

УДК 636.083.12/.13

UDC 636.083.12/.13

06.02.10 – Частная зоотехния, технология производства продуктов животноводства (сельскохозяйственные науки)

06.02.10 – Zootechny, animal production technologies (agricultural sciences)

ИЗУЧЕНИЕ ВЛИЯНИЯ БЕТОННОГО КОРОВНИКА НА СКОТОВОДСТВЕ В ПОСТОЯННОМ ЖИЛИЩЕ: ПРИМЕР КОММУНЫ ГИТАРАМУКА, ПРОВИНЦИЯ КАРУСИ (БУРУНДИ)

STUDY OF THE IMPACT OF CONCRETE BARN ON CATTLE BREEDING IN PERMANENT HOUSING: CASE OF GITARAMUKA COMMUNE, PROVINCE OF KARUSI (BURUNDI)

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Чтобы подчеркнуть влияние бетонной площадки на ферме, было проведено исследование в форме опроса в коммуне Гитарамука, провинция Карузи в Бурунди; и сгруппированы вместе 50 сараев с бетонным полом (BCF) и 50 сараев с небетонным полом (NBCF), все содержат 177 фризских коров. Основными анализируемыми параметрами являются гигиена, патологии, производство навоза, кормление, обновление подстилки, профилактика заболеваний, производство молока, наличие ветеринарных продуктов, ведение документов по животноводству и стоимость строительства и оборудования конюшен. Травы были основным пищевым ресурсом, в то время как рисовые отруби, кукурузная мука, поваренная соль и лизун были для дополнения. Регулярно проводились чистки и зоосанитарные мероприятия. Производство молока было в пользу ESB. Количество произведенного навоза оценивается в 30 тонн для BCF и 52 тонны для NBCF. В NBCF было больше патологий, чем в ESB, но стоимость создания BCF была в 3,6 раза дороже, чем стоимость NBCF

To highlight the impact of a concrete floor barn on livestock, a study was carried out in the form of a survey in Gitaramuka Commune, Karuzi Province in Burundi; and concerned 50 barns on concrete floors (BCF) and 50 barns on non-concrete floors (NBCF), all containing 177 Holstein Friesian cattle. The main parameters analyzed are hygiene, pathologies, manure production, food, litter renewal, disease prevention, milk production, availability of veterinary products, keeping of breeding documents and the cost of building and equipping barns. Fodder was the main food source, while rice bran, corn bran, cooking salt and lick block were added. Cleanliness and zoo-sanitary interventions were carried out regularly. Milk production was in favor of BCF. The amount of manure produced was estimated at 30 tons for BCF and 52 tons for NBCF. In NBCFs, there were more pathologies than in BCFs, but the cost of BCF building was 3.6 times more expensive than that of an NBCF

Ключевые слова: ГИГИЕНА, СТРОИТЕЛЬСТВО, БЕТОН, ЧИСТОТА, ПРОИЗВОДСТВО, ПАТОЛОГИИ

Keywords: HYGIENE, CONSTRUCTION, CLEANLINESS, PRODUCTION, PATHOLOGIES

DOI: <http://dx.doi.org/10.21515/1990-4665-170-002>

Introduction

In Burundi, problems relating to the galloping demography are in the headlines and lead to the shortening of natural ranges, the source of most, if not all of the fodder intended for food for domestic animals [9, 16]. Today, so-called semi-permanent and permanent housing systems are practiced through the

installation of fodder crops and help to limit certain diseases (viral, bacterial, parasitic, etc.) [9, 16, 18], to minimize the time reserved for animals for the benefit of others activities and allow animals to externalize their production skills for milk, meat, etc.

Despite the introduction of these systems, the large part of the herd is still attacked by various diseases (parasitic, viral, bacterial) which lead to a loss of earnings due to the losses of animals through death and reduced productivity [5,6,7].

In an attempt to cushion the economic impact due to these pathologies, a new approach to the intensification of cattle breeding, with concrete-floor and zero-litter barns, has been introduced with the aim of considerably improving the production of cattle hygiene of the habitat and the animal body [9]. The objective of this work is to study its impact on cattle breeding in permanent stalls, in order to prove whether it can significantly contribute to the reduction of pathologies and to the improvement of livestock production.

