PROJECT REPORT ON

SCIENTIFIC GOAT BREEDING

SUBMITTED BY

SARLABAI SANTOSH MAHER

GOAT FARM 100-5 UNIT

SUMITTED UNDER

NATIONAL LIVESTOCK MISSION

SPONSORED BY

Department of Animal Husbandry & Dairying, Government of India

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SARLABAI SANTOSH MAHER

CHAPTER-I

HIGHLIGHTS OF THE PROJECT REPORT

A. ABOUT THE APPLICANT

S. No.	PARTICULARS	
1	Name	SARLABAI SANTOSH MAHER
2	Permanent Address	AT PALSHI, TQ.SILLOD, DIST.CHH.SAMBHAJINAGAR
3	Contact Number	9673103900
4	Education Qualification	UNDER GRADUATE
5	Pan Card	GPHPM2125E
6	Aadhar Card	3673 2407 6051
7	Project Location	GUT NO.768, AT PALSHI, TQ.SILLOD, DIST.CHH.SAMBHAJINAGAR
8	Constitution	Individual
9	Product	Kids, Manure etc.

SARLABAI SANTOSH MAHER

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A. Project Profile (Financial)

Sr. No.	Parameters	Value
1	Breed	Usmanabadi
2		
	Unit Size	100
	Doe	5
	Buck	
3	Product	Kids, Manure etc
4	Cost of the project (Rs.)	20,00,000
5	Bank loan (Rs)	800000
6	Margin money (Rs.)	200000
7	Subsidy	10,00,000
8	Financial Indicators	
	BCR at 15% DF	1.94
	NPW at 15% DF (Rs.)	15,231,799
	IRR%	36.67
	Average DSCR	6.1
9	Interest Rate (% per annum)	11
10	Repayment Period	6 years including one year grace period

CHAPTER-II

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PROJECT DESCRIPTION

Introduction

Goat is a multi functional animal and plays a significant role in the economy and nutrition of landless, small and marginal farmers in the country. Goat rearing is an enterprise, which has been practiced by a large section of population in rural area. Goats can efficiently survive on available shrubs and trees in adverse harsh environment in low fertility lands where no other crops can be grown. In pastoral and agricultural subsistence societies in India, goat is kept as a source of additional income and as an insurance against disaster.

Goats are among the main meat-producing animals in India, whose meat is one of the choicest meats and has huge domestic demand. The emerging favorable market conditions and easy accessibility to improved goat technologies are also catching the attention of entrepreneurs. Due to its good economic prospects, goat rearing under intensive and semi-intensive system for commercial production has been gaining momentum. A number of commercial goat farms have been established in different regions of the country

Production Technology Project Location:

Goat farm is located in the area where assured market round the year is available It is easily accessible to the main road

Feed & Fodder cultivation:

Fertile land with assured irrigation facilities is available so that fodder crops could be successfully raised and abundant good quality green fodders will be made available for animal feeding throughout the year.

Water:

Good quality fresh water for animal drinking and for the cleaning, washing etc, is available

Labour:

Honest, economic and regular supplies of labors are available.

Veterinary Aid:

Veterinary aid/breeding centers facilities are availability near the goat farm.

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CHAPTER-III

MARKET POTENTIAL

In India all prefer goat meat Indians' love for goat meat has led to the commodity's price increasing at 20% per annum The demand for goat meat is increasing faster than the growth in goat population

The goat meat is a high protein diet with high nutritional value. The goat meats are widely used in vanous hotels and restaurants. It is also used at special occasions like parties and marriages.

Direct marketing of animals is highly profitable. Involvement of middleman can reduce the price of animals. There is also scope for exporting Frozen Goat Meat

There is always good opportunity for goat owners during Bakri Id festival. There is a mad rush of customers looking for goats during this festive period, which they would sacrifice on Bakri Id day. The prices goat goes high varying between Rs 10,000 and Rs 50,000 per goat

As the demand far exceeds supply, goat meat prices have been increasing steadily. This increased price has created a need and opportunity for a large scale organized and scientific method of goat rearing in controlled conditions (Stall-Fed method)

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CHAPTER-IV

EXTENSION ACTIVITIES

1. Starting a goat farming business requires planning and preparation. Before starting a goat farm the entrepreneurs/ farmers are generally advised to undergo training They can contact Local Animal Husbandry Department staffs/Veterinary College/agriculture University etc for the purpose. However availability of training facilities & resources are inadequate. Hence I will provide training on goat farming to farmers both onsite and off-site. During training program special thrust health management (medications and vaccinations used), fodder management, kids' management & kind of records to be kept in the farm will be also given

2. For the farmers of nearby locality, visits will be arranged on my goat farm & they will be educated on scientific lines regarding various aspects of goat management. It will help them to improve their knowledge and skill regarding scientific practices to enable them to adopt the same.

3. Farmers will be motivated to adopt improved breeds of goat.

4. I will take Initiatives to strengthen linkages between State Departments, Dairy Development agencies, NGO's and farmers.

5. For farmers who have decided to avail loan from bank for goat farming, assistance will be provided to prepare their bankable project report

6. For the marketing of animals, farmers will be provided necessary support & guidance.

7. Visits of farmers will be arranged to exhibitions with the prime objective of exposing them the technological innovations.

8. Nowadays internet has become important tool to get latest information. There are various websites available on goat farm, which provides useful content. This information will be shared to farmers.

9. Necessary assistance will be given to farmers for setting up model sheds and goat farm units

10. Field visits of goat farmers will be arranged to progressive farmers & research stations, which will motivate them to adapt good husbandry practices.

CHAPTER-V

SARLABAI SANTOSH MAHER

SWOT ANALYSIS

Strengths:

Low labor requirement

Goat is a multi functional animal and plays a significant role in the economy and nutrition of landless, small and marginal farmers in the country.

Goats can efficiently survive on available shrubs and trees in adverse harsh environment in low fertility lands where no other crop can be grown

The initial investment needed for Goat farming is low

No religious taboo against goat slaughter and meat consumption prevalent in the country.

Goat milk is easy to digest.

Goat creates employment to the rural poor besides effectively utilizing unpaid family labor.

Goats are strong creatures that are able to resist various diseases

Since goals are relatively small in size, the facilities and amenities to support them are also minimal.

Goats generally love being with humans and they are extremely docile.

They have a high fertility rate achieving maturity with just 5 to 6 months. The probability of producing twins is high

Risk associated with drought is less in commercial goat farming compared to other livestock breeds.

