

**SYMPOSIUM ON
"DAIRYING—ISSUES AND POLICIES"**

- Chairman** : **Dr. V. KURIEN**
Chairman
National Dairy Development Board, Anand
- Convenors** : **Dr. J. P. JAIN**
Principal Scientist
Indian Agricultural Statistics Research Institute,
New Delhi
- Dr. RUPAK CHAKRAVARTY**
Deputy Manager
National Dairy Development Board, Anand

At the outset, the Secretary of the Society, Prof. Prem Narain welcomed the Chairman and gave the genesis of Symposium. He said that the Executive Council of the Society decided to hold this Symposium on Dairying with a view to highlight the issues and policies in the changed context of dairying sector in India. The phenomenal success and growth of Anand like milk cooperatives for milk collection and marketing has brought in a cooperative culture in the country over the years. More and more milk is flowing to producer controlled cooperative dairies. Marketing has proved to be a much more important input than the other inputs. The questions are being raised whether the traditional strategy for research in dairying in terms of breeding-feeding-health cover-marketing should not be reversed to become marketing-health cover-feeding-breeding. Prof. Narain said that the success of operation flood programme of NDDB piloted by our worthy Chairman has brought in a new technique of making any aid as an investment to eliminate the need of such an aid over time. This has happened in dairying. The milk production has increased substantially; the per capita consumption of milk and milk products have also gone up. This has led to the stoppage of importation of butter and skim milk powder which started in the operation flood programme years ago. Instead, these are entering in the export market to bring in white

revolution in other underdeveloping countries. Such a sea change in dairying sector calls for looking at research in dairying from altogether a different perspective. And this is what we look forward in this symposium. He further said that there could be no better place than 'Anand' to hold such a symposium. The Anand experiment of milk cooperatives for increased production has become a model not only in India but all over the world. And to have this symposium under the Chairmanship of Dr. Kurien, Chairman of NDDDB who is very well known to all of you is indeed a source of great encouragement. He is regarded as synonymous with milk cooperative movement in this country and is aptly the father of white revolution in India. The award of World Food Prize, equivalent to Nobel Prize, bears ample testimony to his stature in the international community of scientists and administrators.

The Chairman expressed his great pleasure to be associated with the symposium and without any ado called upon the speakers to make their presentations. After the presentation by the first two speakers viz. Dr. R. P. Aneja and Dr. K. C. Raut on pricing policies of milk, Chairman raised a few pertinent questions on fixing the price of milk on the basis of its production cost on efficient milk producer households : (i) Who will ensure the minimum price so fixed is actually paid to the producer? (ii) Whether the economic producers have any relevance in un-standardized herd conditions obtainable in the country? Since no one can ensure the payment of milk at a price arrived at in an objective manner it is better the producers may not even know of it as "ignorance is bliss and folly to be wise".

The Chairman in his closing remarks appreciated the thoughtful analysis of the whole gamut of the subject and emphasized the need for reliable data especially when Indian dairying has reached a 'take off' stage.

In the end, Prof. Prem Narain thanked the Chairman for gracing the chair and the convenors as well as speakers and delegates for participating in the deliberations of the symposium.

The extended summaries of the papers presented at the symposium are as follows :

1. PRICING POLICIES AND MARKETING OF DAIRY PRODUCTS

R. P. ANEJA

Institute of Rural Management, Anand

A positive price policy acts as a catalytic agent in providing impetus to growth parameters such as ;

- determining farmers' choice of economic activities;
- influencing the farmers' decisions on resource allocations;
- accelerating production and productivity, and
- securing adequate increase in the marketed supply.

A number of economic and non-economic factors determine the size of milk production, the vital factor being the prices farmers should receive for milk. The Operation Flood Project (OF) launched in 1970 has generally succeeded on the basic premise of sound economic and price policy. Over the last ten years, the annual producer's price of milk has recorded a growth of 9 per cent on an average, for almost all the regions in the country. The pricing policy followed earlier had various ill effects. In order to overcome these, a two-axis approach to milk pricing was evolved, taking into account both fat and SNF. It scientifically provides an element of rationality to the 'common pricing policy' for cow and buffalo milk.

