

**249. PROFILE ON CIVET CAT FARMING AND
ESSENTIAL OIL PROCESSING**

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I. SUMMARY

This profile envisages the establishment of a plant for the production of civet musk with a capacity of 250 kg per annum.

The present demand for the proposed product is estimated at 400 kg per annum. The demand is expected to reach at 1,197 kg by the year 2022.

The plant will create employment opportunities for 79 persons.

The total investment requirement is estimated at Birr 4.28 million, out of which Birr 346,400 is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 17 % and a net present value (NPV) of Birr 1.82 million discounted at 8.5%.

II. PRODUCTION DESCRIPTION AND APPLICATION

Civet cat is a carnivorous mammal of two to three feet long that produces civet. This animal is found in different parts of SNNPRS. Civet musk is a substance found in a pouch near the sexual organ of the true civet cat, that is of the consistency of butter or honey, clear yellowish or brownish in color with a strong musky odor, used in perfume and chemically a complex mixture chiefly of fats and volatile oils.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

The civet (*Viverra civeta*) cat is a native of Africa, and Asia. In Ethiopia it is found in various areas. The civet cat has long dark gray hair, marked with black spots and bands with noticeable ridge on the neck and the back. This nocturnal animal possesses very rough fur, weights between 16 and 20 kilograms and it is about as large as a fox, but more heavily built. Civet cats of the same village defecate in the same place.

Civet musk is generally used as a fixative or a base in high quality perfumes, and continues to be highly demanded in spite of the development of synthetic substitutes for perfume processing.

In Ethiopia, the animal is found in altitudes between 750-3,250 masl. The animal is abundantly found in south and western part of the country.

In SNNPR civet cats are found in most of the zones and special woredas. Nevertheless, civet farm are found only in Sidama, Gedeo, Kaffa and Bench maji zones. In addition to these many farmers of the region collect musk traditionally and sale to collectors. However, at present there are only two registered farms each with 25 civets is functional in Sidama and Gedeo zones.

The production of civet musk in Ethiopia is mainly for export as the user industries are not developed in the country. Export of civet musk during the period 2000 -2006 is presented in Table 3.1.

Table 3.1
EXPORT OF CIVET MUSK (KG)

Year	Export
2000	280
2001	445
2002	454
2003	470
2004	375
2005	374
2006	3,937

Source: - *External Trade Statistics*

Table 3.1 reveals that excluding year 2006 export which is exceptionally high the average annual import was about 400 kg. Accordingly, it is assumed that the export demand for civet musk is estimated at 400 kg.

2. Projected Demand

Export market during 2000-2005 has been growing by 8 % per annum. Accordingly, assuming that the past trend in export will also continue in the future the export demand for the product is projected by applying an annual average growth rate of 8.8%. (See Table 3.2)

Table 3.2
PROJECTED DEMAND (KG)

Year	Projected Demand
2008	435
2009	473
2010	515
2011	560
2012	610
2013	663
2014	722
2015	785
2016	855
2017	930
2018	1012
2019	1101
2020	1197

3. Pricing and Distribution

Based on current international price for the product a price of Birr 8,250/ kg is recommended. The product can be directly exported to end users.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

The market study for civet mus production and essential oil processing shows that in 2000 Ethiopia exported 280 kgs of civet musk. The export figure has increased to 3937 kgs in

2006. The projected demand figure in Table 3.2 shows in 2008 the demand will rise to 435 kgs, while this figure will rise to 785 kgs and 1197 kgs in 2015 and 2020, respectively.

Considering small scale operation of civet musk collection and processing, the envisaged plant will have an annual production capacity of 250 kgs of civet musk.

According to a study made by Hillman in 1987, an Ethiopian large male can produce upto 6.4 gms of civet musk every 5 days. A smaller male can produce 3.4 gms every 5 days. This is according to the study undertaken by the Ethiopian Wildlife Conservation Organization in 1997. For the purpose of this study, considering that the civet cat farm to be established would consist of large and small animals, an average figure of about 5 gms of civet musk every 5 days will be adopted. For single civet cat animal, annual production of musk is estimated to be 305 gms. To secure annual production of 250 kgs of civet musk, the farms to be established would contain 820 civet cats. The animals can be housed at different farms located in different 2 woredas.

2. Production Programme

The envisaged plant is expected to establish 820 civet cat farms to produce 250 kgs of civet musk. However, some time is needed to arrive at full scale production. It would therefore be appropriate to start civet farming and musk production at lower capacity. Thus, at the initial year, the project will be operated at 65% of capacity. Then, production can be increased to 75%, 85% and then to full capacity (100%) during the second, third and fourth year of operation, respectively. Expressing this in terms of final civet musk production, the table below shows the production programme of the envisaged plant.