Goats are good instruments to enhance the health of the grazing land and minimize encroachment of bushes.

Goat meat is a great appeal to the public because of the health benefits it provides to its consumers. It is extremely low in fat, cholesterol and calories. This is good for people who have low energy diet scheme.

Opportunities:

High and ready market of goat meat Confirmed ever-increasing Market price.

Weakness

- Large-scale, organized goat farming has not yet become a successful venture in the country.
- High mortality rate of goat kids

Threats

The gost population is increasing & according to the government census, declining grazing land poses a big challenge to the industry.

1. Introduction (Basic knowledge)

1.1 Introduction of goat farming

Goat is a multi-use animal which is commonly reared for the meat (chevon). In the different parts of the world, goat is raised for the meat, milk, wool and leather. Goat is also called “the poor man’s cow”. In Nepal, the goats can be reared in different ecological zones; hence, people are adopting goat farming as an enterprise. Sheep and goat are belonging to different species, but their management is almost similar. In Nepal, almost in all parts, sheep and goats are raised. And, as all caste and ethnic people like goat meat; day-by-day, goat farming has become a popular business. For the goat farming, the meager needs of fodder and fewer requirements of feeds compared to rearing other livestock, goat farming requires low investment. Shed making can also be possible in a low cost, and easy to sell goats in the case of needs arises to farmer. So, the goat farming enterprise is in growing trend.

Figure No. 1.1.1 Commercial goat farming

Source: JICA Project Team

Livestock farming consists of one third share of total agricultural Gross Domestic Products (GDP) in Nepal; thus, it contributes a major share in agricultural system. As per data source of Department of Livestock Services, Fiscal Year 2073/74; there are 10,986,114 goats in Nepal. Similarly, 65,583 metric tons of goat meat is produced which is 20 per cent of the total meat produced.

As the goat farming business can be operated through a low investment, it has given opportunity of employment and income generation to small farmers and women. Therefore, goat farming has become a boon to poverty alleviation. The amount of feed and fodder necessary for one cow can be easily reared for 5-6 goats; and farmers having less land can easily raise 2-4 goats.

1.2 Characteristics of goat farming

1.2.1 Management (fodder, feed, shed, disease and parasite control)

After purchasing goats, an entrepreneur needs to manage shed construction as per the suitable to climate, nutritious feeding, treatment of diseases and vaccinations, control and timely treatment of goats from internal and external parasites.

1.2.2 Reproduction

After ensuring appropriate management of doe, it becomes ready for reproduction. The mating should be ensured that parturition does not fall in the month of Ashad/Shrawan (July/August) and Poush/Magh (November/December), as it would be difficult to take care of new born kids.

1.2.3 Production and income generation

After 5 months of mating, kids are produced, and income generation will be ready from selling after rearing 8-10 months.

1.3 Importance and benefits of goat farming

- Meat production: Goat meat consists of 20.3% of the total meat produced in the country and the demand is ever in increasing trend.

Fig. No. 1.3.1 Fresh meat
Source: JICA Project Team

- In goat meat (chevon); We can find
  - 76.8% water
  - 2.6% fat
  - 19.6% protein and
  - 1% minerals
- As, comparatively low quantity of fat and high protein, goat meat is considered beneficial to health.

- Can be operated in low investment: In comparison of starting other livestock farming, interested small farmers can start with goats. Goats farming can bring opportunity of income generation at home for the small farmers with low investment at small space.
- PEWA (Ownership): To create, the work environment at family, traditionally goats and kids are given as Pewa (Ownership) to daughters and women family members. In this way, temptation for making Pewa has promoted positively to goat farming.
- Transformation of fodders into nutritious protein: Comparatively goats can be reared with lesser amount of feeds than swine and chicken. Goats eat normal forage, fodders and store in its body as meat which is full of protein.
- Coping of needs: Goats can be sold at any time, and thus has helped to meet the needs of cash.
- Return in short time: As the goats have capacity to give birth of more than one kid at a time, and three times in the period of two years, it generates quicker income in short time with low investment in comparison of rearing other cattle.

Fig. No. 1.3.2 Compost making from goat
Source: JICA Project Team

- Rearing goats for milk and wool: We are raising goats mainly for the meat. But, in appropriate climate and management, goat farming can be done for the milk and wool.
- Compost fertilizers for crops: Livestock are integral part of agriculture. Goat farming has a major contribution in providing fertilizers to crop production. It has reduced the dependency to chemical fertilizers and enhanced the production capacity of the land.
- Goats are needed for traditions or festivals: In our traditions of celebrating Dashain and meeting commitments to God and Goddesses with offering of bucks and does, goats are considered inevitable livestock.
- For transportation: In parts of Himalayan and Hill-belts where there are no roads connections for transportation, (mountain goats) Sinhal and Chyangra have been in use.

Fig. No. 1.3.3 goats used for transportation

Source: JICA Project Team

1.4 Importance of commercialization of goat farming

- To create opportunity of self-employment to human resources, youths and women, who remains wastage in country; and to enhance their self-respect through appropriate management
- To increase income generation through scientific goat farming in traditional approaches
- To reduce a large volume (corers of rupees) import of goats from neighboring country
- Most people from different religious sects love chevon, and demand of goat's meat is in increasing trend in country, which is only possible to meet with adequate supply through commercialization.

1.5 Breeds of goats reared in Nepal

1.5.1 Local breed

Breed	Local breeds of goats (native)	Geographical distribution
Goats	Terai	Terai Belt
	Khari	Inner Hill Belt
	Sinhal	High Hill Belt
	Chyangra	Mountainous Belt

(A) Chyangra

Chyangra is reared above 2,500 meters in the mountainous region. Hairs are used for making Pashmina. Usually it gives birth once in year. Its average weight is 27-30 kg. Doe and buck's weight is 35-40 kg. Bucks can carry goods almost 30% of its weight.

Fig. No. 1.5.1.1 Chyangra breed goat
Source: Commercial Goat Farming, Central Sheep and Goat Promotion Office

(B) Sinhal

In high hill belt, 1500-2500 meters, Sinhal goats are raised. Its color is brown, white and black. Doe Sinhal's weight is up to 34 kg and buck's weight is up to 42 kg. This goat produces one kid at a year; and annually it gives around 200 grams of rough hairs.