Materials

Animal sample (cattle of the Holstein-Friesian breed), barns with concrete floors and barns without concrete floors, a tape measure, reports from the Provincial Directorates of Agriculture and Livestock, The support project for agricultural intensification and development in Burundi (PAIVA-B) and monitoring sheets and the administrative map of GITARAMUKA commune were used.

Methods

A survey was conducted using a well-established questionnaire. This made it possible to collect information on the farming systems practiced in the study area (intensive, extensive and semi-intensive systems), food (legumes and grasses) and watering, the various productions (milk and manure), housing

dimensions, pathologies commonly encountered on farms, preventive care (vermifugation, acaricide spraying), and zoo-veterinary supervision services. The state of hygiene of the animals and the premises and the profitability of the operation were analyzed through personal observations and calculations.

Results

The results come from a survey carried out in 100 cattle farms of the Holstein-Frisian breed located in the commune of GITARAMUKA in the Province of KARUSI. Taking into account the social category of the farmers surveyed and out of a total of 50 Concrete Floor Barns, 42 belong to agro-pastoralists, 3 to state official involved in farming and 5 to traders. The 50 barns on non-concrete floors all belong to agro-pastoralists. The two barn categories contain 177 Holstein Friesian cattle of which 83 (46%) for BCF and 94 (54%) for NBCF.

Fodder remains the main food in the cattle farms surveyed regardless of the type of barn (BCF or NBCF). The results show that 2/3 of farmers feed their animals high energy and nitrogen rich feeds and this tendency is observed almost at the same level in the two types of barns. Rice bran and corn bran are the only concentrated feeds distributed in BCFs and NBCFs. In these barns, the quantities given are almost the same, and vary from 40 to 48% for the rice bran and from 20 to 26% for the corn bran.

Cooking salt and lick block are the only mineral salts distributed to livestock in both types of barns. Cooking salt is used more in NBCFs (66%) than in BCFs (50%) when the trend is opposite for the lick block 42% against 28%.

On all farms, animals drink clean water from managed springs (82% for NBCFs and 90% for BCFs). However, the majority of farmers do not provide adequate space for waterers. The frequency of renewal of bedding in NBCFs is

daily in 32% of farmers while 54% of farmers with BCF wash their barns with water every day.

Figure 1: Collection of cow dung in concrete-floored livestock

Vaccination, vermifugation and spraying with acaricide are the main health care given to animals in the farms surveyed. In all types of barns, this care is practiced around 60% to 100% with a certain difference in favor of BCF.

Spraying does not exceed twice a week and half of the farmers spray once a week, leaving large numbers of cattle unprotected.

Vermifugation of animals follows a certain frequency. For BCF, the frequency of vermifugation once every 3 months reaches 56% (28 heads), the frequency of vermifugation once every 4 months is 16% (8 heads), 28% (14 heads) for vermifugation once every 6 months, while the frequency of vermifugation once a year or occasionally remains at 0%. For NBCFs, the frequency of acaricide spraying once every 3 months reaches 50% (25 staff), 12% (6 heads) for spraying once every 4 months, 34% (17 heads) for spraying once every 6 months, 0% for spraying once a year and 4% (2 heads) occasionally.

The majority of the farmers practice spraying with a frequency of spraying once every three months in all types of barns; or respectively 56% in BCFs and 50% in NBCFs.

The average daily milk production is 6 liters in BCFs compared to 4 liters in farms with NBCFs. The average amount of manure produced per 3-months season in BCFs comes to 7.5 tons while in NBCFs production averages 13 tons; or respectively 30 tons and 52 tons per year.

The frequency of diseases is quite high in NBCFs, theileriosis and verminosis remain the main pathologies: 42.55% of theileriosis against 18.7% in BCF when verminosis reaches respective rates of 21% and 18%.

The majority of farmers (100% in both types of barns) say that veterinary products are expensive and that their availability (76% in BCFs and 62% in NBCFs) is not at all satisfactory.

