SUBJECT I

LIVESTOCK ECONOMY

India’s Livestock Economy: A Perspective on Research*

S.N. Mishra†

I

INTRODUCTION

From whichever development angle one looks at India’s livestock economy, it appears to deserve more research attention than it has actually received. It is hardly possible to over-emphasize the importance of the country’s livestock, as the world’s largest renewable natural resource comprising many species, having great genetic variability and environmental adaptation from sub-Himalayan grasslands to tropical rain forests, as the exclusive source of animal food and nutrition for the country’s population, as a substantial source of income and employment for rural population, specially the rural poor, as the raw material base for a whole host of industries from milk and meat processing to manufacture of bone-meal, leather and leather products, being a major item of export earnings, thereby contributing to the goal of self-reliance and finally as a major strategic option for agricultural diversification and growth. One palpable reason for the less than deserved attention has been the lack of promotion and financial support from public agencies for research in economic and social aspects of the country’s livestock. The Indian Council of Agricultural Research does some funding, which is largely confined to scientific research institutes under its own umbrella and Agricultural Universities. But this is about all. Notably, there are umpteen number of Agricultural Economics Research Centres in the country, maintained by the Ministry of Agriculture, Government of India. But livestock is assiduously kept out of their research purview.

Notwithstanding the general lack of support, a good deal of research in livestock economics has been done during the post-Independence period. My purpose here is not to review that research, but have a bird’s eye-view with the sole intention of noting the gaps and the lacunae. This is what has been attempted in the following section. What about the future perspective on livestock research? The new market-oriented policy regime in the making since July 1991, and concomitant process of integration of the Indian economy into the world economy through trade, investment and technology transfer is bound to have a major influence on livestock research agenda, on the relevance of issues and priority among issues. To illustrate, as a result of liberalisation, dairy co-operatives have already come in conflict with corporate business in the area of milk collection and processing. The issue then is which institutional structure, the one or the other, or a mix of both would serve the social interest better and protect the interest of the dairy producers. In Section III we make an attempt to articulate issues which in our view are likely to occupy or ought to occupy the centre stage of livestock research in the coming years. Sound empirical research in livestock

* Keynote paper.
† Director, Institute of Economic Growth, Delhi - 110 007.
as elsewhere requires sound statistics. Official livestock statistics suffer from several weaknesses. We undertake to comment on them in Section IV, in order to caution against their use without questioning and in the hope that public agencies concerned with their collection and processing will at least provide better and timely statistics, and fill the gaps that are there. The last section has our concluding observations.

II

A BIRD’S EYE VIEW OF LIVESTOCK RESEARCH, GAPS AND LACUNAE

A generation ago in the early 1960s the landscape of livestock research was virtually plain. And, in that situation as a doctoral student I was led by hand to do research in livestock economics, because the founder-director of the Institute of Economic Growth, V.K.R.V. Rao had decided that the livestock sector must be studied. Looking around there was naturally precious little source material to go by. There were those volumes of Livestock Censuses since 1920s gathering dust in the Ratan Tata Library of the Delhi School of Economics. No one had touched them, and touching the early ones required excessive care, since their printed pages had become brittle and fragile. Then there was the Report of the Royal Commission on Indian Agriculture (1928) and the books by John Augustus Voelcker (1893), Norman C. Wright (1937) and W. Burns (1944) which provided a general descriptive account, largely of India’s bovine economy. Rather than despair and brood over the dearth of source material, the easier course was to relax and conjure up a theoretical piece, for which the sources just mentioned provided ample ground. The Royal Commission had pointed to the existence of a vicious circle of increasing cattle numbers and falling productivity. W. Burns had noted falling productivity with increasing cattle density and rainfall, as one moved from the North-West to the lower Gangetic East and the Deccan South. Much earlier, Voelcker had been struck by the large number of ‘Brahmani Bulls’ roaming about the countryside. Around this time also appeared Dandekar’s piece on the problem of cattle numbers (1964).

