The Management in a Dairy Goat Farm Based on Feeding Systems

Roger Stan[1], Ramona Iancu[2], Adrian Enache[2], Sergiu Lazăr[2], Alexandra Pădurariu[2]

[1] *Opportunity Microcredit*
[2]*Faculty of Agricultural Sciences, Food Industry and Environmental Protection, „Lucian Blaga" University of Sibiu*

Abstract
Yield and quantity of milk components are influenced by nutrition goats. The present study analyzes the factors such as heredity, infection, the number of secreting cells and the temperature who often offers nutritional effects. Proper feeding can improve the economics of production, increased production of milk with a maximum amount of fat and proteins are essential. High protein content in milk increased the price difference is due to people's demand for low-fat dairy products.

Keywords: goat milk, management, nutrition, profit, proper feeding.

1. Introduction

Many factors can have major or minor effects on the goal of improving milk and meat production of goats.
The feeding program needs to aim for more than just higher milk yield or weight gain; it needs to provide the best possible health also through feeding, because this will directly affect readiness and success in reproduction [1]. It has been said often that the goat has been neglected in research and numbers of publications, but this was true only until 30 years ago. Meanwhile there has been a ground swell of efforts recognizing the goat as an important part of agriculture, especially small holder agriculture, and in the production of valuable food for human needs for selfsufficiency, [1]diversification, risk stabilization, natural resource utilization like no other animal, gourmet foods and for people with medical needs like cow milk allergy, digestive malabsorption and cholesterol problems [2, 3].

* Corresponding author: Stan Roger, Tel: 004-0740177358, e-mail: rogerstan2000@yahoo.com

2. Materials and methods

Biological material used in this study is the goat, the Albă de Banat breed crossing coming from the Carpatină breed and breed Saanen, analyzed on a farm near Sibiu with a herd of 100 goats. In this project we aimed to increase milk production through various management strategies.
A. The following feeding guidelines should help the dairy producer increase production of solids-corrected milk:

- maximum feed intake;

- feedback management (keep them clean, shaded during hot weather, and have adequate space per goat);
- increase feeding frequency and sequence;
- control ration moisture (50 % moisture or less, prefer: 35 to 50 % moisture);
- examine herd for social interactions
- avoid sudden ration changes;
- provide proper flooring and ventilation.

- proper nutritional factors;
- properly feeding energy (carbohydrates and fats), protein, fiber, minerals, and vitamins;
- monitoring diet composition (use routine forage, feed analyses);
- harvesting and/or buying high quality forage and proper forage allocation.

B. Practical feeding of goats can be grouped into three types:
- free grazing and no supplementary feeding
- limited grazing and supplementary feeding
- confinement feeding with no grazing.

C. The management in a dairy goat farm;
D. Economic calculation of goat's farm.

3. Results and discussion

The importance of maximizing feed intake is related to minimizing negative energy balance during early lactation.

Proper feeding of concentrates primarily involves maintaining proper forage to concentrate ratios and non-fiber carbohydrate (NFC) levels. Non-fiber carbohydrates include starch, sugars, and pectin.

Results and discussion on the method A

A major concern in feeding for better health is the problem of enterotoxemia or overeating disease, as Haenlein confirmed in 1982. Vaccination against enterotoxemia is successfully, to prevent the associated toxin produced by Clostridium perfringens. At any age, symptoms of depression, digestive upsets, coma and death are observed after excessive feeding of kids or mature goats. When sudden changes of feeds occur, when goats are hungry and had free access to palatable, readily fermentable feeds, when goats are fed too little calcium supplement and when too little roughage with too short fiber is fed.

High levels of grain feeding relative to roughage in the ration (> 60%), especially in early lactation lead to rumen acidosis, followed by inappetence and indigestion. Feeding buffers like sodium bicarbonate and magnesium oxide and stemmy hay will help alleviate the early symptoms and prevent enterotoxemia. Other effective feeds are sunflower seeds, cottonseed, oats, dry brewers grain. [4] Fiber is a feeding requirement unique to ruminants, because:

- it maintains a beneficial rumen flora, that produces mainly acetate, the important energy source for all ruminants
- it causes extensive regurgitation for rumination and plentiful salivation for rumen buffering, rather than fast passage through the rumen and incomplete digestion.

Fiber is rarely stated in nutrient requirement tables, but from dairy cattle research it is recognized, that at least 17 percent of the daily dry matter intake is needed.