Fig. No. 1.5.1.2 Sinhal breed goat
Source: JICA Project Team

(C) Khari

From 300 to 1500 meters of altitude Khari goats are reared. Khari goats are in different colors and it is usually called hilly or AULE (low land) goats. Doe usually weighs 15-25 kg and buck weighs 25-35 kg. These Khari gives its first birth in average 16 months of age. Stature of its body is smaller and smarter; Khari can be

reared by keeping in bond or by grazing. Among local breeds of goats in terms of numbers, Khari goats are raised in many numbers in hilly belt of Nepal. Keeping in views of climate, immunity from diseases and average growth, Khari goats are regarded useful in the belts of hills and inner hills of Nepal.

Fig. No. 1.5.1.3 Khari breed goat

Source: Central Sheep and Goat Promotion Office

The characteristics of Khari goats are given as below:

- Can give 3 times birth during 2 years of intervals
- Less suffering through diseases, compare to foreign breeds imported in Nepal, Khari has more immunity towards diseases
- Can be reared in normal shed
- Generally, one goat gives birth at time 2 kids
- Can graze in slopes
- Balance feeds are not necessary
- Mortality rate of kids are low
- Meat is tasty and tight

(D) Terai goats:

Terai goats are reared in Terai belt of Nepal. Doe weighs up to 18 kg and bucks weigh up to 32 kg. And, if well managed, it can give 3 times birth within 2 years. In average, there are 2 kids at a time of birth.

Fig. No. 1.5.1.4 Terai breed goat

Source: Central Sheep and Goat Promotion Office

1.5.2 Foreign goat breeds reared in Nepal

(A) Boer

Boer was developed in the South Africa, and it can be reared in all types of climate. Boer breed has more immunity to diseases than the local breeds, and can give 100% twin birth; and within two years, it can give 3 times birth. Adult Boer weighs more than 100 kg, and if it crosses with local Khari breed, weighs 35-40 kg within a year.

Fig. No. 1.5.2.1 Boer breed goat

Source: JICA Project Team

In 2065 BS, Boer had been reared for detailed research in Goat Research Center, Bandipur. Now, in different parts of Nepal, Boer has been commercially reared by leader farmers. In comparison of other breeds, maturity of Boer is quicker. Before and after separation of milking, the growth rate of Boer kids, in both conditions, is 150-300 grams per day.

(B) Barbari

Barbari has small and robust body, short and standing ears, red or brown patches in white body and does not feel interested in grazing, thus it would be better to rear as a stall feeding system. It is reared for both purposes- meat and milk. The adult Barbari doe weighs 20-25 Kg and buck weighs 25-40 Kg. In average, kids weigh 2 Kg at birth.

Fig. No. 1.5.2.2 Barbari breed goat

Source: JICA Project Team

(C) Sannen

Sannen was originated in Switzerland, and it is best suitable to rear at cold than hot climate. It is famous for milk production throughout the world, this goat breed is polled (has no horn naturally), ear are flopped towards front side, and has white and small hairs. After parturition, this goat gives milk for 150-180 days resulting in average 600-700 liters of milk production. Normally, it gives birth in a year and gives a kid per birth. Doe weighs up to 68 Kg and buck weighs up to 91 Kg in average.

Fig. No. 1.5.2.3 Sannen breed goat

Source: JICA Project Team

(D) Beetal

It seems to be like Jamunapari breeds, and it is reared for milk and meat. It is believed that Beetal originated in Punjab and Hariyana of India. It has features like wide and medium built body, raised nose, backward and outside bound horn, flat and hanging ears, short and thin tail; and it has also good quality skin. Adult buck weighs 60-70 kg and doe weighs 46 kg; and kid weighs 3 Kg weight at the time of birth.

Fig. No. 1.5.2.4 Beetal breed goat

Source: JICA Project Team

(E) Sirohi

This goat breed has originated at dry place of Sirohi, Rajasthan, India and imported in Western parts of Nepal. Sirohi has tight body, and are good for meat. It has physical characteristics like rough hair; short and pointed nose; flat, long and weaker ears; sharp, upward and backward faced horns. At time of birth, kids weigh 2.5-2.75 Kg; whereas, buck weighs 50-70 Kg and doe weighs 25-35 Kg at lives.

Fig. No. 1.5.2.5 Sirohi breed goat

Source: JICA Project Team

(F) Jamunapari

Huge body, long leg, centrally ridged nose (parrot like nose), hanging log ears, short and flat horns are major physical features of this goat. Adult Jamunapri buck weighs up to 45 Kg and doe weighs 38 Kg. At birth, kids weighs up to 4 Kg in average.

Fig. No. 1.5.2.6 Jamunapari breed goat

Source: JICA Project Team

1.5.3 Hybrid goats in Nepal

- Boer cross (Khari and Boer)
- Jamunapari cross (Khari and Jamunapari: Khapari)
- Barbari cross (Khari and Barbari: Khabari)
- Sannen cross (Khari and Sannen)

(A) Introduction of Boer cross (Khari x Boer)

Boer cross has been developed crossbreeding between in pure Khari doe and pure Boer buck. The crossbreed of Boer can survive in any types of climate. Boer cross has comparatively better immunity towards diseases.

Fig. No. 1.5.3.1 Boer cross breed goat

Source: JICA Project Team

(B) Why we need Boer cross?

- Boer cross has been reared up to 2100 meters high altitude and its growth is good in mid-hill belts.
- Boer cross can be reared by both ways: reared in stall feeding or open grazing.
- Boer cross acclimatizes in all types of weather.
- As adult Boer weighs up to 100 Kg, its cross breed can also be found with heavy weight.
- Both goats breed can give 3 times birth within two years of interval and have capacity to give twin kids.
- Both Boer and Boer cross goats have tasty and compact meat.
- Before and after lactation in both conditions it has higher growth rate in kids and low mortality rate.
- High immunity towards disease is found in Boer cross.

1.6 Feeding Management for goats

1.6.1 Feeds of goats and habits of searching feed

Goats have larger belly comparatively to other cattle, and can eat smaller grasses which other cattle cannot. Goats can also eat bitter grasses. Goats can eat dry matter equivalent of 4% of its own body weight. Goats can produce more meat, milk by taking substandard grass than other cattle. Goats do not like to eat wet and filthy things.

1.6.2 Feeding Management for smaller kids

Offspring needs to be fed with milk for 2-3 times in a day so that kids can be protected from diseases. After two weeks, progeny can have soft grass and feeds. Kids must be weaned from its mother after 10-12 weeks, and feed more forage and feeds with protein.

