

Modification and Improvement of Civet Cat Cage

Gutu Birhanu Oliy¹ & Ashebir Hailu Garesu²

Abstract: Civet cat is locally restrained in very narrowed and uncomfortable structure for general movement or exercise. Meanwhile, it influences animal condition mainly resting and retreatment during stress and may cause death of many civet cats living in captivity. To solve the problems, locally prepared cage has been modified to comfortable structure and research was conducted. Modified cage has several advantages over traditional and sub-divided into various compartments. Many of cage parts are designated for get rid of stress from civet cat during musk extraction and increase life span of the cage. Moreover, parts help in facilitating extraction of musk without damage caused on civet cat and cage. Here, three different modern cages were manufactured with three replicas. Totally nine modern cages were prepared and given to one farmer. In addition, traditional cage were used as control. For civet cat living in both modern and traditional cage, the same treatments were provided. At the end of research, each civet cats living in modern cage yield approximately 10g of musk per season where as in traditional cage yields approximately 7.2g of musk per season. A season is marked with a day ranging from 10 to 12 days.

Keywords: - Modern cage, Traditional Cage, Musk and Management

1 INTRODUCTION

Civet cat farming has been practiced in Ethiopia since reign of Queen Saba kingdom and serves as choice item of domestic and foreign trade [1]. Despite such long practice for millennia, the business of civet musk industry has not so far well advanced. It is believed that traditional beliefs and taboo have imposed influence on the improvement of civet farming. In all forms civet cat keepers have not changed their method of capturing from wild, handling in captivity and the way the musk is collected has not been improved. Thus, civet cat production in captivity has been almost characterized by husbandry practice gained and transferred through many generations of family successors with little improvement.

Like any other sector of the economy, civet farming has not been opened to outside information and consequently, its technological progress has been restrained for long time with insignificant research regarding husbandry, housing, handling of the animals and its product [2, 3 & 4]. Even though the farming activity is restrained with many short falls, civet cat production is not as such much known in other continent and parts of Africa, except in Ethiopia. It seems that the country almost has monopoly of the trade, about 90% of the world

trade [2, 5].

According to Teshome 1987 [6], wild civet cat occupies a wide area in Ethiopia. They inhabit both forest area of the west and the more open area of central plateau. They are found to be successful to live in altitude from 750- 3250m above sea level.

Though this is the fact so far, almost all legal farmers keeping civets in captivity in Ethiopia are found in the regional state of Oromia and SNNPS. According to survey result of Ethiopia Wild life conservation Organization, there are about 125 legal farmers keeping civets in western part of the region each having 2000-3000 civet cats with many other additional producers those disclose their possession for fear of tax fees.

These farmers, who engaged on the domestication cleaned or extracted the musk of their civet cats every 8-10 days [7, 8]. Civet musk is produced from the anal glands of the male civet cat [9], this is because males produce larger quantity and better quality musk than females [10]. Each male produces approximately from 11.1 to 28g per month and up to 1kg per annual. According to the documentation of the Ethiopian Wildlife Conservation Organization [2], on the average 1kg of musk costs up to 450 USD. From 1kg of musk about 3000 liters of perfume can be produced.

Very recently civet musk is among the items which are sought in prospect of diversifying export items to give an impetus to the poor foreign exchange income, which has been exclusively dependent on few agricultural products. Mean-

¹Gutu Birhanu Oliy Bako Agricultural Engineering Research Center,, Oromia Agricultural Research Institute, Ethiopia, e-mail: gtbr2006@gmail.com

²Ashebir Hailu Garesu Bako Agricultural Engineering Research Center, Oromia Agricultural Research Institute, Ethiopia

while there is a high need or demand of the musk extracted from the civet animal in the world market for the extraction of perfumes [5], soap cosmetics and traditional medicine [6].

From 1985 to 2000 about 17,337.78 kg of civet musk was exported, and about 7,816,455 USD incomes were earned from the sale [11]. When the income from civet cat farming compared with the income earned from other wild animal products like crocodile skin export and wild life filming, large mammals export, reptiles live export and national park visit fee it has got the first rank. In this case the export earnings generated from the above item in the same year was 1,762,068 USD. On average about 1.23 kg of musk is officially exported from the country per year [2, 12].

Though this is the fact; so far there have been no attempts to improve the farming practices. A traditional beliefs and taboo has abstained the keepers from getting technical assistance from the experts. At present the civet musk industry is surrounded by arrays of problems. Capturing, Housing, feed supply, musk extraction and quarantine systems are traditional. Few farms with large numbers of the cats house the animals in buildings of stone or structure constructed of chika and thatch. Each cat is kept in a small cage made of bamboo or eucalyptus tree. A typical cage has a trapdoor on either end to expedite the handling of the animals [13].

