

Milk price for cheese factories





Sheep's milk for cheesemaking

Introduction

The component (fat, protein, lactose) percentage of the milk is the most important factor. Casein plays a very important role in cheese production. Pure casein is a complex that consists of four individual proteins. One of them is k-Casein, which exists in different genetic variants (A, B, C, and E). A high proportion of k-Casein B is advantageous for milk coagulation and, therefore, for cheese yield. The proportions of the genetic variants can now be determined not only in milk from individual cows but also in mixed milk. As a result, milk producers, especially those with brown cattle, are demanding that cheese makers additionally reward high proportions of k-Casein B in the payment for milk content. This document addresses the milk price according to the milk components for the cheese factories.

Factors affecting yield

The yield of both cheese and butter is significantly influenced by the water content in the product. However, this is not primarily determined by the milk components, but rather by the production parameters. To reflect the true value of the milk components, the yield must be considered relative to the dry matter of the product.

When processing milk into cheese with standardized fat content, both cheese and butter yields must be taken into account, as they are directly related. For the cheesemaker, fat and protein are primarily important for yield, with only casein being relevant in cheese production. On average, casein constitutes about 77 % of the raw protein (depending on genetics/breed, feeding, cell count, and month of lactation or season).

The average casein content in mixed milk is about 50 g per kg of milk or 5 kg per 100 kg of milk.

Data & Trial Method

- **Country:** Bulgaria, 2011
- **Population:** 40 ewes, Synthetic population Bulgarian milk (SPBM), IAS – Kostinbrod, Bulgaria.
- **Duration:** 180 days
- **Trial Groups:** 2 x 20 ewes
- **Feeding System:** In groups, with constant access to water
- **Milk Yield Inspection:** bi-monthly for 120 days

INGREDIENTS (%)	CONTROL	SOYPASS
Corn	12,0	12,0
Wheat	12,0	12,0
Triticale	36,8	36,8
DDGS	21,5	21,5
Soya bean meal	15,0	---
Sunflower meal	--	7,5
Soypass	--	7,5
Calcium carbonate	1,2	1,2
Dicalcium phosphate	0,7	0,7
Salt	0,7	0,7
PREMIX	0,1	0,1

Trial Data & Soypass[®] Performance

Group A (Soya extr. 44%)

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:                               Master                               (527311734424276086)
:                               :                               :
:                               :                               :
: Single-Mix (RUN) ** ACME Feeds ** {1} 2018 CUSTOMISED FORMULA 13:28 20/10/23 0007
: 2209.1/2.0 ( 1) Plant=0088 sibbicks
:                               :                               :
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Time period: 2018 Plant name: Optimization date: 20/10/2023
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LP code: 4141 Description: Bulgaria trial Control LP Solution: OPTIMAL
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RM code Description Kgs % LP_min LP_max RMcost LCost HCost Nutrient Units LP_min Actual LP_max
-----
55 Triticale 368.0 36.8 320.0 [VOLUME] % 100.0
45 DOGS, maize 215.0 21.5 320.0 DRY MATTER % 87.967
13 Soya extr. 44% 150.0 15.0 620.0 PROTEIN % 18.741
2 Maize 121.0 12.1 270.0 FAT % 4.0728
51 Wheat 120.0 12.0 320.0 FIBER % 4.0769
31 Limestone 12.0 1.2 210.0 NDF % 16.4275
44 Salt 7.0 0.7 110.0 ADF % 5.8666
29 DCP 18% 7.0 0.7 400.0 STARCH % 38.2495
-----
Total: 1000.0 100.0 356.72 SUGAR % 2.0446
-----
Batch cost: 356.72 ASH % 5.56115
CALCIUM % 0.73216
PHOS % 0.5783
SODIUM % 0.32773
SALT % 0.85473
POTASS % 0.76873
LYSINE % 0.77148
METHIONINE % 0.30998
MER MJ/kg 11.7223
PDIA u/kg 56.885
PDIN g/kg 130.918
UDP g/kg 28.1957
GROSS ENER MJ/kg 16.26745

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Group B (SoyPass & Sunflower)

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===== Master (527311734424276086) =====
:
: Single-Mix (RUN) ** ACME Feeds ** {1} 2018 CUSTOMISED FORMULA 13:30 20/10/23 0008
: 2209.1/2.0 ( 1) Plant=0088 sibbicks
=====

Time period: 2018 Plant name: Optimization date: 20/10/2023
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LP code: 4141 Description: Bulgaria trial Control LP Solution: OPTIMAL
-----

RM code Description Kgs % LP_min LP_max RMcost L0cost H0cost Nutrient Units LP_min Actual LP_max
-----
55 Triticale 368.0 36.8 320.0 [VOLUME] % 100.0
45 DOGS, maize 215.0 21.5 320.0 DRY MATTER % 87.8159
2 Maize 159.05 15.905 270.0 PROTEIN % 16.7425
51 Wheat 120.0 12.0 320.0 FAT % 4.09607
39 Soyabass 75.0 7.5 800.0 FIBER % 4.411075
41 Sunflower extr. 28% 36.95 3.695 280.0 NDF % 18.3438
31 Limestone 12.0 1.2 210.0 ADF % 6.4287
44 Salt 7.0 0.7 110.0 STARCH % 40.0
29 DCP 18% 7.0 0.7 400.0 SUGAR % 2.556755
ASH % 5.383997
Total: 1000.0 100.0 344.34 CALCIUM % 0.723734
PHOS % 0.595143
Batch cost: 344.34 SODIUM % 0.326589
SALT % 0.856197
POTASS % 0.688669
LYSINE % 0.414823
METHIONINE % 0.250847
MER MJ/kg 11.615475
PDIA g/kg 60.9957
PDIN g/kg 121.14005
UDP g/kg 32.774855
GROSS ENER MJ/kg 14.922823