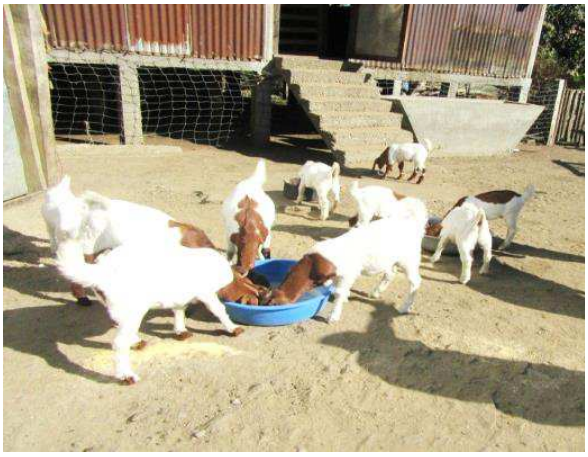

Fig. No. 1.6.2.1 Feed feeding at paddock

Source: JICA Project Team

1.6.3 Feeding Management for adult goats

After 4 months of parturition, Doeling and Buckling should be kept in separate from preventing unnecessary mating behaviors from bucks to doeling. It is necessary that growth of Boer cross kids should be 50-150 grams per day; if it is not measured, it should be learnt that there is a problem in feeding management. As possible as for the whole 24 hours, green forage and fodders should be kept in the place of stall. Salt and other multi-nutrients minerals cake and clean water adequately needs to be fed to goats. Diet of goats and kids based on its weight has been given as followings:

Fig. No. 1.6.3.1 Concentrate feeding to adult goats

Source: JICA Project Team

Table No. 1.6.3.1

Necessary feed of goats based on its weight

Weight of goat (kg)	Milk intake (ml per day)	Concentrate feed (gm. per day)	Green fodder (kg per day)
22	400		
33	500		
4	600		
5	600	50	as much as the consumed amount
6	700	100	"
7	700	150	"
8	600	200	"
9	500	250	"
10	300	350	"
15	200	350	"
20		350	about 2kg)
30		350	about 4kg
more than 30		400	about 5kg

Source: Central Sheep and Goat Promotion Office, Harihar Bhawan

1.6.4 Methods of preparation of balanced feed by using local raw materials

To obtain cheap feed is an important element for getting profit from any livestock, and as much as 50% cost is incurred in Goat Farming. Healthy livestock's can be produced by ensuring proper quantity and balanced feeding. To obtain maximum benefit, focus to be given in fodder plants than into feeds.

- Crops (non-leguminous) – 3 parts(different varieties of crops like maize, wheat, bran-roughage, products from maize, wheat, millet, rice, etc.)
- Pulses (Leguminous) or wastages from oilseeds (bi-products): 1 part
- By mixing crops and legume or different types of pina very well, balance feed can be prepared.
- If dry bi-product of oilseeds is avilable, it is necessary to break in small particals, and better to be roasted, but it is not necessary if it is fed after cooking.

- Likewise, it would be better to mix 1 kg salt, 1 kg mixture of minerals and 25 grams of vitamin "A" supplement with 100 kg feed, and it should be mixed well 2-3 times to mix up very well.
- Such feed should be fed to adult goats around (250 gm- ½ MANA), pregnant goats (500 gms-1 MANA) and for breeding buck (500 gms-1 MANA) per day.

1.7 Tagging kids for identification

For the proper management of Commercial Goat Farming, to identify goats, tagging is necessary. Tagging helps to identify productive and unproductive goats from the herds and thus helpful in managing feeding and culling. When kids become 1-2 weeks older, it would be better to tag appropriately. In kid's ears, such plastic or metal tags can be given. Or, kids can be given the number in the ear by using color tags.

Fig. No. 1.7.1 Tagging in goat's ear

Source: JICA Project Team

The benefits of tagging are given below:

- Helpful to keep the record and identify the goats.
- Helpful to keep the record of reproduction and health record of goats.
- Helpful for appropriate management of goats.
- Easy for searching in case of theft or missing.
- Easy to submit as evidence to Insurance Company for insurance or claim

2. Management of goat shed

2.1 Introduction of farm shed/barn

As for living human needs house; goats do also need shed/barn. Some people have raised goats together with barn of cattle; but for commercial goats farming, it is good to have goats shed constructed separately for better care. By using local materials, goat farming shed should be constructed resilient to earthquake. As per ages of goats, separate spaces should be allocated within the shed. Kids should be kept into clean,

dry and warm spaces to protect from potential pneumonia. It is appropriate to lay dry and soft grass in the floor. A space from 0.2 to .5 square meters is necessary from parturition to 3 months older per kid. Problem due to internal parasites for the kids arises in wet and damp places, therefore shed should be maintained dry and warm.

2.2 Importance of shed

Shed is necessary to protect goats from the Sun, water and cold; protect from tigers and jackals etc. at night and protect from theft. Sheds built above the ground is good for appropriate management of dung of goats which will help to control infections and non-infectious diseases. As well as, it will be easy for management of goat feeding to farmers.

2.3 Plan for construction of good shed

It is beneficial to construct goat shed by using low cost and locally available materials. While constructing shed, separate spaces should be maintained for kids, dry doe, pregnant doe, kidding doe, wether and breeding buck. There is fear of uncontrolled pregnancy and abortions, if bucks and adult goats are mixed together in one space. Shed's floor is maintained to keep secure footing; but dung and urine should pass from the holes, and it should be easy to clean the shed. If holes are bigger than a finger size, goat's legs get entangled, gets wounded, no secured footings can get fractured legs also.