Table 1 lists some feeds like sunflower and cotton seed, which are very high in fiber contents, but also have high fat and protein contents, so they are ideal for maintaining the high energy and protein supply needed for early lactation high milking goats, besides providing the extra protective fiber content to avoid low fat syndrome, acidosis and enterotoxemia.

Table 1. Nutrient composition of some seeds for goats (% DM)

%	Sunflower seed	Cotton seed	Corn shelled	Oats	Soybeans roasted
Mineral	3.0	5.0	1.2	3.6	5.6
Crude fiber	30.72	21.2	2.0	12.0	6.0
Fat	27.3	22.7	4.3	5.8	19.0
Carbohydrates	20.4	26.9	80.6	56.0	26.7
Crude protein	17.6	25.0	10.7	13.8	43.0
TDN	82.2	92.0	92.8	77.3	93.4
Calcium	0.20	0.18	0.07	0.05	0.30
Phosphorus	0.58	0.78	0.32	0.39	0.61
Potassium	0.75	1.29	0.38	0.46	1.79
Iron	0.002	0.014	0.002	0.007	0.006

Feeding ruminants and their rumen microflora correctly should result in sufficient amounts of rumen synthesized B vitamins. However, any change and upset in feed intake may reduce the amounts significantly.

Niacin is needed in early lactation when ketosis or acetonemia may be a problem.

Thiamine deficiency may occur after heavy grain feeding or if certain feeds with antithiamine activity are ingested. Blindness can result and thiamine supplementation may be needed.

Pyridoxine is required for biosynthesis of fatty acids, transport of amino acids and minerals.

Several minerals besides calcium require particular attention in proper goat feeding: phosphorus, magnesium, selenium, iron, copper as Haenlein confirmed in 1992, dextran injection or with iron supplementation to the ration. Protein is the more expensive nutrient in feeding and therefore often limiting maximum productivity. Industry by-products often are less expensive sources besides the traditional major supplies of oilmeals. However, as forages have higher fiber and lower protein contents with increasing maturity, the least expensive sources of protein are usually forages, alfalfa, clovers, well fertilized grasses, harvested at prebloom or immature stages. A minimum of 7 percent crude protein in the diet dry matter is required for normal rumen function, and forage intake will be decreased at lower protein levels. The supply of some rumen protected protein has been effective in increasing milk yield. Excess protein feeding is not only wasting money but is stressing the goat by increasing her blood urea levels, increasing urine excretion and interfering with efficient reproduction. Protein deficiencies will reduce feed intake, rumen function and retard fetal development.

Results and discussion on the method B

Effects and expectations in meat and milk production obviously differ with these types of feeding under extensive or intensive management. Proper rations must then be calculated differently, depending on the degree of nutrient supply expected from the amount of grazing provided [5, 6, 7].

B_1 Grazing management

Under free grazing providing no other sources of nutrients, the grazing strategy must aim towards finding the best pasture in each season without excessive travel and with a stocking rate that is compatible with good renewal of the vegetation and the best sustainability of forages and browse. The presence of a goatherder will assure this and improve productivity over un-supervised grazing. Nevertheless the nutrient composition varies tremendously from season to season and despite the selectivity of grazing goats, the daily supply often falls short of nutrient requirements of production and at times even of maintenance, so that the goats actually lose milk production, weight and potentially health .

B_2Limited grazing

Limited grazing will be a normal consequence by goats when fed supplementary grain. The strategy could be based on the amount of daily milk produced at the rate of 2.5 l milk per l l grain or more depending on the price of grain to the price of milk ration. A superior feeding strategy would be based on body condition scoring. The concept of free choice feeding without rationing to individual goats has been tried successfully as mentioned Haenlein in 1978.

B_3 Total mixed ration (TMR)

Total mixed ration is another approach to free choice feeding. Grass silage is fed routinely and successfully to dairy goats. A total mixed pelleted ration has been our TMR for years and it is commercially available. The major composition was 12 percent protein and 26 percent fiber. The high fiber content prevented over-eating by the goats. This pelleted ration was provided to the goats in gravity-flow self-feeders. In addition to this pelleted ration we always provided mixed hay free choice and the goats usually ate less than under conventional feeding, but they preferred stems to get enough fiber. Individual feeding is the alternative to group feeding and free choice offer of feeds. It is more labor intensive may save some wasted feed and may better feed according to body condition. It has not been demonstrated whether feeding success in production or profit from the operation is better than in group feeding. Individual feeding requires individual stalls or temporary tie-ups or feeding at milking time or computerized feed dispenser stalls. In any case it also requires detailed calculations of fitting rations according to individual requirements and prevailing feed ingredient prices. In addition to including the volume capacity of a goat's rumen when calculating rations (expressed in the 3 to 5 percent/body weight intake range), one must also consider palatability of the ration and the goat's preference for variety and selection of feeds. Actually voluntary intake is more important than correct nutrient composition. Unless feed intake is maximized, production improvement in the short and long run is not secured [8, 9].

