Optimization of protein requirement for dairy goats during rearing period with local protein feed stuff from bioethanol production and best roughage

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Introduction

- Ethanol production – 170.000 t DDG
- DDG have high protein value for ruminants
- In Austria soybean is the most important protein source
- Appr. 30.000 dairy goats

Questions

- Replace soybean with DDG?
- Feed intake during rearing period?
- Development of body weight?
- Effect of roughage?

Material and methods – experimental design

- 36 female Saanen kids
- 3 concentrate groups
  - Control without DDG (C)
  - Half soybean, half DDG (50)
  - DDG without saybean (100)
- 2 hay qualities (c3 and c4)
- 3 repetitions (for each 28 d)
- Individual feed intake

Number of animals

Conc. / hay	C	50	100
c3	6	6	6
c4	6	6	6

Material and methods

- Individual pens
- Feeding twice a day
- Concentrate and hay ad libitum
- Fodder rest was weighted once a day
- Fresh water was available ad libitum
- Daily dry matter intake
- Once a week body weight was measured

Material and methods - concentrate

	group		
Feedstuff	**C**	**50**	**100**
Barley	41.37	39.89	39.40
Maize	15.76	14.78	12.81
Dried beet cuts	14.78	14.78	14.78
Oat	10.84	9.85	8.87
Soybean extraction meal	11.82	5.91	-
DDG	-	9.36	18.72
Minerals	2.96	2.96	2.96
Carbolic limestone	0.99	0.99	0.99
Molasses	1.50	1,50	1.50
Crude protein, g/kg DM	156.00	156.00	156.00
Energie, MJ ME	12.26	12.15	12.04
Crude fibre, g/kg DM	76.39	77.20	78.20

Results

	Concentrate			Hay		Repetition		
	C	**50**	**100**	**c3**	**c4**	**1**	**2**	**3**
Body weight begin, kg	33.77	33.93	32.52	33.26	33.55	21.15 [a]	32.78 [b]	46.29 [c]
Body weight end, kg	39.03	39.42	37.92	38.96	38.61	25.98 [a]	39.06 [b]	51.32 [c]
Age, d	161	164	162	162	162	102 [a]	165 [b]	221 [c]
Total gain, kg	5.24	5.48	5.38	5.70 [a]	5.06 [b]	4.82 [a]	6.29 [b]	5.03 [a]
Daily gain, g	**192**	**201**	**198**	209 [a]	185 [b]	172 [a]	234 [b]	186 [a]

Results

	Concentrate			Hay		Repetition		
	C	**50**	**100**	**c3**	**c4**	**1**	**2**	**3**
DMI, kg/d	**1.21**	**1.19**	**1.21**	**1.22**	**1.19**	**0.92 a**	**1.28 b**	**1.41 c**
Hay intake, kg DM/d	0.23 a	0.21 a	0.27 b	0.22	0.24	0.24 b	0.16 a	0.29 c
concentrate intake, kg DM/d	0.98	0.99	0.94	0.99	0.95	0.68 a	1.11 b	1.12 b
Feed conversion kg DM/kg gain	**6.71**	**6.36**	**6.55**	**6.17 a**	**6.92 b**	**5.62 a**	**5.73 a**	**8.27 b**
Hay conversion kg DM/kg gain	1.38	1.25	1.57	1.28	1.53	1.61 a	0.81 b	1.79 a
Concentrate conv. kg DM/kg gain	5.33	5.11	4.98	4.89 a	5.39 b	4.01 a	4.93 b	6.48 c

Economically results

Costs per kg Concentrate

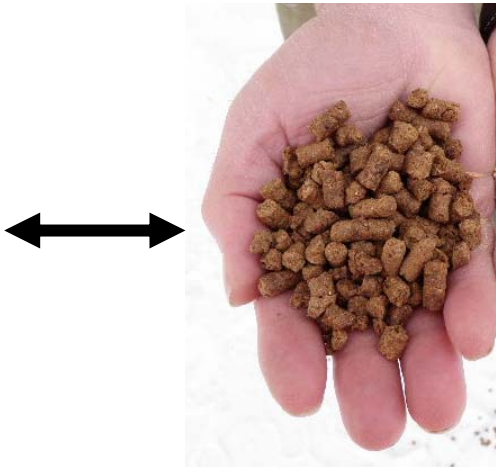
- C 0.262 €
- 50 0.249 €
- 100 0.236 €

Concentrate costs per kg gain

- C 1.587 €
- 50 1.446 €
- 100 1.336 €

Conclusion

- DDG is a native feedstuff
- No significant effect of DDG on daily gain, feed intake and feed conversion
- Soybean can be replaced 100% by DDG
- 1 kg body gain 0.25 € ↓



- Hay quality affected
  feed conversion
  and daily gain

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