

Dairy Farming

1. Why do Dairy Farming ?

1.1 Dairying is an important source of subsidiary income to small/marginal farmers and agricultural labourers. The manure from animals provides a good source of organic matter for improving soil fertility and crop yields. The gobar gas from the dung is used as fuel for domestic purposes as also for running engines for drawing water from well. The surplus fodder and agricultural by-products are gainfully utilised for feeding the animals. Almost all draught power for farm operations and transportation is supplied by bullocks. Since agriculture is mostly seasonal, there is a possibility of finding employment throughout the year for many persons through dairy farming. Thus, dairy also provides employment throughout the year. The main beneficiaries of dairy programmes are small/marginal farmers and landless labourers. A farmer can earn a gross surplus of about Rs. 12,000 per year from a unit consisting of 2 milking buffaloes. The capital investment required for purchase of 2 buffaloes is Rs. 18,223/-. Even after paying a sum of Rs. 4294/- per annum towards repayment of the loan and interest the farmer can earn a net surplus of Rs. 6000 - 9000/- approximately per year. (For details see model scheme enclosed). Even more profits can be earned depending upon the breed of animal, managerial skills and marketing potential.

1.2 According to World Bank estimates about 75 per cent of India's 940 million people are in 5.87 million villages, cultivating over 145 million hectares of cropland. Average farm size is about 1.66 hectares. Among 70 million rural households, 42 per cent operate upto 2 hectares and 37 per cent are landless households. These landless and small farmers have in their possession 53 per cent of the animals and produce 51 per cent of the milk. Thus, small/marginal farmers and land less agricultural labourers play a very important role in milk production of the country. Dairy farming can also be taken up as a main occupation around big urban centres where the demand for milk is high.

2. Scope for Dairy Farming and its National Importance.

2.1 The total milk production in the country for the year 2001-02 was estimated at 84.6 million metric tonnes. At this production, the per capita availability was to be 226 grams per day against the minimum requirement of 250 grams per day as recommended by ICMR. Thus, there is a tremendous scope/potential for increasing the milk production. The population of breeding cows and buffaloes in milk over 3 years of age was 62.6 million and 42.4 million, respectively (1992 census)

2.2 Central and State Governments are giving considerable financial assistance for creating infrastructure facilities for milk production. The ninth plan outlay on Animal Husbandry and Dairying was Rs. 2345 crores.

3. Financial Assistance Available from Banks/NABARD for Dairy Farming.

3.1 NABARD is an apex institution for all matters relating to policy, planning and operation in the field of agricultural credit. It serves as an apex refinancing agency for the institutions providing investment and production credit. It promotes development through formulation and appraisal of projects through a well organised Technical Services Department at the Head Office and Technical Cells at each of the Regional Offices.

3.2 Loan from banks with refinance facility from NABARD is available for starting dairy farming. For obtaining bank loan, the farmers should apply to the nearest branch of a commercial or co-operative Bank in their area in the prescribed application form which is available in the branches of financing banks. The Technical Officer attached to or the Manager of the bank can help/give guidance to the farmers in preparing the project report to obtain bank loan.

3.3 For dairy schemes with very large outlays, detailed reports will have to be prepared. The items of finance would include capital asset items such as purchase of milch animals, construction of sheds, purchase of equipments etc. The feeding cost during the initial period of one/two months is capitalised and given as term loan. Facilities such as cost of land development, fencing, digging of well, commissioning of diesel engine/pumpset, electricity connections, essential servants' quarters, godown, transport vehicle, milk processing facilities etc. can be considered for loan. Cost of land is not considered for loan. However, if land is purchased for setting up a dairy farm, its cost can be treated as party's margin upto 10% of the total cost

of project.

4. Scheme Formulation for bank loan.

4.1 A Scheme can be prepared by a beneficiary after consulting local technical persons of State animal husbandry department, DRDA, SLPP etc., dairy co-operative society/union/federation/commercial dairy farmers. If possible, the beneficiaries should also visit progressive dairy farmers and government/military/agricultural university dairy farm in the vicinity and discuss the profitability of dairy farming. A good practical training and experience in dairy farming will be highly desirable. The dairy co-operative societies established in the villages as a result of efforts by the Dairy Development Department of State Government and National Dairy Development Board would provide all supporting facilities particularly marketing of fluid milk. Nearness of dairy farm to such a society, veterinary aid centre, artificial insemination centre should be ensured. There is a good demand for milk, if the dairy farm is located near urban centre.

4.2 The scheme should include information on land, livestock markets, availability of water, feeds, fodders, veterinary aid, breeding facilities, marketing aspects, training facilities, experience of the farmer and the type of assistance available from State Government, dairy society/union/federation.

4.3 The scheme should also include information on the number of and types of animals to be purchased, their breeds, production performance, cost and other relevant input and output costs with their description. Based on this, the total cost of the project, margin money to be provided by the beneficiary, requirement of bank loan, estimated annual expenditure, income, profit and loss statement, repayment period, etc. can be worked out and shown in the Project report. A format developed for formulation of dairy development schemes is given as Annexure I.

5. Scrutiny of Schemes by banks.

The scheme so formulated should be submitted to the nearest branch of bank. The bank's officers can assist in preparation of the scheme for filling in the prescribed application form. The bank will then examine the scheme for its technical feasibility and economic viability.

(A) Technical Feasibility - this would briefly include -

1. Nearness of the selected area to veterinary, breeding and milk collection centre and the financing bank's branch.
2. Availability of good quality animals in nearby livestock market. The distribution of important breeds of cattle and buffaloes are given in Annexure II. The reproductive and productive performance of cattle and buffalo breeds is given in Annexure III.
3. Availability of training facilities.
4. Availability of good grazing ground/lands.
5. Green/dry fodder, concentrate feed, medicines etc.
6. Availability of veterinary aid/breeding centres and milk marketing facilities near the scheme area.

