DAIRY FARMING

1. INTRODUCTION:

India derives nearly 33% of the gross Domestic population from agriculture and has 66% of economically active population, engaged in agriculture. The share of livestock product is estimated at 21% of total agriculture sector. The fact that dairying could play a more constructive role in promoting rural welfare and reducing poverty is being recognised. Milk production alone involves more than 70 million producers, each raising one or two cows/ buffaloes primarily for milk production. The domesticated water buffalo is one of the gentlest of all farm animals; hence it can be breaded easily. The dairy sector offers a good opportunity to entrepreneurs in India. India is a land of opportunity for those are looking for new and expanding markets. Growth prospects in the dairy sector are very bright.

Dairy farming provides an excellent opportunity for self-employment of unemployed youth. It is also an important source of income generation to small/marginal farmers and agricultural laborers. Since agriculture is mostly seasonal, there is a possibility of finding employment throughout the year for many persons through dairy farming.

Entrepreneur must check the following points before starting a dairy farm.

Availability of good quality dairy breed cows in nearby livestock market, Nearness of the Farm to Veterinary Hospital, Artificial Insemination Centre/livestock Aid Centers, MPCS Marketing facility of milk and milk product in the locality, Availability of concentrates ,fodder & medicine in that locality.

2. PRODUCT & ITS APPLICATION:

Centralized dairy farming as we understand it primarily developed around villages and cities, Dairy farming has been part of agriculture for thousands of years. Historically it has been one part of small, diverse farms. In the last century or so larger farms doing only dairy production has emerged. Large scale dairy farming is only viable where either a large amount of milk is required for production of more durable dairy products such as cheese, butter, etc. or there is a substantial market of people with cash to buy milk, but no cows of their own.This was the best way. The step by step with innovation dairy farming is going for automation as from Hand milking, Vacuum bucket milking, Milking pipeline, Milking parlours, Herringbone and parallel parlors, Rotary parlors, Automatic milkier take-off, to Fully automated robotic milking

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Before starting a dairy farm the entrepreneurs/ farmers are advised to undergo training on dairy farming. They can contact Local Animal Husbandry Department staffs/Veterinary College/agriculture University etc. for the purpose. Successful running this project does not require any specific qualification.

4. INDUSTRY LOOKOUT AND TRENDS

The global dairy sector is currently going through a period of turbulence. Slowing demand from China, Russia's trade embargo and the removal of EU milk quotas, resulted in a period of excess supply and low prices. Despite this, the long term outlook for the sector remains positive. Rising populations and changing diets are increasing demand for dairy. As incomes rise and nations become increasingly urbanised, individuals tend to receive more of their calories from proteins (including dairy) as opposed to basic carbohydrates (mostly grains). Global demand for dairy is expected to increase by 2.5 per cent per annum to 2020, largely driven by increasing urbanisation and rising incomes in emerging markets.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

The Indian Dairy Industry, 80% remains un-organized even today, indicating the potential that can be tapped by Dairy Companies. Valued at INR 5,000 billion in 2016, 60% of the market comprises liquid and powdered milk, while value added products such as butter, ghee and curd comprise the remainder. Highly premiumized products such as branded yogurt, probiotic dahi, speciality cheeses etc., account for only 5% of the revenue; they nevertheless, hold the maximum margin potential for dairy industry companies and tend to be the focal point for private MNCs like Nestle and Danone. India has always been the largest producer (an estimated 400 million litre per day currently) and consumer of milk in the world. But it remained a boring market largely because the per capita consumption was low, and most of the milk was consumed in its basic, liquid form, or at best as ghee and some butter. Out of the 400 million litres of milk that India produces per day, 160 million litres per day (48 per cent) is retained by the producers for their own consumption. The surplus milk that is available for sale is around 240 million liters per day (52 per cent) and out of that only 70 million litres per day is being used by the organized sector - consisting of co-operatives such as Amul, Mother Dairy (wholly-owned subsidiary of NDDB) and Nandini- a brand owned by the Karnataka Cooperative Milk Producers Federation (KMF), as well as private sector players such as Nestle and Danone. Over 170 million litres of the surplus milk continues to be with the unorganised sector, comprising traditional doodhwalas. In value terms, the Indian milk economy is worth Rs 5 lakh crore, growing at a CAGR of 15-16 per cent, out of which the organised milk economy is worth Rs 80,000 crore.Dairy development in India has been acknowledged the world over as one of modern India"s most successful development programme. India is the second largest milk producing country with anticipated production of about 78 million tons during 1999-2000. The production of milk products stood at 3.07 lakh tonnes in 1999-2000. Production of milk powder including infant milk food has risen to 2.25 lakh tons in 1999-2000, whereas that of malted food is at 65000 tons. Off late market for milk products is showing a steady increase.

