

Cow farming: Best Practices for Dairy Opportunity

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Abstract—Cattle rearing plays a significant role in India's agrarian economy. It serves not only as a source of livelihood for farmers but also supplies vital dairy products like milk, curd, cheese, and ghee. By integrating scientific and modern methods into cow care and dairy management, farmers can significantly increase productivity and profitability. This paper provides an in-depth overview of the best practices in cow farming, including breed selection, nutrition, housing, health management, and modern technology utilization, while emphasizing environmental sustainability and government support.

Index Terms—Dairy farming, Cow breeds, Feed management, Health care, Dairy technology, Government schemes, Livestock, Biogas, Organic farming & etc.

I. INTRODUCTION

The selection of the appropriate cow breed is a foundational step in establishing a productive and sustainable dairy enterprise. A cow's genetic makeup has a direct impact on milk yield, disease resistance, adaptability to climatic conditions, and long-term profitability. Hence, choosing the right breed according to the geographical location, environmental conditions, and management capacity is crucial for maximizing output and ensuring the well-being of the animals.

(i) Indigenous Breeds

Indigenous or native breeds of cattle have evolved naturally in specific climatic regions of India, and they exhibit exceptional adaptability to local environmental conditions. Examples of prominent indigenous breeds include Sahiwal, Gir, Rathi, Tharparkar, and Haryana. These breeds are well-suited for tropical climates, possess strong immune systems, and require relatively lower maintenance as compared to exotic breeds.

One of the key advantages of indigenous breeds is the higher fat content in their milk, which makes it more

nutritious and suitable for producing traditional dairy products like ghee and curd. Furthermore, these breeds have better resistance to local parasites and diseases, reducing the need for frequent veterinary interventions. Additionally, they perform well even under limited feeding resources and are ideal for small-scale or marginal farmers.

Indigenous cows also play an important role in sustainable agriculture, as their dung and urine are rich in nutrients and can be used effectively for organic farming and biogas production. Promoting these breeds not only preserves biodiversity but also enhances rural livelihoods and supports ecological balance.

(ii) Exotic and Hybrid Breeds

Exotic breeds, such as Jersey and Holstein Friesian (HF), have been introduced from temperate countries and are well-known for their high milk production capacity. Holstein Friesians, for instance, are capable of producing over 6,000 to 8,000 liters of milk per lactation cycle under optimal conditions. Jerseys, while producing slightly less milk than HF, have the advantage of higher milk fat percentage and adaptability to warmer climates among exotic breeds. However, the management of exotic breeds in India poses certain challenges. These breeds are more sensitive to heat, humidity, and local diseases, making them less suitable for tropical climates without adequate infrastructure such as temperature-controlled shelters, precision feeding systems, and regular veterinary care.

To overcome this limitation, crossbreeding programs have been implemented successfully across the country. By crossbreeding indigenous cows with exotic bulls (or vice versa), farmers can develop hybrid breeds that combine the best traits of both types—higher milk yield from exotic genetics and climatic resilience from indigenous lines. Such crossbreeds are increasingly popular in commercial

dairy operations as they strike a balance between productivity and adaptability.

(iii) Selection of Healthy Animals

Regardless of the breed, selecting healthy cows is critical for building a profitable and sustainable dairy herd. When purchasing or choosing dairy cattle, the following health and physical traits must be carefully evaluated:

The cow should have a shiny coat, alert eyes, and an active temperament, indicating overall well-being.

Avoid animals with hereditary or genetic disorders, as these may impact long-term productivity and breeding potential.

Examine the udder for symmetry, softness, and absence of swelling or lesions, which are signs of mastitis or other udder-related issues.

The teats should be well-spaced and functional, facilitating easier milking, whether manually or with machines.

Check for sound limbs and proper hoof condition, as lameness or foot problems can restrict movement and access to feed, ultimately affecting milk yield. II. Feed and nutrition management

The health and milk production capacity of a cow depends on its diet. A balanced and nutritious diet helps in increasing the productivity of a cow.

(i) Type of diet:

1. Green fodder, the main source of nutrition for cow is green fodder. To maintain nutritional balance, it should be fed as Napier Grass, feed lucerne and berseem.
2. Dry feed, Include straw and hay in their diet. This improves the digestion process.
3. Enhanced diet, Mineral and vitamin rich feed supplements for cows, Mineral Mixture, should give.
4. Cereal, Wheat, barley, corn, and soy-based diets meet their protein requirement.

