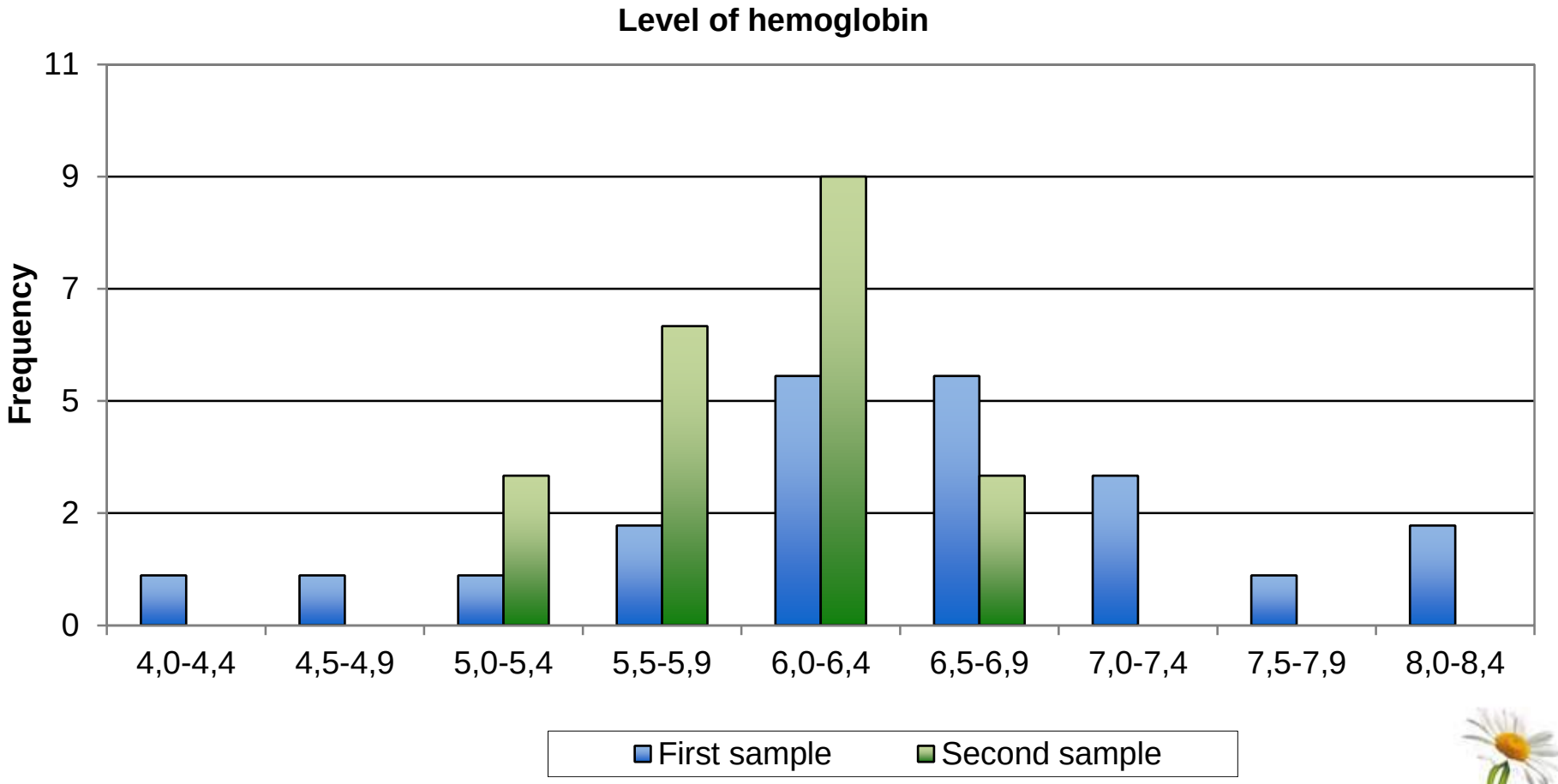


Fast


100
75
50
25
0
%
0
6
12
18
24
36
Hours
Absorption capacity
Colostrum quality

Results of Hb-analysis

at 3 and 43 days in 21 goat kids fed with Denkamilk Caprimel



Extra vitamines, minerals and trace elements can be necessarry

- Directly starting from day 1 mixed into the milk (replacer)
  - 0-10 dys: 2.5 g/animal/day
- As top-dressing on the feed/concentrate around weaning
  - 7-10 days 2.5 g/animal/day
- After antibiotic treatment
  - 7-10 days



- Vitamins:
  - A, B-complex, C, D3, E, K
- Minerals & Trace elements
  - Fe, Cu, Zn, Co, Se, Mn, Mg, I

Training pen

Sufficient intake

- Short distance to teat
- Connect to teat 2-3 times daily
- High concentration (180 g/liter)

Easy intake

- Max. 10 - 15 goat kids per teat
- Min. 2 teats at 35 - 40 cm height
- Close to the automatic feeder
- Vertical teat opening (optimum milk yield)

Avoid (re)contamination

- In training pen until day 4 of life
- Replace/separate animals with insufficient intake to a separate pen
- Temperature (bedding), climate (humidity)



Training pens for at least 4-5 days



Training pens

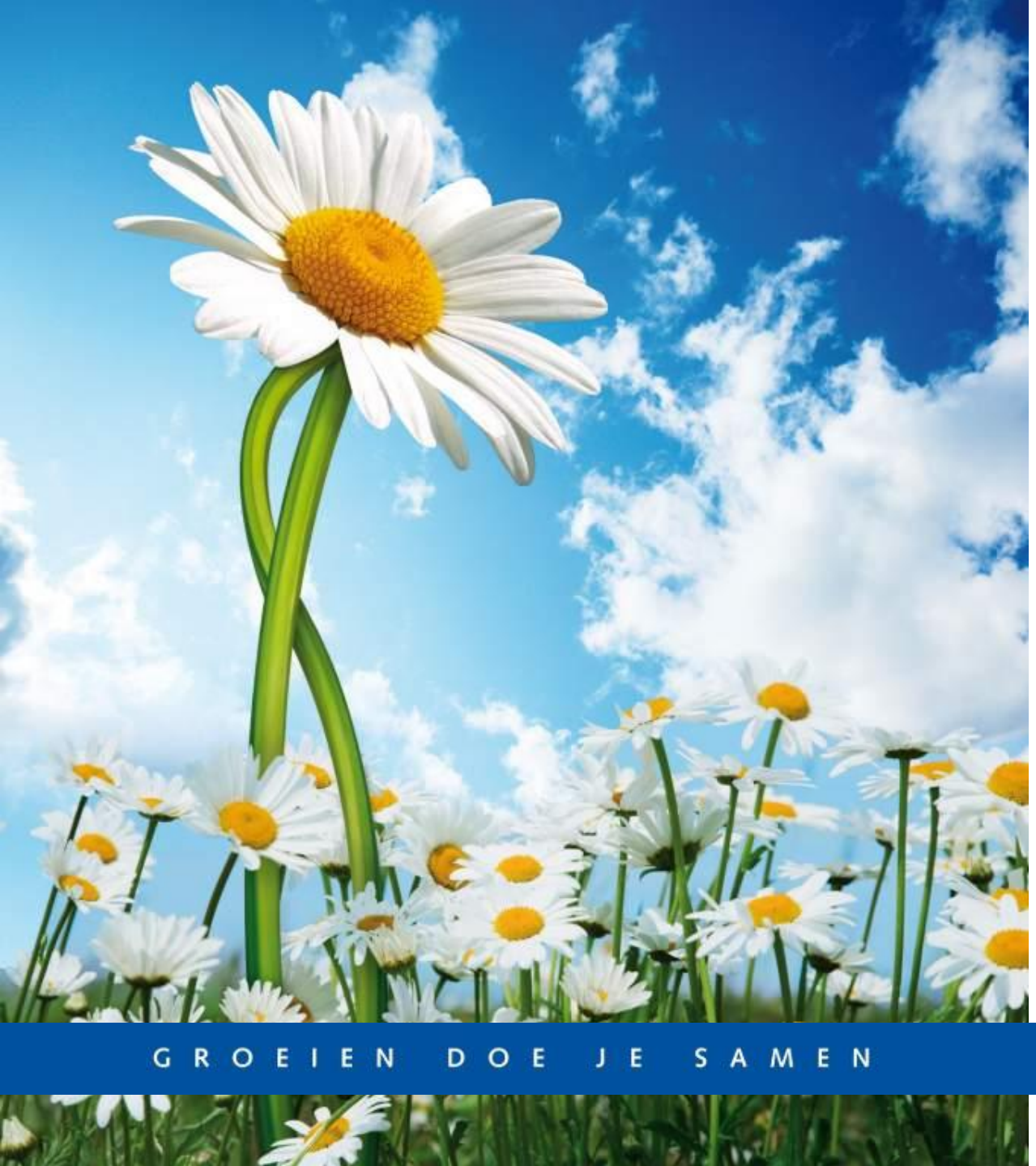


Feeding strategy

- Prompt and safe start
- Harmonious / optimal growth
  - Maximum does not necessarily mean optimum !
  - Growth from milk and concentrates
    - Correct protein / fat balance
    - Concentration
- Optimum weanability:

  no post-weaning growth check
  - Sufficient intake of concentrates and roughage
  - Avoid too low age / too low weight / insufficient buildup of immunity





