RESEARCH PAPER | Economics | Volume : 3 | Issue : 12 | Dec 2013 | ISSN - 2249-555X

Impact of Dairy Development Programmes in India – An Economic Analysis

KEYWORDS

A. Serma Saravana Pandian	Dr. K. N. Selvakumar	Dr. M. Prabu
Assistant Professor, Dept. of AH Economics, Madras Veterinary College, Chennai-7	Professor and Head, Dept. of AH Economics, Madras Veterinary College, Chennai-7	Associate Professor and Head, Dept. of Livestock Business, Management, Madras Veterinary College, Chennai-7

Introduction

Since time immemorial, animal husbandry has been closely interlinked with agriculture in India. Livestock are an important source of income and employment in rural areas. Besides complementing and supplementing agriculture, animal husbandry provides security to farmers, especially when agriculture fails. Livestock are essential to millions of poor households across the country not only as a source of income but also as a major source of protein, supplementary nutrition, draught power, fertilizer, fuel and a store of wealth. In the post-Independence period, the Indian dairy sector has undergone a major shift, mainly due to the introduction of new technologies during the implementation of various dairy development programmes. This paper discusses the dairy development programmes across the different segments dairy sector, as well as the impact of these programmes on the production and productivity.

Dairy Development

In pre-Independence India, farmers reared indigenous or native breeds of cattle. Given the relatively low productivity of native breeds, milk production in the country was very low in relation to the huge cattle population present and dairying was confined to traditional pockets in the country. Various projects — technological as well as institutional — have been taken up since 1950 onwards to promote milk production in the country. These initiatives covered the vital spheres of breeding, nutrition and health of milch animals as well as marketing of milk. After Independence, various programmes of dairy development have been taken up, such as the Key Village Scheme (KVS), Intensive Cattle Development Project (ICDP), and Operation Flood (OF).

MATERIALS AND METHODS

The time series data pertaining to the study were collected from various reports of the Government of India as given in the references. The data collected was tabulated and analysed by Compound Growth rate analysis

The growth rate of was measured by fitting an exponential time trend of the form.

$Y_t = b_0 (b_1)^t$

$\ln Y_t = \ln b_0 + t \ln (b_1)$

The annual compound growth rate (r) was given by

r = Anti-ln (b) – 1

Y – Population / Production

t - time in years

bo, bi – co-efficients

RESULTS AND DISCUSSION

Impact of Dairy development programmes

The various technological and institutional measures taken to develop the dairy sector have had a direct impact on the productivity of milch animals and production of milk as well as the per capita availability of milk in the country. This section attempts to elaborate the positive impact of interventions. Milk production in India, after stagnating around 20 million tonnes for about 20 years between 1950 and 1970, registered a rise from the early 1970s, crossing 30 million tonnes by 1980–81, 50 million tonnes by 1990–91, 90 million tonnes by 2004–05 and 104 millions by 2007-08.

Increase in milk production in the country is largely related to the increase in productivity of milch animals. From Table 1 it is clear that while female bovine population has been increasing over the years, the rate of increase in population is much lower than that of milk production across the five decades under consideration. While milk production has grown at an annual compound growth rate of about 3 %, female bovine population has grown at less than 1 %.

Table 1 Rate of Growth of Milk Production and Female Bovines, 1951–2001

Annual compound growth rate of milk production		Annual compound growth rate of adult female bovine	
Period	Percentage	Period	Percentage
1950–51 to 1960–61	1.64	1951–1961	- 0.01
1960–61 to 1970–71	0.96	1961–1972	0.78
1970–71 to 1980–81	3.69	1972–1982	1.13
1980–81 to 1990–91	5.48	1982–1992	1.66
1990–91 to 2000–01 2000-01 to 2007-08	4.11 3.82	1992–2003 1951–2003	0.55 0.82
1950–51 to 2007–08	2.95		