Due to these facts the World Animal Well Fare Organization [14] had been in campaign against the trade of natural musk from Ethiopia. A press release was made to fragrance industries not to use natural civet musk and to consumers not to buy products containing natural civet musk, thus the sector was getting handicapped to contribute its share for the improvement of the country's foreign currency.

Therefore to lift the ban much has to be done starting from the changing of the taboos and backward cultural attitude of farmers who are working on civet farming and improving the general husbandry (improving the living cage and other husbandry practices). Hence Bako agricultural Engineering Research Center with Oromia regional Agricultural Development Bureau had taken an improvement work on the cage before five years and trained the farmers who domesticate the cat. In this case the achievements gained were; on the first place the traditional cage was completely changed with somehow newly developed design.

On the other hand these improved cages were given to selected farmers so that it was appreciated by some farmers who engaged on the domestication; though it has some draw backs. These were: the living cage length, width and height could not

allow the free movements of the civet cat which in turn had a negative impact on the animal and the entertainment, the bad cultural outlook of most the farmers, who engaged on the domestication, the cost of living cage was too high so that it was not affordable by most farmers and the previous cages did not keep the welfare of the animals.

To solve these specific problems, previously existing civet cat cage has been modified to suitable type with experts and good results has been achieved. The modified civet cat cage has different compartments. Their internal parts are subdivided for various purposes: protecting guard, harvesting guards and side guards are designated for get rid of stress from civet cat and facilitate extraction of musk without damage. The cage was design for harboring of male civet cat which is more productive. Hence this experiment was initiated to improve and modify the civet cat cage by conducting experiments to have concrete and tangible information about the amount of musk gained from civet cat those harbored in the new cage.

2 MATERIALS AND METHOD

2.1 Preliminary survey and study

At this stage well-structured questioners was prepared and an interview were conducted on civet cat farmers in West and East Wollega as well as West Shoa zones. In addition to this, different professionals who have been working on civet farming were visited for their constructive and valuable experience share. Besides this behavior of the animal were thoroughly studied and identified and general information were collected on traditional civet cat cage, civet husbandry, trapping, and transporting, housing, musk trading and storing.

2.2 Design Preparation and Cage Production

In this case different design options from different sources were collected, studied, identified and reworked to suit the local conditions. Based on the design specification, three type of civet cat cage were prepared and quantity of their materials were determined, the dimensions of the cage and feeding box were decided and the material of construction for feeding box was identified. Totally about nine modern cages with the feed boxes were produced based on the design specification in the work shop.



Figure 1 Feature of Modern Cage

2.3 Farmer know how upgrading & Cage distribution

Three farmers were purposively selected from East Wollega and West shoa to train on the way of trapping from the wild, the way of transporting, and the way of housing in captivity and on the general husbandry by different concerned professionals. But to accessible to local areas, all the cages were given to one farmer who took the training for effective controlling and supervision purpose. In this case the farmer was advised to place the civet cats inside these cages and inside their traditional cages too; so that it was possible to see the difference between the two cages with respect to the performance of the animals. His traditional cage was used as a check.

2.4 Supervision and Data Collection

Finally the selected farmer from west shoa zone was visited and supervised to evaluate his performance and attitudinal change. In case the farmer was supervised five times in year by researcher to capacitate his attitude with respect to the modern husbandry system and technical support and advice was given to them. Meanwhile Bako-Tibbe district agricultural development and natural resource expert was made to follow sensitively their respective civet cat farmers' day to day activities. The variables interfered are number of replication, kinds of design and observation made on weight gained and yield delivered. Comparative performance of the animals that live in both cages were evaluated and analyzed based on the data collected.

3 RESULTS AND DISCUSSION

The effect of design on weight and yield were analyzed in table below to describe the significance of the parameters.

Changing design of modern civet cat cage didn't significantly influence weight increment and decrement status of civet cat as it can be seen from table-1(i.e. no significant change exists among modern cage). Whereas, significant change is observed in between modern cage and traditional colony. This shows that employing suitable housing has great effect on general event of civet cat.

3.1 Effect of design on weight of civet cat

The existence of design option in the case of modern civet cage doesn't bring significant difference in musk extraction or production. Meanwhile significant variation present with yield gain by modern and traditional cage due to different factors. Feeding is another factor that directly affecting civet cat statuses. The farmer usually feeds the cat civet egg and porridge daily and provides meat in ten days interval. The more the feed are offered, the more the yield would be. Housing is the major factor that influences musk production.