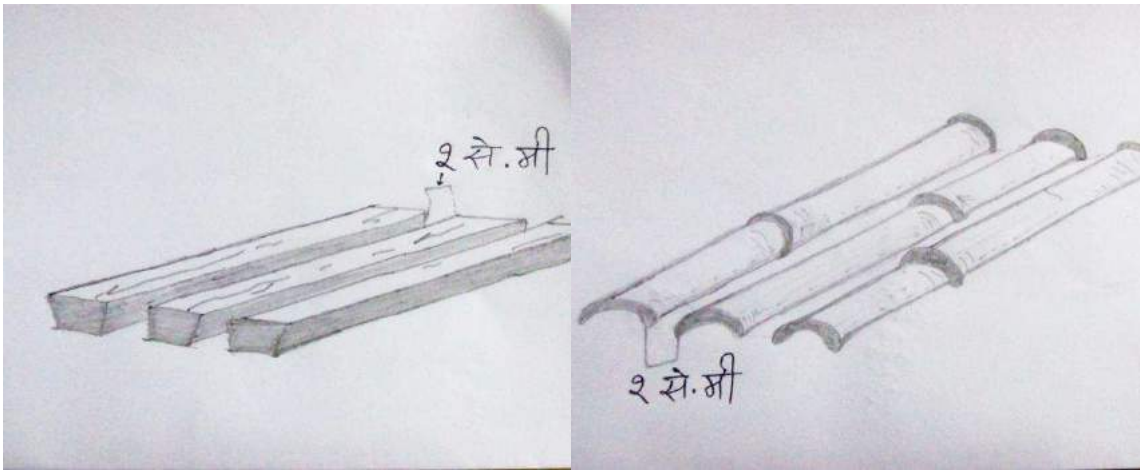

Fig. No. 2.3.1 Wooden planks and bamboos maintained at distance in shed's floor

Source: JICA Project Team

Normally, as goats donot eat fallen fodder from floor and feeds from the ground, stall for grass feeding should be constructed, and there shall be well mangement of enough dinking water. For adequte light and free flow of airs, ventillation should be maintained. Paddock should also be managed for goats feeding space and free movement beyond the goat shed. Inside paddock, there shall be management of feeder/containerfor goat's feeding and drinking water. It is approprite to plant fodder plants around the paddock. Sick goats and goats bought from other places may be infected disease. So, such goats should be kept away in seperate shed at safe distance.

2.4 Construction of goat shed

2.4.1 Locally available resources while constructing goat shed

As per the recommended standards, locally vailable low cost materials have to be used while constructing goat shed.

Table No. 2.4.1.1

Locally available materials for constructing goat shed

Materials	Utility
NIGALO/ Arundinara artistata	For fencing shed
Babmboo	Used for pole, creating a floor, fencing of shed
SALLO, JAMUN(Euqenia jambolana) (generally available solid wood)	To use as pillars
Sacks of jute (JUTKO BORA)	To cover shed in the winter
CGI Iron Sheets (Corrugated Ginc Iron)	For roofing
(Fencing)	To make wall, fencing of shed

Source: JICA Project Team

2.4.2 Area required for goats

Table No. 2.4.2

Area required for goats based on age

Age	Space needed inside shed (square meter per head)	Outside open space (Square meter per head)
Upto 3 months	0.2 to 0.3	0.4 to 0.6
From 3 to 9 months	0.6 to 0.75	1.2 to 1.5

From 9 to 12 months	0.75 to 1.0	1.5 to 2.0
Adult goats	1.5 to 2.0	3.0 to 4.0
Adult buck	2.5 to 3.0	5.0 to 6.0

Source: Central Sheep and Goat Promotion Office, Harihar Bhawan

2.4.3 Sample of Shed

The numbers of kids and goats kept by goat farmer depends on the size of the goat shed also. However, considering the small size of farmers of Barpak, it has been presented earthquake resistant goat shed for maximum one breeding buck, 2 mother goats, and 6 kids including breeding buck and without breeding buck with the size from four to eight square meters.

Fig. No. 2.4.3.1 Constructing earthquake resistant goat shed using cross beam

Source: JICA Project Team

Fig. No. 2.4.3.2 Laying the wooden planks with appropriatly so the goat's leg will not pass from holes

Source: JICA Project Team

Fig. No. 2.4.3.3 Goat reared in earthquake resistant shed using cross beam

Source: JICA Project Team

2.4.4 Improtant things to be considered in shed management

- It has to be covered the shed with Jute sacks to protect goats from cold in the winter, but at day time (except during rainy and cloudy day); it is hygienic to let the sun-light enter inside the shed by rolling up the sacks.
- It has to be removed the dung deposited under the shed at least twice in a week. If dung deposit is not removed time to time, with the gas emission and filth, it will adversely affect health, growth and reproduction capability of goats, and it rises death rate of small kids also.
- It has to be cleaned regularly feed container for goats.
- It has to be applied fencing wires for the safety of livestock.
- It has also to be disinfected the shed by limes to control external parasites for goats.

Fig. No. 2.4.4.1 Shed in good condition – clean and dry

Source: JICA Project Team

Fig. No. 2.4.4.1 Shed in bad condition- littered waste

Source: JICA Project Team

3. Plan for feeding safety

For the livestock raising and production purpose, management of feeding should be carried out appropriately. Best feed for livestock is green grass. Grasses from grounds obtained from pastures, edges of farmlands, forage and fodder plants are the major sources of feeding for livestock in Nepal. Therefore, availability of different types of grasses from grounds should be ensured throughout the year, and forage and fodders have to be planted. Similarly, while grazing goats, it is better to take cyclic order than to graze in one place, so that new leaves can grow up. At the time of availability of adequate grasses, it's better to make hay and silage for storage and feeding in winter.

3.1 Basic feeds for Goats

Fig. No. 3.1.1 Basic feeds for goat

Source: JICA Project Team

(A) Pure water: 5 liter is necessary for a goat per day

(B) Forage and fodder: There is different requirement of necessary forage and fodder for goats based on its weight. The required forage and fodder for goats based on its weight is as followings:

Table No. 3.1.1 Required forage and fodder for goat based on weight

Goat	Forage and fodder
Growing kids (Up to 10-15 kg)	2-3 kg per day
Small goat (Up to 20 kg)	4 kg per day
Medium goat (Up to 25 kg)	5 kg per day
Big goat (Up to 30 kg)	6 kg per day

Source: Central Sheep and Goat Promotion Office, Harihar Bhawan

(C) Concentrate Feed (Balance diet): Compulsorily concentrate feeds are given to especially sick goats, recovering doe, pregnant and growing young kids in shed.

Fig. No. 3.1.2 Concerntrate feeding to goats

Source: JICA Project Team

Fig. No. 3.1.3 Leguminous feed

Source: JICA Project Team

Table No. 3.1.2

Materials used for making goat's feed

Raw materials		**Raw protein in percent**
Non-leguminous crops	Maize	10
	Wheat	10
	Rice bran	12
	Wheat bran	14
	Jai	9
	Barley	10
	Millet	11
Leguminous crops	Soybean or bi-product of Soya (PINA)	41
	Bi-product of oilseeds (TORIKO PINA)	27

Source: JICA Project Team

(D) Salt and minerals block: Method of making salt and minerals block/cake are as followings:

- **Necessary materials:**
  - Red clay – 2 kg
  - Salt – 0.5 kg
  - Wheat Floor - <0.5 kg, as per need
  - Egg shell – 25-30 pieces,
  - Water- as per need
- **Preparation method:**
  - Mince red clay into dust, screen it before use.
  - Mince egg shell to dust
  - Mixed dust of red clay, dust of egg shell, salt and white floor in a pot. Add adequate water to shape it as cake/block, otherwise thinner mixture, it is difficult to prepare a cake/block.
  - The volume of mixture is enough for making 2-3 cakes/blocks.
  - Shape of Cake/blocks should be made rectangular or circle; and in the middle, there should be made small hole for hanging.
  - After 4-5 days, the prepared mineral cakes/blocks are ready for use.
  - Mineral cake/block should be placed where goats can easily lick it, and it should be placed for goat to lick it at once in a day.