(ii) Availability of water:

The cows are fed at least daily 50-60 liters of clean water should be given. Adequate water affects milk production.

(iii) Time of grazing:

Feeding twice a day, morning and evening, and keep it fresh. Clean at the grazing place, Keep it clean.

3. Housing and Care

The living space of cows plays an important role in improving their health and productivity. A properly managed shed not only provides comfort to the cows, but it also protects them from diseases.

(i) Cleanliness and Comfort:

- Keep the enclosure dry and clean.
- There should be enough space for the cows so that they feel comfortable.
- Clean the udders and floor regularly.

(ii) Proper Structure:

- The floor of the enclosure is moisture resistant and non-slippery, Must be free.
- Arrange windows for adequate light and ventilation during the day.
- Provide soft and dry place for cows to rest.

(iii) Temperature control:

To protect it from heat and cold, prepare a shady and warm place in the enclosure according to the season.

4. Health management

Regular health management of cows is important for their longevity and high productivity.

(i) Routine immunization:

Hoof to cows, mouth full, Get timely vaccinations for diseases like FMD, brucellosis, and anthrax.

(ii) Parasite control:

Use proper medications to keep cows free from external and internal parasites.

(iii) Consult a doctor:

Time, get your cows checked by a veterinarian on time. Keep sick cows separate from other cows.

5. Milk production and milking management

(i) Procedure for Duhai:

- Keep milking times regular, morning and evening,
- Use automatic milking machines to reduce the risk of udder infection.
- Sanitize the udders before and after milking.

(ii) Measures to Increase Productivity:

- Provide a stress-free environment to the cow.
- Provide balanced diet and adequate rest.
- Prioritize quality, not just the quantity.

II. BREEDING AND BREED IMPROVEMENT MANAGEMENT

(i) Consideration of heat cycle:

Reproductive cycle of cows, Hit Period, Choosing the right time for breeding improves their productivity.

(ii) Artificial insemination:

Use modern artificial insemination techniques to improve the breed.

Waste management and environmental protection

(i) Gobar Gas Plant:

Conserve energy by producing biogas from cow dung.



(ii) Organic Manure:

Make organic fertilizer from cow dung and urine and use it in farming. This also improves crop production.

III. USE OF MODERN TECHNOLOGY IN DAIRY

(i) Monitoring Tools:

Use modern sensors and apps to monitor the activity and health of cows.



(ii) Automatic equipment:

Adopt robotic systems to make feed distribution and milking process faster and more efficient.

(iii) Data Collection:

Regularly analyze cows' production and health data.

IV. MENTAL AND PHYSICAL HEALTH OF COWS

The mental and physical health of cows plays a vital role in dairy management.

- Give them freedom to roam in open fields.
- Allow adequate time for rest to reduce fatigue.
- Sweet music can be used for entertainment and relaxation.



V. TAKE ADVANTAGE OF GOVERNMENT SCHEMES

The Government of India, along with various state governments and allied institutions, has launched numerous schemes and support programs aimed at boosting the dairy industry. These initiatives are particularly designed to uplift small and marginal farmers, promote breed improvement, modernize dairy operations, and ensure sustainable growth of the livestock sector. By utilizing these schemes effectively, dairy farmers can significantly reduce operational costs, enhance productivity, and transform dairy farming into a profitable enterprise.

(i) Access to Low-Interest Loans

One of the primary forms of support provided to dairy farmers is the availability of low-interest loans and credit facilities. Financial institutions, in collaboration with NABARD (National Bank for Agriculture and Rural Development) and other government bodies, offer subsidized loans under various schemes to help farmers establish or expand dairy units.

For example, under the Dairy Entrepreneurship Development Scheme (DEDS) and Animal Husbandry Infrastructure Development Fund (AHIDF), farmers can avail loans for:

- Purchase of high-yielding milch animals
- Construction of sheds and storage units

Purchase of equipment like milking machines, bulk milk chillers, etc.

Setting up feed plants, milk processing and packaging units

These loans often come with interest subvention and subsidy components, reducing the financial burden on farmers and encouraging them to adopt modern dairy practices.