(B) Economic Viability - this would briefly include -

1. Unit Cost - The average unit cost of dairy animals for some of the States is given in Annexure IV.
2. Input cost for feeds and fodders, veterinary aid, breeding of animals, insurance, labour and other overheads.
3. Output costs i.e. sale price of milk, manure, gunny bags, male/female calves, other miscellaneous items

etc.

4. Income-expenditure statement and annual gross surplus.

5. Cash flow analysis.

6. Repayment schedule (i.e. repayment of principal loan amount and interest).

Other documents such as loan application forms, security aspects, margin money requirements etc. are also examined. A field visit to the scheme area is undertaken for conducting a techno-economic feasibility study for appraisal of the scheme. Model economics for a two animal unit and mini dairy unit with ten buffaloes are given in Annexure V and VI.

6. Sanction of Bank Loan and its Disbursement.

After ensuring technical feasibility and economic viability, the scheme is sanctioned by the bank. The loan is disbursed in kind in 2 to 3 stages against creation of specific assets such as construction of sheds, purchase of equipments and machinery, purchase of animals and recurring cost on purchase of feeds/fodders for the initial period of one/two months. The end use of the fund is verified and constant follow-up is done by the bank.

7. Lending terms - General

7.1 Unit Cost

Each Regional Office (RO) of NABARD has constituted a State Level Unit Cost Committee under the Chairmanship of RO-in-charges and with the members from developmental agencies, commercial banks and cooperative banks to review the unit cost of various investments once in six months. The same is circulated among the banks for their guidance. These costs are only indicative in nature and banks are free to finance any amount depending upon the availability of assets.

7.2 Margin Money

NABARD had defined farmers into three different categories and where subsidy is not available the minimum down payment as shown below is collected from the beneficiaries.

Sr.No.	Category of Farmer	Level of predevelopment return to resources	Beneficiary's Contribution
(a)	Small Farmers	Upto Rs.11000	5%
(b)	Medium Farmers	Rs.11001 - Rs.19250	10%
(c)	Large Farmers	Above Rs. 19251	15%

7.3 Interest Rate

As per the RBI guidelines the present rate of interest to the ultimate beneficiary financed by various agencies are as under :

No.	Loan Amount	CB's and RRB's	SLDB/SCB
(a)	Upto and inclusive of Rs.25000	12%	As determined by SCB/SLDB subject to minimum 12%
(b)	Over Rs. 25000 and upto Rs. 2 lakhs	13.5%	-do-
(c)	Over Rs. 2.0 lakhs	As determined by the banks	-do-

7.4 Security

Security will be as per NABARD/RBI guidelines issued from time to time.

7.5 Repayment Period of Loan

Repayment period depends upon the gross surplus in the scheme. The loans will be repaid in suitable monthly/quarterly instalments usually within a period of about 5 years. In case of commercial schemes it may be extended upto 6-7 years depending on cash flow analysis.

7.6 Insurance

The animals may be insured annually or on long term master policy, where ever it is applicable. The present rate of insurance premium for scheme and non scheme animals are 2.25% and 4.0% respectively.

8. Package of Common Management Practices Recommended for Dairy

Farmers

Modern and well established scientific principles, practices and skills should be used to obtain maximum economic benefits from dairy farming. Some of the major norms and recommended practices are as follows :

I. Housing:

1. Construct shed on dry, properly raised ground.
2. Avoid water-logging, marshy and heavy rainfall areas.
3. The walls of the sheds should be 1.5 to 2 meters high.
4. The walls should be plastered to make them damp proof.
5. The roof should be 3-4 metres high.
6. The cattle shed should be well ventilated.
7. The floor should be pucca/hard, even non-slippery impervious, well sloped (3 cm per metre) and properly drained to remain dry and clean.
8. Provide 0.25 metre broad, pucca drain at the rear of the standing space.
9. A standing space of 2 x 1.05 metre for each animal is needed.
10. The manger space should be 1.05 metre with front height of 0.5 metre and depth of 0.25 metre.
11. The corners in mangers, troughs, drains and walls should be rounded for easy cleaning.
12. Provide 5-10 sq. metre loaf space for each animal.
13. Provide proper shade and cool drinking water in summer.

14. In winter keep animals indoor during night and rain.
15. Provide individual bedding daily.
16. Maintain sanitary condition around shed.
17. Control external parasites (ticks, flies etc.) by spraying the pens, sheds with Malathion or Copper sulphate solution.
18. Drain urine into collection pits and then to the field through irrigation channels.
19. Dispose of dung and urine properly. A gobar gas plant will be an ideal way. Where gobar gas plant is not constructed, convert the dung alongwith bedding material and other farm wastes into compost.
20. Give adequate space for the animals. (The housing space requirement of crossbred cattle in various categories/age-groups is given in Annexure-VII).

II. Selection of Animal :

1. Immediately after release of the loan purchase the stock from a reliable breeder or from nearest livestock market.
2. Select healthy, high yielding animals with the help of bank's technical officer, veterinary/animal husbandry officer of State government/ Zilla Parishad, etc.
3. Purchase freshly calved animals in their second/third lactation.
4. Before purchasing, ascertain actual milk yield by milking the animal three times consecutively.
5. Identify the newly purchased animal by giving suitable identification mark (ear tagging or tattooing).
6. Vaccinate the newly purchased animal against disease.
7. Keep the newly purchased animal under observation for a period of about two weeks and then mix with the general herd.
8. Purchase a minimum economical unit of two milch animals.
9. Purchase the second animal/second batch after 5-6 months from the purchase of first animal.
10. As buffaloes are seasonal calvers purchase them during July to February.
11. As far as possible purchase the second animal when the first animal is in its late stage of lactation and is about to become dry, thereby maintaining continuity in milk production vis-a-vis income. This will ensure availability of adequate funds for maintaining the dry animals.
12. Follow judicious culling and replacement of animals in a herd.
13. Cull the old animals after 6-7 lactations.