Fig. No. 3.1.4 Making dust of red clay

Fig. No. 3.1.5 Making powder of egg shell

Fig. No. 3.1.6 Adding water: well mixed

Source: JICA Project Team

Fig. No. 3.1.7 Making rectangular shape, and small hole in center

Source: JICA Project Team

3.2 Feeding method

- For easy feeding to goats, forage and fodder are always given in stall-fed, and if stall-fed remains empty, it shows inadequacy of forage and fodder to goat.
- Twice in a day, goats should be fed in the morning and evening; and changing of water and feeding time table should be maintained at the same time.
- Unnecessarily, feed should not be over fed to goat. Over feeding may cause bloat out stomach and sometimes goat can die.

4. Reproduction/Breeding Management

4.1 Introduction to reproduction of goats

The estrous cycle for doe is 21 days; in 21 days doe gets in heat, and searches buck for mating. After mating, doe gets pregnancy for 5 months or 150 ±5 days. Breeding of doe is not fixed on season/time. The crossbreed of Boer and Khari, it gives birth to single kid in its first parturition, and second time onward, it can give birth to two kids. Well fed, well-nourished does can have estrous cycle in the winter and summer too. Availability of adequate forage and fodder; and in environment moderate with temperate, in between the month of Bhadra (July/August) to Kartik (October/November) more cases of does are found in heat. In high hill and Mountainous belts, always does do get heat in hot months.

Fig. No. 4.1.1 Breeding to doe

Source: JICA Project

4.1.1 Major signs of does in heat

- Wagging her tail
- Less willing to take feeding, forage and fodder
- Suddenly reduced milk production
- Continuous bleating
- Mucus seen in the vagina
- Reddish and swollen valve
- Mounting to buck and goat whatever comes in front

If doe's in heat, ensure mating with buck (breed) after 12-14 hours. The time of heating and mating time is as followings:

Table No. 4.1.1.1

Time of heating and mating time

Time of mucus seen	Appropriate time for mating with Buck
Morning	At the same day: from evening till morning
Noon- day time	Next day: from morning till noon
Evening	Next day: from morning till noon

Source: JICA Project Team

If again after 21 days, mucus is seen in doe; it should be known that doe is not pregnant; in that case; again mating with buck breed is needed. Generally, after 50-65 days of parturition, doe comes in heat. 2-3 months after parturition, it is appropriate for mating with buck. By doing so, within 2 years, 3 times does can have parturition.

4.1.2 Reproduction Age (For Boer Cross)

- Doe – >18 kg (approximately 7 month to 7 years)
- Buck - >25 kg (approximately 8 month to 5 years)

Doeling usually are in estrous cycle before 7 months, but as it has no physical growth, it is not good for mating. In 3 months, doeling do get in heat but considering its maturity, mating with buck is prevented.

Harms of immature mating

- Low pregnancy rate
- Difficulty during labor
- Fear of abortion
- Premature birth
- Inadequate milk production and no growth of kids

Things to be considered for reproduction

- Does age must reach7-month-old.
- There shall not be in-breeding at any cost.
- Parent doe and buck should not be kept mixed in same space, otherwise there are chances of uncontrolled pregnancy, and buck will create hassles to doe unnecessarily.
- Maintain ratio of in average 25-30 does for breeding by one buck.
- Buck for breeding should not be reared to heavy or too skinny.
- Buck's age must be reached 8-month-old, and can be in reproduction service for 5 years.
- Breeding management should be maintained is such a way that there should be no parturition, in the winter season-Poush/Magh (November-January) and in heavy rainy season-Shrawan (July/August). It means there shall not be mating in months of Shrawan, Bhadra, Poush and Magh). If parturition in these months happens, kid's mortality rate will be high or becomes difficult of rearing kids.

4.2 Reproduction with different kinds of breeds

Mating with local buck and improved breed of doe should be prevented. If such mating happens with a local breed buck, simultaneously the quality deteriorates. If doe gets mating with good breeding buck, then parturition of high quality kids will be ensured.

4.3 Record keeping for reproduction/breeding

To maintain the quality of goat, there should be record keeping of reproduction. The record keeping can be done as followings:

Table No. 4.3.1

Sample of reproduction record keeping

Doe Tag No.	Buck Tag No.	Mating Date	Expected date		Number of kid	Sex of kid	Weaning Kids No.	Remarks
			Late	Real				
150123	20412	Falgun18 Chaitra9	Shrawan17	Shrawan15	2	M+F	1	
150234	20412	Chaitra2	Shrawan31	Bhara1	1	F	1	

Source: JICA Project Team

5. Management of Buck and Doe

5.1 Importance and introduction of buck and doe management

The farm management activities have special role, and taking care of buck and doe for obtaining maximum benefit from commercial goat farming. Therefore, good management of doe and buck is important. Comparatively buck needs more feeds and exercise than does, and as according to time, it needs special care for doe (pregnant doe, expecting doe, parturition doe, dry doe).

Generally, does can be used up to 7 years; whereas, buck can be used up to 5 years for breeding purpose in case of Boer cross breed. If any problems occurred in this period, the goats can be used as meat. And, its productive period can also be extended if it has good reproductive capacity.

5.2 Feed and hoof management for buck

- Feed management – During mating, buck usually runs after doe without eating. Therefore, farmers need to pay heeds to buck's weight. If weight gets lesser, then buck is given more feeds. If buck gets heavy, reproduction becomes difficult; in such case weight needs to be loosened. If breeding capacity of buck is decreased or in-active, the eggs with flour should be mixed and feed to buck so that it helps to resumes its health condition.

- Hoof management –Time to time, goat's hoof must be trimmed otherwise it may start rotting on. Due to long hoof, it may face difficulty in walking and at the time of mating also. If goat is reared in the shed only, trimming of hoof may be necessary, but in open grazing, it may not be required.