Table 1 Effect of design on weight of civet cats

No	Types of design	Average weight
1	60x60x25**	10.933A
2	60x60x30	12.583A
3	60x55x30	12.767A
4	Traditional cage	9.483 B
	Mean	11.442
	CV (%)	8.24%
	LSD (5%)	1.630

Note: ** two civet cats were died before the collection of final raw data and Value in the last column followed by the same letters is not significantly different at 5% level test.

As it can be seen from figure 2 below, the musk extracted from the civet cat seems yellowish in color and waxy in nature. Civet musk is normally extracted from musk gland of male animals by scraping with locally manufactured an ox horn spoon and stored in goblet prepared from horn of animals.



Figure 2 Musk stored in horn for sell

Modern cage has special compartments which contributes a lot for musk extraction. It is comfortable for civet cat to relax in freely so as to minimize stresses and ease general activities. Whereas traditional cage was narrow and has no different parts as modern one. Here musk is extracted from traditional cage in miserable ways which may result lose in yield and civet cat itself. Due to this and remaining factors, amount of musk extraction from traditional cage become lower.

3.2 Effect of design on yield

The data's were collected last year when the prices of any items hit up. Due to price fluctuation happen on all items, the farmers couldn't be able to feed the civet cat as much as they can. It affected the owner to feed them a limited type of items. Musk production is directly affected with types of feed and feed offering time. If proper feed is provided for civet cat, extraction values increases sharply.

Table 2 Effect of design on yield gained from civet cat living in the cage

No	Types of design	Average yield
1	60x60x25**	9.900A
2	60x60x30	10.300A
3	60x55x30	9.950A
4	Traditional cage	7.167B
	Mean	9.329
	CV (%)	11.35%
	LSD (5%)	1.832

Note: ** two civet cats were died before the collection of final raw data and Value in the last column followed by the same letters is not significantly different at 5% level test.

3.3 Effect of weight change on yield

As it can be seen from above tables, the three models of modern cage are almost similar in output. This means that each civet cat yield approximately 10g of musk per season. A season is marked with range of day's between 10-12. Feeding and housing facility are directly influencing both weight and yield. As we observed that all civet cat living in modern cage and traditional one are different in size and age in formerly. Modern cage is easy and can be transported from place to place. It has different compartments with guard that facilitates extraction of musk without damage of the cage.

Table 3 Effect of weight change on yield

No	Type of design	Average weight	Average yield
1	60x60x25	10.933A**	9.900A
2	60x60x30	12.583A	10.300A
3	60x55x30	12.767A	9.950A
4	Traditional cage	9.483 B	7.167B
	Mean	11.442	9.329

CV (%)	8.24%	11.35%
LSD (5%)	1.630	1.832

4 ACKNOWLEDGMENTS

The authors would like to thank Bako Agricultural Engineering Research Center's wood shop workers for their kindly support in manufacturing the prototypes and also civet cat owner's cooperation in case of data collection session. Particularly, owner's decision to breakthrough of traditional bamboo and believes. Finally, we would to thank animal science research department of Bako Agricultural Research Center for their support of this manuscript, and the participants for comments and suggestions on research work. We also thank Oromia Agricultural Research Institute team for their comments and review.

5 CONCLUSIONS

So far much has to be done to change attitude of civet farming community and society. Traditional beliefs resist the farmer not to accept the modern cage as means of better cage. This and other factors blocked us to perform our experiment as much as we can. Besides the farmers are connecting the taming activity with a religion aspect which becomes cumbersome to the real day to day supervision and activity. They are harboring the civet cat in backward traditional cage which has very restricted space and severe for animal well fare.

Musk extraction process is backward and unsafe. The musk is extracted from very sensitive body part of the animal (i.e. testicle) so that it needs great attention and care. In local area, animal horn is accustomed as scraper for musk harvesting. Since the horn is very hard and tough, while extracting the musk it causes injure on the part this finally may cause death of the civet cat. When the experiment was conducted, there were about nine civet cats in the modern cage and five in traditional cage as control. For that moment, the farmer was provided with nine modern cages.

However from time the experiment was started, performance of civet cat living in traditional cage declining and mortality began not later than two months. Consequently, some of them were died. Not sooner that data collection was completed; the entire traditional cage became empty. Not only this but also while the data was being collected, three civet cats were died from modern cage at different time. Most probably, the death connected with unsafe musk extracting operation.