III. Feeding of Milch Animals

- 1 Feed the animals with best feeds and fodders. (Feeding schedule is given in Anneuxre VIII).
2. Give adequate green fodder in the ration.
3. As far as possible, grow green fodder on your land wherever available.
4. Cut the fodder at the right stage of their growth.
5. Chaff roughage before feeding.
6. Crush the grains and concentrates.
7. The oil cakes should be flaky and crumbly.
8. Moisten the concentrate mixture before feeding.
9. Provide adequate vitamins and minerals. Provide salt licks besides addition of mineral mixture to the concentrate ration.
10. Provide adequate and clean water.
11. Give adequate exercise to the animals. Buffaloes should be taken for wallowing daily. In case this is not possible sprinkle sufficient water more particularly during summer months.
12. To estimate the daily feed requirement remember that the animals consume about 2.5 to 3.0 percent of their body weight on dry matter basis.

IV. Milking of Animals

1. Milk the animals two to three times a day.
2. Milk at fixed times.
3. Milk in one sitting within eight minutes.
4. As far as possible, milking should be done by the same person regularly.
5. Milk the animal in a clean place.
6. Wash the udder and teat with antiseptic lotions/luke-warm water and dry before milking.
7. Milker should be free from any contagious diseases and should wash his hands with antiseptic lotion before each milking.
8. Milking should be done with full hands, quickly and completely followed by stripping.
9. Sick cows/buffaloes should be milked at the end to prevent spread of infection.

V. Protection against Diseases

1. Be on the alert for signs of illness such as reduced feed intake, fever, abnormal discharge or unusual behaviour.

2. Consult the nearest veterinary aid centre for help if illness is suspected.
3. Protect the animals against common diseases.
4. In case of outbreak of contagious disease, immediately segregate the sick, in-contact and the healthy animals and take necessary disease control measures. (Vaccination schedule is given in Annexure IX).
5. Conduct periodic tests for Brucellosis, Tuberculosis, Johne's disease, Mastitis etc.
6. Deworm the animals regularly.
7. Examine the faeces of adult animals to detect eggs of internal parasites and treat the animals with suitable drugs.
8. Wash the animals from time to time to promote sanitation.

VI. Breeding Care

1. Observe the animal closely and keep specific record of its coming in heat, duration of heat, insemination, conception and calving.
2. Breed the animals in time.
3. The onset of oestrus will be within 60 to 80 days after calving.
4. Timely breeding will help achieving conception within 2 to 3 months of calving.
5. Breed the animals when it is in peak heat period (i.e. 12 to 24 hours of heat).
6. Use high quality semen preferably frozen semen of proven sires/bulls.

VII. Care during Pregnancy

Give special attention to pregnant cows two months before calving by providing adequate space, feed, water etc.

VIII. Marketing of Milk

1. Marketing milk immediately after it is drawn keeping the time between production and marketing of the milk to the minimum.
2. Use clean utensils and handle milk in hygienic way.
3. Wash milk pails/cans/utensils thoroughly with detergent and finally rinse with chloride solution.
4. Avoid too much agitation of milk during transit.
5. Transport the milk during cool hours of the day.

IX. Care of Calves

1. Take care of new born calf.
2. Treat/disinfect the navel cord with tincture of iodine as soon as it is cut with a sharp knife.
3. Feed colostrum to calf.
4. Assist the calf to suckle if it is too weak to suckle on its own within 30 minutes of calving.
5. In case it is desired to wean the calf immediately after birth, then feed the colostrum in bucket.
6. Keep the calf separately from birth till two months of age in a dry clean and well ventilated place.
7. Protect the calves against extreme weather conditions, particularly during the first two months.
8. Group the calves according to their size.
9. Vaccinate calves.
10. Dehorn the calves around 4 to 5 days of age for easy management when they grow.
11. Dispose of extra calves not to be reared/maintained for any specific purpose as early as possible, particularly the male calves.
12. The female calves should be properly reared.

Annexure I

FORMAT FOR SUBMISSION OF SCHEMES

1. GENERAL

- i) Name of the sponsoring bank
- ii) Address of the controlling office sponsoring the scheme
- iii) Nature and objectives of the proposed scheme
- iv) Details of proposed investments

S.No	Investment	No. Of units
(a)		
(b)		
(c)		

- v) Specification of the scheme area (Name of District & Block/s)

S.No.	District	Block

- vi) Names of the financing bank's branches:

S.No.	Name of the Branch/District

(a)	
(b)	
(c)	

vii) Status of beneficiary/ies:
(individual/Partnership/Company/Corporation/Co-operative Society / Others)

viii) In case of area based schemes, coverage of borrowers in weaker sections (landless labourers, small, medium & large farmers as per NABARD's norms, SC/ST, etc.)

ix) Details of borrowers profile (Not applicable to area based schemes)

(a) Capability

(b) Experience

(c) Financial Soundness

(d) Technical/Other special Qualificaitons

(e) Technical/Managerial Staff and adequacy thereof

2. TECHNICAL ASPECTS :

a) Location, Land and Land Development :

i) Location details of the project

ii) Total Area of land and its cost

iii) Site map

iv) Particulars of land development, fencing, gates, etc.