Marketing, the strategic link between the consumers and the producers has been a focal point of OF programme. The behaviour of milk prices paid to the consumers by AMUL both during flush and lean seasons has been discussed in the paper. The success story of organised dairy on co-operative lines has been depicted. Through this, producers got not only attractive price but also technical inputs to enhance productivity. The paper discusses how liquid milk has witnessed an upswing in price as compared to milk products. The global price situation in respect of milk has been discussed in addition to comparing support prices of butter and skim milk powder in the EEC and USA. A word of caution is given to the co-operatives to safeguard the exploitations as even today 70 per cent of urban milk supply is through private vendors. A number of impending issues in milk trade has been indicated in the paper as these are remained unaddressed and unsolved.

2. POLICIES FOR PRICING OF MILK

K. C. RAUT and SHIVTAR SINGH

Indian Agricultural Statistics Research Institute, New Delhi

Remunerative price, if paid to the producers, can provide incentives for enhancing milk production. Cost of production should form basis for fixing price of milk. The methodology for working out cost of production in an objective manner has been developed by IASRI suggesting cost accounting approach. The components of production cost are: feed, paid and family labour, depreciation on animals, recurring expenditure,

depreciation on assets and equipments and interest on capital. Such cost surveys being expensive need not be repeated year after year. Utilising the quantities of physical inputs and outputs estimated from the detailed enquiry, index of cost of production can be worked out for next 4 to 5 years by securing fresh data only on seasonal prices of feeds and fodders and labour wage rates. Pricing policy may have to consider a suitable margin of profit for dairy producer's enterprise and keeping in mind the consumer's interest to get adequate and quality of milk at a reasonable price.

Some of the basic issues are :

- Whether home grown feeds should be evaluated at prevailing market rates or market rate minus transport cost or at their cost of production rates;
- whether family labour should be evaluated at the prevailing wage rates or to be costed as per norms considering type of work;
- rate at which the depreciation on animals should be worked out; and
- any adjustments required for differing fat and solids-not-fat content of cow and buffalo milk.

Settling these issues, may help arriving at production cost in a realistic manner. Suggestions have been made in the paper to solve these basic issues quoting some research findings to substantiate the ideas.

In order to know the bulk line cost in relation to price fixation, it may be relevant to consider only "efficient" commercial producers of milk, efficiency being defined in terms of lower cost of production. Rejecting some percentage of producers assuming not efficient, the average of remaining can be worked out to obtain the average cost of production. At the end, suggestions have been made to take steps for lowering the cost of production which will help in providing additional income to the producer and increasing milk production.

3. IMPACT OF OPERATION FLOOD PROGRAMME ON INCREASING MILK PRODUCTION IN INDIA

M. P. G. KURUP
N. D. D. B., Anand

The National Dairy Development Board initiated its first phase of 'Operation Flood' (OF) in 1970 with the primary objectives to promote

establishment of viable, farmer-owned and managed dairy cooperative organisations for collecting, processing and marketing of milk and supplying technical inputs, and to evolve a national milk grid and monitor it through movement of milk and milk products and implementation of pooling and pricing strategies, so as to meet the country's increasing demand for milk and milk products on the one hand and to provide remunerative prices to the milk producers in rural areas on the other. The OF programme also aimed at undertaking research and development activities in areas of milk production enhancement, processing of milk and milk products and their marketing.

On completion of Phase II of OF in March, 1986, 22 Federations were established with 164 Milk Producer Unions (MPU) and 42,700 Dairy Cooperative Societies (DCS) covering 45 million producers. The total processing capacity established was 10 million litres of fluid milk and 584 tonnes of milk powder per day. The third phase of OF is initiated since March, 1987. By September, 1990 there were 173 MPUs, 61576 DCSs covering 7.19 million farmers.

The demanding task of OF was to link the millions of widely scattered milk production units, each contributing very small quantities with some urban markets, providing regular market and remunerative prices. The cooperative institutional network, during 1989-90 collected on an average 9814 thousand kg. of milk in a day and paid about 1200 crores of rupees in the year. In the last decade, the total quantity of milk procured through producers' cooperatives has been increasing at the rate of 30.3 per cent per annum. The milk procurement prices paid by the cooperatives have increased at an annual rate of 11 per cent.