In this background, starting with the assumption that there is surplus cattle in the country, I demonstrated theoretically that removing restrictions on slaughter would be Pareto-optimals since increased meat production would improve the welfare of the non-vegetarians, and savings on feed due to reduced numbers would lead to increase in milk production, and, therefore, in the welfare of the vegetarians in the country (Mishra, 1966). Soon after Raj (1969) questioned the assumption of surplus cattle. There followed a lively debate, mainly between Raj and Dandekar who in his 1964 paper had already produced an estimate of ‘cow-surplus’ in India. I reviewed the debate later (Mishra, 1973) and gave my own estimate of cow-surplus (a little over 19 per cent as against Dandekar’s 49-50 per cent in 1961), using a formula I published subsequently (Mishra, 1978, Chapter 5). To my knowledge, no one has questioned that estimate so far.

What explains the surplus of cows in India, irrespective of its size? If someone does not claim that Indian farmers and cattle holders are irrational, then the obvious answer is: cow’s religious sanctity among Hindus. Next, what explains total cattle holding? The answer is: Its economic usefulness and religious sanctity of the cow. It was nobody’s claim, nor is, that religious prejudice against cow slaughter was (is) the principal reason for low productivity of animal husbandry in the country (Vaidyanathan et al., 1982). Who needs to be told that poor animal nutrition inter alia is the principal cause of low productivity!
Whereas in India the debate on surplus cattle was confined among a few economists, a whole variety and multitude of western scholars participated in what came to be known as the 'sacred cow controversy' in the pages of the *Current Anthropology*. The debate continued for over 15 years beginning with the paper by Marvin Harris (1966) and ended possibly only after he succeeded in getting his manuscript submitted in 1968 published by the Journal in 1982 (Vaidyanathan *et al.*, 1982; for the background see Marvin Harris’s comment on Freed and Freed (1981). Incidentally, in 1964-65 the late Raj Krishna had passed on to me the draft copy of Harris’ 1966 paper. It postulated a symbiotic equilibrium between man and animal and on that ground justified carrion eating by a section of the Hindu Society. I had dismissed it for its perverse utilitarianism and anti-development implications (Mishra, 1966, 1973). Nonetheless, thanks to Harris, this debate is indeed very rich for us to be aware of, since scholars there brought in a whole lot of disciples to bear on the issue - history, philosophy, theology, geography, sociology, anthropology, and of course economics.

The Institute of Agricultural Research Statistics, later renamed as Indian Agricultural Statistics Research Institute (IASRI) generated a number of survey based livestock studies during the 1960s, which were undertaken with the specific purpose of developing methodologies for measurement of livestock productivity, feed consumption, and biological characteristics such as age at first calving, inter-calving period, mortality rate, kidding rates, etc. The late V.N. Amble deserves a tribute for playing a leading role in this. Using the results from the IASRI studies, Amble also prepared a plan for meeting the minimum nutritional requirement of 201 gm of milk per capita per day for the country’s population, and estimated the consequential requirement of feed for the bovine stock (Amble, 1965; Amble *et al.*, 1965). The methodologies developed by the IASRI were handed over during the Fourth Plan to the State/Union Territory Governments for them to regularly carry out what is known as the ‘Integrated Surveys on Livestock Products and Animal Husbandry Practices’. What actually happened about these surveys we shall make some observations in Section IV.

The decade of 1970s and good part of 1980s were marked by the euphoria generated by the Operation Flood Programme (OFP) and the crossbreeding of indigenous cows with exotic breeds which were seen to usher in a ‘white revolution’, parallel to the green revolution. It was in this sort of climate that the National Commission on Agriculture (NCA) produced a voluminous report on animal husbandry (Government of India, 1976). The NCA had a long vision of 25 years. For the year 2000 A.D. it produced in minute detail the size and composition of the livestock population, and gave estimates of output and demand of livestock products, feed-fodder requirement and availability, and so many other things. A long vision of development is important, so that policies could be geared to its realisation. But, as it happens, the more quantitative shape you give it, the less likely becomes the possibility of its realisation. It is not surprising, therefore, many of the Commission’s projections along the path have turned out to be quite off the mark, and by no stretch of imagination we are anywhere near the vision in the remaining five years (Mishra and Sharma, 1990). Just to give one example, starting with an *estimated* figure of one million crossbred milch cows in 1973-74, the Commission projected 19 million of them in 2000 A.D., implying an annual growth of 72 per cent a year. About a decade and half later in 1987, the Livestock Census enumerated only a little over 5 million. Clearly, the Commission was overtaken by the climate of the time and made heroic assumptions about the success of the crossbreeding
policy.