Speaking about Milk replacer

Denkamilk

DENKAVIT

Denkavit

- **Dutch family owned company (since 1929)**
- **Specialized in:**
  - Feed for young animals (± 420.000 MT feed/year)
  - Special ingredients for compound feed industry
  - Veal calves (± 500.000 calves in integration in Europe)
- **International active:**
  - Export: > 50 countries worldwide
- **Research facilities** in the Netherlands and France for calves, piglets, kids and lambs
- **Turnover of € 600 million/year**







Research station The Netherlands and in France.











3040 calves
230 sows
6500 piglets

1.300 calves in France

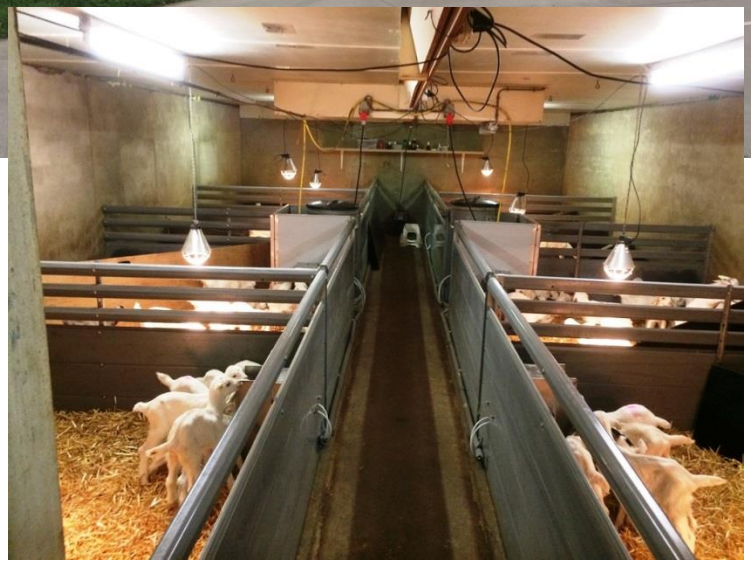
Capacity digestion tract is starting point.



Digestibility studies kids & lambs

Research capacity of ca. 700 kids per year feed and feedsystem trials.





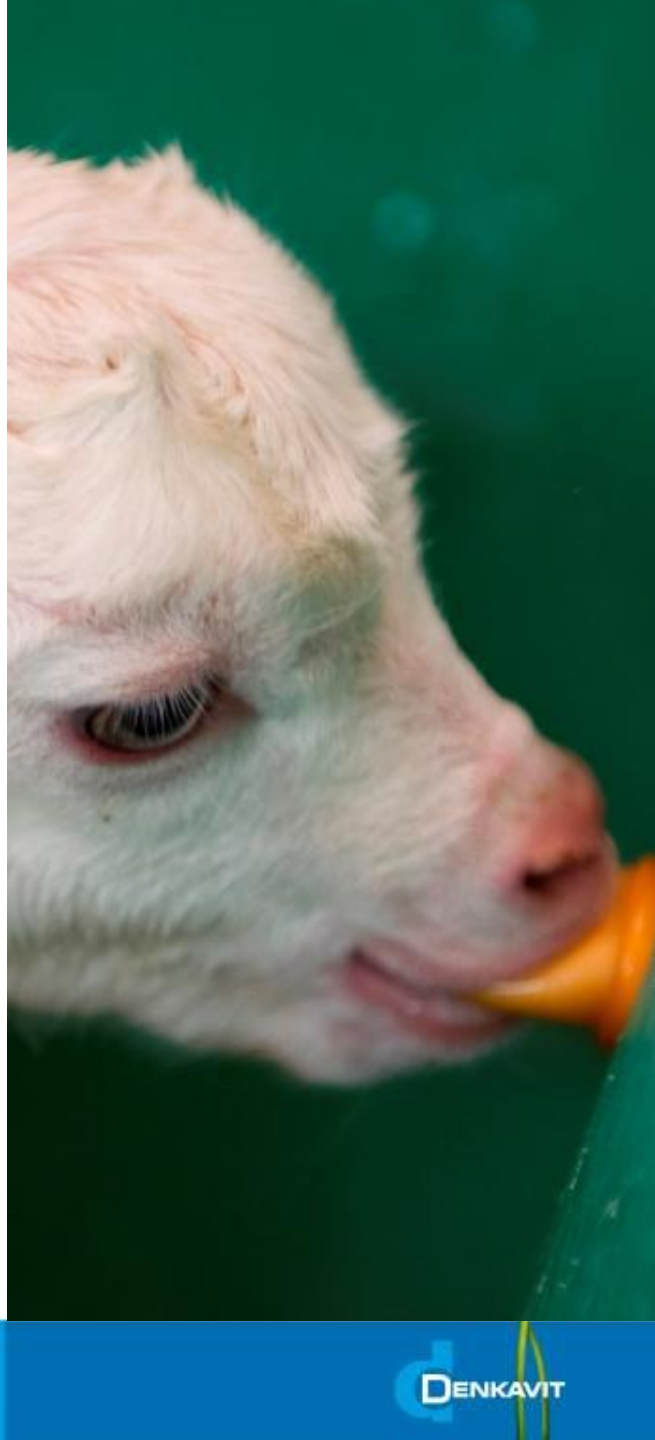




Denkamilk goat kid milk replacer

Corresponding factors:

- Origin of raw materials:
  - Selected for taste / solubility / digestibility
- Production process
- Structure and free flowing characteristics
- Compositions proven in practice
- Safety concept (acidification, prebiotic, mixture of essential oils)
- Correct vitamin levels
- Based on extensive digestibility trials