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Trial Data & Soypass[®] vs Soybean meal 44%

	Group A (Soya extr. 44%)	Group B (SoyPass & Sunflower)
Crude protein (%)	18.7	16.7
Urea (mg/ltr)	440-462	352-374

*the SoyPass group has significantly lower urea levels

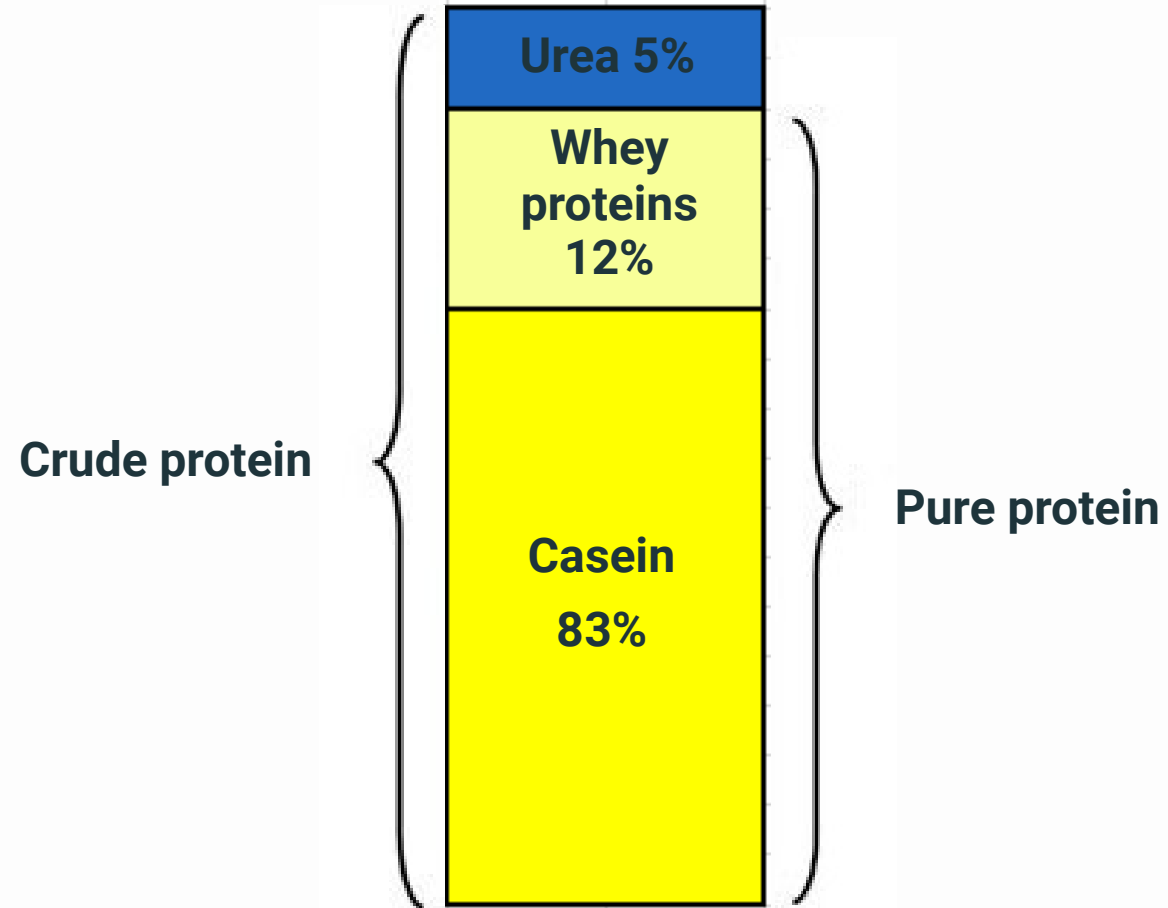
* the SoyPass group has a lower ration cost

Sheep milk urea & crude protein

The relationship between sheep milk Urea and the Crude Protein of the ration (Cannas 1998)

Urea (mg/ltr)	154.0	176.0	198.0	220.0	242.0	264.0	286.0	308.0	330.0
CP (%DM)	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0
Urea (mg/ltr)	352.0	374.0	396.0	418.0	440.0	462.0	484.0	506.0	528.0
CP (%DM)	16.5	17.0	17.5	18.0	18.5	19.0	19.5	20.0	20.5

*CP = Crude Protein



Composition of Nitrogen and Protein Fractions in Milk.

Composition of sheep milk

Breed /Average	Fat (%)	Total Protein (%)	Casein (%)	Whey Protein (%)	Lactose (%)	Dry matter (%)	Ash (%)
Lacaune	7.0	6.0	4.0	1.0	5.0	20.0	1.0
Friesian	7.0	6.0	4.0	1.0	4.0	19.0	1.0
Chios	8.0	6.0	5.0	2.0	5.0	20.0	1.0
Assaf	6.0	5.0	4.0	1.0	5.0	19.0	1.0
Karagouniki	9.0	7.0	5.0	2.0	5.0	20.0	1.0
Frisarta	6.0	6.0	5.0	1.0	5.0	18.0	1.0

Composition of Feta Cheese g/kg (ready for consumption)

- Humidity 560 g/kg
- Fat 235 g/kg
- Casein 124 g/kg
- Mineral salts 45 g/kg
- Acids 11 g/kg

Composition of Haloumi Cheese g/kg (fresh product)

- Humidity 460 g/kg
- Fat 430 g/kg
- Protein 200-220 g/kg
- Salt 30 g/kg
- Carbohydrates 8 g/kg
- Sugar 5 g/kg