All of the farmers with concrete-floor barns have animal monitoring sheets and 84% say that this activity is profitable. The same farm records are only held by 12% of farmers with NBCFs and here 70% declare that their occupation is profitable.

To better assess the economic impact of these different types of barns, a comparative analysis of the construction costs of the two types of barns was carried out. It shows that the construction of a BCF requires 354,000 Bif while that of an NBCF would not exceed 96,000 Bif, i.e 3.6 times cheaper.

Discussion of the results

The dynamics of the evolution of breeding lead us to observe a diversity of breeding systems. These transformations are due in particular to rapid demography and urbanization, which are leading to a significant increase in demand for food products, including proteins of animal origin.

In this race towards the modernization of livestock buildings, the level of education and the financial means would play a catalytic role given that among the surveyed farmers with BCFs are states officials workers that involved in animal farming and traders while those who remain in tradition, therefore with NBCFs are only agro-pastoralists.

The breed factor is less influential in the improvement of barns since the presence of the Frisian breed is almost the same in BCF as in NBCF. It is the same with animal feed; and the reason would be the cost and availability of feed, a key factor in animal production and which is exerted with the same intensity in both types of barns.

The cleanliness of housing is more of a concern to breeders with concrete-floored barns, which is in a way a requirement linked to this type of livestock buildings. The other interventions aiming at the prevention of pathologies (vaccination, vermifugation, spraying) are carried out with almost the same dynamism, which leads to think that the introduction of the concrete floor barn in this study area has not yet deeply influenced the cattle breeding.

The average daily milk production is 6 liters per cow in BCFs compared to 4 liters in farms with NBCFs. This poor milk performance is mainly due to the lack of adequate genetic potential and inadequate feeding conditions such as developed in the previous paragraphs. The difference in milk production in favor of BCF is linked only to the good hygienic conditions observed.

Manure production in concrete-floor barns is almost half of the amount produced in non-concrete-floor barns (30 tons versus 52 tons) for a period of one year. This low production of manure in BCFs results from non-compliance with the advice (mixing dung with straw and / or plant debris) provided by the technicians in charge of the supervision. However, as quality perspective, the manure produced in BCFs is richer than the manure produced in NBCFs because the latter contains a large amount of straw used as bedding.

Conclusion

This work provides information on the approach to cattle breeding on concrete floor barn. Looking at the data from the parameters analyzed, in particular the nuanced assessment of the prevalence of diseases, the hygienic conditions of the habitat and the animal body and the assessment of the different

productions, the results show that: in the area where this study has been carried out, the Concrete Floor barn is indeed present even if it is not yet generalized.

In this study area, the modernization of livestock buildings is based on two essential factors, namely the financial means of the breeders and their level of education. The choice between the Concrete Floor Barn and the Non Concrete Floor Barn is not strongly linked to the genetic potential of the animals raised or to the type of diet practiced.

The introduction of the concrete-floor barns motivates the breeder to improve housing hygiene. However, the present study does not establish relationship between the type of barns and the prophylactic interventions given.

On the other hand, the modernization of livestock buildings is being done for the benefit of improving milk production. As for the production of manure, the concrete-floor barns has a qualitative advantage when, in quantitative terms, the Concrete Floor Barn is recommended. The cost of the Concrete Floor Barn is higher compared to the cost of the Non-Concrete Floor Barn, but the comparative advantages militate in favor of the first type of barn.

Finally, the introduction of a concrete floor barn requires accompanying measures aimed at adapting the management of breeding to this new tool with a view to real profitability.

Recommendations

- strengthen the financial capacities of cattle breeders by enabling them to acquire BCFs.
- increase awareness-raising efforts by directing them to all categories of breeders regardless of the level of education.
- For better profitability, it is desirable for farmers who have installed BCFs to equip themselves with high-performance breeds and consequently improve feed.

- take advantage of the many advantages offered by BCF to carry out certain zoo-veterinary interventions in particular.

- take additional initiatives in order to maximize the quantitative and qualitative improvement brought about by the modernization of livestock buildings.

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