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Proceedings of the Workshop on

Economics of Animal Production in Kerala

held on 6th June 1983

at

**College of Veterinary and Animal Sciences
Kerala Agricultural University**

Mannuthy, Trichur - 680 651

Convenor

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(Professor-in-charge)

Animal Production Economics

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Proceedings of the workshop on 'Economics of Animal
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Kerala Agricultural University
Mannuthy.

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Exerpts from the welcome address by Dr.M.Krishnan
Nair, Dean, College of Veterinary & Animal Sciences.

This is the first time that we are organising a
workshop on economics of animal production. Any system,
whether crops or animals has to be related to the cost of
inputs and returns in addition to social necessities and
compulsions. Here we have attempted to bring together profess-
ionals actually concerned with the management of technical in-
puts and the social scientists and administrators to take stock
of pertinent research and to identify priorities for future
research.

I think that it may not be wrong to cayegorise live-
stock development policies into two categories, viz: technical
and economic. Although separation is useful for enumerating
policy areas, an integration of the two categories is badly
needed. Economic analysis can help biological scientists by
indicating where the cost/benefit ratios is likely to be the
greatest, that is, concentrate on those production activities
in which greatest value added originates, or where perceived
scientific break-throughs are expected to create production
gains.

Now`a days different types of models have been commonly
used to obtain information about livestock systems, and it is
important to distinguish between them. One is the biological
and the other is the economic model. The biological model
developed by animal scientists consists of a series of
simulaneous equations that trace the flow of energy through the
plant-animal system being studied, from the feed one offers,
to intake of feed by the animals, and their weight change and
subsequent production of offspring. The total energy entering
the system must equal the total energy absorbed and produced
as end-product. Implicit in the model are assumptions relat-
ing level of quality of intake with quantity of intake and with

efficiency of conversion of feed to metabolisable energy available to the animal. Models relating to liveweight and probability of conception have been developed by Levin and coworkers.

The economic model used by agricultural economists and planners simulates the composition of a herd or flock over time, given different management and marketing strategies, and sometimes has linear programming components. This type of model reports on cash flows and calculating internal rates of return for a given set of production and marketing conditions.

Animal production has many facets that should be considered in the development of a research orientation. There are those that require large scale facilities and costs, and, those concerned at the local levels. When considering research priorities it also becomes evident that certain factors do not become limiting until other constraints to the existing production system have been removed. In addition, certain research activities lend themselves to a disciplinary approach, whereas others demand a closely coordinated effort by a team composed of several disciplines.

In our country we are in a deficit situation regarding per capita consumption of livestock products as based on minimum dietary requirements. The situation results from a circular pattern of low levels of animal product supplies caused by low returns on resources devoted to animal production, which is caused, in turn by low levels of purchasing power of the vast majority of population.

There are many questions relating to the diversity and complexity of factors of livestock production. A discussion of these and identifying the problems will give potential benefits to policy makers for further empirical research to be conducted within a rigorous conceptual framework.

Exerpts from the presidential address by Sri.T.

Madhava Menon, Vice-Chancellor, Kerala

Agricultural University.

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Various development programmes in the livestock sector have been implemented with a view to increasing income and employment opportunities. But it is doubtful whether the benefits of the programmes have reached the poor and needy whose upliftment can very much be aided through livestock production. In the state livestock forms an integral part of the agricultural system and their economy is of considerable importance to the supply of nutritive foods and energy.

The proper management of our livestock resources, in the aggregate, has received very little attention. Some models for analysing the livestock economy have been suggested and it is desirable that we try out these models, viewing the food and energy supplies from the livestock sector as a whole system, for the all round development of this sector.

Another area that might be fruitfully deliberated upon is the scope for introduction of newer species and products to enhance the availability of livestock products in the aggregate. In meat production, for instance, unconventional sources like rabbits may have good promise, but suitable technologies have to be developed to exploit such sources.

Exerpts from the inaugural address by Dr.A.Vaidyanathan,
Centre for Development Studies, Trivandrum.

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In Kerala cows dominate the milk production scene and he-buffaloes the draft scene, and this picture is just the opposite of the all India scene.

