

## The Situation of Goat Breeding from the Perspective of Livestock Breeders

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### Abstract

One of the key factors affecting the technical and economic performance of livestock units is the identification of various aspects of management. The main purpose of applying the correct scientific management is to achieve maximum profitability and optimal productivity. Therefore, it is necessary to identify the role of management factors on the performance of livestock units. To this end, the present study was conducting with the aim of marketing the role of social, environmental and genetic factors in breeding goats by analyzing the data of the questionnaire and phenotypic traits. In this regard, in the first step, the statistics of breeders and participants in the "World Goat Day conference" the Institute of Animal Research of Iran received from the conference secretariat and to determine the validity and accuracy of the questionnaire, 10 breeders were selecting through interviews in different villages in virtual channels, the questionnaire was completed. Then, the information was analyzing to fix the bugs. Finally, the questionnaires were completing through face-to-face interviews of 82 active breeders with the distribution of different provinces and was using to obtain effective factors in production. Statistical information was obtaining from major goat breeders of livestock affairs in the provinces. The questionnaire contained questions about the general information and specifications of livestock breeders, as well as technical and educational information such as management status, health (parasites and diseases), medications, nutrition and formulation (forage and concentrate) time, place, how to sale products, how to reproduce and the number of kids born, provide inputs and raw materials, facilities and equipment, revenues, problems and dilemmas were present. Statistical indicators of the studied variables were calculated for all groups. The data obtained from the study entered the Excel software environment and statistically analyzed using SAS software. The results of this study show that the percentage of twinning and multiparity are a significant factor in the mortality of kids, in the heifer of goat, the mortality rate of kids is higher and the doeling, no matter how fit they are, have a significant effect on the birth of healthy kids and conversely if the doeling is not in good physical status, the percentage of imperfect and even dead kids will increase. The age of illness and death was higher in the early years of birth than in the old age that is due to the weak immune system of kids and the lack of timely milking.

**Keywords:** Management factors; Goat breeding; Statistical index; Fixed effects

## Introduction

The goat is the first farm animal to be domesticated in Iran about 8000 BC and has maintained its position as an animal that is useful and resistant to adverse environmental conditions (Morand-feher et al., 2005). The goat is special characteristics such as the ability to walk long distances, the ability to choose and feed plants, and the effective digestion of high-fiber foods due having a strong urea cycle, goats have the power to survive in harsh and unfavorable environments (Morand-feher et al., 2005). Goats usually behave according to their instincts and they are among the animals that learn habits and behaviors well and when they are accustomed to the fence and even the binding person, they can easily be bound by them (Solaiman, 2007). The picture of a mountain goat has long played an important role in Iranian art, and its paintings from pre-historics times have been seen at cave motifs, carved stones, and on pottery and metal utensils and in the Achaemenid period, it reached its highest glory in terms of diversity and for centuries it was a symbol of life force, fertility and guardian of the tree of life. In prehistoric times, pictures of mountain goats were painted and engraved on stones. In Iran, breeding goats is of particular importance due to the lack of water shortages and successive droughts. Recently, this species has become a new candidate for industrial breeding and one of the focus of attention of government officials due to its lucrative products, while low expectations for food needs and keeping animals productions. The goat's resistance to dehydration after the camel is ranked second. It is the resistance that results from adaptation. It is prominent feature in areas such as Iran, which is facing limited water resources, especially at the rangeland level (Valizadeh, 2013). For the reasons mentioned below, goat breeding has played an important role in national development and it has a special importance and status:

1. Less investment and need for input than other livestock breeding.
2. Easier management of breeding.
3. Faster return on capital than raising cattle.
4. Use of grassland forage, the rest of the grazing ranging and agricultural residues.
5. Grazing from weeds and grassland.
6. Adaptation of the animal to the environment in different climates, even desert and semi-desert.
7. Further resistance to diseases and parasites.
8. Increasing the yield of rangelands, farms and orchards through fertilization by sheep and goats.

9. Increase the yield of pastures, fields and gardens by fertilizing sheep and goats.
10. Production of protein for nutrition (human), milk and meat (fibers) wool, crack and hair for carpet weaving and textile and leather industries as raw material for leather industry.
11. Creating productive employment and increasing the income of farmers and preventing the migration of non-urban population to the city (Ghulami, 2015). The Management of livestock units is to create a decision, which with limited resources are allocated between the production unit to act in a manner to achieve the goal or objectives (arsalanbod, 1998). The aim of the study was to study and evaluate the contribution of managerial factors affecting goat breeding productivity and suggest ways to improve production for goat breeders, which was done through the analysis of the questionnaire data.