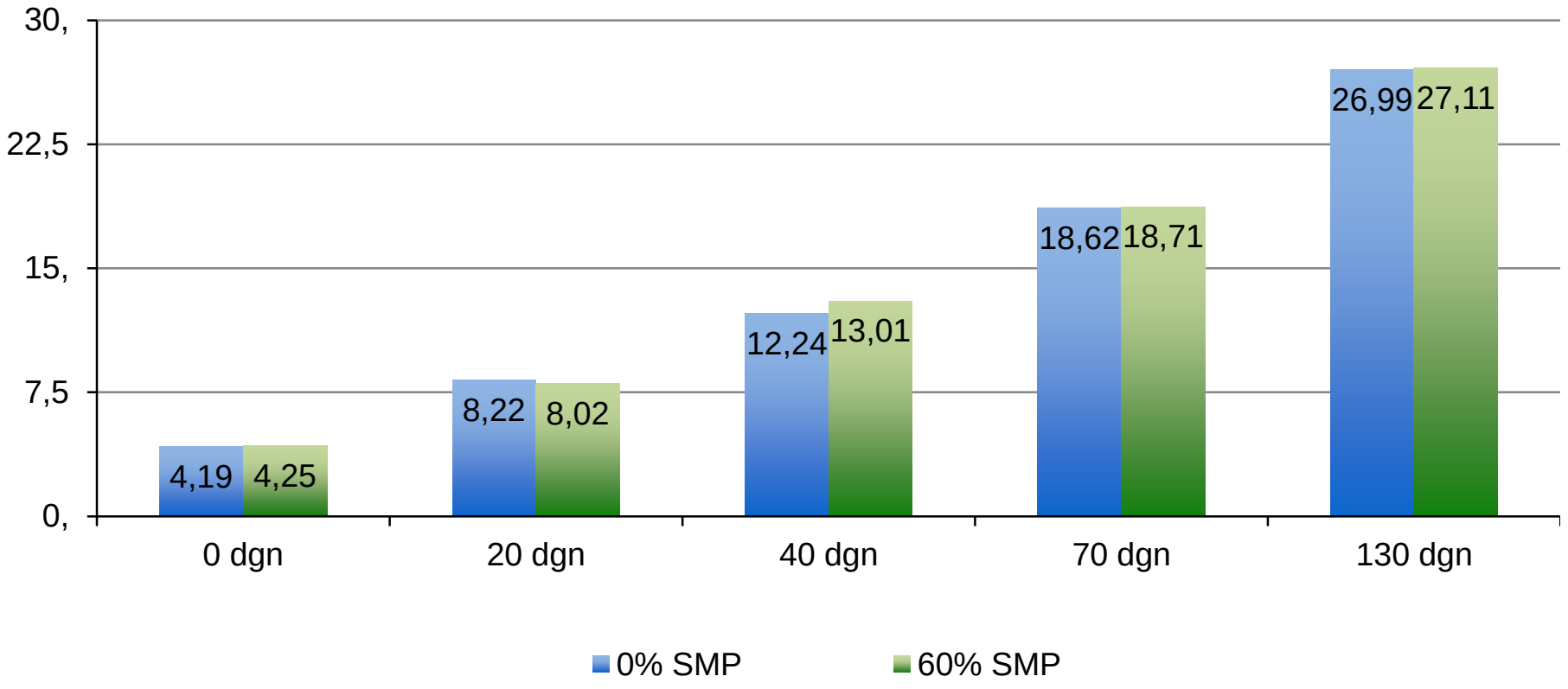
Research of weight development



Research of weight development

`Institut expérimentale Caprine du Pradel` France

Female and male goat kids



Analysis of technical results

	0% SMP	60% SMP
ADG (gram)	**236**	**228**
Weaning age (days)	**50.32**	**49.29**
Weaning weight (kg)	**14.93**	**14.89**
FCR	**1.298**	**1.367**

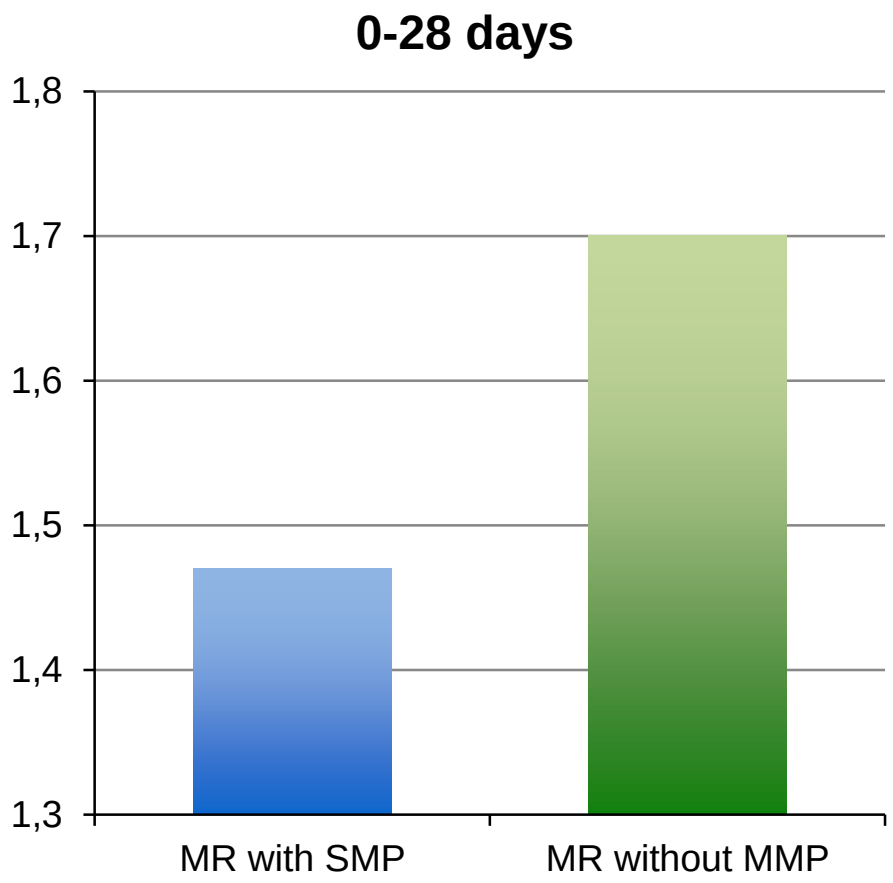
Technical results male goat kid fattening

	0% SMP	60% SMP	
Number	**34**	**33**	
Birth weight (kg)	**4.72**	**4.89**	**Ns**
Age at slaughter (days)	**26.06**	**24.45**	**Ns**
Live weight (kg)	**10.94**	**10.56**	**Ns**
ADG (gram)	**241**	**232**	**Ns**
Carcass weight (kg)	**7.30**	**6.98**	**Ns**
Carcass efficiency	**66.73**	**66.12**	**Ns**

Carcass quality



Research of concentrate intake





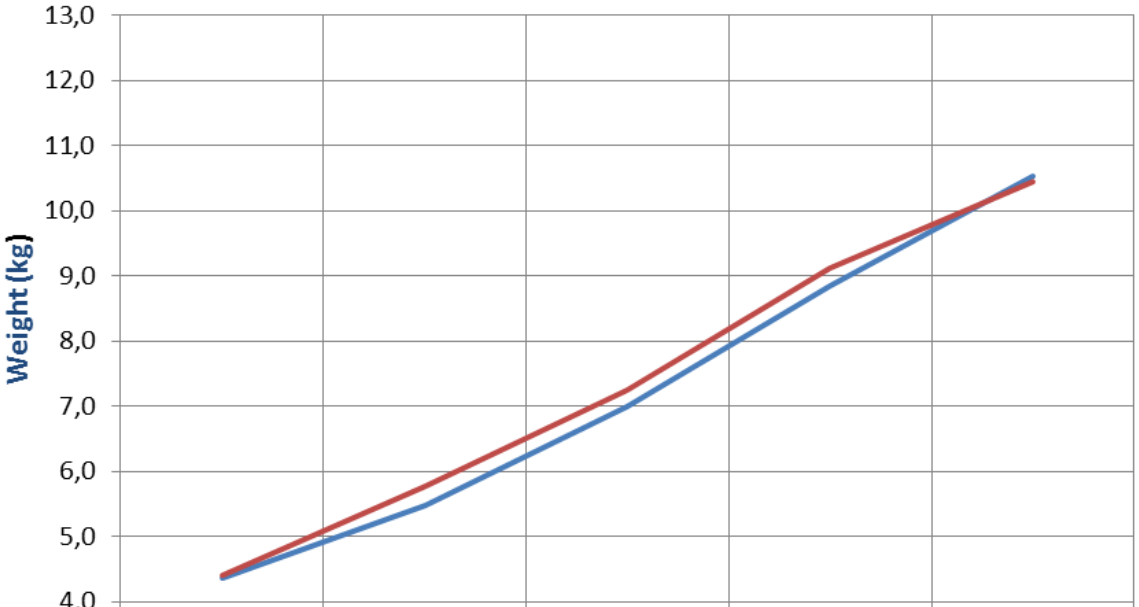
Milk replacer: whey vs smp

- No/less risk of coagulation disorders
  - Milk without SMP does not require coagulation
  - One less risk factor
- Lower risk of scours
- Earlier intake of concentrates and roughage
  - Facilitates earlier weaning !
- Possibility to acidify the milk
  - Better hygiene