Apart from providing organised markets and remunerative prices throughout year as means for motivating production enhancement, efforts were made for creating infrastructure for improvement of genetic quality of both cattle and buffaloes, establishing plants to provide better feed, and creating mobile veterinary health care services.

The impact studies showed that there was improvement in income of producers through increased milk production, increment in return per litre of milk sold and reduction in cost of milk production. A study by the Indian Institute of Public Opinion, New Delhi observed about 24.6% increase in milk yield in the seventeen OF-I milksheds over a period of seven years. Another study by Institute of Rural Management, Anand on impact of OF-I at the village level observed that the average milk yield per animal in milk in cooperative villages was 12.6% higher than in control villages. The EEC in its report (1986) on implementation of O F.-II stated that the activities had substantially increased the supply of good quality of milk, contributing at the same time to maintaining price

at an acceptable level. The paper highlights some of the constraints as well as future programme of work.

4. OPERATION FLOOD : SOME DIMENSIONS OF ITS IMPACT

PARIMAL C. BARDHAN

N.D.D.B., Anand

The Operation Flood programme launched in 1970 has emerged as one of the most successful development strategies for income generation and employment in rural areas. The reasons for today's self sufficiency in domestic milk production are, (i) judicious and optimal management of food aid provided by the world Food Programme and European Economic Community during early phase of Operation Flood, (ii) price fixation and management making the farmers directly responsive to the market forces and (iii) technological innovations to raise animal productivity and facilitating easy and economic disposal of liquid milk. The quantum of commodity aid which constituted 67 per cent of the total throughput in 1950-51 reduced to 10.2 per cent in 1989-90 and stands to be nil in 1990-91. Infact, the country is keenly exploring the possibilities of exporting surplus milk powder. A study has shown positive correlation between the procurement and consumer price of milk in the market. During the period 1980-90, the procurement price increased by 63 paise in response to a rupee increase in the consumer price of milk. The total procurement of milk under Operation Flood increased from 25.6 lakh kg. per day in 1980-81 to 94.7 lakh kg. per day in 1989-90. Some of the innovative methods used to enhance productivity of animals include artificial insemination, embryo transfer, veterinary health coverage, installation of feed plants and urea molasses plants. The NDDB has launched a Foot and Mouth disease control programme in 27 districts of South India in 1984 and have so far administrated 25.9 million vaccinations covering 12.35 million animals in 19 districts. The Operation Flood has created a countrywide modern marketing infrastructure that involves chilling, processing, pasteurisation, homogenisation, conversion of solid non-fat into milk powder, creation of National Milk Grid and sale of milk udder chain of innovative systems like Mother Dairies, new packages etc. The paper gives the progress made in some major areas of marketing network. Under the National Grid programme, milk is transferred from surplus to deficit areas. The Operation Flood has a chain of economic beneficiaries linking between milk farmers and consumers. The women members constitute about 15 per cent of the registered society members. Operation Flood programme for the first time re-

cognised women's contribution to and potential role in the development process. The paper outlines the steps taken under Operation Flood to maintain harmony in the natural ecological balance in rural areas. During the two decades, the Operation Flood has given the farmers real control over only about 20 per cent of the country's total liquid milk marketable surplus. On the whole, the Operation Flood has an in-built structure to meet some of the unforeseen challenges.

5. STRATEGY FOR BETTER HUSBANDING OF FEED RESOURCES IN THE 90's

V. D. MUDGAL

Project Directorate on Cattle G-123, Shastri Nagar, Meerut (U.P.)