## Materials and Methods

The statistical population of the study included active Livestock breeders who breed goats in different regions of Iran, including the cities of Qom, Isfahan, Tehran, Alborz, Hashtgerd, Shahryar, Savojbolagh, Eshtehard, Karaj, Koohrang, Saveh, Baneh, Ardabil, Shabestar, Meybod Nodoushan, Meshkin Shahr, Sarvabad, Baft Kerman, North Khorasan, South Khorasan, Sistan and Baluchistan, Khuzestan, Yazd, Hamedan, Ahar, Khodaafarin, which breed more than 30 goats, and the questionnaire of people who breed less than 30 goats in the herd were removed to increase the accuracy and validity of the data, which ultimately resulted in the number of respondents being 82.

Some of the questions were expressed in four options and some in two options and three options so that the herders could choose their desired answer from among the options and in some questions, the other option was placed so that the Livestock breeders could easily say if he had an answer other than the desired options. When answering the Livestock breeders to questions, where Livestock breeders needed more guidance were explanation and on question, explained, until there is no ambiguity in answering the questions.

The text of the questionnaire is as follows: **The first part** questions about goat products and highest income from breeding and how much peoples welcome the consumption of goat meat and questions about farming and livestock include the highest cost of breeding, breed type in the herd and also specialized questions, such as economic age of goat breeding in the dairy industry and

age of dominant animals on the farm reproductive questions include estrus and percentage of Polynesia and nutritional questions including diet control and nutrient balance and the amount of concentrate consumed in terms of body weight, major cereal type of consumption and fodder system in the herd and includes product sales.

**Second part** factors affecting the economy of the kid, which includes the following: Care priority after birth, average birth weight in the herd, the best age of weaning, a disease-resistant breed, the importance of the type of puberty, kid survival in the birth type, doeling traits and doeling body status in impact of survival and the survival of the kid, the critical age of kid deaths, the perfect season for kid's survival, percentage of monster kid in the herd.

**Part three** the questions include factors affecting the economy of doeling generator breeding, which also includes the following questions: The most suitable age mating age for doeling in the region, the ratio of buck to doeling at mating time, estrus hours, type of food items at the time of flushing, percentage of dystokia in doeling, lowest doeling mortality due to heifer of births, the economic age of the doeling, the period of lactation, the amount of milk produced during the period of lactation, suitable BCS at mating time, the number teat of doeling in herd, common vaccine used, weight of one year old in doeling in kg.

**Part four** questions that include factors affecting the breeding economy of buck breeders: The criteria for selection a suitable buck for mating, use a different buck or buck in the herd, use of native buck or foreign buck in the herd, the best breed of foreign goat in terms of Livestock breeder, the ratio of buck to doeling percentage, economic age and best time to remove buck in the herd, one year old male goat weight in herd. In addition to surveying the management and production factors, the questionnaire can show the type of breeding system in different geographical locations in Iran. Given that Livestock breeders were raising goats in various parts of Iran, they gave different answers to the questions that reflects the difference in breeding and marketability of the product with regard to the geographical area and the climate of the breeding environment. After extracting and gathering the data, the results were analyzed through descriptive statistics depending on the nature of the raw data (ranked, nominal, distant, slightly continuous and slightly discrete) using SAS software and Univariate procedure.

## Results

According to the Livestock breeders survey and analysis of the data obtained from the questionnaire, 81.7 percent had access to an animal husbandry expert. Sales of goat products in Livestock breeders were such that 70.73 percent of the local market, 2.43 percent of industrial slaughterhouses, 19.51 percent retail and 7.31 percent of other areas offered. Livestock breeders education level of are 14.63 percent masters, 9.75 percent bachelor, 19.51 percent diploma, 23.17 percent elementary and 32.92 percent illiterate.

