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Improving Buffalo Productivity Through PT Bulls and Hygienic Milking Practices: A Comprehensive Field Initiative in Model Village Gujar Heri Under SCSP

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The Scheduled Caste (SC) community-focused livelihood programs are implemented under the Scheduled Caste Sub Plan (SCSP). As part of this initiative, the village Gujar Heri has been selected to support the upliftment of the SC community through activities related to livestock, agriculture, and allied sectors. Under the skill-development component, villagers are encouraged to participate in various training offered by KVKs, RSETIs, and other agencies, based on their needs and interests. The major emphasis of the program is on enhancing household-level income generation by equipping farmers with practical skills and promoting sustainable livelihood opportunities.

Baseline Survey and Need Assessment

The intervention began with a detailed baseline survey to understand the socio-economic profile, land ownership patterns, livestock resources, agricultural activities, income sources, and daily household practices. Out of 132 households surveyed, 117 belonged to SC families, and nearly 50 households were directly dependent on livestock—primarily buffaloes, cattle, and goats—for income, household milk use, and insurance against financial crisis.

The survey highlighted major challenges:

- low milk yields due to poor genetics,
- lack of knowledge about scientific breeding practices,
- dependence on random natural mating,
- frequent mastitis cases,
- poor udder hygiene and inconsistent milking practices,
- limited awareness among women, who perform most livestock-related tasks.

These observations formed the basis for designing targeted interventions focusing on genetic improvement and milk hygiene, two pillars essential for improving productivity in smallholder buffalo systems.

Genetic Improvement Through PT Bulls: Empowering Farmers with Knowledge

Understanding the Problem

Most families kept low-yielding animals for household purposes, unaware of the long-term economic benefits of upgrading livestock genetics. Some families relied on natural service, often from non-evaluated bulls, resulting in:

- low genetic gain,
- increased disease transmission risks,
- unpredictable milk production,
- and difficulty maintaining breed characteristics.

Training on Scientific Breeding

To address this, ICAR–CIRB organized focused training sessions within the village itself in February and March 2025. Conducting training in the village ensured maximum participation of women, who play a central role in milking, feeding, heat detection, and record-keeping.

During these sessions, farmers learned:

- the difference between ordinary bulls, pedigreed bulls, and Progeny Tested (PT) bulls,
- how PT bulls are scientifically evaluated based on the average performance of their daughters,
- why PT bulls provide the highest reliability for improving next-generation milk yield,
- how to identify heat symptoms in buffaloes (mounting behavior, mucus discharge, bellowing, agitation, vulval swelling),
- the correct timing for AI—"12 hours after first heat signs",
- importance of record keeping,
- why a bull's semen must not be used on its own daughter,
- and how long-term genetic improvement takes 4–6 generations, but brings sustained and measurable gains.

Fig. 1 & 2. Group Photograph of Farmers' Training on Scientific Buffalo Farming at Gujar Heri, organized by ICAR–CIRB, Sub Campus Nabha

Demonstration for Better Adoption

Field demonstrations on:

- semen handling,
- thawing procedures,
- gun loading,
- and proper AI technique

helped farmers understand practical aspects of the technology. They were also sensitized about reproductive health indicators, such as observing any change in discharge—color, consistency, or smell—to detect uterine infections early.

The training increased farmers' interest in using CIRB's PT bull semen and even sex-sorted semen, which ensures the birth of more female calves, improving long-term profitability.

Hygienic Milk Production: Reducing Mastitis and Improving Milk Quality

Why Udder Health Matters

Mastitis—especially subclinical mastitis—was found to be a major recurring problem in village herds. Subclinical mastitis often remains unnoticed but silently reduces milk yield, alters milk composition, increases veterinary expenses, and causes irreversible udder damage.

The functioning of the udder is directly linked to:

- market value of the animal,
- milk yield sustainability,
- and profitability of the household.

Therefore, improving milk hygiene was identified as a top priority.