This paper deals with the current live stock population vis-a-vis feed resources situation and current patterns of utilization in India. The trend in milk production and the infrastructure available in the country has been delineated. Emphasis is made on the short fall of 44 percent concentrates and 36 percent green fodder for ruminants. Cereals straws are the most important ruminant feeds and the estimated annual production is 200-250 X 10⁶ tonnes. Sodium hydroxide and urea treatment have been successful as also development of urea-molasses blocks. The prevailing feeding methods commonly practiced are two categories: extensive systems, and systems combining arable cropping which include road side grazing, communal grazing, arable grazing, tethering and cut and carry feeding. Potentially important feeding strategies that merit increased application include large scale intensive use of agro-industrial by-products, development of complete rations, strategic supplementation etc. The technology that is now available in the field of animal nutrition for improving the conversion efficiencies is the by pass nutrient technology : (a) by pass protein, (b) by pass lipid and (c) by pass starch. Manufacturing of compound cattle feed and the role of ICAR funded AICRP on Agro-industrial by-products utilization has been high lighted. The shortcomings and the need for overcoming them has been elucidated. Use of biotechnology products in the field of animal nutrition opens new vistas. Wider adoption of these, and the development of new feeding strategies need to consider the contrasting situations in India where the most critical input in animal production strategy, therefore, is provision of improved and balanced nutrition to livestock. In India where the amount of good quality feeds and fodder are inadequate and there exists a large number of less productive animals, the use of untapped sources of feed might help to greater extent. The use of Agro-industrial by-products in enhancing the feed resources and the antimetabolites present therein need attention.

6. SURVEILLANCE AND CONTROL OF ANIMAL DISEASES IN 90's

M. RAJASEKHAR

Institute of Animal Health & Veterinary Biologicals, Hebbal, Bangalore

In India, dairy industry has made a tremendous progress during the past four decades consequent to the introduction of exotic germ plasm for improving the indigenous cattle population. This has resulted in high yielding crossbred cattle which unfortunately, are more susceptible to a variety of bacterial viral and protozoan infection resulting in moderate to heavy economic losses to the dairy farmer. A critical assessment of existing disease control programme in the country indicate (i) inadequate disease reporting system and diagnostic facilities, (ii) inability to control movement of infected animals and (iii) insufficient vaccination and animal health coverage programmes. Indian Council of Agricultural Research has initiated an All India Co-ordinated Project to develop a model for animal disease monitoring, surveillance and forecasting of economically important animal diseases. The objective of this surveillance system is to develop methods for estimating accurately the incidence, prevalence, trends (forecasting) and economic impact of diseases of livestock to aid and supplement conventional disease control programmes in the country.

Disease control can be achieved by organised and effective disease surveillance in a national perspective as an alternate method for better utilisation of precious vaccines whose production is totally inadequate considering resources and magnitude of livestock population.

- (a) Animal disease reporting system to be revamped and strengthened to incorporate recent developments in the communication system available in the country. In this direction, the national computer information network of Government of India which effectively connects talukas/districts with respective state capitals and New Delhi should be fully made use to report of disease outbreaks for instituting effective control measures. Other agencies such as milk unions, state diagnostic laboratories and universities must also participate in this effort.
- (b) A two-tier disease control measure can be attempted at state/Central level for the benefit of farmers in the affected region and its neighbourhood.
- (c) A large scale sero-surveillance, sero-epidemiology programme to be initiated to map the incidence and prevalence of various livestock diseases in the country. This will form backbone to develop disease control strategies based on geo-agro-climatic conditions.

- (d) Recent progress in the field of diagnostics must be fully utilised to develop 'penside' diagnostic kits for rapid and accurate diagnosis of animal diseases.
- (e) Considering huge and mixed livestock population, paucity of funds and trained manpower, it is proposed that multicomponent or mixed vaccines must be developed and routinely used to ensure simultaneous protection against several diseases at lower cost.
- (f) National animal disease data bank to be established to retrieve and transfer disease information to different states at short notice.
- (g) National animal disease surveillance programme to be initiated to monitor the incidence, prevalence and economic impact of animal diseases as a network research programme involving state veterinary departments, diagnostic laboratories, agricultural universities, NDDB and ICAR research institutions. This will ensure a concerted effort of several animal health agencies to coordinate effective control of animal diseases in the country.

The ICAR and Government of India may be approached to support this important national surveillance programme in the Eighth Plan Period.