Recent fattening trial with essential oils

Average growth S92



	Week 0	Week 1	Week 2	Week 3	Week 4
A	4,4	5,5	7,0	8,9	10,5
B	4,4	5,8	7,3	9,1	10,4

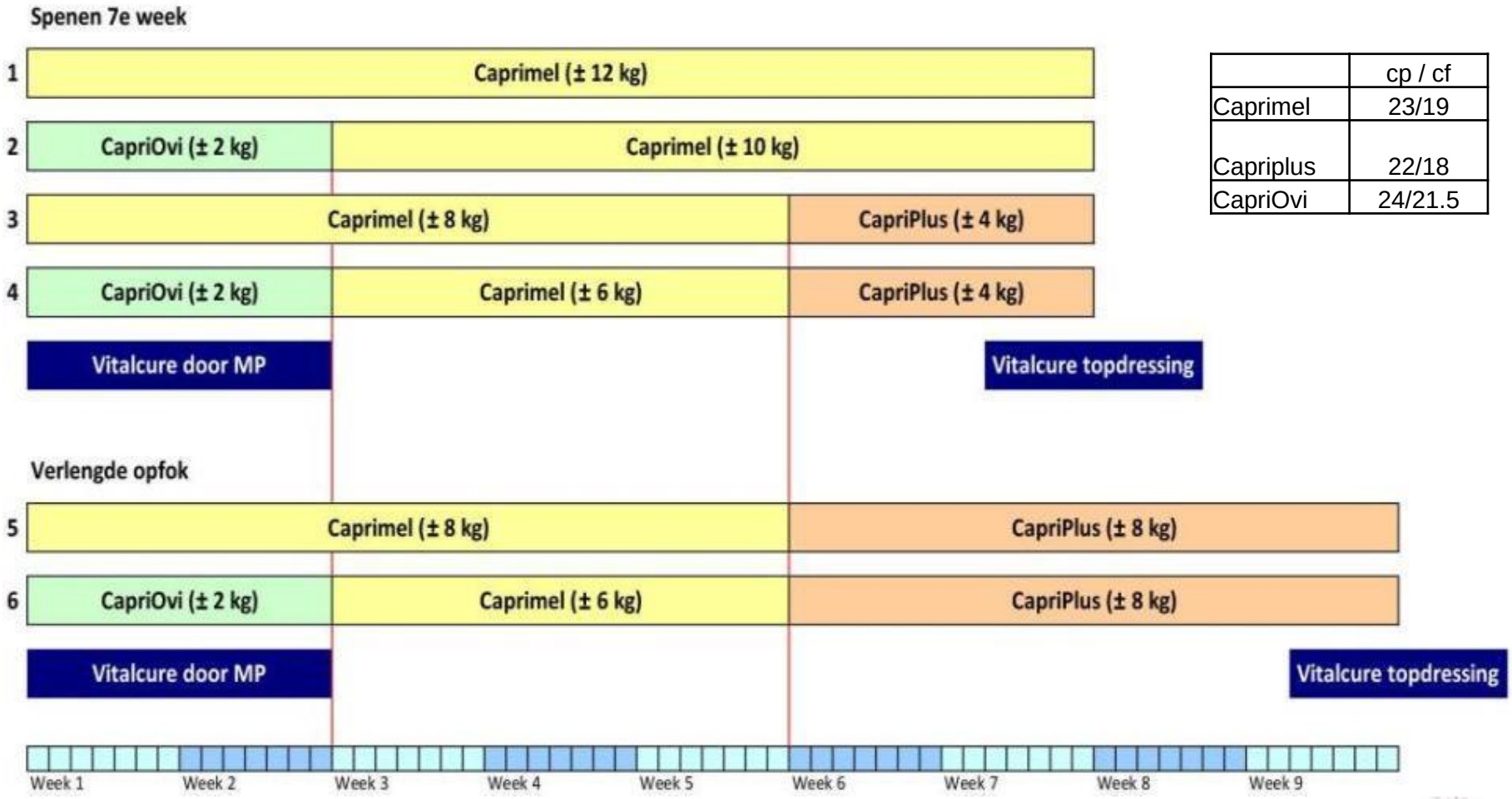
Growth (g/day):
A: 220
B: 216

Feed intake(kg):
A: 7.4
B: 7.8

FCR :
A: 1.19
B: 1.29

2 x180 kids

Denkavit Capri Concept



	cp / cf
Caprimel	23/19
Capriplus	22/18
CapriOvi	24/21.5

Application

Concentration

- 175-200 gr / litre of water
- For fattening 200-240 g/l water

Ad libitum feeding at the lamb bar: CapriOvi

- Prepare and apply at room temperature
- Refresh several times daily

Restricted feeding: Caprimel / CapriPlus / CapriOvi

- Dissolve in water of 45 - 50 ^{0}C
- Drinking temperature 41 – 42 ^{0}C

Automatic feeder: Caprimel / CapriPlus / CapriOvi

- Set preparation temperature at 43 – 44 ^{0}C



Portfolio (NL)

Caprimel

- Alround milk replacer for rearing purposes
- Highly palatable, highly digestible
- Excellent and safe juvenile growth
- Crude protein 23 %, crude fat 19 %
- Suitable for automatic feeders

CapriPlus

- Attractive alternative with lower energy level
- Perfect for final weeks before weaning
- High intake of concentrates, easy weaning
- Excellent digestibility
- Crude protein 22 %, crude fat 18 %
- Suitable for automatic feeders



Portfolio (NL)

CapriOvi

- High energy content for the first 10 - 14 days
- Also suitable for fattening of male goat kids
- 1st phase rearing
- Highly stable in solution
- High degree of safety
- Universally applicable
- Crude protein 21.5 %, crude fat 24 %

Caprifit

- Attractive alternative
- High energy content
- Fattening of male goat kids
- 1st phase rearing



Portfolio (NL)

CapriOvi Royal

- With 50 % skimmed milk powder
- High energy content
- Also suitable for fattening of male goat kids
- Highly stable in solution
- High degree of safety
- Universally applicable
- Crude protein 22 %, crude fat 25 %