6. RAW MATERIAL REQUIREMENTS:

The nutritional requirements of cattle are usually divided into maintenance requirements, which depend on the cow's weight; and milk production requirements, which in turn depend on the volume of milk the cow is producing. The nutritional contents of each available feed are used to formulate a diet that meets all nutritional needs in the most cost effective way. Notably, cattle must be fed a diet high in fibre to maintain a proper environment for the rumen microbes. Farmers typically grow their own forage for their cattle. Crops grown may include corn, alfalfa, timothy, wheat, oats, sorghum and clover. These plants are often processed after harvest to preserve or improve nutrient value and prevent spoiling. Corn, alfalfa, wheat, oats, and sorghum crops are often anaerobically fermented to create silage. Many crops such as alfalfa, timothy, oats, and clover are allowed to dry in the field after cutting before being baled into hay.

7. MANUFACTURING PROCESS:

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 conditions are: Care full selection of animals, feeding of animals, milking, of animals, Milking machines are held in place automatically by a vacuum system that draws the ambient air pressure down from 15 to 21 pounds per square inch (100 to 140 kPa) of vacuum. The vacuum is also used to lift milk vertically through small diameter hoses, into the receiving can. A milk lift pump draws the milk from the receiving can through large diameter stainless steel piping, through the plate cooler, then into a refrigerated bulk tank. Milk is extracted from the cow's udder by flexible rubber sheaths known as liners or inflations that are surrounded by a rigid air chamber. A pulsating flow of ambient air and vacuum is applied to the inflation's air chamber during the milking process. When ambient air is allowed to enter the chamber, the vacuum inside the inflation causes the inflation to collapse around the cow's teat, squeezing the milk out of teat in a similar fashion as a baby calf's mouth massaging the teat. When the vacuum is reapplied in the chamber the flexible rubber inflation relaxes and opens up, preparing for the next squeezing cycle. It takes the average cow three to five minutes to

give her milk. Some cows are faster or slower. Slow-milking cows may take up to fifteen minutes to let down all their milk. Though milking speed is not related to the quality of milk produced by the cow, it does impact the management of the milking process. Because most milkers milk cattle in groups, the milker can only process a group of cows at the speed of the slowest-milking cow. For this reason, many farmers will group slow-milking cows so as not to stress the faster milking cows. The extracted milk passes through a strainer and plate heat exchangers before entering the tank, where it can be stored safely for a few days at approximately 40 °F (4 °C). At pre-arranged times, a milk truck arrives and pumps the milk from the tank for transport to a dairy factory where it will be pasteurized and processed into many products. The frequency of pick up depends and the production and storage capacity of the dairy; large dairies will have milk pick-ups once per day.

LAND AND BUILDING: Availability of 2 acre of irrigated land is prerequisite for the project. Housing for cows: Floor –Pucca, strong concrete cemented, impervious to moisture,and have slope 1 in 60 towards gutter. Plinth should be 2ft. higher than ground Walls-3ft. high lengthwise brick wall on sides, End wall should be solid made of bricks. Roof– 14-16ft. high at the center and 8ft. high on the side wall .There should be hang over 3ft beyond wall to prevent rain water from entering cow shade. Roof should be of asbestos, cement asbestos, or tile. Thatched roof can replace asbestos in low cost housing.

TAIL TO TAIL SYSTEM OF HOUSING

ITEMS	LENGTH IN METER
MANGER	0.6M
STANDING PLACE	1.5M
GUTTER	0.4M
FEEDING PASSAGE	1.2M ON BOTH SIDE
MILKING PLACE	1.2M

8. MANPOWER REQUIREMENT:

The enterprise requires 3 employees as detailed below**:**

Sr. No.	Designation Of Employees	Salary Per Person	Monthly Salary ₹	Number				
			Per Annum	Year-1	Year-2	Year-3	Year-4	Year-5
	Variable Labor:							
1	Production Manager	18,000	0	0	0	0	0	0
2	Operators	12,000	12000	1	1	1	1	1
3	Helpers	10,000	10000	1	1	1	1	1
			22000	2	2	2	2	2
1	**Fixed Staff:**							
2	Admin Manager	15,000	15000	1	1	1	1	1
3	Accounts/Stores Assistant	12,500	0	0	0	0	0	0
	Office Boy	9,000	0	0	0	0	0	0
	Sub-Total		15000	1	1	1	1	1
	Total		37000	3	3	3	3	3

9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 4 months' time as detailed below:

Sr. No.	Activity	Time Required
1	Acquisition of premises	2.00
2	Construction (if applicable)	2.50
3	Procurement & installation of Plant & Machinery	2.50
4	Arrangement of Finance	1.00
5	Recruitment of required manpower	1.00
	Total time required *(some activities shall run concurrently)*	4.00

10. COST OF PROJECT:

Sr. No.	Particulars	₹ in Lacs
1	Land	0.00
2	Building	4.50
3	Plant & Machinery	3.50
4	Furniture, other Misc Equipments	0.50
5	Other Assets including Preliminary / Pre-operative expenses	0.53
6	Margin for Working Capital	1.62
	Total	**10.65**

Additional Expenses for this project as listed below. These are optional, and promoter can select it according to the requirement of the project.

