The new practice involved providing a balanced ration advisory service with locally available feed resources directly to farmers. The service was provided in local languages through village-based resource personnel, who had been given two weeks of training, through a netbook/android tablet, the software of which could determine the feed requirements needed to meet the appropriate nutrient levels for an animal’s physiological status and level of milk production. Each animal was tagged so that data on balanced feeding could be captured. So far, 2.4 million animals have been covered in more than 30,000 villages. Balanced feeding affects the costs of milk production, daily milk yields, milk fat percentage, lactation yields and nutrients required per litre of milk. It also helps reduce enteric methane emissions by 12–15 percent per litre of milk. Large scale implementation could help improve milk production in developing countries with limited feed resources.

### AREA OF FOCUS

An estimate by the NDDB of India on more than 100,000 field animals revealed that about two thirds of the total number of animals are fed on excess energy and protein. At the same time, about the same proportion of animals are deficient in essential minerals. It was deduced that for enhanced milk production, milk producers would need to be advised on optimizing the usage of existing feed resources in a way that would meet the animals’ requirements for milk production and other physiological functions.

### CONTRIBUTORS

- National Dairy Development Board (NDDB) of India – Conceived the idea, and developed the programme and software (the Information Network on Animal Productivity and Health) for ration balancing. Trained agency officers and monitored roll-out and implementation.
- Implementing agencies: Provided technical manpower, trained local resource persons (LRP), monitored work, selected villages, conducted village awareness programmes, and provided inputs on quality feed, mineral mixtures, etc.
- Village-based LRPs: Provided ration balancing services, tagged animals, entered and monitored data, ensured balanced feeding implementation and visited producers monthly to re-formulate the ration.
- Milk Producers: Provided information to LRPs, ear-tagged animals, helped record data on feed intake and milk production, implemented the RB advisory provided to him/her by LRPs.

### ACTIONS TAKEN

A data library of feed resources used for feeding dairy animals in different parts of the country was generated by testing the samples in a laboratory. By referring to various international and national feeding standards, nutrient requirements for various categories of animals were created. Using this information, user-friendly computer software was developed which could formulate a low-cost and balanced ration for the field animals, taking into consideration their body weight, daily milk yield, milk fat percentage, pregnancy status, etc.

NDDB undertook the formulation, implementation and monitoring of the programme, carried out mid-term reviews to assess corrective measures, interpreted generated data on various breeds of animals; recorded methane emissions; provided necessary inputs in formulating area-specific breeding policies; popularized the programme; and generated extension materials in local languages in the form of pamphlets, posters, videos, etc.

### OUTCOMES AND EVIDENCE

- Yearly income of milk producers increased by INR 7,625. Out of 1.8 million milk producers, 26 percent are women. For those providing advisory services, about 6,000 out of 30,000 LRPs are women. The social status of women LRPs improved greatly as their monthly income grew to INR 1,500-3,000.
- Net daily average income of farmers increased by INR 25/animal/day.
- Milk production enhancements helped make extra milk available to families engaged in dairy farming.

### SUMMARY

The NDDB of India, with support of the National Dairy Development Board, implemented a Ration Balancing Programme (RBP) in six districts of Anand, Gujarat, India. The programme aimed to provide balanced feeding for dairy animals to improve milk production and reduce methane emissions. The programme was implemented in 30,000 villages, covering 2.4 million animals. The programme led to increased income for milk producers, improved milk production, and reduced environmental impact. The programme was supported by a software library of feed resources, local extension materials, and expertise from implementing agencies. The success of the programme was due to its targeted approach, technical support, and community engagement.