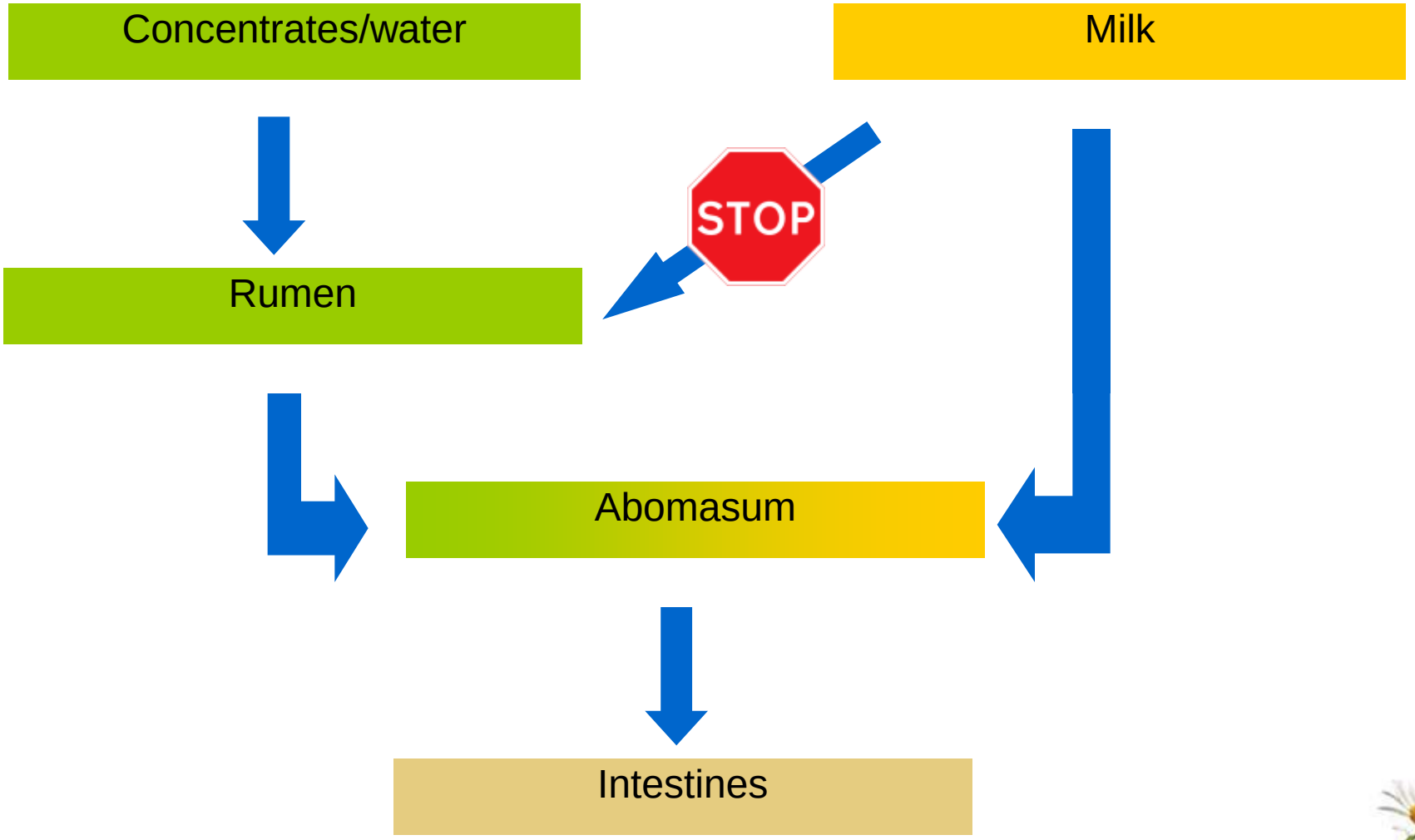


Features of goat kids

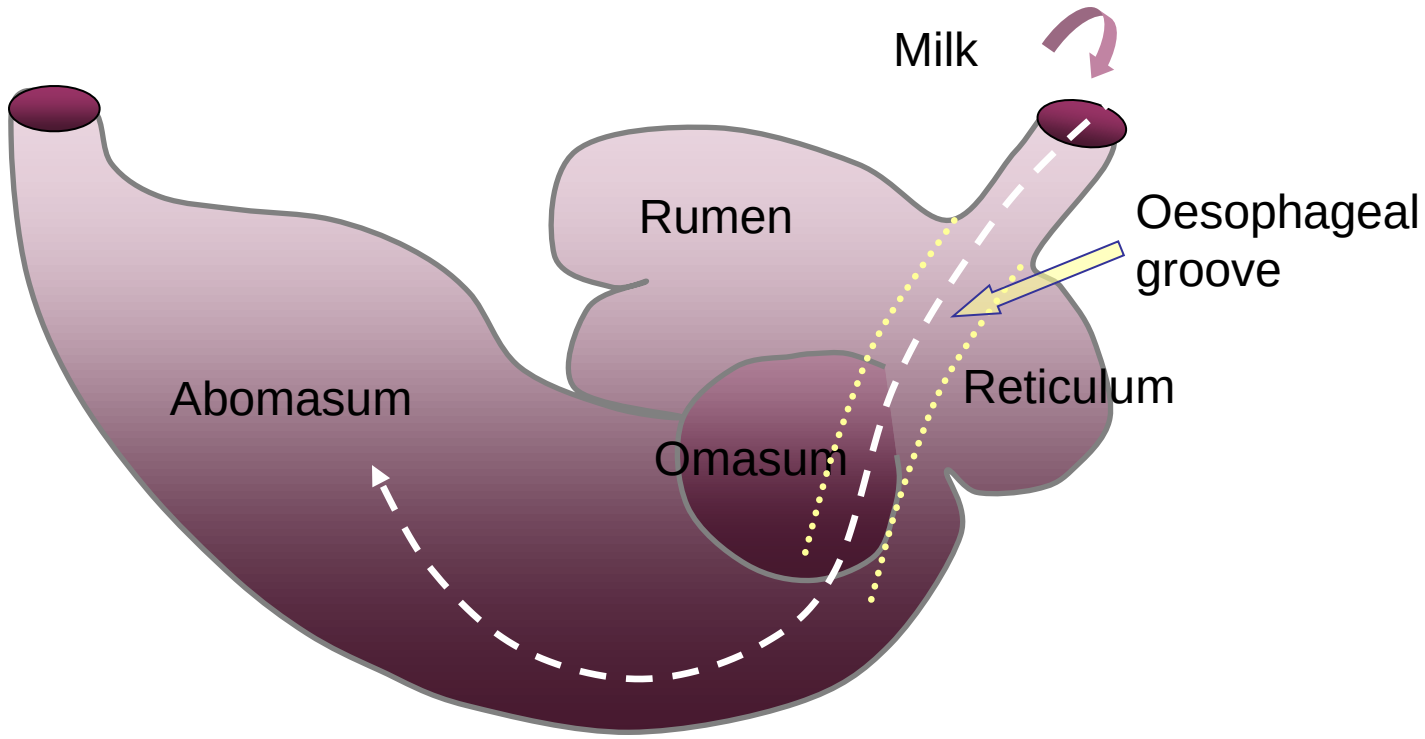


Oesophageal groove reflex

Flow of feed in the animal



Oesophageal groove reflex



Causes of rumen drinking

- Lumps in the milk
- Excessive milk intake
- Variation in concentration
- Teat height < 15 cm
- Damaged teats (sucking air)
- Tube feeding
- Variable drinking temperature, too low temperature in no-teat feeding systems
- Composition of milk replacer
- Stress (e.g. transport / competition)
- Poor health (e.g. respiratory disease)

Features of goat kids



Development of rumen and abomasum

Ruminant

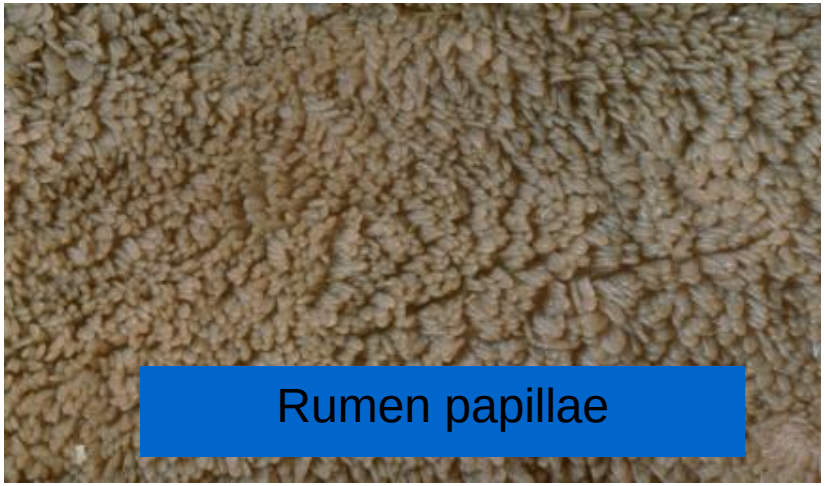
Feed and water intake

Rumen development











Rumen development



- Small quantities
- Easily digestible
- Always (!) fresh



- 10 % chopped hay, straw or alfalfa
- Dry
- Tasty
- Hay: chopped

Difference in rumen development in 7 weeks



Weaning

Supply as from day 7:

- Unlimited fresh and palatable water
- Highly digestible and palatable goat kid pellet
- Chopped alfalfa/ hay / straw

Weaning without growth check:

- Minimum 6 weeks of age
- Body weight 12 tot 14 kg
- Consumption of pellet 250 gr/day



Setup of weaning method trial

- Methods:
  - Influencing ease of drinking via mounted taps
  - Application of cold milk (room temperature)
  - Decreasing concentration by 50 % (down to 95 g/l water)
  - Once a day supply of milk

Results weaning method trial

	Control	Influencing drinking ease	½ concentration	Cold milk	Milk 1 x daily
ADG					
0-56 days (gram)	**179**	**226**	**166**	**174**	**201**
Weight gain (kg)	**10.02**	**12.47**	**9.27**	**9.78**	**11.28**
Difference (index)	**100**	**126**	**93**	**97**	**112**