The climate of the time also determined the focus of scholarly research during those decades. The predominant concern was the economics of dairy farming under different size of holdings, with different species and types of animals, and in different regions. There is enough testimony to this from the two publications of the Indian Society of Agricultural Economics on livestock economics (1980, 1989). All of the six full length papers published in the 1980 Conference Number of the Society’s Journal were on dairy and milk-feed relationship. Similarly, out of the 50 ‘summaries’ of the papers, as many as 43 were on dairying. There was no paper on sheep or goat raising and economics of meat production, or economics of livestock by-products, for instance flaying, curing, collection and marketing of hides and skins. Again in the 1989 volume, with one exception of a paper by Kalia and Rajapurohit on goat rearing, all the papers relate to bovine milk production in particular. Studies relating to the OFP were naturally concerned with milk production and marketing in the milkshed areas covered by the milk co-operatives.

Economic study of draught animals, their demand arising out of technological and institutional changes in agriculture, and their supply that is replacement and growth as conditioned by the growth and composition of the bovine stock, specially cattle has received much less attention. Nevertheless, works of Sharma (1981, 1989), Mishra and Sharma (1990), Binswanger (1978) and Vaidyanathan (1982), among others, provide good understanding of this very important aspect of the livestock economy and its linkage with agriculture.

With the rise of the environmental movement in the country during the 1980s, livestock population, specially sheep and goat came to be blamed for degradation and depletion of the common property resources, i.e., grasslands, wastelands and forests. The pressure of the human population on all types of land, though, appears to outbid the grazing pressure from the livestock population, since the former has been rising at a far too higher rate than the latter. Be that as it may, unbiased, serious scientific investigation in the interactive relationship between livestock and the environment has not been attempted. A connected issue is that of feed and of fodder cultivation. Much of the work on availability and nutritional requirement of feed and fodder has been done by official committees and expert groups (for review, see Mishra and Sharma, 1990). Feed consumption studies after the IASRI surveys of 1950s and 1960s (Amble, 1965) are difficult to come across. So is the case with economics of fodder cultivation and its marketing, which appear to have become a profitable enterprise in the agriculturally developed parts of North-West India.

Finally, it needs no saying that planning of livestock development, in the official parlance ‘Animal Husbandry and Dairying’ has been an integral and abiding part of the planning process since the First Five Year Plan (1951-56). Post-facto economic evaluation of the policies, programmes and projects have hardly been undertaken, except that of the OFP which was also imbued with partisan spirit. The Intensive Cattle Development Projects (ICDP) cover hundreds of districts in the country for example, but where is the economic evaluation of even a few of these projects? Similarly, since the First Plan there has been a policy on salvage of high breed animal (specially buffalo) calves from landing to slaughter in metropolitan cities. It seems that this policy has completely failed. And, negative selection among buffaloes continues unabated. What are the economic forces behind this failure, and what is the national loss on account of this, we do not know.
III

FUTURE RESEARCH PERSPECTIVE

The gaps and lacunae apart, the market-oriented economic policy of the country has brought into focus new issues which were not very important or relevant in the past. These issues can be broadly classified under two groups: (1) those arising out of the opening of the economy to trade, investment and technology flow, and (2) those arising out of deregulation or market freedom.

To reflect on the first group, opening of the economy has made livestock trade an extremely important field of research. There are several issues here. For instance, is our livestock sector protected, what is its comparative advantage, what is its export potential, what are tariff and non-tariff barriers to livestock exports, what should be the strategy for promoting export of live animals, livestock products, and livestock based manufacture? Under the World Trade Organisation (WTO) rules, mandatory livestock imports are going to come. How will that affect domestic production and incentive structure of domestic producers?

It is widely recognised that in today’s world, technology has become a key factor to development and growth, more important than the conventional factors of production, namely, land, labour and capital. Not only that, it has become a tradable commodity with trappings of intellectual property rights. Development of biotechnology has come to occupy the centre stage in the developed world. In this background, given the wide spectrum of germ plasm and genetic variability within each species of livestock, India has great potential for the development of livestock biotechnology of breeding (intragenic as well as transgenic), of feed-composition, and hybrid fodder, etc. Increasingly, economists will be called upon to assess the viability of available livestock biotechnologies both from the angle of domestic application and trade.