Cross breeding and operation flood programmes have had some impact, but this has resulted in functional fragmentation of disciplines with no proper coordination. In livestock development programmes there is no monitoring worth mentioning. What is happening now is the mere reporting of some physical and financial targets, and, planners seem to insist on such reporting. It is left to one's imagination to visualise how much of this reporting is cooked up. But it is astounding that the managers of the programmes are quite unconcerned about knowing what is happening and one finds very little effort in this direction. In fact there may even be a challenge to resist any objective probing on the ground that there may be criticisms and questions asked. But these are unfounded fears.

Cattle must be viewed as a composit unit producing milk, work and calves and its integration with crop production. Although Kerala has forged ahead in the milk production front, it still depends considerably on imports for its meat production.

Many feeding experiments were purely from the nutritional point of view with very little response studies from the economic point of view. Wherever feed availability improves buffaloes have been found to substitute for cows and in the light of the stabilising trend regarding draft animals, there will be more feed available for milk production.

There has been a number of surveys conducted at the national and regional levels pointing out the various inter-regional variations in productivity and other aspects. What is lacking is proper use of these data, and the proper techniques to be used for making reliable estimates. How-

ever, there is still much research that could be carried out for generating data on many basic aspects, particularly to answer specific questions. Continuous/periodical monitoring should be undertaken to gather information on prices, costs and other economic and technical parameters.

There is need for coordinated, multidisciplinary approach as, in the Indian context, scientists among themselves and in collaboration with economists have to work, for the reason that, Indian agriculture is an integrated system, multifunctional in character and animal production is organically integrated with agriculture.

(..6.)

Abstracts of papers presented - Session II Bovine
Economy

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WHITE REVOLUTION - AN APPRAISAL AT THE MICRO LEVEL.
(Dr.T.Prabhakaran, College of Vety. & Animal Sciences)

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It was around 1970 that cross breeding on a massive scale was introduced in the state, and results were evident by 1976-77. This year can be considered as the turning point in milk production since, between 1966-67 (2.65 lakh tonnes*) and 1976-77 (5.10 lakh tonnes) the growth rate in milk production was 6.77 per cent (compound) per annum and between 1976-77 and 1980-81 (9.08 lakh tonnes) the growth rate was 15.51 per cent per annum, with an overall growth rate of over 9 per cent for the 14 year period. Cows contributed over 80 per cent of the total milk production and the increase in total output of milk has been due largely to the qualitative change in the breedable cattle population of 13.71 lakhs (1977), in which over 50 per cent were crossbred cows.

Based on the random sample surveys conducted in the Ollukkara Block area some of the techno-economic parameters observed during 1966 - 67 and 1976-77 were as follows:-

Parameter	1966 - 67	1976 - 77
Percent households producing milk	25	40
Average daily yield per milk cow (ltrs.)	2.50	3.02
Average per household milk production (ltrs.)	2.50	3.22
Average age at first calving (months)	42	40.27
Average calving interval (months)	17	18
Average duration of lactation (months)	9	11
Average feed cost per day per household (Rs.)	1.48	3.40
Average feed cost per litre of milk (Rs)	0.59	1.46
Average quantity of milk sold per household per day (ltrs.)	1.47	1.93
Average sale price of milk per litre (Rs.)	0.90	2.01

* 1 lakh = 0.1 million.

The integrated survey conducted by the department of Animal Husbandry in 1978-79 indicated the per day feed cost for cross bred and non-descript cows as Rs.8.49 and Rs.5.44 respectively. The features relating to the rearing patterns which remained unchanged over time were; lack of influence of size of holding on average output of milk per household and on strength of cattle per household, large scale trade in cattle, more so on small than large holdings and higher consumption of milk in large than in small holdings.

The principal observations may be summarised as follows:

During the period prior to white revolution feed costs increased by slightly over one per cent for every per cent increase in the returns from milk and, during the period after, by about one and half per cent. The production base for milk has spread wider and home consumption of milk has increased marginally. Technologically the herd has progressed, though not to the level possible through better exploitation of crossbred cows and, in general, milk production has become less remunerative. Although market orientation to milk production was observed through a regression analysis of survey data, benefit/cost analysis using feed costs alone over four lactations revealed milk production in the crossbred cows, under prevailing field conditions, to be less attractive. The economic indicators were, Internal Rate of Return 36.5%, Net Present worth Rs.1,035.75, Pay Back period - 4.14 years (corresponding to completion of third lactation at the age of 7.31 years) and benefit/cost ratio - 1.17.