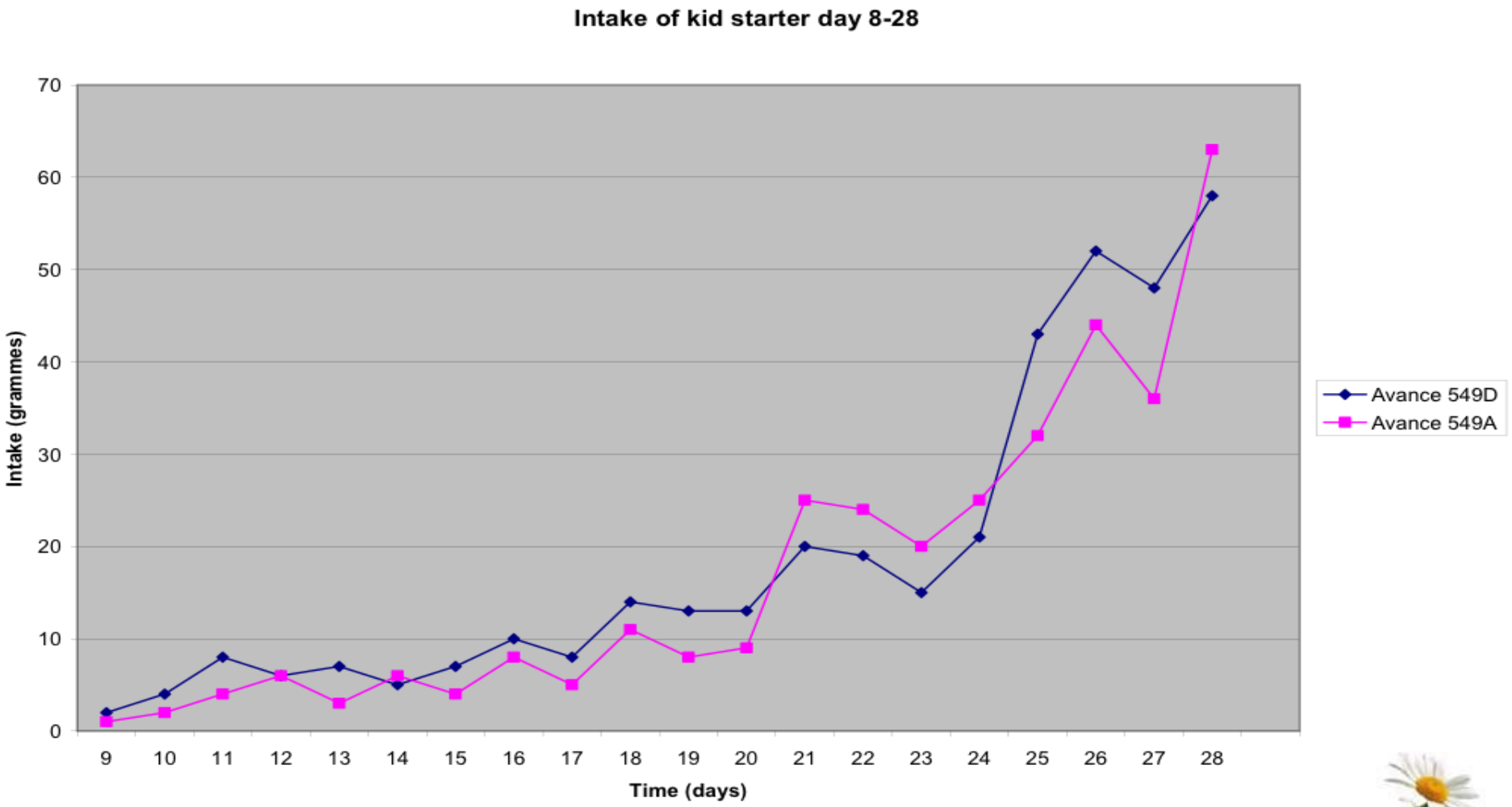


Results weaning method trial

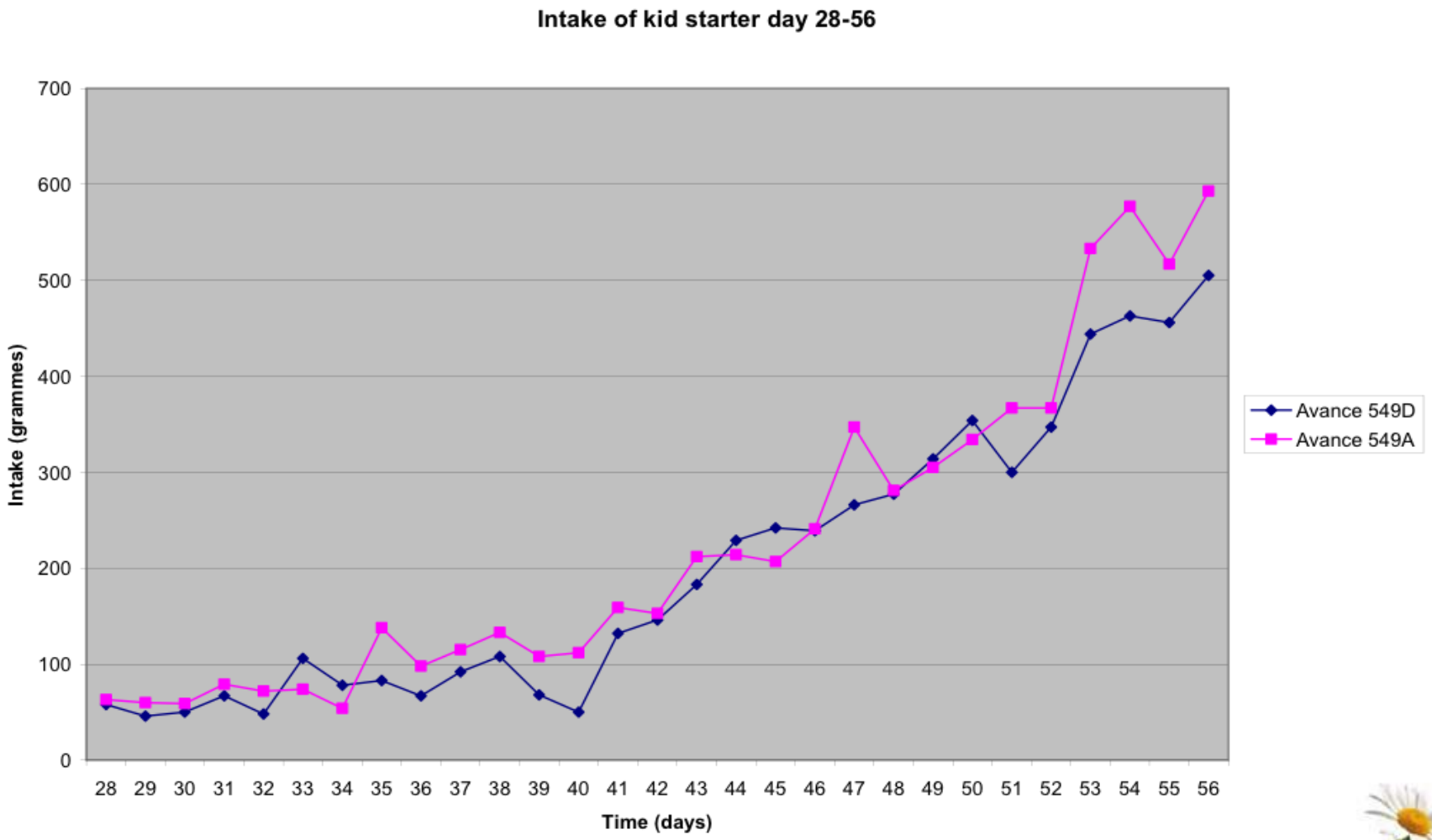


	Control	Influencing drinking ease	½ concentration	Cold milk	Milk 1 x daily
Intake of concentrates (gram)					
7-28 days (gram)	17	17	17	17	17
28-35 days (gram)	70	102	70	70	70
35-42 days(gram)	107	124	107	107	110
42-49 days(gram)	191	324	257	203	318
49-56 days (gram)	484	536	467	480	562
0-56 days (gram)	**129**	**163**	**136**	**130**	**158**
Total (gram)	**6312**	**7968**	**6662**	**6371**	**7752**
Difference (index)	**100**	**126**	**106**	**101**	**123**

Development of concentrate intake 0-28 days



Development of concentrate intake 28-56 days



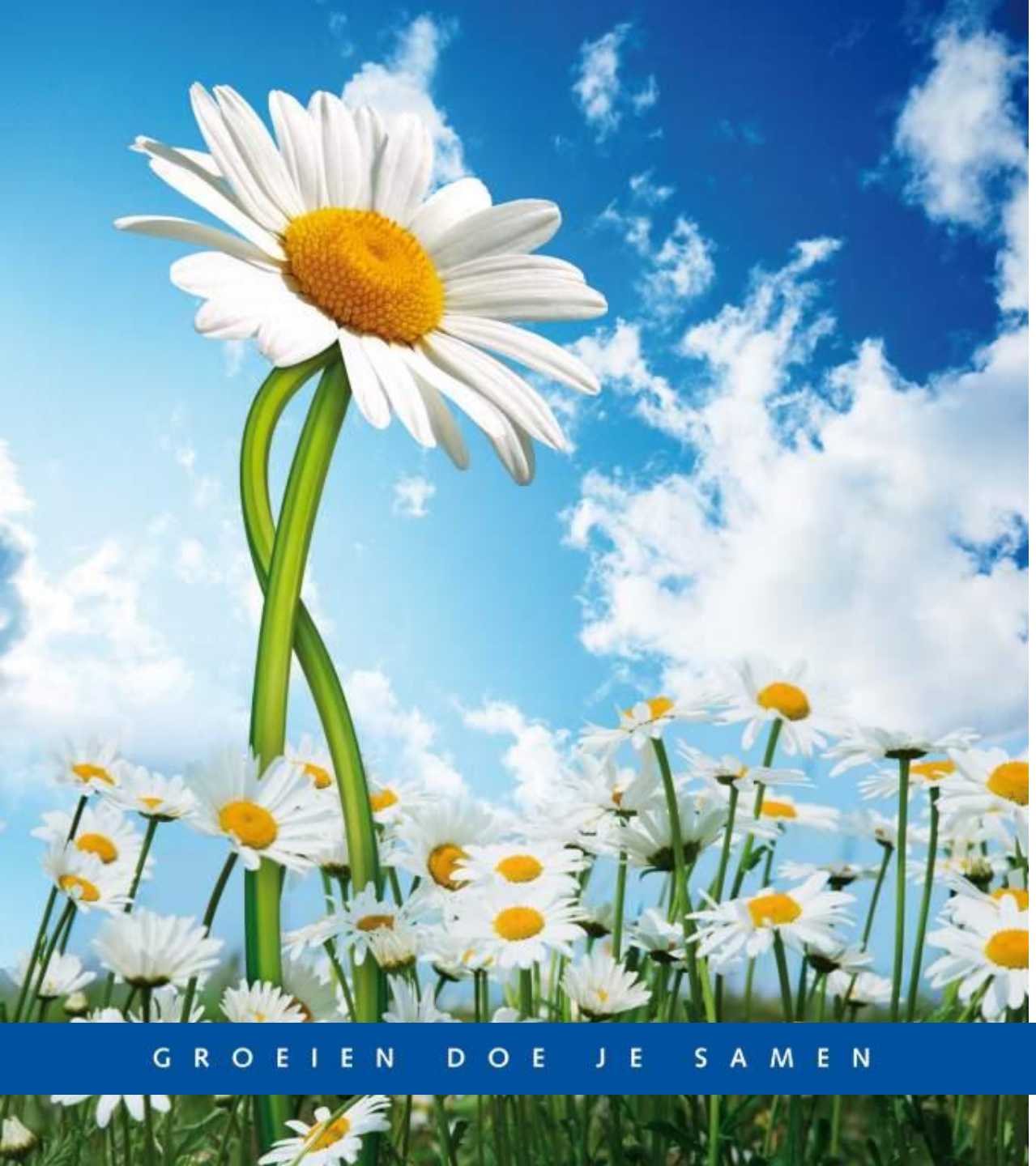
Supply of drinking water

Water = key nutrition

FRESHLY available AT ALL TIMES

- Number of drinking reservoirs
  - 3-4 drinking reservoirs / 100 goat kids
- Location
  - Close to concentrates and roughage
  - Away (far) from teats
- Type of water reservoir
- Water quality
  - Municipality / own water source (well)





Application of milk replacer: an art

DENKAVIT

Application of milk replacer. Attention points:

- Concentration
- Mixing temperature
- Mixing time
- Drinking temperature
- Water quality
- Hygiene

Feeding systems



Automatic feeder



Restricted feeding



Ad lib stockfeeding

Restricted feeding (trough)







Restricted feeding (lamb bar)

- Mount a sufficient number of teats
- Do not overfeed
- Feed according to schedule





Ad lib stockfeeding (lamb bar)

- Always milk available
- Always at constant temperature
- Milk replacer 24 hour stability
- Milk replacer soluble in warm or cold water
- Verify milk intake
- Hygiene





Automatic feeder







Pitfalls automatic feeder

- Infection pressure at the automatic feeder
- Incorrect installation and settings
  - Setting concentration / calibration
  - Cleaning of powder orifice
  - Mixing temperature (43 / 44 ºC)
- Hygiene of teats, tubes, mixing cup
- Stress of goat kids in group
  - Correct training
  - Group size
- Difficult setup regarding general treatment



Avoid too large group size

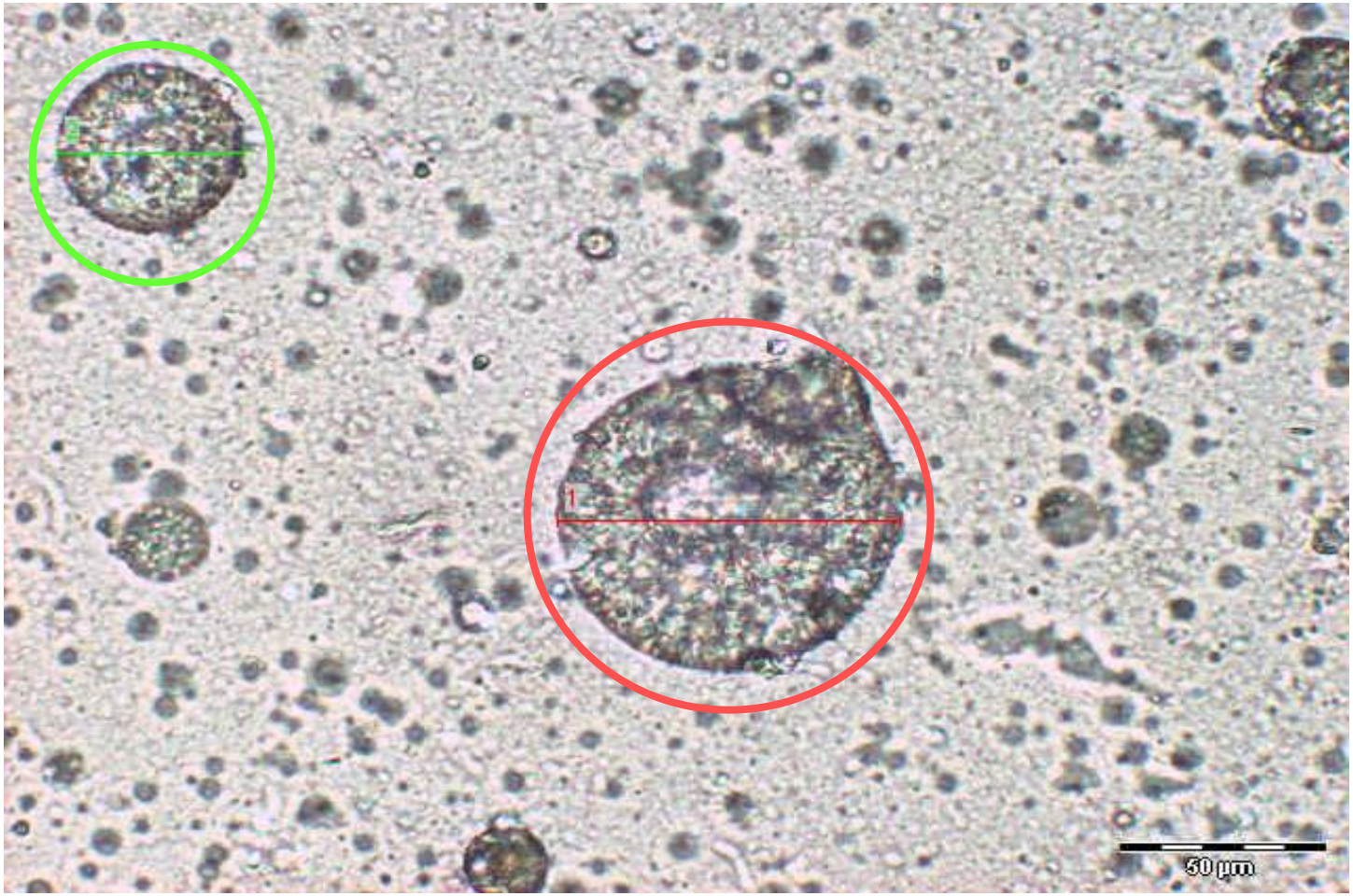








Improper preparation, T has to be > 40 degrees



1 = 83.2 ⌈m

2 = 45.4 ⌈m

Watery solution

x 200

Many badly dissolved fat particles

Too high mixing temperature

> 65°C

Frequently encountered in case of 2-step preparation/mixing



Effect:

- Denaturation of protein:
  - Less soluble
  - Less digestible/undigestible
- Loss of vitamin activity (breakdown)
- Negative impact on fat emulsification

Consequence: poor growth and digestive disorders !