Table 3.3**PRODUCTION PROGRAMME**

Year	1	2	3	4 and above
Capacity utilization (%)	65	75	85	100
Production civet musk (kgs)	162.50	187.50	212.50	250

IV. MATERIALS AND INPUTS**A. RAW AND AUXILIARY MATERIALS**

The production process starts with capturing civet cats and domesticating them at fixed locations.

Inputs to civet farming and musk production consist of appropriate food items for the civets, which consist of maize and ox meat. Studies indicate that in order to increase the musk extraction rate, the rate of feeding of the civet will have to be increased. This is true particularly just after musk is extracted in order to replenish and boost production. Assuming that one civet cat feeds daily on 2 kgs of meal (maize, cereals, etc), the annual requirement of feed for 820 civet cats will be 495,200 kgs. At the rate of Birr 120 per quintal the annual expenditure on raw material will be Birr 594,240. Expenses for other auxiliary inputs are estimated to be Birr 7500. Thus, the total annual expenditure on raw and auxiliary material will be Birr 601,740.

B. UTILITIES

Electricity and water are utilities required for the envisaged plant. Electricity consumption is estimated to be 15000 kWh, and at the rate of Birr 0.474 per kw, the annual cost will be Birr 7110. Annual water consumption is estimated to be 7500 m³, and at the rate of Birr 10.0 per m³, annual expenditure will be Birr 75,000. Thus, the total annual expenditure on utilities will be Birr 82,110.

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

In this study it is proposed that 250 kgs of civet musk will be produced per annum. For this about 820 civet cats are required. It is therefore essential to capture and cultivate 820 civet cats in cages to be located in the identified woredas. It is proposed that each farm will contain 10 to 15 civet cats in order to make the management easy and productive. Each civet will live in a cage having a size suitable to accommodate its full length and size, and also appropriate space for feeding. The cages can be made from wooden sticks of proper thickness, and from twine. The cages will have sufficient access to extract the musk. Moreover, the cage needs to have a gap to trap the civet by the neck during musk extraction. The cage will also have an opening to place the legs of the civet. Once the legs are secured, its rear end is pulled out so that the perineal base of the animal's tail is exposed. The gland is opened up and squeezed until it exudes. This secretion is gathered by currying the civet gland with a wooden spoon and storing the yellowish, somewhat greasy substance in aluminium containers, in which it is shipped. Civet is extracted with alcohol to make a tincture which is added mostly to floral perfume to impart a sweet and well-blended character. The important odor constituent of civet is a musk ketone, civetone.

2. Source of Technology

Equipment required for civet cat farming and civet musk collection, packing and shipping to market are not complex. They can be procured locally from companies engaged in metal and wood working.

B. ENGINEERING

1. Machinery and Equipment

Equipment required for civet musk production consist of cages made of wood materials, feeding equipment, wooden spoon and aluminium containers (5 kgs capacity, each), and other auxiliary equipment. The list of production equipment is given in Table 6.1 below.

Table 6.1
LIST OF PRODUCTION EQUIPMENT

Sr. No.	Description	Qty	Cost ('000 Birr)		
			LC	FC	TC
1	Cage (wooden)	820 units	98.4	-	98.4
2	Aluminium containers (5 kg capacity)	50 pcs	-	25	25
3	Wooden spoon (pcs)	200	4.0	-	4.0
4	Feeding containers (metallic)	820	164	-	164
5	Musl collecting bowls (plastic)	100 pcs	5.00	-	5.0
6	Other auxiliary equipment	Reqd	50	-	50
	Total		321.40	25	346.4

2. Land, building and civil works

Civet farms shall be established in the four weredas indicated above. Moreover, a central musk collecting, packing and shipping unit will have to be established. The management team consisting of the plant manager, secretary, and other administrative staff will perform the management function at the central unit. Each civet farm is expected to be located in an area of about 500 m² land area. For a total of 70 farms in the four weredas, the total land area requirement will be 35,000 square metres. The central unit to be located at Laku town will

have an area of 500 m². Thus, the total land area will be 35,500 m², and at the rate of Birr 1.0 per m² for a period of 80 years, the land lease value will be Birr 2.84 million. For carrying out administrative task, plant building will be built on an area of 200 m². At the rate of Birr 1500 per m², the total expenditure on building will be Birr 300,000. Thus, the total investment on land, building and civil works will be Birr 3.14 million.