b) Civil Structures :

Detailed cost estimates along with measurements of vaious civil structure

- Sheds

- Store room

- Milk room

- Quarters, etc.

c) Equipment/Plant and Machinery :

i) Chaff cutter

ii) Silo pit

- iii) Milking machine
- iv) Feed grinder and mixer
- v) Milking pails/milk cans
- vi) Biogas plant
- vii) Bulk coolers
- viii) Equipment for manufacture of products
- ix) Truck/van (price quotations for the above equipments)

d) Housing :

- i) Type of housing
- ii) Area requirement
 - Adults
 - Heifers (1-3 years)
 - Calves (less than 1 year)

e) Animals :

- i) Proposed species
- ii) Proposed breed
- iii) Source of purchase
- iv) Place of purchase
- v) Distance (kms.)
- vi) Cost of animal (Rs.)

f) Production parameters :

- i) Order of lactation
- ii) Milk yield (ltrs. per day)
- iii) Lactation days
- iv) Dry days
- v) Conception rate
- vi) Mortality(%)

- Adults
- Young stock

g) Herd projection (with all assumptions) :

h) Feeding :

i) Source of fodder and feed - Green fodder

- Dry fodder
- Concentrates

ii) Fodder crop rotations

- Kharif
- Rabi
- Summer

iii) Fodder cultivation expenses

iv) Requirement and costs :

Quantity required (kg./day)

	Cost(Rs. / Kg)	Lactation	Dry Period	Young Stock
Green Fodder				
Dry Fodder				
Concentrates				

i) Breeding Facilities :

i) Source :

ii) Location :

iii) Distance (km.) :

iv) Availability of semen :

v) Availability of staff :

vi) Expenditure per animal/year

j) Veterinary Aid :

i) Source

ii) Location

iii) Distance (km.)

iv) Availability of staff

v) Types of facilities available

vi) If own arrangements are made -

a) Employed a veterinary doctor/stockman/consultant

b) Periodicity of visit

c) Amount paid/visit (Rs.)

vii) Expenditure per animal per year (Rs.)

k) Electricity :

i) Source

ii) Approval from SEB

iii) Connected load

iv) Problems of power failure

v) Arrangements for generator

l) Water :

i) Source

ii) Quality of water

iii) Availability of sufficient quantity for drinking, cleaning and fodder production

iv) If investment has to be made, type of structure, design and cost

m) Marketing of milk :

i) Source of sales

ii) Place of disposal

iii) Distance (km.)

iv) Price realised - (Rs. per liter of milk)

v) Basis of payment

vi) Periodicity of paymen

n) **Marketing of other products :**

i) Animal - age

- place of sale

- price expected

ii) Manure - Qty./animal

Price/unit (Rs.)

iii) Empty gunny bags

- Number

- Cost/bag (Rs.)

o) **Beneficiary's experience :**

p) **Comments on technical feasibility :**

q) **Government restrictions, if any :**

3. FINANCIAL ASPECTS :

i) **Unit Cost :**

Sr.No	Name of the Investment	Physical units and specification	Unit cost with component wise break-up (Rs.)	Whether approved by state level unit cost committee
	Total			

ii) Down payment/margin/subsidy(Indicate source & extent of subsidy):

iii) Year-wise physical & financial programme :

Year	Invest- Ment	Physical Units	Unit Cost (Rs.)	Total Outlay (Rs.)	Margin/ Subsidy (Rs.)	Bank loan (Rs.)	Refinance Assistance (Rs.)
1	2	3	4	5	6	7	8
Total							

iv) Financial viability (comment on the cash flow projection on a farm model/unit

and enclose the same.)

Particulars :

a) Internal Rate of Return (IRR) :

b) Benefit Cost Ratio (BCR) :

c) Net Present Worth (NPW) :

v) Financial position of the borrowers (to be furnished in case of corporate bodies/partnership firms)

a) Profitability Ratio :

i) GP Ratio

ii) NP Ratio

b) Debt Equity Ratio :

c) Whether Income Tax & other tax obligations are paid upto date :

d) Whether audit is upto date (enclose copies of audited financial statements for the last three years)

vi) Lending Terms :

i) Rate of Interest :

ii) Grace Period :

iii) Repayment Period :

iv) Nature of Security :

v) Availability of Government guarantee wherever necessary :

4. INFRASTRUCTURAL FACILITIES :

a) Availability of technical staff with bank/implementing authority for monitoring