There is another aspect of this problem. Development of livestock biotechnology rests on the livestock resource base. Tropical countries, India in particular, are endowed with a diversified, rich resource base. In the present context, conservation and protection of this resource base has acquired an importance it never had before. Economic research in the country so far has been concerned with efficiency of the livestock sector, one way or another. In the changed context, it will as well require to be approached from the viewpoint of natural resource economics. Not only the current value of the stock and its efficiency of use, but its future value will also have to enter the analysis. Several of the country’s livestock whose populations are either small, declining or of marginal importance to the sector, for instance, camel, ponies, yak, Mithun, water buffaloes, sheep and goat, hardly received any research attention in the past. These are to come in their own for their future value, for their value in preserving the bio-diversity, if for nothing else. It may also be worth noting that the approach of resource economics to the comparative economics of bullocks versus tractors will change its complexion. This is because whereas tractors are run on an exhaustible resource, bullocks are a non-exhaustible renewable resource. Sustainability and adverse environmental effects in the two cases are another matter.

Let us now turn to the issues arising out of deregulation or market freedom. There is increasing pressure and demand from the corporate sector to enter into agriculture and allied activities in the name of modernisation, scale-economy, captive raw material supply for agro-processing and exports. There is accordingly demand for removal of ceilings on land
ownership, as if ownership of land is a necessary condition for a capitalist enterprise in agriculture and allied activities. Even without this, though, corporate sector has already made inroad in inland fisheries in the recent past. As noted in Section I, entry of the private business in milk collection and processing has created a conflict of interest with dairy cooperatives. A major research issue then is: what should be the optimal institutional structure in livestock production and processing, which will make maximum contribution to growth and income distribution and ensure rural employment. Several alternative institutional arrangements are possible, and indeed are in place, for instance, in sugar, tomato and milk. Those are: a pure integrated capitalist enterprise, a joint processing company with livestock producers having share in it, a contract farming arrangement, and a producers’ co-operative system. A connected issue is: whether there are substantial economies of scale, and which institutional arrangement is best suited to exploit these economics without compromising on the development goals noted above.

Finally, research in economics of meat production and processing is expected to assume importance in the future. The elasticity of demand for meat with respect to consumer expenditure is close to one. With faster per capita income growth the demand for meat is going to grow. The livestock sector also has the potential for meat export. Sheep, goat and poultry apart, the bovine population, particularly the cattle population is slowly and but surely moving towards a composition oriented to increasing milk production. With the observed stagnation and expected decline in drought animals stock demand, there would be increasing number of male calf not required for replacement of that stock. This has the economic potential for rearing them for meat purposes. In the developed West up to 40 per cent of income from cattle keeping is accountable to meat. In our country there are restrictions on slaughter, and there are further legislative moves to impose a complete ban on slaughter of all classes of bovines. What should be the economically rational approach to the disposal of increasing numbers of bovine male calf in the future? Livestock economists at least should try to lay bare the loss of potential income on this account to millions of bovine keepers in the country, a substantial percentage of which is comprised of the rural poor. Finally, thanks to political exploitation of the people’s religious susceptibility, if India cannot produce bovine meat for herself, can she benefit from export of live meat bovines raised for the purpose? If so, are there export markets for such animals, and what are the constraints to exports to those markets which have to be overcome?

IV

COMMENTS ON LIVESTOCK STATISTICS

The pre-condition for good empirical research is the availability of good data. Collection of primary data by individuals and social science research institutions is feasible at the micro level, provided there is financial support for it. For the macro research studies one has to rely on secondary data from official sources. These are primarily collected for preparing national (state) level aggregates like income, production, stock of capital, capital formation, etc. It is also collected for purposes of monitoring and appraising development programmes and projects. Whatever the purpose, the result depends upon the quality and the timeliness of the data.

Livestock statistics from the official sources, as we shall see, have deteriorated on both these counts, specially since the mid-1970s. The quinquennial livestock census, the best
source of statistics on livestock number, their age-structure and functional classification is no longer the same it had been since 1920s. In 1982 census, the authorities in their wisdom dropped the functional category of animals ‘used for work’. For cattle males over 3 years of age they introduced a new classification: castrated and non-castrated, destroying the uniformity of functional classification that had been there since 1921. Following the criticism they restored the original classification in 1987 census. But it took two years to complete the census in 1989 and its results were published six years later in 1995. The census is no more taken in the scheduled month of the census year. Neither is the coverage complete. Worst still, the 1992 census, it is reported, was conducted only in the seven states of the country. As noted, it takes years before the census data are published, notwithstanding the advances made in communication and information technology. There is thus no timeliness of census data either in collecting it or in making it available for public uses or research purposes.