Based on the market outlets for milk the organised sector (cooperatives and Govt. institutions) was found assuming increasing importance over time. Thus the stable outlets with market orientation to production seems to have increased production and productivity of milk, but at increasing costs and decreasing margins.

The issues arising may be summarised as follows:

1. The need for considering alternatives in lowering cost of production.
2. Lack of sensitivity on the part of organised marketing system to producer and consumer interests as evidenced by imposing quotas on off take during flush seasons, and
3. the impact of changing levels of income and food habits on consumption of milk and milk products.

Integration of animal and crop enterprises for
optimum farm Resource use in Kerala.

(G.Sreekumaran Nair, Agricultural Specialist, Agrl.
(PEM Cell) Department, Trivandrum)

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In our overwhelming preoccupation with foodgrains production, livestock development was not perhaps given the importance it deserved. The direct contribution of animal husbandry is 5-6 per cent of Indian's national income. The paradox of having large numbers of cattle and buffaloes and pathetically low productivity levels, is well known. Apart from milk, meat and work production, livestock also yield other products like hides, bones, horns, hooves and other by-products valuable in industries and pharmaceuticals. Besides livestock provide employment to about a million people, mostly self-employed in family units.

The cross bred cattle population in the state is constantly increasing. This trend though desirable, we should not loose sight of the problem of numbers vis-a-vis availability of feed and fodder resources. It is reported that the National Bank for Agriculture and Rural Development (NABARD) is exploring the possibility of exporting cross bred cattle from Kerala to other states for distribution under various subsidy-linked credit programmes. Absence of sentiments against slaughter of cattle in Kerala provides good scope for the development of meat industry which can provide remunerative outlet for the surplus cross bred male stock and other culled animals.

Projects under Special Agricultural Development Programme (SADU) are attempting to integrate crop and livestock production. It would be worthwhile to conduct studies on the optimum combination of resources that favour economic animal production in the various agro-climatic conditions of the state.

Performance of Jersey and Brown Swiss crossbred cows
(R.Balakrishnan Asan, V.S.Balakrishnan & T.Prabhakaran
College of Veterinary & Animal Sciences,
Mannuthy)

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Livestock economy of Kerala is oriented more towards cattle, particularly cows, than other livestock including buffaloes. Cattle forms 56 per cent while the buffaloes comprise only 9 per cent of the total livestock population in the state. The main emphasis in cattle development was increasing milk production potential in cows through cross breeding. Jersey and Brown Swiss cross breeds dominate the crossbred population in the state. A comparison is made between these two crossbreeds regarding certain technical parameters based on data from organised farms under Kerala Agricultural University. The level of exotic inheritance among the cows studied ranged between 50 and 75 per cent.

Some of the principal parameters are summarised in the chart. In the long run Brown Swiss crossbred cows were better milk producers than Jersey crossbred cows, although in matters like post partum oestrus and infertile period, which influence calving intervals, they were similar.

Chart on page (36).

(..10)

Problems and Prospects of financing animal husbandry
Sector

(B.J. Baliga, Divisional Manager, Canara Bank,
Mangalore)

Commercial banks play an important role in the development of livestock production in the country. Dairy finance is one of the major lending activities under agricultural finance. Some of the problems faced by financing animal husbandry sector are as follows:-

1. Shortage of good quality cattle.

A severe shortage is experienced while implementing massive dairy development programmes. The existing animals are transferred from hand to hand resulting in an undue escalation of prices for animals. Besides taking action to reduce the uneconomic period of maintaining cows, it will be worthwhile to explore establishing cattle breeding farms in the suburbs of towns utilising sewage for fodder cultivation. Most of the schemes are for financing purchase of mature cows only. It is essential that schemes for assisting in the scientific rearing of cross bred calves and heifers are also implemented.

2. Need for propagating fodder.

The cost of the major source of roughage, viz; paddy straw, is increasing rapidly turning dairy farming into an uneconomic enterprise, particularly for poor farmers and agricultural labourers. Fodder development programmes have not created the desired impact on farmers. Hence the feasibility of establishing community fodder farms and silage plants by cooperatives can be explored.

3. Manufacture and distribution of concentrates.

The Kerala Agricultural University can investigate the scope for making cheap concentrates with the farm waste and other materials available locally, and, at the same time standardising feeds. Banks may render assistance for setting up plants.

4. Low cost housing for dairy animals.

It will be worthwhile to conduct a study on devising cheap modes of construction of hygienic cattlesheds. By this, the housing component in project costs, which works out to more than 33 per cent, must be brought down to at least 16 per cent if the project is to be economically viable.