5.3 Importance and introduction of removing inbreeding in goats

Inbreeding is said while reproduction system in same linage of goats related to same ancestry. For example: breeding between sister and brother, father and daughter; uncle and niece, maternal uncle and niece are some examples.

There are following harms of inbreeding between five generation of same buck and doe:

- Continuous decline in breeding capacity,
- Offspring may be in unique condition, weak and small in shape
- Reduction in physical weight and production,
- Bad traits may transfer in kids
- Genetic disorder may transfer from one generation to the next
- Reduction in immunity power
- Age of first for parturition may increase from one generation to the next,
- More affected by diseases

5.4 Management of buck in rotation for removing inbreeding

It is necessary to avoid inbreeding in goats for ensuring better kids growth, prevent being easily affected by diseases and good production etc. To avoid such inbreeding; in every 15 months, buck should be rotated. Or, buck can be reared separately in many groups if goat farming is through cooperative to avoid inbreeding. For this purpose, the following method can be applied:

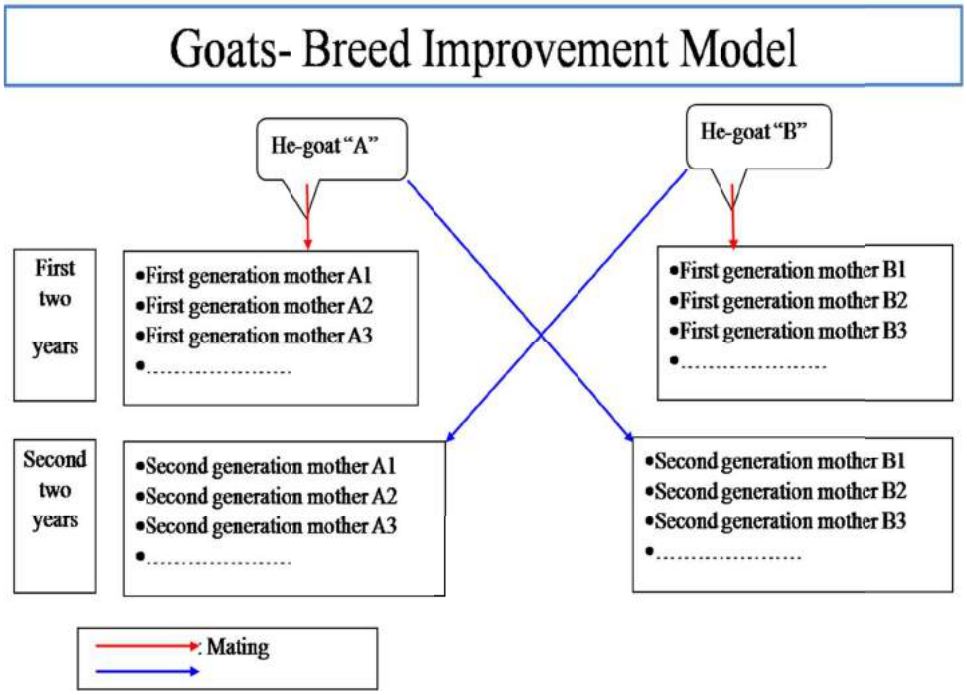

Fig. No. 5.4.1 Goat breeds improvement method

Source: JICA Project

5.5 Record keeping

5.5.1 Record keeping of every doe

While goat farming is done through groups and cooperative, one sheet for record keeping should be prepared for each goat, and always refer to the same sheet. Sample record keeping is as followings:

Table No. 5.5.1.1

Sample of record keeping of doe

Doe's Tag No. 150123		Date of Birth: …..		Breed: 50% Boer	
Buck Tag No. ……..		Mother's Tag No. …..		Color: White Brown	
Kids:					
S.N.	Buck's Tag No.	Parturition Date	Sex	Weaning kid no. and sex	Remarks
1	20412	Bhadra 2	1 buckling	1 buckling	
2	20412	Baisakh 2	1 buckling, 1 doeling	1 doeling	1 dead
Diseases: vaccination of scabies, Chaitra 2073					

Source: JICA Project Team

5.5.2 Record keeping for each buck

For each buck, one sheet for record keeping should be prepared and always refer to the same sheet. Such record becomes helpful while selecting buck for breeding. Sample record keeping for each buck is as followings:

Table No. 5.5.2.1

Sample record keeping for buck

Buck's Tag No.: 20412		Date of Birth:		Breed: Boer 50%	
Father's Tag No: ….		Mother's Tag No. ….		Color: White black	
Name of goat farmer	Doe's Tag No.	Mating date	Expected date of parturition	Sex of kids	Remarks
	150123	Falgun 11	Shrawan 12	1 buckling	
	150234	Falgun 30	Bhadra 1	1 buckling, 1 doeling	1 dead
Disease: Hoofing trimming/cutting: Chaitra 2073					

Source: JICA Project Team

6. Health and Nutrition Management

6.1 Health: Introduction and Importance

Health management is an important and integral part in goat farming. Through goat management, it is necessary to improve the productivity of goats, such as: general health management, parasite control, vaccine management, environment management and proper record keeping. Health management in farm level includes proper care taking of health of pregnant doe, newborn kids, youth and adults. Similarly, health management help to reduce the mortality rate of newborn kids, and it provides knowledge, skill and practice of control of infectious diseases.

'Prevention is better than cure', the statement best fits for livestock too. In healthy livestock, better immunity and recovery is quicker. But, if livestock fall sick, farmer must buy medicines, and it increases cost also. Treatment of disease must be faster; otherwise it will be very difficult to treat.

SARLABAI SANTOSH MAHER

CHAPTER-VI

ECONOMICS OF THE PROJECT

B. BASIS & PRESUMPTIONS

Sr. No.	Particular	Unit	Quanitty
1	**Techno-economic parameters**		Usmanabadi
	Breed of Goat		Semi
	System of rearing		Intensive
	No of Does		100
	No. of Bucks		5
	Age at Maturity	Months	10 to 12
	Kidding interval	Months	8
	No of kidding	per year	1.5
	Kidding percentage	%	80
	Average litter size (average of single, twinning,		1.5
	Triplet, quadruplet)		1.1
	Sex ratio	%	20
	Mortality (%) Kids	months	11
	Saleable age of kids	6 years including	
	Payback period	moratorium for the 1st year	
	Expenditure norms		
	Space requirement per head for Buck & Doe	sq ft	1,000
II.	**Expenditure norms**		
	Space requirement per head for kid	sq ft	0
	Cost of construction of sheds for buck, doe & kid	sq ft	285
	Cost of one Doe (Female)	Rs	12,000
	Cost of one Buck (Male)	Rs	20,000
	No of unskilled labour	Nos	2
	Cost of one unskilled labour per annum	Rs	60,000
	Cost of Chaff of cutter- 1 nos.	Rs.	22,000
	Rate of concentrate per kg	Rs	10
	Misc, expenditure i.e. vaccine medicine and veterinary aid etc	Rs	50
	Electricity and Water supply per month	Rs	1,000
	Rate of interest for bank loan	(%)	11
	Own contribution in project cost	(%)	10
III.	**Income norms**		
	Sale price of Buck/(11 month)		
	Sale price of Doe (11 month)	RS	15000
	Sale price of Doe (11 month)	RS	10000

