

Key Points of Fattening Technology of Tibetan Yaks under New Business Conditions

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Abstract

The conventional high-efficiency fattening and breeding technology of Tibetan yaks often relies on breeding cattle, embryo calf breeding, immunization and other means. Based on the important position of yak industry in Tibet's animal husbandry, this paper will analyze its impact on high-efficiency yak breeding from two aspects: reasonable grazing, supplementary feeding and fattening and heat preservation and fat preservation of cowshed, focusing on the technical points of high-efficiency fattening and breeding of Tibetan yaks under the new business state, In order to provide scientific basis for the yak industry in Tibet in actual production, and also provide some reference value for relevant staff.

Keywords

Tibetan Yak Grazing Reasonably; Supplementary Feeding; Fattening; Barn Heat Preservation and Fat Preservation.

1. Introduction

Yak, as an important part of grassland animal husbandry in the alpine region of Tibet, is also the means of production and living of Tibetan compatriots. However, the yak raising and management in Tibet mainly adopts the traditional grazing mode. In addition, the availability of grassland in Tibetan pastoral areas is low [1]. What's more, the duration of dry grass period in some high-altitude areas of Tibet can account for 2 / 3 of the whole year, which seriously restricts the development of animal husbandry in Tibet. In addition, the low level of production and breeding of farmers and herdsmen, religious beliefs and other factors lead to breeding cattle, embryo calf breeding Immunization [2] and other advanced animal husbandry technologies cannot be popularized and applied to remote pastoral areas. Now, with the continuous improvement of people's living standards in Tibet, people's demand for yak related products is also increasing, resulting in the gradual expansion of the supply gap of yak products in Tibet. Based on this, this paper will discuss its impact on efficient yak breeding from two aspects: rational grazing and supplementary feeding, and heat preservation and fat preservation in cattle houses, Exploring the key points of efficient yak breeding technology suitable for remote pastoral areas under the new business mode is of great significance to promote the development of yak industry in Tibet.

2. Effects of Rational Grazing and Supplementary Feeding

2.1. Conservative Grazing

Yak's temperament is strong and unbalanced. It is rough, wild, timid and easy to be frightened, but it has strong gregariousness. The conditioned reflex established by training is not easy to disappear and can better obey the command. Therefore, when a large group of yaks graze,

generally only one herder is needed, which is not easy to lose. According to the characteristics of yaks that are easy to be frightened, after the yaks enter the grazing land, the herders should not follow the yaks closely, to avoid the yaks wandering around without quiet feeding. In order to prevent cattle from crossing the border and sneaking attacks by wolves, the herders can choose a place with a certain distance from the yak group, which can take into account the highland of the whole group for guarding and lookout. The way to control the yak herd and make them obey the command is that the herders use a specific call and command sound, accompanied by throwing out small stones. Small stones are usually thrown by bare hands, with a throwing distance of tens of meters. It can also be thrown by grazing whip when the distance is far. The landing of stones, the "whoosh" sound of its flight in the air, and the whiplash sound of grazing whip are all warnings and signals for yaks. Yaks will judge the direction they should go according to the landing point of stones and the source of sound. The herders use the grazing whip to drive the yaks forward, gather or disperse. Yaks who walk far away from the crowd will soon get together when they hear the sound of whips and flying stones, as well as the falling point. The grazing schedule of yak herd varies according to the type and season of yak herd. The general principle is: "go out early and return late in summer and autumn, and go out late and return early in winter and spring", to facilitate food intake, fat grabbing and product provision.

Originally, the dry season in winter in the pastoral areas of Tibet lasts for a long time, so the grassland should be managed reasonably to prevent the situation that there is no pasture in winter and spring. According to statistics, under the utilization rate of natural grassland in Tibet, its efficiency needs to be gradually brought into play from July [3]. In July, the utilization rate of grassland is about 30% and increases day by day, reaching the maximum in mid-September, and the utilization rate of grassland is about 70%. After that, the utilization rate of forage began to decline gradually. When grazing, the breeders can divide the grazing area into two seasons in combination with the local climate and pasture conditions. First, the grazing pasture in winter and spring must be reserved [4]. It is very cold in winter and the pasture has not turned green in spring. If there is no grassland for grazing in this season, Yaks may lose weight seriously. In addition, the outdoor temperature in winter in Tibet is too low, so the grazing time should be strictly controlled. Generally, grazing after 10 a.m., in case of heavy snow, the grazing time should be postponed to prevent yaks from losing fat due to cold resistance in a low-temperature environment. In this season, the puddles and rivers in the grassland are basically frozen, so attention should also be paid to providing yaks with drinking water in time. The second is grazing in summer and autumn. The grassland begins to turn green during the summer festival. The breeding personnel should pay attention not to overgrazing, to prevent the degradation of the grassland caused by the excessive consumption of newly unearthed grass by yaks. In addition, yaks will enter their estrous mating period in this season [5]. The breeding personnel should pay attention to correct feeding and management, to improve the calving rate of yaks. The grass in late summer and early autumn is in the vigorous growth period, which is the best season for yak grazing, in addition, the temperature in this season is appropriate. At this time, the outdoor grazing time can be appropriately extended. This season is also the time for yaks to gain weight and fatten. The breeding personnel should choose the area with lush grass for grazing to ensure that yaks eat enough food for winter.