The diet control method was 87.80 percent personal and experimental and 12.19 percent under expert nutritionist. According to the obtained statistics, the market value of goat milk is higher than other goat products and in the tropical regions, due to the climatic and taste conditions, the marketability of goat meat was higher than in the cold regions and people raised goats because of milk production and other byproducts were lower priorities. The highest cost of Livestock breeders in the breeding was related to nutrition, followed by maintenance and treatment costs. The highest income from goat breeding was milk production was 73.49 percent after that, meat become the second highest priority at 18.07 percent and milk and meat are up 1.2 percent in the top three and lastly, crack and hair accounted for 6.02 percent. The most used diet items in the flushing period were grain of 55 percent, followed by quality forage, 36 percent and mineral resources, 4 percent and other food items, respectively, 5 percent. In the studied herds, the amount of lactation during the period in order has been shown to be 200 liters, 300 liters, 100 liters, 400 liters with percentages of 40.96, 32.53, 16.86, and 8.43. The most common of the food items used by goat breeders during the estrus period that cause flushing were grains, which breeders used by 54.87 percent. Because Cereal grains are high energy and protein, they have a greater effect on the ability to reproduce and increase the percentage of twinning and healthier kids. 65.85 percent of goats herd were primiparous and 32.92 percent twinning and 1.21 percent prolific. Most of the breeds in the herd were native; this factor is due to the breeding environment and adaptation of native goats compared to other goats and indigenous goats are more resistant to harsh climates and regional diseases than other goats. In the studied herds, the twinning percentage was less than 10 percent, which could be due to the type of goat gene in the herd as well as the type of nutrition, that due the lack of financial resources and the lack of pastures for grazing, most Livestock breeders did not provide the proper diet for goats. The highest survival rate was in doeling with 51.8 percent and 46.98

percent of the buck. The most appropriate age of mating in Livestock breeders is 12 months old, because the Livestock needs to reach physical maturity in addition to sexual maturity. The mating methods in the herds are natural and mating done by bucks. The statistics obtained from this study are that the natural mating method was 82.92 percent and artificial insemination method 12.19 percent and a combined of natural methods and artificial insemination 6.09 percent. 81.93 percent of Livestock breeders reported dystokia in the herd less than 5 percent, but 9.64 percent of the Livestock breeders reported percentage of dystokia in the herd between 20-50 percent that this indicated a problem in the herds that the herd problem must be solved with proper management, because this factor not only damages the production of herds, but it also causes the birth of weak and monster kids and damages the doeling genitalia and the doeling may die during childbirth, that this is to the detriment of the Livestock breeders and production efficiency will come down. Due to the fact that with the arrival of spring, the weather is relatively warm and forage is placed more available to Livestock than autumn and winter, this factor plays an important role in the increasing the survival rate of kids. In the first days after birth, kids are more prone to disease and death due to a weakened immune system and sensitivity to temperature changes. According to the results of this study, more estrus time observed in the herd at 18-24 pm with 36.58 percent and after that respectively were hour 12-18 with 31.71 percent, hour 6-12 with 28.05 percent, hour 24-6 with 3.65 percentage. The results of the questionnaire showed that most breeders chose the buck selection frame size with 58.53 percentage of the top priority and then they chose the breed with 41.46 percent as the second priority, also, 65.85 percent of breeders prefers to use the native breeds of buck. According to the survey, 47.56 percent of Livestock breeders used different breeds of bucks for mate. The buck to doeling ratio in the herd at mating time were 1:25, 1:20, 1:14, respectively with percentages 41.5, 24.4, 20.7. Based on the response of Livestock breeders, the best breeds of foreign goats in terms of Livestock breeders respectively were Saanen, Alpine and Boer Respectively, who chose Saanen as the best goat. The most resistant breeds to the disease are native breeds with 89.15 percent and then the foreign breeds with 9.64 percentage, which have gained due to the climatic conditions of the region and the compatibility of native goats and the resistance they have to that climate. Vaccination is one of the most important and influential factors in livestock breeding, which prevents major damages and increases the production and the becomes productivity of livestock units. The major vaccines used

in breeding periods include: Foot-and-mouth fever, Brucellosis, Blackleg, smallpox, among them, vaccines Foot-and-mouth fever had the highest percentage of 40 percent. The data of the questionnaire were statically analyzed after collection by SAS software. The results are presented in table 1.