I have referred to the IASRI livestock surveys of 1950s and 1960s in Section II. Following the methodology developed through these surveys, all the states and union territories were supposed to carry out annually an integrated survey on livestock production and animal husbandry practices under a centrally sponsored plan scheme, beginning during the Fourth Plan (1969-74), making regular data available on inputs, outputs, and bio-characteristics of the surveyed population. Few states did so, not before 1977-78. As late as in 1987-88, out of the 31 states and union territories, only 17 carried out the survey (Government of India, 1988). How is the livestock production for national income purposes estimated each year? Apparently, there are problems here. The Ministry of Agriculture pools together what it calls ‘survey estimates’ and ‘official estimates’ from non-surveyed states, scrutinises these and supplies all-India estimates to the Central Statistical Organisation (CSO). The so-called ‘official estimates’ are virtually guess estimates of the concerned Animal Husbandry Departments. There are problems with the ‘survey estimates’ too, since the recommended methodology is not strictly followed (Government of India, 1988). For whatever worth, the Survey Reports could be useful for research purposes. But there is no co-ordinated attempt to publish them. At best one has to procure them from the respective Animal Husbandry Departments with a time lag.

What could be the possible reason for such a sorry state of affairs both in respect of the livestock censuses and the integrated surveys? It seems the primary reason lies in bringing these under centrally sponsored plan schemes. The State and Union Territory Governments apparently take these as central activities, rather than their own regular responsibility charged to their non-plan revenue account. They wait for the money to be released from the centre and even if it is released in time, there are always more pressing demands to fulfil.

For the problems associated with the Integrated Livestock Surveys and for the fact that quinquennial livestock censuses are neither complete, nor timely, the CSO livestock related statistics on national income accounts do not possess the quality that they are expected to possess. In another context we found that the CSO estimates on real capital formation in the livestock sector are far from being correct (Mishra and Chand, 1995). It seems that following the earlier pattern of the Farm Management Surveys, the Commission for Agricultural Costs and Prices gets data collected on some aspects of livestock, particularly on cost of maintenance of working bullocks and dairying. But these are left to lie in the questionnaire schedule.
We have gone into the problems of livestock statistics in some detail for two reasons. Firstly, the researcher should be very cautious and careful while using the official statistics. Secondly, the Conference should deliberate on this basic issue with a view to making precise, operational recommendations to the Government of India for generating quality statistics and making it available on time. Just as human census of 1991 could quickly become available on the NICNET, why can't the livestock census and survey data become available in the same way?

V

CONCLUDING OBSERVATIONS

To sum up, research in livestock economics has not received the support it deserves, even though the livestock sector plays an important role in the Indian economy. Furthermore, the livestock of the country is a natural endowment, a renewable resource which in terms of its germ plasm spectrum and genetic variability is incomparable with any other country in the world. Yet a good deal of research has been done in the post-Independence period. By going over the literature in a cursory fashion, I have tried to identify the gaps and the lacunae in this research. It appears that much of the research has been focused on explanations of the cattle holdings and economics of dairying. Small ruminants, and even the large ones with small populations like yak, Mithun and water buffaloes have been neglected. So is the case with equines - camel, horses and ponies. I have also tried to articulate the research issues that have emerged, and are going to be important in the wake of liberalisation policy of the country since July 1991. Livestock trade, livestock biotechnology, and treatment of livestock from the point of view of natural resource economics, in my view, are going to be very important. Since good livestock research, for that matter any research depends upon the availability of quality data and timely access to that data, I have briefly reviewed the status of official livestock statistics to show that it suffers on both counts. The improvement in it is not only necessary and desirable for research, it is equally necessary and desirable for official purposes.

REFERENCES

Amble, V.N.; V.V.R. Murty, K.V. Sathe and B.P.P.S. Goel (1965), "Milk Production of Bovines in India and Their Feed Availability", Indian Journal of Veterinary Science, September.


Vaidyanathan, A. (1982), Role of Bovines in Indian Agriculture: A Study of Size, Composition and Productivity, Centre for Development Studies, Trivandrum (mimeo.).