In order to understand the importance of yield increase (of milch animals) in increasing milk production in the country, a crude exercise has been attempted using data provided by the FAO. The average yield of milk per cow over the period 1961 to 1970 was 437.8 kg per annum and that of buffalo was 898.1 kg per annum. Assuming the average yield to remain constant at this level, milk production for the years 1961 to 2001 has been estimated as a product of this average yield and the actual number of adult female cattle and buffalo. The sum of estimated cow milk production and estimated buffalo

Volume : 3 | Issue : 12 | Dec 2013 | ISSN - 2249-555X

milk production provides the total estimated milk production for the years 1961 to 2001. Comparing the estimated series of milk production with actual milk production in the country, an estimate of gain due to productivity increase has been calculated. As can be seen from Table 2, milk production would have remained at less than 45 million tonnes in 2001 if there had been no improvement in the yield of milch animals.

Table 2 An Estimate of Gain in Milk Production (in million tonnes)

Year	Actual milk production	Estimated milk production	Estimated gain in milk production
1961	19.84	20.24	-0.40
1971	21.83	22.18	-0.36
1981	33.27	28.14	5.13
1991	51.71	36.70	15.01
2001	82.20	44.76	37.44

Note: Milk production refers to cow and buffalo milk
Source: www.faostat.fao.org

The rapid increase in milk production has resulted in a rise in per capita availability of milk in the country from 112 gm/day in 1971 to 220 gm/day in 2001. In 2005, it further increased to 232 gm/day.

A review of literature brings out evidences of the advantage of cross-breeding technology. Lalwani (1989), while estimating technological change in the dairy farming sector in India from the input-output data for the reference period 1979–80 (collected under the Operation Research Project of NDRI by applying the Cobb-Douglas production function), has found that adoption of cross-bred cattle in place of buffaloes or indigenous cows led to higher milk yield/day. Gaddi and Kunnal (1996) have studied the sources of output growth in the new milk production technology (cross-breeding) in Karnataka by following the Cobb-Douglas production function. The results indicated that the total growth in milk yield per cow per lactation by shifting to cross-bred animal was about 146 %. The estimated growth in milk output was 146 %, of which 47 % was contributed by technology. Further, Kumar and Pandey (1999) have also estimated that livestock output in India grew at 2.59 % per annum over 1950–51 to 1995–96. They had used the total factor productivity approach for analysing the sources of growth in the livestock sector. According to their estimate, technical change contributed about 30 % to overall output growth over 45 years.

Conclusion

Various dairy development programmes in the post-Independence period in the livestock sector of the country have made significant improvements in the production, productivity and per capita availability of livestock products. Milk production in India was perceptibly low in 1960. To improve milk production in the country, multi-pronged approaches in breeding, health cover, feeding and marketing were initiated by the government through various development programmes, which resulted in reduced animal losses as indicated by the disease incidence particulars. Various feeding technologies were developed to exploit the full potential of cattle along with the creation of marketing facilities for rural milk. These combined measures resulted in improvement in milk production to 127.9 million tonnes in 2011-12, with India standing first in the world in milk production. The growth in the dairy sector was significant, as indicated by the two-fold increase in the value of output per milch animal.

REFERENCE Basic Animal Husbandry Statistics. Various years. New Delhi: Ministry of Agriculture, Department of Animal Husbandry and Dairying, Government of India. | | Gaddi, G.M. and L.B. Kunnal. 1996. "Sources of Output Growth in New Milk Production Technology and Some Implications to Returns on Research Investment". Indian Journal of Agricultural Economics. 51 (3): 389-95. | | Kumar, Anjani and U.K. Pandey. 1999. Sources of Growth in the Livestock Sector. Policy Paper 9. New Delhi: National Centre for Agricultural Economics and Policy Research. | | Lalwani, Mahesh. 1989. "Technological Change in India's Dairy Farming Sector: Distribution and Decomposition of Output Gains". Indian Journal of Agricultural Economics. 44(1): 55-86. | | National Dairy Development Board (NDDB). 1996. Quarterly and Monthly Progress Reports on Operation Flood. Anand. |