b) Details of -

i) technical guidance

ii) training facilities

iii) Govt support/extension support

c) Tie-up arrangements with marketing agencies for loan recovery

d) Insurance -

- Type of policy

- Periodicity

- Rate of premium

e) Whether any subsidy is available, if so amount per unit

f) Arrangements for supply of green fodder and cattle feed

ANNEXURE II

Cattle and Buffalo Breeds Important Characteristics/Description

Sr. No.	Name Breed	Habitat/Main State	Breeding Tract Districts	Assembling Centres	Areas of demand	Remarks
1	2	3	4	5	6	7
A)	CATTLE	(INDIGENOUS)				
1	Amrith mahal	Erstwhile Mysore State now part of Karnataka	Tumkur and Chitradurg	Erstwhile Mysore State	Karnataka and adjoining area	Draught breed
2	Dangi	Maharashtra and Gujarat	Ahmednagar, Khandesh, Raigad, Nasik, Thane, Surat	Weekly markets in Ahmednagar, Nasik, Thane and West Khandesh district	Rocky ghat areas with heavy rainfall	Draught breed
3	Denoi	Andhra Pradesh Karnataka and Maharashtra	Medak, Nizambad, Mahboobnagar, Adilabad Gulbarga, Bidar, Osmanabad, Nanded	Weekly cattle markets, Jatras and fairs in Bidar and adjoining districts	Bidar and adjoining districts	Draught purpose breed
4	Gir	Gir Hills and forest of South Kathiawar	Junagarh, Also maintained by NDRI, Bangalore	—	Gujarat, Rajasthan, Maharashtra	Dairy purpose breed
5	Hallikar	Karnataka	Tumkur, Hassan & Mysore	Dodballapur, Chickballapur, Harikar, Devargudda, Chikkuvalli, Karuvalli, Chittavadgi (T.N.) North Arcot (T.N.) Hindupur, Somaghatta, Anantpur (A.P.)	Dharwar, North Kanara, Bellary (KT) Anantur & Chittur (A.P.), Coimbatore North Arcot, Salem (T.M.)	Draught breed
6	Hariana	Haryana and Delhi, Punjab, Rajasthan	Rohtak, Hissar, Gurgaon, Karnal, Patiala, Sangrur, Jaipur, Jodhpur, Alwar, Bharatpur Western districts	Cattle fairs at Jehazgarh, Mahim and Bhadurgarh (Rohtak dist.) Hansi & Bhiwani (Hissar dist.)	Throughout the country	Dual purpose breed
7	Kangayam	Tamil Nadu	Coimbatore	Avanashi, Tirppur, Kannauram, Madurai Athicombu	Southern Districts of Tamil Nadu	Draught breed
8	Kankrej	Gujarat	Ahmedabad,	Ahmedabad,	Rajasthan,	

9	Khillari	Maharashtra	Solapur, Kolhapur, Satara	Southern Districts of Maharashtra and adjoining districts of Andhra Pradesh and Karnataka		Draught breed
10	Krishna Valley	Maharashtra, Andhra Pradesh, Karnataka	Watersheds of Krishna and adjoining areas of A.P. and KT	Ichalkaranji (Kolhapur), Chinchali (Gulbarga)		
11	Malvi	Madhya Pradesh	Guna, Vidisha, Raisen Sehora, Ujjain, Indore, Dewas, Gwalior, Shivpuri, Mandasaur, Jhabus & Dhar	Agar (Shajapur) Singaj (Nimar) Sehore & Ashta (Sehore)		Draught purpose
		Rajasthan	Jhalwar and Kotah	Karimnagar (A.P.)		
12	Nagori or Nagauri	Rajasthan	Jodhpur & Nagaur	Nagaur Parbatsar (Nagpur), Balotra (Barmer), Puskar (Ajmer), Hissar, Hansi (Haryana State)	Rajasthan, Haryana, Uttar Pradesh	Draught purpose
13	Ongole	Andhra Pradesh	Ongole, Guntur, Narasaraopet, Bapatla and Nellore	Available in Ongole tract of Andhra Pradesh	-	Dual Purpose
14	Rathi	Rajasthan	Alwar, Bharatpur, Jaipur	Alwar, Rewari (Gurgaon), Pushkar (Ajmer)	-	- Dairy breed
15	Sahiwal	Punjab, Haryana, Delhi, U.P., Bihar, M.P., W.B.	Sahiwal (erstwhile Montgomery)	Jullundar, Gurdaspur, Amritsar, Kapurthala, Ferozepur (Punjab), NDRI, Karnal, Hissar, Anhora Durg (M.P), Lucknow, Meerut, Bihar, W.B.	-	Dairy breed
16	Red Sindhi	Pakistan All parts of India	-	-	-	Dairy breed
17	Siri	Sikkim, Bhutan	Darjeeling Hill Tract	Darjeeling (Brought by dealers)	-	Dual purpose
18	Tharparkar	Pakistan (sind)	Umarkot, Naukot, Dhoro Naro Chor	Balotra (Jodhpur), Puskar (Ajmer), Gujarat State	-	Dairy breed

B) CATTLE (EXOTIC)

1	Brown Swiss	Switzerland	-	India, Pakistan & other Asian countries	-	Dairy breed
2	Holstein Friesian	Holland	Province of North Holland and West Friesland	Through out the country (crossbreds)	-	Dairy breed
3	Jersy	British Isles	Island of Jersey	Crossbreds	-	Dairy breed

				available in all states/U.Ts		
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B) BUFFALOES

ANNEXURE - III

Reproductive and Productive Parameters (Traits) in Indian Cattle and Buffaloes

Sr.No	Name of the breed	Age at first calving (months)	Calving interval (months)	Lactation yield (kg.)	Lactation length (days)	Dry period (days)	Milk yield kg/day during lactation
1	2	3	4	5	6	7	8
i)	Cattle						
a)	Indian breeds						
1	Dangi	54	17	600	300	210	2.0
2	Deogir	48	15	1,500	300	150	5.0
3	Deoni	53	14	810	270	150	3.0
4	Gir	48	16	1,350	270	210	5.0
5	Gaolao	46	16	600	300	180	2.0
6	Hallikar	46	20	600	300	300	2.0
7	Hariana	58	13	1,200	240	150	5.0
8	Kangayam	44	16	600	240	240	2.5
9	Kankrej	48	17	1,800	360	150	5.0
10	Khilari	52	16	240	240	240	1.0
11	Ongole	40	19	630	210	360	3.0
12	Rathi	40	19	1,815	330	240	5.5
13	Red Sindhi	42	14	1,620	270	150	6.0
14	Sahiwal	40	14	1,620	270	150	6.0
15	Tharparkar	50	14	1,620	270	150	6.0
16	Umblachery	46	17	360	240	270	1.5
17	Non-descript	60	19	405	270	300	1.5

B) Crossbred Cattle (Bos indicus Fx Bostaurus M)

1	H x F	34	14	2,970	330	90	9.0
2	H x BS	29	15	2,805	330	120	8.5
3	H x J	33	13	2,850	300	90	9.5
4	G x J	25	13	2,640	330	60	8.0
5	G x F	25	13	2,160	270	120	8.0
6	RS x F	29	12	2,295	270	90	8.5
7	RS x RD	28	12	2,160	270	90	8.0
8	RS x J	29	12	1,500	300	90	5.0
9	R x J	32	12	2,700	300	60	9.0
10	T x F	33	13	2,550	300	90	8.5

11	S x F	33	14	2,400	300	120	8.0
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C) Buffaloes

1	Bhadawari	50	15	1,080	270	180	4.0
2	Murrah	42	16	1,800	300	180	6.0
3	Nili-Ravi	54	16	1,950	300	180	6.5
4	Surti	44	16	1,765	330	150	5.5
5	Mehsani	50	14	1,620	270	150	6.0
6	Jaffarabadi	50	14	1,620	270	150	6.0
7	Pandharpuri	56	14	1,350	270	150	5.0
8	Marathwadi	50	14	1,015	270	150	3.5
9	Nagpuri	50	14	1,350	270	150	5.0
10	Dharwari	50	14	1,350	270	150	5.0
11	Non-descript	50	16	540	270	210	2.0

Key : H = Hariana S = Sahiwal RS = Red Sindhi

G = Gir T = Tharparkar L = Non-descript

R = Rathi F = Friesian BS = Brown Swiss

RD = Red dane J = Jersey

Annexure - IV

**Unit cost of cows and buffaloes Approved
by NABARD in some of the major States in India**

Annexure V

**Economics of two animal unit (buffaloes)
Project at a Glance**

1	Unit Size	:	2 Animals
2	Breed	:	Graded Murrah
3	State	:	Karnataka
4	Unit Cost (Rs.)	:	18,223
5	Bank Loan (Rs.)	:	15,400
6	Margin Money (Rs.)	:	2,823
7	Repayment period	:	5
8	Interest rate (%)	:	12
9	BCR at 15% DF	:	1.50:1
10	NPW at 15% DF (Rs.)	:	29,187
11	IRR(%)	:	>50%

MODEL PROJECT FOR TWO ANIMAL UNIT(BUFFALOES)

A INVESTMENT COST

Sr.No.	Items	Specifications	Phy units	Unit Cost	Total Cost
				(Rs. /Unit)	(Rs.)
1	Cost of animals		2	8,200	16,400
2	Insurance		2	689	1,378
3	Conc. Feed (4.5 kg/day/animal for 30 days)	135 Kg	1	3.3	446
4	Total cost				18,223
5	Margin money (15% of total cost)			Say Rs.	2,733
					2723
6	Bank laon (85% of total cost)			Say Rs.	15490
					15500

B TECHNO ECONOMIC PARAMETERS

i)	No.of milch animals	2
ii)	Cost of milch animals	8,200
iii)	Lactation period (days)	280
iv)	Dry period (days)	150
v)	Milk yield (lts./day)	7
vi)	Sale price of milk (Rs./lt)	7.75
vii)	Sale of manure/animal/year (Rs.)	300
viii)	Insurance premium for five years (%)	8.4
ix)	Veterinary aid/animal/year (Rs.)	150
x)	Labour (Rs.)	Family labour
xi)	Cost of electricity & water (Rs./animal)	100
xii)	Interest rate (%)	12
xiii)	Repayment period (years)	5
xiv)	Income from sale of gunny bags 20 bags/tonne @ Rs. 5/bag	100
xv)	Feeding schedule	

S.No.	Type of fodder/feed	Price (Rs./kg)	(Quantity in kg/day)	
			Lactation Period	Dry Period
a)	Green fodder	0.2	25	25
b)	Dry fodder	0.5	5	5
c)	Concentrate	3.3	4.5	1

xvi) Animals will be purchased in two

batches at an interval of 5 - 6 months

xvii) It is assumed that the expenditure on calf rearing will nullify the sale value of calf / hieffer.

xviii) Closing stock value (Rs. per animal) 4100

C LACTATION CHART

Sr.No	Particulars	Years				
		I	II	III	IV	V
i)	Lactation Days					
a)	First batch	250	280	250	210	210
b)	Second batch	180	210	210	210	210
	Total	430	490	460	420	420
ii)	Dry Days					
a)	First batch	110	80	110	150	150
b)	Second batch	-	150	150	150	150
	Total	110	230	260	300	300

Annexure - V (Contd.)

D CASH FLOW ANALYSIS

Sr.No.	Particulars	Years				
		I	II	III	IV	V
I	Costs:					
1	Capital cost*	17,777				
2	Recurring cost					
a)	Feeding during lactation period					
	Green fodder	2,150	2,450	2,300	2,100	2,100
	Dry fodder	1,075	1,225	1,150	1,050	1,050
	Concentrate	6,386	7,277	6,831	6,237	6,237
	Total	9,611	10,952	10,281	9,387	9,387
b)	Feeding during dry period					
	Green fodder	550	1,150	1,300	1,500	1,500
	Dry fodder	275	575	575	750	750
	Concentrate	363	759	858	990	990
	Total	1,188	2,484	2,733	3,240	3,240
c)	Veterinary aid & breeding cover	225	300	300	300	300
d)	Cost of electricity & water	150	200	200	200	200
	Total	28,951	13,936	13,514	13,127	13,127
II	BENEFITS					
a)	Sale of milk	23,328	26,583	24,955	22,785	22,785
b)	Sale of Gunny bags	205	232	218	200	200