Cow shed for 10 cows 40sq.ft/cow @250/sq.ft	100000
Calf pen for 10 calves 20 sq.ft./calf @250/sq.ft.	50000
Cost of 10CB cows with average 10 liter milk yield /day @30000	300000
Cost of transportation @Rs1000/ cow	10000
Cost of one chaff cutter with 2 HP motor	25000
Cost of dairy appliances @ 1000/cow	10000
Cost of electrification with five ceiling fans	23000
Cost of one single bucket milking machine	27000
Total	545000

11. MEANS OF FINANCE:

Bank term loans are assumed @ 75% of fixed assets. The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	2.66
2	Bank Finance	7.99
	Total	**10.65**

(a) COST OF PRODUCTION

Type of Animal	Indigenous Milch breed /CB
No. of Animals	10
Cost of Animal (Rs./animal)	30000/cow
Average Milk Yield (litre/day)	10
Floor space (sqft) per adult animal	40
Floor space (sqft) per calf	20
Cost of construction per sqft (Rs.)	250
Cost of equipment per animal (Rs.)	1000
Cost of fodder cultivation (Rs./acre/season)	5000
Insurance premium (% per annum)	5
Veterinary aid/animal/ year (Rs.)	1000
Cost of concentrate feed (Rs./kg)	12
Cost of dry fodder (Rs./kg)	2
Rate of interest (%)	12
Repayment period (years)	6
Selling price of milk/litre (Rs./kg)	27
Sale price of gunny bags (Rs. per bag)	10
Lactation days	280
Dry days	150

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	0.81	0.25	0.20	0.61
2	Receivables	0.41	0.25	0.10	0.30
3	Overheads	0.41	100%	0.41	0.00
4	Creditors	-		0.00	0.00

	Total	1.62		0.71	0.91

13. LIST OF MACHINARY REQUIRD

Machines	**Number of machines**
Milking Equipment 4 Cluster Can	1
1 Tractor	1
1 Trailers/Trolley/Attachments	1
1 Loader for Tractor	1
1 Green Fodder Chaff Cutter with Motor (10HP)	1
Feed Grinder with Motor (optional)	1
Mist Cooling System	1
Semen Container with Accessories	1
Milk Cans 40 Liter	10
Generator 7.5 KVA	1
Bore well With Motor	1
Ropes, chains, tagging equipments, water pipes etc.	

All the machines and equipments are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

1. Flour Tech Engineers Private Limited
   Plot No. 182, Sector 24,
   Faridabad - 121005,
   Haryana, India

2. P Square Technologies
   3, Swami Mahal,
   Gurunanak Nagar,

Off. Shankarsheth Road Bhavani Peth,
Pune - 411002,
Maharashtra, India

3. Ricon Engineers
10 To 13, Bhagwati Estate,
Near Amraiwadi Torrent Power,
Behind Uttam Dairy,
Rakhial, Ahmedabad - 380023,
Gujarat, India

4. Kamdhenu Agro Machinery
Plot No. 6, Near Power House,
Wathoda Road Wathoda,
Nagpur - 440035,
Maharashtra, India

5. Fry-Tech Food Equipments Private Limited
S. No. 4, Raviraj Industrial Estate,
Bhikhubhai Mukhi Ka Kuwa Bharwadvash,
Ramol, Ahmedabad - 380024,
Gujarat, India

14. PROFITABILITY CALCULATIONS:

CASH FLOW ANALYSIS.	1	2	3	4	5
Feeding during lactation period vide yearly lactation days and feed cost as per chart	203350	190900	174300	174300	190900
Feeding during dry period	39100	44200	51000	51000	44200

vide dry days and feed cost as per feed chart enclosed					
Medicine vaccine veterinary aid	10000	10000	10000	10000	10000
Insurance @5% of animal cost /year	15000	15000	15000	15000	15000
Cost of fodder cultivation	50000	50000	50000	50000	50000
Cost of labour	60000	60000	60000	60000	60000
other miscellaneous expenditure	10000	10000	10000	10000	10000
Total	387450	380100	370300	370300	380100
INCOME					
Sale of milk @Rs.27/liter during lactation days with average milk yield /cow liter/day	661500	621000	567000	567000	621000
Sale of gunny bags	2300	2250	2100	2100	2200

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	4.87	5.68	6.50	7.31	8.12
3	Raw Materials & Other direct inputs	₹. In Lacs	2.20	2.57	2.94	3.30	3.67
4	Gross Margin	₹. In Lacs	2.67	3.11	3.56	4.00	4.45
5	Overheads except interest	₹. In Lacs	1.54	1.63	1.82	1.88	1.92

6	Interest @ 10 %	₹. In Lacs	0.80	0.80	0.53	0.40	0.32
7	Depreciation @ 30 %	₹. In Lacs	2.45	1.75	1.23	0.88	0.79
8	**Net Profit before tax**	₹. In Lacs	**-2.12**	**-1.07**	**-0.02**	**0.85**	**1.42**

The basis of profitability calculation:

This unit will have 28,000 Liter/Annum capacity. The growth of selling capacity will be increased 10% per year. (This is assumed by various analysis and study, it can be increased according to the selling strategy.)

Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per litre. The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 50.35% of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	8.12
2	Variable costs	₹. In Lacs	3.67
3	Fixed costs incl. interest	₹. In Lacs	2.24
4	BEP = FC/(SR-VC) x 100 =	% of capacity	50.35%

16. STATUTORY / GOVERNMENT APPROVALS

The Ministry of Food Processing Industries has been operating several plan schemes for the development of processed food sector in the country during the 10th Plan. One of the schemes relates to the Technology Up-gradation/ Establishment/ Modernisation of food processing industries.

The Indian food processing industry is regulated by several laws which govern the aspects of sanitation, licensing and other necessary permits that are required to start up and run a food

business. The legislation that dealt with food safety in India was the Prevention of Food Adulteration Act, 1954 (hereinafter referred to as "**PFA**"). The PFA had been in place for over five decades and there was a need for change due to varied reasons which include the changing requirements of our food industry. The act brought into force in place of the PFA is the Food Safety and Standards Act, 2006 (hereinafter referred to as "**FSSA**") that overrides all other food related laws.

FSSA initiates harmonization of India's food regulations as per international standards. It establishes a new national regulatory body, the Food Safety and Standards Authority of India (hereinafter referred to as "**FSSAI**"), to develop science based standards for food and to regulate and monitor the manufacture, processing, storage, distribution, sale and import of food so as to ensure the availability of safe and wholesome food for human consumption.Entrepreneur may contact State Pollution Control Board where ever it is applicable.

All food imports will therefore be subject to the provisions of the FSSA and rules and regulations which as notified by the Government on 5th of August 2011 will be applicable.

Key Regulations of FSSA

A. Packaging and Labelling

B. Signage and Customer Notices

C. Licensing Registration and Health and Sanitary Permits

17. BACKWARD AND FORWARD INTEGRATIONS

The objective of the scheme is to provide effective and seamless backward and forward integration for processed food industry by plugging the gaps in supply chain in terms of availability of raw material and linkages with the market. Under the scheme, financial assistance is provided for setting up of primary processing centres/ collection centres at farm gate and modern retail outlets at the front end along with connectivity through insulated/ refrigerated transport.

The Scheme is applicable to perishable horticulture and non-horticulture produce such as, fruits, vegetables, dairy products, meat, poultry, fish, Ready to Cook Food Products, Honey,

Coconut, Spices, Mushroom, Retails Shops for Perishable Food Products etc. The Scheme would enable linking of farmers to processors and the market for ensuring remunerative prices for agri produce.

The scheme is implemented by agencies/ organizations such as Govt./ PSUs/ Joint Ventures/ NGOs/ Cooperatives/ SHGs / FPOs / Private Sector / individuals etc.

Backward Linkage:

- Integrated Pack-house(s) (with mechanized sorting & grading line/ packing line/ waxing line/ staging cold rooms/cold storage, etc.)
- Pre Cooling Unit(s)/ Chillers
- Reefer boats
- Machinery & equipment for minimal processing and/or value addition such as cutting, dicing, slicing, pickling, drying, pulping, canning, waxing, etc.
- Machinery & equipment for packing/ packaging.

Forward Linkage:

- Retail chain of outlets including facilities such as frozen storage/ deep freezers/ refrigerated display cabinets/cold room/ chillers/ packing/ packaging, etc.
- Distribution centre associated with the retail chain of outlets with facilities like cold room/ cold storage/ ripening chamber.

18. TRAINING CENTERS AND COURSES

There are few specialised Institutes provide degree certification in Food Technology, few most famous and authenticate Institutions are as follows:

1. Anand Agricultural University,
   Anand –388110, Gujarat – INDIA

2. Junagadh Agricultural University
   Junagadh University, Junagadh, Gujarat – 362015
   Gujarat – INDIA

3. Dairy Science College
   KVAFSU Regional Campus, Bellary Rd,
   Hebbal, Bengaluru,
   Karnataka –560024

Udyamimitraportal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.