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B. TOTAL COST OF PROJECT

Sr. No.	Particular	Unit	Unit rate	Quantity	Amount in Rs.
A.	**Capital Cost**	1			
	Land				
	Land & Site development				Own
	Site development	Ls			0
II	**Cost of Animals**				
	Cost of Does	Nos	12,000	100	1200000
	Cost of Bucks	Nos	20,000	5	100000
					1300000
III	**Cost of Buildings**				
	Shed for animals (Sheds of each	Sq.ft	285	1,000	285000
	size 55 100')				
	Shed for Kids (Size 100*35)	Sq.ft	285	0	0
					285000
IV	**Machineries & Equipments**				
	Chaff cutter	Nos	22,000	1	22000
	Integrated Silage Machine	Nos	160000	1	160000
					204000
	Miscellaneous expenses				
	Fodder Cultivation	Rs/Acre	20000	1	20000
	Insurance	%	7.5		97500
	Transport Charges	Ls	200	105	21000
	Other Expenses	Approx			40000
		TOTAL (A)			**1967500**
B	**Working Capital for one production cycle**				
	Concentrate feeds of Parent	Rs./Kg	28744	1	28744
	stocks @ 150 gm/Day/Animal				
	(365 Days 525)				
	Dry Fodder 1Kg/Day/Animal	Rs/Kg	143719	2	287438
	(365 Days 525)				
	Unskilled workers	Rs/Per	60000	2	120000
		Annum			
	Electricity and Water supply	per month			
	Misc, expenditure i e vaccine	per	1000	12	12000
	medicine and veterinary aid etc	Animal/Year	25	105	2625
		TOTAL B			**450807**
		TOTAL A+B			**2418307**

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D. MEANS OF FINANCE

Sr. No.	Particular	Unit	Quantity	Amount in Rs.
1	Term loan	%	40	967323
2	Own contribution	%	10	2,41,831
3	Capital Subsidy entitlement under	%	50	1209153.5
	National Livestock Mission Schemes			
	Maximum Subsidy Amount 50 lakh or 50%			
			TOTAL	**24,18,307**

SARLABAI SANTOSH MAHER

E PROJECTION OF PERFORMANCE & PROFITABILITY

1	**Flock Production Chart**						
	Particular	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	No of kinding/year	1.5	1.5	1.5	1.5	1.5	1.5
	No of kids bom male	90	90	90	90	90	90
	No of kids bom female	90	90	90	90	90	90
	No of kids died mate 20%	18	18	18	18	18	18
	No of kids died female 20%	18	18	18	18	18	18
	Kids produced in No of male kids available for sales	**0**	**72**	**72**	**72**	**72**	**72**
	first year will be said in second year & so on						
	No of female kids available for sale	**0**	**72**	**72**	**72**	**72**	**72**

SARLABAI SANTOSH MAHER

Projected Profitability

Particular	Unit	Unit rate in Rs	Qua-ntity	I year	II Year	III year	Iv year	V year	VI year
Income									
A From sain of mals goats	Buck	15000	72		1080000	1134000	1190700	1250235	1312747
From sale of female									
Goals	Doe	10000	72		720000	756000	793800	833490	875165
Manure	Tone	1000	20	20000	21000	22050	23153	24311	25527
		TOTAL A		20000	1821000	1912050	2007653	2108036	2213439
Expenditure									
A Fodder Cultivation	Rs/acre	20000	1	20000	22000	24200	26620	29282	32210
Dry Fodder	Rs/acre	143719	0	0	0	0	0	0	0
Concentrate feeds of	Rs/kg	28744	2	57488	63237	69561	76517	84169	92586
Parent Stocks									
Concentrate feeds for Kids	Rs/kg	26280	2	52560	57816	63598	69958	76954	84649
Kids									
Unskilled workers	Rs/per]	60000	2	120000	132000	145200	159720	175692	193261
	annum								
Insurance	%	7.5		97500	97500	97500	97500	97500	97500
Electricity And Water	per month	1000		12000	13200	14520	15972	17569	19326
Supply									
Misc. experendure	Per								
i.e vaccine medician	Animal / Year	50	105	5250	5775	6353	6988	7687	8456
Transport Charges	Ls			105000	115500	127050	139755	153731	169104
		TOTAL B		469798	507028	547982	593030	642584	697092
Net Income		TOTAL A+B		489798	2328028	2460032	2600683	2750620	2910531

SARLABAI SANTOSH MAHER

G. Term Loan Repayment

rate of interest-% per annum **11**

Opening balance of tam loan: **967323**

Year	Loan Outstanding	Principal	Interest	Total Repayment	Gross Surplus	DSCR
1	₹ 9,67,323.00	₹ 1,07,480.00	₹ 1,06,406.00	₹ 2,13,886.00	₹ 0.00	0
2	₹ 8,59,843.00	₹ 1,20,915.00	₹ 94,583.00	₹ 2,15,498.00	₹ 13,13,972.00	6.1
3	₹ 7,38,928.00	₹ 1,38,189.00	₹ 81,282.00	₹ 2,19,471.00	₹ 13,64,068.00	6.2
4	₹ 6,00,739.00	₹ 1,38,189.00	₹ 66,081.00	₹ 2,04,270.00	₹ 14,14,623.00	6.9
5	₹ 4,62,550.00	₹ 1,38,189.00	₹ 50,881.00	₹ 1,89,070.00	₹ 14,65,452.00	7.8
6	₹ 3,24,361.00	₹ 1,61,221.00	₹ 35,680.00	₹ 1,96,901.00	₹ 15,16,347.00	7.7
7	₹ 1,63,140.00	₹ 1,63,140.00	₹ 17,945.00	₹ 1,81,085.00	₹ 0.00	0

AVG DST		4.96