Market is the main threat for safe and sustainable musk production. Many of the former civet farmers had abandoned their taming due to the market and fluctuation of life standard. Since internationally recognized animal well fare organization banned the trade route of civet musk of the country, yet the trade is going under black market and contraband. Economic gain of the farmers from the sale of the production is very low, and could not be comparable with economic benefits of the exporters. Therefore, the farmers are carrying out production of the musk with great discourage and are not taking a care for civet cat. So far, we have been supervising the activity closely. We observed that mortality rate is increasing even in modern cage.

Feeding is another factor that affect yield and it is usually

given for survival and recovery of the animal secretion. Normally, the farmers feed the civet cat with meat, egg, porridge and the like for their feeding. The farmers usually provided meat in ten days interval. Whereas the rest food items are being given to them daily. We observed that when the civet cats offered meat and egg, they became more productivity than ever. The experiment was conducted during inflation of material happened as worldwide. Male civet cat is normally tamed for musk production. Each civet cats living in the modern cage yielded average musk of 10g per season where as in traditional cage yields average musk of 7.2g per season. A season is marked with range of day's 10-12. The yield gained is yet better when compared with that of pointed up in literature.

Modern cage is comfortable and safe. Moreover, it is simple to be constructed with local person and can easily be transported from place to place. It has different guard that facilitates extraction of musk without any damage on the farmer and damage cause on cage and civet cat. While testing, modern cage shows serious attention on selection of materials. Since civet cat is wild animal, they aggravate during extraction of musk. This in turn causes particularly damage on wooden frame part. Therefore, the whole frame part needs strong blank wood to get tight and tough part. In general, production of musk is mostly influenced with comfortable housing structure with good management, quality, quantity of feed, mode of supply and market.

Eventually, employing modified cage will rescue resource and contribute a lot to solve the problem connected with civet musk trade banned on the country. This in turn increases need of investment on civet farming scheme which will ensure free musk export there by increase revenue gained from trade.

REFERENCE

1. Pankhurst, R. (1961). An Economic History of Ethiopia: From Early Times to 1800, Lalibela House, Addis Ababa. Ethiopia.
2. EWCO D. & Tischler, T. (1973). Management Practices for Civet Farming.
3. Kebede, S. (1995). Preliminary survey on civet farming in Illubabor Zone.
4. Hillman, J. C. (1987). Civet Utilization and Research. A report to the Ethiopian Wildlife Conservation Organization. EWCO. Addis Ababa, Ethiopia. 11pp + 3pg appendices.
5. Girma, G. (1995). Musk Trade and Export. Proc .Civet Farming, Musk Production and Trade Workshop. May 1995. Ethiopian Wildlife Conservation Organization. Addis Ababa. Ethiopia. pp 45-53.
6. Teshome, D. (1987). Civet Cat Farming in Oromia.
7. Almaz, B. (1995). Civet cat farming and musk production seminar proceeding (Amharic) EWCO.
8. Kumera, W. (2005). Improving civet cat farming for quality musk production (Amharic version). Agriculture and Rural Development Bulletin, Second Year No 6 December 2005. pp 31-34.
9. FAO, (Food and Agriculture Organization of the United Nations), (2000). World Watch List for Domestic Animal Diversity. D.S. Beata 3rd ed. FAO, Rome, Italy. Pp 702-703.
10. Tolosa T. & Ragassa F. (2007). The husbandry Welfare and health of Captive African Civets (*Viverra zibethica*) in Western Ethiopia. Animal Welfare Journal; 16(1): 15-19.
11. Abebe, Y. (2003). Sustainable Utilization of the African Civet (*Civettictis civetta*) in Ethiopia. Second Pan-African symposium on the sustainable use of natural resources in Africa. Bihini Won wa Musiti (eds), IUCN, Gland, Switzerland and Cambridge, U.K. pp 197-208.
12. Takele, T. (2009). The African civet cat (*Viverra zibethica*) and Its Life Supporting Role in the Livelihood of Smallholder Farmers in Ethiopia, Conference on International Research on Food Security, Natural Resource Management and Rural Development, Hawassa University, Department of Animal and Range Sciences, Ethiopia.
13. Hugh F. Rouk & Hai1u M. (1963). Ethiopian Civet Cat (*Civettictis Civetia*), Experiment Station Bulletin No. 21, Imperial Ethiopian College of Agriculture and Mechanical Arts, Dire Dawa, Ethiopia.
14. WSPA, (1999). Press release. New report exposes cruel farming of musk for the perfume industry. Wildlife, June 1999. Accessed 23 February, 2008 <http://ww2.wspa-international.org/index.html>