3. Proposed Location and Site

Location of a plant is determined on the basis of proximity to raw materials, availability of infrastructure and establishment of market outlets. Moreover, consideration is given to fair distribution of projects among SNNPRS woredas. According, four potential woreda have been identified to be endowed with civet cat. These are shebedino, Awassa zuria, wonago and hammer. The civet cat farms intended to be established for the purpose of this project can be located in all the four woredas as it is found suitable for musk production. As Shebedino woreda is more likely suitable for civet cat farming, it would then be advisable to locate / establish the envisaged project in Leku town.

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

Manpower required for civet musk production consists of farm workers and administrative workers. The details of manpower requirement and related annual and monthly wages are given in Table 7.1 below.

B. TRAINING REQUIREMENT

Short term training on how to manage civet farms and production of civet musk will be given to production workers will be given to production workers for a period of two weeks. A total of Birr 10,000 will be sufficient to carry out the training programme.

Table 7.1
MANPOWER REQUIREMENT

Sr. No.	Job Title	Nos	Monthly Salary	Annual Salary
1	Plant manager	1	1500	18000
2	Secretary	1	500	6000
3	Personnel	1	600	7200
4	Store man	1	600	7200
5	Sales man	1	600	7200
6	Drivers	3	450	16200
7	Production supervisor	1	800	12000
8	Workers	70	350	294,000
	Sub total	79	-	367800
	Workers benefit (25% BS)			91950
	Total			459,750

VII. FINANCIAL ANALYSIS

The financial analysis of the civet musk project is based on the data presented in the previous chapters and the following assumptions:-

Construction period	1 year
Source of finance	30 % equity 70 % loan
Tax holidays	5 years
Bank interest	8%
Discount cash flow	8.5%
Accounts receivable	30 days
Raw material local	30days
Work in progress	5 days
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days

A. TOTAL INITIAL INVESTMENT COST

The total investment cost of the project including working capital is estimated at Birr 4.28 million. The major breakdown of the total initial investment cost is shown in Table 7.1.

Table 7.1**INITIAL INVESTMENT COST**

Sr. No.	Cost Items	Total Cost ('000 Birr)
1	Land lease value	80
2	Building and Civil Work	1,500.00
3	Plant Machinery and Equipment	1,000.00
4	Office Furniture and Equipment	75
5	Vehicle	200
6	Pre-production Expenditure*	363.08
7	Working Capital	616.98
	Total Investment cost	3,835.1

* *N.B Pre-production expenditure includes interest during construction (Birr 230.23 thousand), training (Birr 10 thousand) and Birr 90 thousand costs of registration, licensing and formation of the company including legal fees, commissioning expenses, etc.*

B. PRODUCTION COST

The annual production cost at full operation capacity is estimated at Birr 1.64 million (see Table 7.2). The material and utility cost accounts for 41.59 per cent, while repair and maintenance take 0.91 per cent of the production cost.

Table 7.2**ANNUAL PRODUCTION COST AT FULL CAPACITY ('000 BIRR)**

Items	Cost	%
Raw Material and Inputs	3,314.25	81.14
Utilities	24.94	0.61
Maintenance and repair	75	1.84
Labour direct	109.8	2.69
Factory overheads	36.6	0.90
Administration Costs	73.2	1.79
Total Operating Costs	3,633.79	88.96
Depreciation	252.5	6.18
Cost of Finance	198.32	4.86
Total Production Cost	4,084.61	100

C. FINANCIAL EVALUATION**1. Profitability**

According to the projected income statement, the project will start generating profit in the first year of operation. Important ratios such as profit to total sales, net profit to equity (Return on equity) and net profit plus interest on total investment (return on total investment) show an increasing trend during the life-time of the project.

The income statement and the other indicators of profitability show that the project is viable.

2. Break-even Analysis

The break-even point of the project including cost of finance when it starts to operate at full capacity (year 3) is estimated by using income statement projection.

$$\text{BE} = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable Cost}} = 40\%$$

3. Pay Back Period

The investment cost and income statement projection are used to project the pay-back period. The project's initial investment will be fully recovered within 6 years.

4. Internal Rate of Return and Net Present Value

Based on the cash flow statement, the calculated IRR of the project is 17 % and the net present value at 8.5% discount rate is Birr 1.82 million.

D. ECONOMIC BENEFITS

The project can create employment for 79 persons. In addition to supply of the domestic needs, the project will generate Birr 1.11 million in terms of tax revenue. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports.