

Rohini College of Engineering & Technology

AI 3017 INTEGRATED FARMING SYSTEM

UNIT 3.2



Rohini College of Engineering & Technology

Dairy farming in IFS

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,

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.

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).

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.

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 :

1. Housing
2. Selection of Animal
3. Feeding of Milch Animals
4. Breeding Care

Integrating dairy farming into an Integrated Farming System (IFS) involves a synergistic approach where dairy production is harmoniously intertwined with other agricultural activities to optimize resource use and enhance overall farm sustainability. In this integrated system, dairy cows are not only milk producers but also key components in nutrient cycling and land management. For instance, crop residues and by-products can be utilized as feed or bedding material, reducing waste and enhancing soil fertility. Manure from dairy cows, rich in nutrients, can be composted and used as organic fertilizer for crops, closing nutrient loops within the farm. Moreover, integrating dairy farming with crop production allows for efficient use of land and water resources, with crops benefiting from nutrient-rich effluents and improved soil structure facilitated by rotational grazing practices. Beyond agricultural outputs, dairy farming in an IFS supports ecosystem services such as biodiversity conservation and soil conservation, contributing to long-term environmental sustainability. By diversifying income streams through value-added dairy products and optimizing energy use through biogas production from cow manure, integrated dairy farming systems not only improve economic resilience but also foster community well-being and food security in rural areas.

Assistance Available from Banks/NABARD for Dairy Farming.

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.

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.

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.

Dairy farming in an Integrated Farming System (IFS) involves integrating dairy production with other agricultural activities to maximize efficiency, sustainability, and productivity. Here's how dairy farming fits into an IFS:

1. **Feed and Forage Production:** In an IFS, crops like maize, sorghum, and legumes can be grown to provide feed and forage for dairy cattle. By integrating feed production with dairy farming, farmers can ensure a steady supply of nutritious feed while optimizing land use.
2. **Manure Management:** Dairy cattle produce a significant amount of manure rich in nutrients like nitrogen, phosphorus, and potassium. This manure can be composted and used to fertilize crops, closing nutrient cycles and reducing the need for chemical fertilizers.
3. **Integration with Crop Production:** Crops grown in rotation with dairy farming can benefit from nutrient-rich effluent and manure. For example, crops like maize can benefit from the nitrogen in cow manure, reducing the need for additional nitrogen fertilization.
4. **Biogas Production:** Dairy farms can utilize cow manure for biogas production through anaerobic digestion. Biogas can be used for on-farm energy needs, such as heating and electricity, enhancing energy efficiency and reducing reliance on fossil fuels.

5. **Nutrient Cycling:** Integrating dairy farming with crop production allows for efficient nutrient cycling. Crops utilize nutrients from dairy effluent and manure, while residues and by-products from crop production can be fed back to cattle as feed or bedding material.
6. **Diversified Income Streams:** Dairy farming provides multiple income streams from milk production, sale of calves, and potentially value-added dairy products like cheese and yogurt. This diversification helps buffer against market fluctuations and enhances overall farm profitability.
7. **Water Management:** Efficient water use is critical in dairy farming. Integrated systems can incorporate water-saving practices such as drip irrigation for forage crops and efficient watering systems for cattle.
8. **Ecosystem Services:** Dairy farms in IFS can contribute positively to biodiversity and ecosystem services. Practices such as agroforestry, where trees and shrubs are integrated into pasture or crop systems, can provide habitat for wildlife and improve soil health.
9. **Social and Community Benefits:** Dairy farming often plays a central role in rural communities, providing employment and economic opportunities. Integrated systems can strengthen local food systems and contribute to food security.
10. **Crop-Livestock Integration:**

Forage Production: Grow forage crops such as alfalfa, clover, and grasses to feed dairy cattle. These crops can be rotated with other cash crops to optimize land use and maintain soil fertility.
11. **Crop Residues:** Utilize crop residues (e.g., maize stalks, wheat straw) as bedding material or as supplementary feed for dairy cattle, reducing waste and enhancing nutrient cycling.
12. **Manure Management:** Dairy cattle produce manure rich in nitrogen, phosphorus, and potassium. Implement systems to compost or store manure effectively, using it as organic fertilizer for crops. This reduces the need for synthetic fertilizers and improves soil health.
13. **Biogas Production:** Consider anaerobic digestion of dairy manure to produce biogas for on-farm energy needs, such as heating or electricity generation.
14. **Agroforestry and Silvopasture:**

Integrate trees and shrubs into pasture lands or crop fields to provide shade for dairy cattle, improve soil structure, and enhance biodiversity. Agroforestry systems can also provide additional income through timber or fruit production.

15. Integrated Pest Management (IPM):

Use dairy cattle in an IPM strategy by allowing them to graze selectively to control weeds or pests in crop fields. This reduces the need for chemical pesticides and promotes natural pest control.

16. Water Management:

Implement water-efficient practices such as drip irrigation for forage crops or efficient watering systems for dairy cattle. Proper water management ensures optimal health and productivity of both crops and livestock.

17. Value-Added Products:

Consider producing value-added dairy products such as cheese, yogurt, or ice cream using milk from dairy cows. This diversifies income streams and adds value to farm products.

18. Ecosystem Services:

Maintain and enhance ecosystem services by preserving natural habitats, promoting biodiversity, and reducing environmental impacts through sustainable farming practices.

19. Economic Viability and Resilience:

By diversifying income sources, optimizing resource use, and reducing input costs (e.g., fertilizers, pesticides), integrated dairy farming systems can improve economic viability and resilience against market fluctuations.

20. Community and Social Benefits:

Dairy farming integrated into an IFS can contribute to local food security, provide employment opportunities, and support rural communities economically and socially.