(ii) Breed Improvement Programs

Breed improvement is a critical aspect of enhancing milk yield and animal productivity. The government has introduced several nationwide initiatives aimed at genetic upgradation and conservation of indigenous breeds.

Key programs include:

Rashtriya Gokul Mission (RGM): Focuses on the development and conservation of indigenous breeds like Gir, Sahiwal, Rathi, etc., and setting up of Gokul Grams (integrated cattle care centers).

National Artificial Insemination Programme (NAIP): Promotes artificial insemination using superior quality semen to improve the genetic makeup of the herd.

e-Pashuhaat Portal: An online platform that facilitates the buying and selling of high genetic merit germplasm (semen, embryos, bulls) and services across the country.

These initiatives not only help in enhancing milk production but also ensure long-term sustainability of cattle breeds suited to Indian climatic conditions.

(iii) Training and Capacity Building

Recognizing the need for education and skill development among dairy farmers, the government regularly organizes training programs, awareness camps, and workshops in collaboration with institutions such as:

Krishi Vigyan Kendras (KVKs)

State Animal Husbandry Departments

NDDB (National Dairy Development Board)

ICAR (Indian Council of Agricultural Research)

These trainings cover a wide range of topics including:

Scientific cattle rearing practices

Feed and fodder management

Disease prevention and vaccination

Milking hygiene and milk preservation

Use of modern dairy equipment and technologies

In addition, online platforms and mobile apps developed under the Digital India initiative are also used to provide dairy-related guidance and updates to farmers in real-time and in regional languages.

VI. CONCLUSION

Cow farming, when managed with foresight, scientific knowledge, and modern agricultural practices, emerges as one of the most promising and sustainable pillars of rural economic development in India. It is not merely an agricultural activity, but a multifaceted enterprise that supports livelihoods, ensures food security, and promotes agro-industrial development. By aligning traditional knowledge with modern dairy science, farmers can unlock the true potential of dairy farming, making it not only a source of subsistence but also a commercially viable and environmentally sustainable venture.

A well-planned cow farming model begins with the selection of appropriate breeds that are suited to the local climatic and environmental conditions. Indigenous breeds, which are resilient and require less maintenance, combined with the high-yielding capacity of exotic or cross-breeds, create a balanced herd that delivers both quantity and quality in milk production.

Balanced nutrition and effective feed management are vital to maintaining animal health and maximizing output. The inclusion of green fodder, dry feed, cereals, and mineral supplements ensures that cows receive all essential nutrients necessary for higher milk yield, reproductive health, and disease resistance. Clean and adequate water supply is another non-negotiable element that directly impacts dairy productivity.

Furthermore, housing and shelter management contribute significantly to the overall health and wellbeing of cows. Providing animals with comfortable, hygienic, and temperature-controlled shelters prevents illnesses, enhances reproductive performance, and ensures consistency in milk production throughout the year.

Health management is another cornerstone of successful dairy farming. Timely vaccinations, deworming, and veterinary consultations help prevent diseases and ensure herd longevity. Cows that are physically fit and mentally stress-free tend to produce more milk and remain fertile for longer periods. Integrating stress-reduction techniques such as open grazing, gentle handling, and even playing music has been found to improve milk yield and cow behavior.

With the advent of modern dairy technologies, the efficiency and scalability of cow farming have

increased manifold. Tools such as automated milking machines, health monitoring apps, and smart feeding systems allow farmers to reduce labor, minimize losses, and track performance metrics in real-time. These innovations make the business more precise and data-driven, thus enabling informed decision-making. Equally important is waste management, which transforms potential environmental hazards into valuable resources. Cow dung can be processed into biogas for energy generation or composted into organic manure, thus creating a circular, sustainable farming ecosystem that benefits both the farm and the environment.

Government initiatives play a vital role in supporting dairy farmers. Various schemes offer subsidies, low-interest loans, training programs, and breed improvement projects, thereby lowering the barriers to entry and encouraging small and marginal farmers to adopt dairy farming as a full-time occupation.

In conclusion, the Indian dairy sector holds immense potential to transform rural India. When best practices are adopted holistically—from breed selection and feeding to health care and technology—cow farming becomes more than just a tradition; it becomes a robust, scalable, and impactful economic activity. The convergence of scientific management, policy support, and farmer education will not only enhance productivity but also ensure long-term sustainability, environmental conservation, and improved livelihoods for millions of rural families across the nation.

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