2.2. Supplementary Feeding

The dry season in Yak producing areas is as long as 7 ~ 8 months every year, and the forage supply season is unbalanced, which is a key link threatening the safety of Yaks in winter. In order to make yaks survive the winter safely, go deep into the pastoral area and vigorously publicize grass storage and material preparation. The Yaks in the core group store 40kg of grass and 20kg of material, guide the herdsmen to feed the female and young animals reasonably in

the dry grass period, and actively promote artificial grass planting. Expand the artificial grass planting area in summer and autumn, improve the grass processing and storage capacity, and feed reasonably in winter and spring to improve the stress resistance of yaks, prevent fat loss and reduce death loss. The effects of different feeding levels on the cultivation of Tianzhu White Yak Calves have been studied. The results show that early weaning and scientific and reasonable supplementary feeding of concentrate and roughage are one of the effective ways to solve the obstruction of growth and development of Tianzhu White Yak Calves in cold season and reduce fatigue death.

Supplementary feeding technology is one of the effective ways to improve the breeding efficiency and economic benefits of yaks [6]. Due to the particularity of natural ecological environment in alpine pastoral areas, the forage withering period is long and the forage is seasonally unbalanced, resulting in poor economic benefits of yak production. In warm season, yaks should be fed with urea, salt or licking bricks around grazing land or enclosure. Yaks need a large amount of forage. According to statistics, when the live weight of each yak is 100 kg, the daily intake of green grass is about 10 kg, when the live weight of yak is 200 kg, the daily intake of green grass is about 14 kg, when the live weight of yak is 250 kg, the daily intake of green grass is about 16 kg, when the live weight of yak is 300 kg, the daily intake of green grass is 18 kg, and when the live weight of yak is more than 300 kg, the daily intake of green grass is about 20 kg. If only natural grazing cannot guarantee the daily feeding demand of yaks, especially when the dry grass period lasts for a long time in winter in Tibetan pastoral areas, it is inevitable that yaks will starve and lose fat due to insufficient feeding[7]. Moreover, the serious fat loss of yaks is more likely to cause a series of adverse consequences, such as the damage of functional tissues and organs of adult yaks and the reduction of their ability to resist natural disasters. Therefore, supplementary feeding is also a necessary way for Tibetan yaks to be raised and fattened efficiently. In this paper, oat grass was used as supplementary feed for experimental research. 90 shelf cattle weighing about 90kg were randomly selected from a herdsman household in Jiagong village, Luoma Town, Naqu City, Tibet Autonomous Region. The selected 90 shelf cattle were evenly divided into three groups for captive feeding, grazing supplementary feeding and pure grazing without supplementary feeding. The diet of the first group was 2.4kg/d, which was raised in shed; The second group was supplemented with 1kg / D, once in the morning and once in the evening, and the supplement amount was set as 0.5kg/time. The method of outdoor grazing in the daytime and enclosure in the shed at night was adopted; The third group is the control group, free grazing, no supplementary feeding and no shed. The weight is measured at the beginning, middle and end of each month, and the average value is calculated as the weight value of the current month to observe the impact of different feeding methods on Yak fat loss. The statistics of experimental weight measurement data are shown in Table 1. The results showed that the average body weight of the captive group increased by 4.12kg/head, the average body weight of the grazing supplementary feeding group increased by 2.11kg/head, and the average body weight of the pure grazing group decreased by 3.76kg/head.