c)	Sale of manure	450	600	600	600	600	
d)	Closing stock value					8,200	
	Total	23,982	27,414	25,773	23,585	31,785	
III	DF @15%	0.870	0.756	0.658	0.572	0.497	
IV	DISCOUNTED COSTS AT 15%	25,175	10,537	8,886	7,505	6,526	58,630
V	DISCOUNTED BENEFITS AT 15%	20,854	20,729	16,946	13,485	15,803	87,817
VI	NPW @ 15%	29,187					
VII	BCR @ 15%	1.50:1					
VIII	DF @ 50%	0.667	0.444	0.296	0.198	0.132	
IX	NET BENEFITS	-4,969	13,479	12,259	10,458	18,658	
X	DISCOUNTED NET BENEFITS AT 50%	-3,313	5,990	3,632	2,066	2,457	10,833
XI	IRR	>50%					

* excluding the capitalised expenditure on concentrated feed

E REPAYMENT SCHEDULE

Bank Loan (Rs) - 15500

Interest Rate (%) - 12

Capital recovery factor - 0.277

Year	Income	Expenses	Gross surplus	Equated annual instalment	Net surplus
I	23,982	10,728	13,254	4,294	8,961
II	27,414	13,936	13,479	4,294	9,185
III	25,773	13,514	12,259	4,294	7,966
IV	23,585	13,127	10,458	4,294	6,165
V	23,585	13,127	10,458	4,294	6,165

Annexure VI

Economics of a mini DAIRY unit TEN ANIMAL UNIT (BUFFALOES)

PROJECT AT A GLANCE

1	Unit size	:	10 animals
2	Breed	:	Graded Murrah
3	State	:	Karnataka
4	Unit cost (Rs)	:	155,030
5	Bank loan (Rs)	:	131,700
6	Margin money (Rs)	:	23,330
7	Repayment period (yrs)	:	5

8	Interest rate (%)	:	13.5
9	BCR at 15% DF	:	1.53:1
10	NPW at 15% DF(Rs)	:	154,403
11	IRR (%)	:	>50

MODEL PROJECT FOR TEN ANIMAL UNIT (BUFFALOES)

A INVESTMENT COST

S.No.	Items	Specifications	Phy.units	Unit Cost (Rs./unit)	Total Cost (Rs.)
1	Cost of animals		10	8,200	8,200
2	Transportation cost of animals		10	300	3,000
3	Cost of construction of shed	Sq.ft.	650	55	35,750
4	Cost of Store cum office	Sq.ft.	200	100	20,000
5	Equipments (chaff cutter, milking pails, cans, technicians		10	500	5,000
6	Insurance		10	328	3,280
7	Fodder raising expenses @ Rs.3000/acre		2	3,000	6,000
8	Total cost				155,030
9	Margin money (15% of total cost)			Say	23255 23330
10	Bank loan (85% of total cost)			Say	131776 131700

ANNEXURE VI (contd)

B TECHNO ECONOMIC PARAMETERS

i	Animals will be purchased in two batches at an interval of 5-6 months	
ii	Second/Third lactation animals within 30 days of calving will be purchased in first year	
iii	No. of acres of irrigated land for fodder production considered in the project. Green fodder will be produced on the farm. Fodder production expenses is considered in the cash flow analysis. During first year only two seasons are considered.	2
iv	In the first year the fodder production expenses are capitalised for one season (Rs. per acre per season) and manure is utilised for fodder production	3,000
v	It is assumed that the expenditure on calf rearing will nullify the income realised from its sale. However, the heifer will be retained on the farm and the old animals will be sold out.	
vi	No. of milch animals	10

vii	Cost of milch animals	8,200
viii	Transportation cost (Rs. per milch animal including followers)	300
ix	Civil structures:	
	a) Shed (sft. per milch animal)	65
	b) Store and office (sft)	200
x	Cost of construction	55
	a) Shed (Rs. per sft)	100
	b) Store and office	
xi	Cost of equipment (Rs per milch animals)	500
xii	Lactation period (days)	280
xiii	Dry period (days)	150
xiv	Milk yield (lts/day)	7
xv	Sale price of milk (Rs/ltr)	7.75
xvi	Income from sale of gunny bags (20 bags/tonne @ Rs.5/bag)	100
xvii	Expenditure on dry fodder for dry and lactation period requirement (kg/day)	5
	Cost (Rs/kg)	0.5
xviii	Expenditure on concentrates	4.5
	a) Requirement (kg/day)	1
	Lactation period	3.3
	Dry period	
	b) Cost (Rs/kg)	
xix	Veterinary aid/animal/year (Rs)	150
xx	Labour (Rs./month)	900
xxi	Insurance premium (%)	4
xxii	Cost of electricity, water & other overheads (Rs/animal)	200
xxiii	Depreciation(%)	5
	a) Sheds	10
	b) Equipment	
xxiv	Value of closing stock	4,100
xxv	Interest rate(%)	13.5
xxvi	Repayment period (years)	5

ANNEXURE VI (Contd.)