Factors affecting feed intake by goats are:feed factors(taste, smell,size/form of feed), goats factors(appetite, preference, size, pregnancy, growing, lactating) [10, 11].

Results and discussion on the method C.

Functional parameters in raising goats are paddocks, milking, milking parlor, shed growth.

Table 2. Indicators used in growing goats technology

1	Accommodation area of a goat	Goats 1.5-2.0 m^2/ head Kid 0.5-0.7 m^2/ head Buck 3.0-5.0m^2/ head
2	Paddock-double the surface area of accommodation	3 m^2/ head
3	The optimum temperature of the shelter	8-10 ^{0} C
4	The optimum temperature of the shelter during births	16-20 ^{0}C
5	Front Feeding	0.35 m/l
6	Daily consumption of green table	6.5kg/head/day
7	Water Consumption	3 – 8 l/day/ head
8	Partition height	1.5 m
9	Width feeding alley	2.4 m
10	Luminosity factor(1 m^2 window to 2 m of floor)	1/20
11	Milking parlor	sized according to the milking plant
12	Waiting room	0.4- 1.0 m/ head
13	Accommodation Area	Goats 100 head x 1,5 m/ head= 150 m^2 Kids 130 head x 0.55 m/head= 71.5 m^2 Youth 22 head x 1.0 m/head= 22 m^2 Buck 3 head x 4.0 m/head= 12 m^2
14	Shelter area for accommodation	255,5 m^2
15	Paddock area	511 m^2
16	Width feeding alley	2.4 m

Results and discussion on the method D

1. Income

- evaluation of milk production
  26400 lx 0.2588= 6833 euro (without management)
  39000 lx 0.4235= 16518 euro
- evaluation of meat production
  130 kids x 12kg x 3.0588 = 4772 euro (without management)
  100 kids x 18 kg x 4 = 7200 euro

- subsidies
  125 goats x 13.4117 €/ head = 1676 € (without management)
  155 goats x 13.4117 €/ head = 2079 €

2. Total expenses
11788 euro (without management)
22980 euro

3. Total revenue
13035 euro (without management)
25797 euro

4. Financial result R=V-C
13035-11788=1247 euro (without management)
25797-22980=2817 euro

Table 3. Budget of revenues and expenses

BUDGET OF REVENUES AND EXPENSES			
INDICATORS	U.M.	Value	Value
		Without a management system	With a management system
I MATERIAL COSTS(1+2+3+4+5+6)	€/YEAR		
1 Feeds	€/YEAR	9125	15291
2 Medicines	€/YEAR	295	547
3 Other materials (Milk Tanker purchase)	€/YEAR		1425
4 Supplies Expenses(3% of 1+5)	€/YEAR	282	459
II COSTS (expenditures) WITH WORK FORCE (manager salary)	€/YEAR		1130
II PRODUCT VALUE	€/YEAR	11359	23718
goat milk	€/YEAR	6833	16518
kids from calving	€/YEAR	4772	7200
(+)Subsidies	€/YEAR	1676	2079
C TAXABLE INCOME (B +Subsidies - A)	€/YEAR	13035	25797
(-) Taxes (16% of C)	€/YEAR	2086	4128
D NET INCOME	€/YEAR	1247	2817
% increasing profit	225%		

4. Conclusions

Feeding strategies under the confinement system can include green chop, agricultural and industrial by-products besides commercial grain rations. This will provide variety, increase intake, lower feed costs, stimulate milk production, but may increase labor costs.

In combination with regular body condition scoring of growing and milking goats, these tables should be adjusted up or down to provide the right supply of nutrients under the circumstances with enough challenge for improved production and growth, or with enough restriction to prevent overconditioning and health risks.

If all this is well accomplished then it is time to negotiate the right price for milk, yogurt, cheese and meat from the goats, to proceed with aggressive marketing and promotion to reap the rewards for all this work and to assure that the farm will continue in business for years to come. On the basis of the original researches we successed to increase the profit with 225%, pointing the main conclusion of the work.

Acknowledgements

We would like to show our gratitude to the evaluation committee and to our advisors for the relevant guidelines and recommendations made during the entire period of performing this work.

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