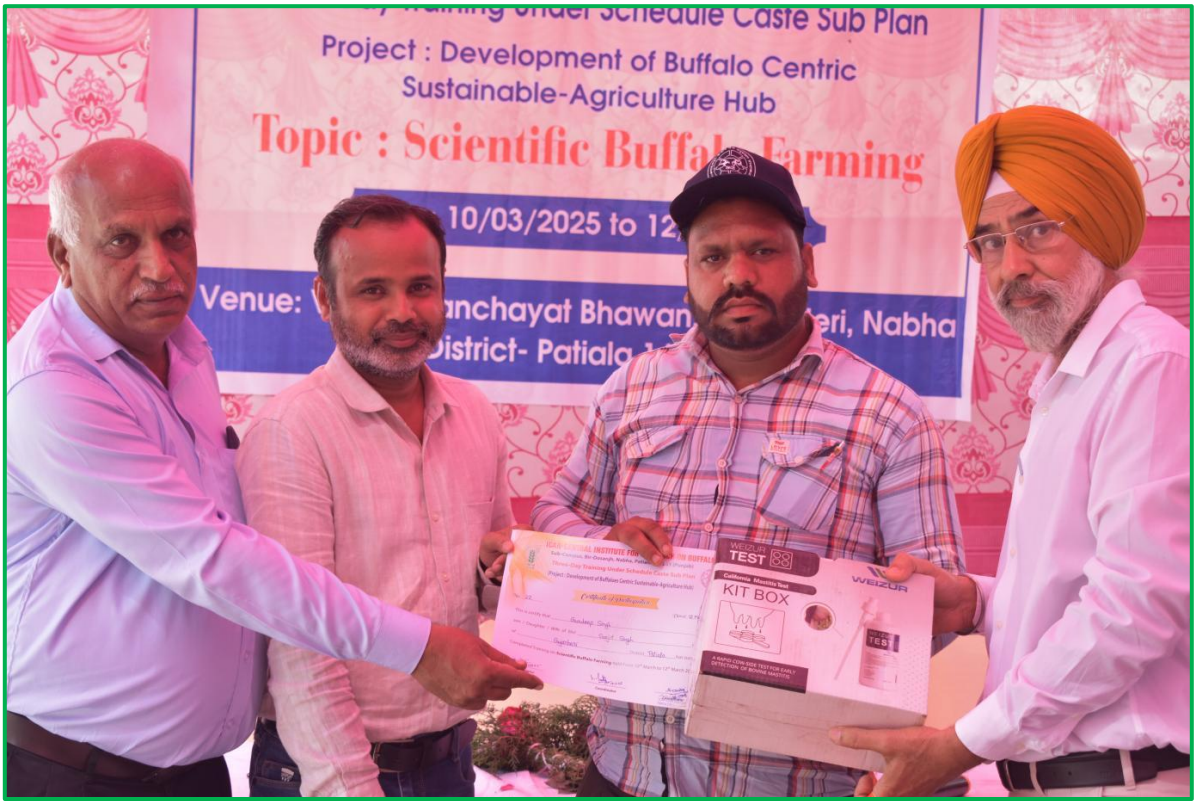

Fig. 3. Farmers Receiving CMT Kits and Teat Dip Cups under the SCSP Initiative

Training on Milking Hygiene

Hands-on training was provided on:

- pre-milking udder cleaning,
- washing and drying of hands,
- cleaning of the milking area,
- filtering and storing milk properly,
- post-milking teat dipping using betadine–glycerine or recommended teat dip solutions,
- avoiding immediate sitting after milking by offering fodder,
- importance of maintaining dry, clean floors.

Farmers learned that teat pores remain open for several minutes after milking, making the udder highly vulnerable to infection. Teat dipping at this stage drastically reduces pathogen entry.

CMT Screening and Mastitis Prevention

Farmers were trained to perform the California Mastitis Test (CMT) every 15 days to detect subclinical mastitis early. CMT kits were demonstrated and explained step by step.

Regular screening helps:

- prevent progression to clinical mastitis,
- reduce treatment costs,
- avoid milk loss,
- and prevent culling of good animals due to irreversible udder damage.

Farmers have now begun practicing teat dipping at home and are showing interest in adopting regular CMT screening for their animals.

Impact and Behavioural Change

The interventions in Gujjar Herri have already shown significant behavioural change:

Among farmers:

- increased awareness about genetic improvement,
- demand for PT bull semen,
- understanding of proper AI timing,
- reduction in reliance on natural service,

- improved record-keeping habits.

Among women:

- stronger participation in training,
- better understanding of udder hygiene,
- improved milking routines,
- confidence in identifying mastitis and reproductive signs.

Among youth:

- interest in learning AI procedures,
- curiosity about high genetic merit bulls,
- willingness to adopt modern practices.

Conclusion

The combined approach of **PT bull–based genetic improvement** and **scientific milking hygiene** has laid a strong foundation for economic upliftment of the SC households in Gujjar Herri. With improved awareness, better skills, and access to quality inputs, villagers are now increasingly viewing livestock not merely as a household asset, but as a **sustainable income source**. This initiative by ICAR–CIRB, Sub Campus Nabha under SCSP demonstrates how targeted scientific interventions—delivered through training, demonstration, and community engagement—can bring measurable and long-lasting improvements in rural buffalo production.