Trait	Unit	Mean	SD	Min	Max	Mod
Number of goats at the beginning of the activity	head	32.65	64.26	1	400	10
Number of goats now	head	74.24	78.52	5	500	30
The economic age of goat breeding at the beginning of the activity	year	3.52	0.757	1	4	4
The age of the dominant goat on the farm	year	2.61	0.615	1	3	3
Percentage of Twining	percent	1.719	0.774	1	3	1
The amount of concentrate consumed in terms of body weight percentage	percent	12.92	6.18	10	40	10
Average birth weight in the herd	kg	2.09	0.619	1.5	4	2.5
The best age of weaning	month	3.19	0.986	2	4	4
Percentage of monster kids in the herd	percent	6.09	3.85	5	25	5
The most suitable mating age for doeling	month	10.68	1.53	8	12	12
Percentage of doeling dystokia in the herd	percent	9.39	9.95	5	35	5
The effect of pluriparous on the mortality rate of kid	number	2.72	0.593	1	3	3
Economic age of doeling	year	4.63	0.9	2	5	5
Percentage of doeling replacement in the herd	percent	62.56	4.46	60	75	60

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Time of pregnancy period	day	150.67	3.01	145	155	150
Period of lactation	month	4.79	0.95	3	6	5
The amount of lactation during the period	liter	232.92	86.14	100	400	200
Bcs	-	2.87	0.548	2	4	2.5
The number of teat	number	2.06	0.505	1	4	2
One year old doeling weight	kg	32.8	3.91	27.5	40	32.5
The percentage of buck to doe in the herd	percent	4.19	0.857	3	5	5
Economic age of buck	year	2.53	0.549	1	3	3
One year old buck weight	kg	43.84	12.35	27	90	37.5

**Table 1:** Results from questionnaire data analysis.

## Discussion

The survival of Lambs is one of the most important factors influencing the profitability in sheep breeding, because by identifying its specific causes and significantly reducing the mortality rate of lambs, it is possible to increase farm profitability (Kirk et al., 1982), which is consistent with the results of this study. The number of healthy lambs in a farm plays an important role in choosing the ewes of a herd in the future, which is one of the most important reproductive traits today (Kirk et al., 1982). Numerous studies have shown, that is about 10-35 percent of lambs die in the first six months of their life (Nash et al., 1996), which is consistent with the results of this study. According to research, the highest mortality rate for lambs is 6-13 percentage at the beginning of birth, which occurs most often during the first five to seven days after birth (Scales et al., 1986). Birth weight is also considered to be the most appropriate quantitative measurement criteria for growth and BCS, that, this is trait is closely related to weaning weight and the final weight of livestock (Topal et al., 2010). Although, daily weight gain is higher in lambs with high birth weight, however, due to the larger size of this lambs, the dangers posed by hardening are threaten them and their chances of survival will be lower (Alexander, 1984), due to the similarity between sheep and goats, this can also be generalize to kids. Chniter et al (2011) they reported that maternal age has a significant effect on the birth weight lambs. Management, nutrition and health factors vary from year to year and the effect of the years is

more associated with climatic conditions, nutrition (the amount of rainfall and the access to food resources) and disease (Wilson et al., 1886). Adequate or supplemental feeding of the ewes in the second half of pregnancy not only increases the birth weight of the lambs, but also, it prepares the breast tissue for more milk secretion, thus accelerating weaning weight (Saadat noori et al., 1982)

## Conclusions and Recommendations

According to the present study, it seems that the situation of goat breeding in Iran, despite of numerous researches done in academic departments and research centers, it is not systematic and regular and there has been more scattering and parallel work done this regard. In the questionnaire section, it is concluded that consanguinity in villages and native herds cannot be estimated due to lack of records and pedigree records. Also, the constant effects of year, season, herd and pluriparous show that these effects play a key role in growth and should be considered as non-genetic and environmental effects and it is meaningful and non-significant causes should be used. When the livestock breeders are in the right weather conditions, he can provides the fodder and the right diet for livestock and as a result, livestock production increases. If the livestock breeders can store forage with proper management, he can provide it to the livestock in the winter and have a good production in the winter, but if the forage is not stored properly, it will cause damage and reduce livestock production in the winter. By giving the right information to the livestock breeders that, wrong crosses between native and foreign goats can be prevented so that pure breeds are not destroyed. The age of the livestock breeds is getting older and the young members if family were not interested in continuing this job, if trend continues, it will destroy livestock reserves are depleted.

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