Table 1. Statistical comparison of weight growth of experimental Yaks

| Measurement time | November / kg | December / kg | January / kg | February / kg | March/ kg | April / kg |
|-------------------------------------|---------------|---------------|--------------|---------------|-----------|------------|
| Captive group | 90.04 | 91.32 | 92.05 | 92.78 | 93.39 | 94.16 |
| Grazing supplementary feeding group | 90.02 | 90.54 | 90.96 | 91.38 | 91.79 | 92.13 |
| Pure grazing group | 89.98 | 88.97 | 88.25 | 87.75 | 87.01 | 86.22 |

3. Effect of Cowshed Insulation

Due to the low temperature in winter (the lowest temperature is about -40°C) in the high and cold altitude areas of Tibet, yaks in Tibetan pastoral areas are mostly cultured in pen, and even directly cultured in open-air pen. The breeding place is too simple to resist the cold. The optimum survival and growth temperature of yak is about $8 \sim 12^{\circ}\text{C}$ [8]. When the temperature is lower than the optimum temperature, the metabolism of hungry poultry will increase by $2 \sim 5\%$ for every 1°C drop in temperature, and the amount of heat dissipation or heat loss on the body surface will be $0.65 \text{ kcal} / \text{m}^2$ for every 1°C drop in temperature. For yaks with a live weight of about 300kg , it is necessary to supplement them with about 1.1kg concentrate or about 2.2kg green hay every day to make up for the heat loss caused by cold weather. After a cold season, the weight loss of a pure Grazing Yak can reach $1/6 \sim 1/4$ of its own weight [9]. The weight loss is equivalent to the loss of one yak from five yaks. In the alpine pastoral area of the Qinghai Tibet Plateau, proper greenhouse captivity can play the role of antifreeze and cold prevention in winter. In Jiagong village, Luoma Town, Naqu City, Tibet Autonomous Region, the warm shed yak farm of the village cooperative and the open-air shed yak farm of a herdsman were selected for data collection and comparison. The main parameters of the warm environment of the two types of yak farms in winter were monitored. The same feeding method of grassland grazing and supplementary feeding in the morning and evening was adopted, and the yaks were weighed and measured regularly, to explore the impact of ambient temperature on the efficient breeding of yaks. The results showed that the average temperature of the inner surface of the greenhouse yak farm and the open-air circle yak farm were 5.9°C and -18.9°C respectively; The indoor average temperature is 6.3°C and -18.2°C respectively [10]. The measurement results of the temperature of the cowshed show that the temperature of the yak breeding cowshed in Tibet is generally low in winter, and the temperature of the cowshed in the open-air shed yak breeding farm at night is much lower than expected. In these two captive environments, 60 shelf cattle with a weight of about 90kg were randomly selected and divided into two groups on average to carry out the experiments of warm shed feeding and open-air enclosure feeding respectively. The weight was measured at the beginning, middle and end of each month, and the average value was calculated as the weight value of the current month to observe the impact of different feeding methods on Yak fat loss. The statistics of the experimental weight measurement data are shown in Table 2. After the analysis of the measurement results, During the growing period of one winter, the average weight of the group in the greenhouse yak farm increased by $3.25\text{kg}/\text{head}$, the average weight of the group in the open-air enclosure yak farm decreased by $11.19\text{kg}/\text{head}$, and the yaks raised in the open-air enclosure yak farm lost fat seriously.

Table 2. Statistical comparison of weight growth of experimental Yaks

| Measurement time | November / kg | December / kg | January / kg | February / kg | March / kg | April / kg |
|-----------------------------|---------------|---------------|--------------|---------------|------------|------------|
| Greenhouse yak farm | 90.52 | 91.14 | 91.76 | 92.28 | 92.79 | 93.25 |
| Open-air enclosure yak farm | 88.53 | 87.01 | 85.26 | 83.02 | 80.95 | 78.81 |

4. Conclusion

In conclusion, through the experimental study of supplementary feeding of Yaks in Naqu, Tibet, this paper comes to the conclusion that supplementary feeding can effectively reduce the fat loss of Yaks in winter. Under the reason that the dry grass period lasts for a long time in winter in Tibetan pastoral areas, herdsman in pastoral areas should reasonably divide the grassland into areas for management and grazing reasonably, so as to effectively protect the effective

utilization rate of grassland, so as to fully ensure that yaks can eat grass in different seasons, And do a good job of yak supplementary feeding in the dry season of grassland, so as to prevent yaks from losing fat or damaging functional tissues and organs, reducing their ability to resist natural disasters and a series of adverse consequences due to their inability to meet the amount of grass in the dry season of grassland. In addition, in this paper, yaks in Naqu, Tibet are selected for comparative experimental research between the greenhouse farm and the open-air shed farm of a herdsman. It is concluded that the average weight of the greenhouse yak farm group has increased during the growth period of one winter, while the yaks raised in the open-air shed yak farm have lost weight seriously. The cold climate in winter in Tibet is also an important factor affecting the efficient fattening of yaks, Therefore, it is suggested to improve the environmental conditions of yak sheds as far as possible and improve the anti-freezing and cold prevention effect of yak sheds, to prevent yaks from losing fat seriously due to cold resistance in winter.

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