Group housing

Focus : High growth and rumen development

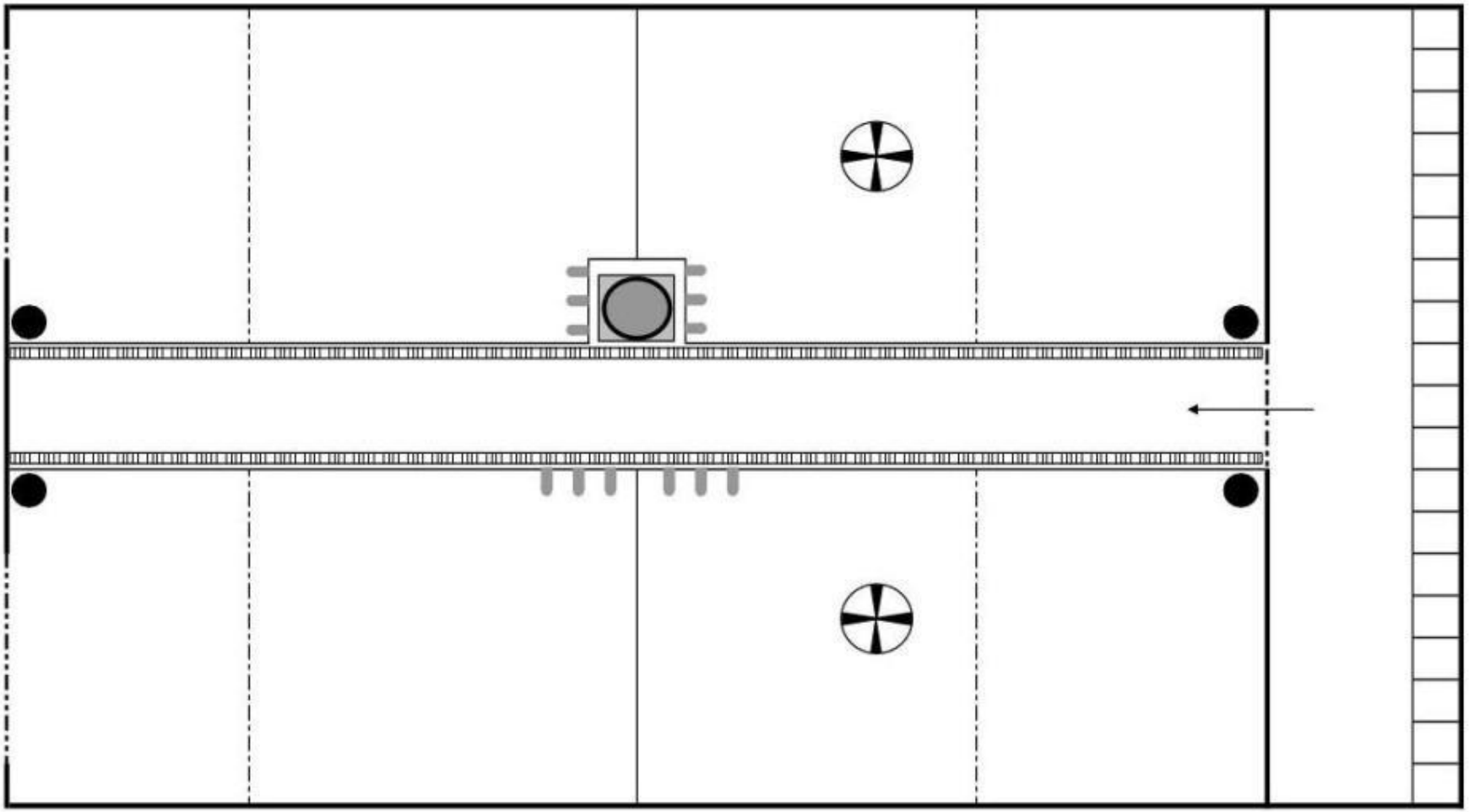
Group size
- Not too big (heterogenity)

Pen surface for each goat kid
- More space for moving around
- Lower infection pressure
- Less stress

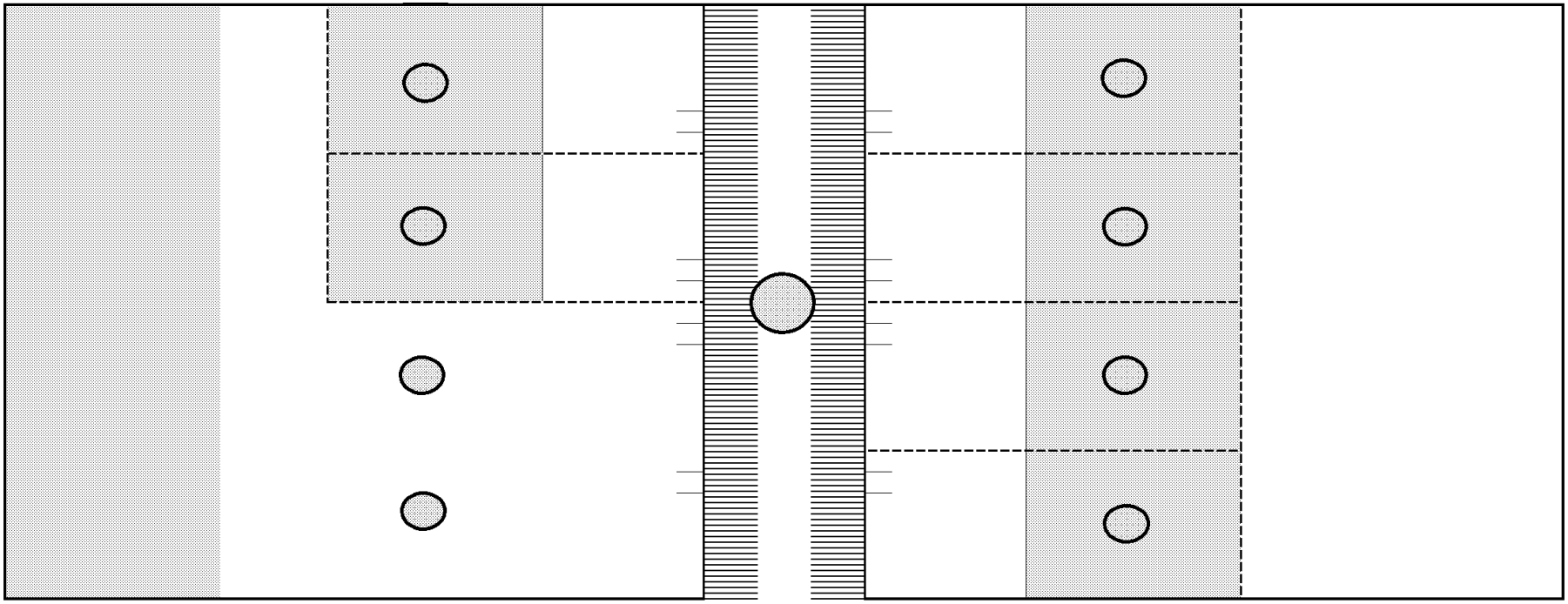
- Water
- Supply of concentrates and roughage
- Freshness of feed(s)
- Automatic feeder



Example of setup



The ideal rearing unit ?



Why the attention to climate ?

Climate has serious impact on:

- Respiratory disease (2x)
- Medical treatment
- Development and capacity of the respiratory system
- Feed intake and growth
- Uniformity
- Infection presure
- Future results !!!



Successful rearing

- Colostrum
  - 1st day
  - Correct quantity/type applied by teat
- Training pen
  - Max. 10 - 15 goat kids per teat
  - Min. 2 teats at 35 - 40 cm height
  - Close to the automatic feeder
  - Vertical teat opening (optimum milk yield)
- Milk intake
  - Check 2 times per day
- Regular checks
  - Replace damaged teats
  - Clean orifice daily
  - Check concentration once a week
- Weighing
  - Determine correct moment of weaning



Thanks for your attention!