7. SURVEILLANCE AND CONTROL OF DISEASES IN THE 90's

D. K. SINGH

N. D. D. B., Anand

Livestock diseases bring about a huge waste of national resources in the form of lower productivity, cost of treatment and death of animals. Some of the Zoonotic diseases are constant human health hazards. Three parent diagnostic disciplines : clinical medicine, pathology and epidemiology, are necessary for the control of diseases. For the control prevention and eradication of diseases, implementation of herd health programme as well as epidemiological studies are essential. For epidemiological studies, data relating to the disease, its determinants, behaviour and population size are collected. Information about the diseases and their determinants is obtained through surveys. Data could be collected from other sources like veterinary organisations/hospitals/practitioners, abattoirs, serum banks, pharmaceutical companies and veterinary schools. Proper economic assessment of disease control programmes need to be made. Control is the reduction of morbidity and mortality from diseases; and eradication means extinction of an infectious agent and also the disease. The paper deals with the strategies of control and eradication, considering the nature of disease: sporadic, endemic, epidemic and pro-

pagating epidemic. The paper also indicates important factors in the control and eradication programmes. Many viral, bacterial, protozoan, parasitic, metabolic and deficiency diseases of the animals need to be controlled in India during 90's. The NDDB is implementing a massive FMD Control Project in the four Southern States of India. The Cost: Benefit ratio is quite encouraging. The Government of India with the help of EEC proposes to implement Rinderpest Eradication Programme where in large scale seromonitoring and extensive vaccination in an organised manner is envisaged. Suggestions are given to take measures to control the diseases like Bovine Ephemeral Fever, HS, Anthrax, Black Quarter, Theileriosis. Efforts are on at Animal Disease Research Laboratory, NDDB for developing Medicated Urea Molasses Block (MUMB) which may help in minimising the loss due to helminthic parasites.

8. DEVELOPMENT OF DATA BASES AND MANAGEMENT INFORMATION SYSTEMS IN DAIRYING

P. NARAIN

Indian Agricultural Statistics Research Institute, New Delhi-12

Dairying in India has changed during the recent past mainly due to dairy development programs. The success of dairy development programs depends upon the basic framework that is made available for drawing up such scientific and realistic programs. It is therefore most appropriate that we develop the basic framework for research and analytical studies, by establishing databases and information systems in dairying. Databases in dairying will cover data on number of dairy animals at microlevel collected through censuses, data on performance characteristics and relative economics of rearing dairy animals obtained through rational sampling designs involving physical measurement techniques, input-output data based on a number of sound experiments planned on scientific lines and conducted on an extensive scale, cattle feed statistics (concentrates, dry fodder, green fodder, and grass), current status of the stock, breeding strategy, and disease control measures. The management information system will cover the current status of research, scientific and technical literature available, measures of impact of dairy development programs (benchmark and assessment), project evaluation and review and critical paths.

9. DEVELOPMENT OF DATA BASE AND INFORMATION MANAGEMENT SYSTEM IN DAIRYING

C. L. MALIK

Department of Agriculture and Cooperation, New Delhi

One of the serious constraints in planning development of livestock sector is lack of information management system. This is due to high rate of illiteracy among the rural community who are the people, keeping milch cattle and buffaloes. Only answer under these circumstances, is to collect data through random sample surveys, using established techniques. These should include state level, district level surveys for estimating production, surveys on economics of production, mortality surveys, assessment and evaluation surveys, fodder production surveys, etc. Milk group among all animal products has the key importance, as it contributes nearly 67% of the total value of output from the livestock sector. The dairying sector has therefore a very important role in improving the dairy farmers income, animal productivity, etc. Massive programme of operation flood is an ongoing integrated programme of milk production, processing and marketing for this purpose. Results of NSSO surveys have revealed in large number of states (which incidently contribute 76-88% of the total milk production in the country) that intake of animal protein from milk group is higher both in rural and urban areas when compared to production of eggs and fish. There is thus a clear indication of the possibility of more release of milk for the dairies. In-depth statistical surveys are certainly required to confirm this contention. For paying remunerative prices to producers, large number of regular surveys on economics of production are required. While for the ongoing projects assessment surveys are needed to judge the impact resulted at the grass root level, bench mark surveys, and standard procedures of project formulation and analysis should be the basis for selection of future projects. Regarding types of information urgently required under dairy enterprise, the same have been indentified by the NCA in 1976 and hence early efforts are required to fill these various data gaps. For the entire dairy development programme and keeping in view its definite future expansion, a National Information Network system is recommended for quick flow of information and early decision making process.