C. Lactation Chart

S.No	Particulars		I	II	Years III	IV	V
I	Lactation Days						
a)	First batch		1,250	1,400	1,250	1,050	1,050
b)	Second batch		900	1,050	1,050	1,050	1,050
	Total		2,150	2,450	2,300	2,100	2,100
II	Dry days						
a)	First batch		550	400	550	750	750
	Second batch		-	750	750	750	750
	Total		550	1,150	1,300	1,500	1,500

D CASH FLOW ANALYSIS

Sr.No	Particulars	I	II	Year III	IV	IV	
I	Costs						
1	Capital cost*	145,750					
2	Recurring cost						
a)	Green fodder raising expenses	12,000	18,000	18,000	18,000	18,000	
b)	Feeding during lactation period						
	Dry fodder	5,375	6,125	5,750	5,250	5,250	
	Concentrate	31,928	36,383	34,155	31,185	31,185	
	Total	37,303	42,508	39,905	36,435	36,435	
c)	Feeding during dry period						
	Dry Fodder	1,375	2,875	3,250	3,750	3,750	
	Concentrate	1,815	3,795	4,290	4,950	4,950	
	Total	3,190	6,670	7,540	8,700	8,700	
d)	Veterinary aid & breeding cover	1,125	1,500	1,500	1,500	1,500	
e)	Cost of electricity & water	1,500	2,000	2,000	2,000	2,000	
f)	Insurance	3,280	3,280	3,280	3,280	3,280	
g)	Labour cost	10,800	10,800	10,800	10,800	10,800	
	Total	188,868	52,678	50,945	49,503	48,635	
II	BENEFITS						
a)	Sale of milk	116,637	132,912	124,775	113,925	113,925	
b)	Sale of Gunny bags	1,023	1,218	1,165	1,095	1,095	
c)	Depreciated value of sheds	-				26,813	
d)	Depreciated value of equipments					2,500	
e)	Closing stock value					41,000	

III	DF @ 15%	0.87	0.76	0.66	0.57	0.50	
IV	DISCOUNTED COSTS AT 15%	164,233	39,832	33,497	28,303	24,180	290,045
V	DISCOUNTED BENEFITS AT 15%	102,313	101,422	82,808	65,763	92,143	444,448
VI	NPW @ 15%	154,403					
VII	BCR @ 15%	1.53:1					
VIII	DF @ 50%	0.667	0.444	0.296	0.198	0.132	
IX	NET BENEFITS	-71,208	81,453	74,995	65,518	136,698	
X	DISCOUNTED NET BENEFITS AT 50%	47,472	36,201	22,221	12,942	18,001	41,893
XI	IRR	>50					

* excludes the capitalised cost for fodder raising for three months and insurance for one year

E REPAYMENT SCHEDULE:

Interest rate(%) - 13.5

Capital recovery factor - 0.287

(in Rs.)

Year	Income	Expenses	Gross surplus	Equated annual installment	Net surplus
I	117,660	33,838	83,823	37,798	46,025
II	134,130	52,678	81,453	37,798	43,655
III	125,940	50,945	74,995	37,798	47,197
IV	115,020	49,503	65,518	37,798	27,720
V	115,020	48,635	66,385	37,798	28,587

Annexure - VII

Housing Space Requirements for Crossbred cattle

Age-group	Manger Space (mtr.)	Standing or covered area (sq.mtr.)	Open Space(sq.mtr.)
4-6 months	0.2-0.3	0.8-1.0	3.0-4.0
6-12 months	0.3-0.4	1.2-1.6	5.0-6.0
1-2 years	0.4-0.5	1.6-1.8	6.0-8.0
Cows	0.8-1.0	1.8-2.0	11.0-12.0
Pregnant cows	1.0-1.2	8.5-10.0	15.0-20.0
Bulls*	1.0-1.2	9.0-11.0	20.0-22.0

*To be housed individually

Annexure - VIII

Feeding Schedules for Dairy Animals

(Quantity in Kgs.)

S.No.	Type of animal	Feeding during	Green Fodder	Dry Fodder	Concentrate
1	2	3	4	5	6
(A)	CROSSBRED COW				
a)	6 to 7 litres milk per day	Lactation days	20 to 25	5 to 6	3.0 to 3.5
		Dry days	15 to 20	6 to 7	0.5 to 1.0
b)	8 to 10 litres milk per day	Lactation days	25 to 30	4 to 5	4.0 to 4.5
		Dry days	20 to 25	6 to 7	0.5 to 1.0
(B)	BUFFALOES				
a)	Murrah (7 to 8 litres milk per day)	Lactation days	25 to 30	4 to 5	3.5 to 4.0
		Dry days	20 to 25	5 to 6	0.5 to 1.0
b)	Mehasana (6 to 7 litres milk per day)	Lactation days Dry days	15 to 20	4 to 5	3.0 to 3.5
			10 to 15	5 to 6	0.5 to 1.0
c)	Surti (5 to 6 litres milk per day)	Lactation days	10 to 15	4 to 5	2.5 to 3.0
		Dry days	5 to 10	5 to 6	0.5 to 1.0

Annexure - IX

Programme for vaccination of farm animals against contagious diseases

Sr. No.	Name of disease	Type of vaccine	Type of vaccination	Duration of immunity	Remarks
1	2	3	4	5	6
1	Anthrax (Gorhi)	Spore vaccine	Once in an year premonsoon vaccination	One season	-
2	Black Quarter (Sujab)	Killed vaccine	- do -	- do -	-
3	Haemorrhagic Septicaemia (Galghotu)	Ocladjuvant vaccine	- do -	- do -	-
4	Brucellosis (Contagious abortion)	Cotton strain 19 (live bacteria)	At about 6 months of age	3 or 4 calvings	To be done only in infected herds
5	Foot and Mouth disease (Muhkhar)	Polyvalent tissue culture vaccine	At about 6 months of age with booster dose 4 months later	One season	After vaccination repeat vaccination every year in Oct./Nov.
6	Rinderpest (Mata)	Lapinised avianised vaccine for exotic and crossbred cattle, caprinised vaccine for zebu cattle.	At about 6 months of age	Life long	It is better to repeat after 3 to 4 years