5. Cattle insurance.

The current rate of premium comes to 3.1% of the cost of the animal, which is too high. The premium subsidy scheme introduced by the Government does not seem to have benefited many dairy farmers. The constitution of a risk fund by producers' cooperative societies with contributions from producers, Government and societies can be thought of.

6. Coordination of extension and development activities.

There are multiple agencies working in the field of dairy development and most of them are carrying out similar functions. There is need to coordinate the activities of these agencies for effective dairy development.

7. Marketing arrangement.

Many cooperative societies which were formed to solve the problem of marketing milk have turned sick due to misappropriation of funds and mis-management. The societies should ensure fair price to the producers in all seasons and make available inputs such as feed, fodder, veterinary aid etc. at reduced costs. There must be proper supervision of the functioning of the societies.

8. Monitoring and evaluation.

These seem to be lacking in many schemes being implemented by various agencies. The task should be entrusted to a third party, not involved in the implementation of the programmes.

Due to certain technical reasons development of other livestock has not progressed as much as cattle. But many are coming forward for establishing broiler units utilising bank finance.

Economic of livestock production in Kerala
(Director, Dept. of Dairy Development, Trivandrum)

1. Major problems of economic importance.
 - a) Upgradation of the genetic potential of milch cows
 - b) The development of feed and fodder resources
 - c) Development of infrastructural facilities for marketing milk and milk products, and
 - d) Organisation and development of strong and viable farmers' organisations.

Feed and fodder resources available are far below requirements. The production of cultivated fodder is meagre; the area covered being less than 10,000 hectares in the state. Milk production in Kerala is almost entirely dependent on costly concentrate feeds which are mostly imported from outside the state. Kerala has to develop newer varieties of fodder suitable to different agro-climate conditions and capable of integrating with crop cultivation.

2. Newer and potential areas for exploitation and development in the production-processing marketing consumption chain.

The volume of milk consumed in the state is very much dependent on consumption habits of the population. Milk consumption even in the higher income brackets in Kerala is low compared with people of similar categories in the north. Imaginative programmes are needed to increase consumption of milk. It would do well to start with children and, if necessary, to provide milk at subsidised price. This will expand market for milk and increase employment opportunities. Kerala Agricultural University should research into newer and popular milk products that can be produced with simple and inexpensive equipments, to increase milk consumption.

Feed Resources and Economics of Milk Production
(P.Ramachandran & C.R.Ananthasubramaniam,
College of Veterinary & Animal Sciences, Mannuthy)

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Variability in production due to genetic factors does not exceed 35% and the rest is contributed by environment, the most important of which is feed, which accounts for 70 per cent of cost of production. The National Commission on Agriculture (1976) has reported shortage of 44 per cent in concentrates, 44 per cent in dry roughage and 38 per cent in green fodder. The live-stock population in the country in 1982 was 369 million and poultry population 147 million. Distribution of livestock was as follows:

Cattle - 182, Buffaloc - 61.5, Goat - 72, sheep - 41.5, pigs - 10 and others - 2.

According to NCA (1976) report the cattle population should show an increase in the proportion of improved breeds with overall reduction in total numbers by 2000 AD taking into consideration the livestock feed and fodder resources. The cattle population in the country in 2000 AD has been estimated at 166.7 millions consisting of (in millions), bullocks - 73, non-descript cows - 21.3, improved cows - 11, crossbred cows - 18.9, non-descript young stock - 26.5 and crossbred young stock - 16. For this cattle population the estimated feed requirements (in million tonnes) per annum are, concentrates - 45.6, green fodder - 454.6 and dry fodder - 269.6.

So long as increasing the availability of conventional feeds do not appear to be feasible, inclusion of feeds from unconventional sources in the rations of animals seem to be a possible solution to the problem of shortage and at the same time reducing feed cost. For example, the addition of unconventional feed like rubber seed cake to the extent of 25 per cent replacing 25% coconut cake in a standard ration for dairy animals the cost of feed per kilogram of milk could be reduced by over 10 per cent. Some of the unconventional feeds identified and found capable of replacing conventional feeds to the extent of 10-25 percent are, tapioca starch waste, tapioca leaf meal, cocoa pod, rubber seed cake and coconut pith.

Chart showing progress of calving in
crossbred cows

B R E E D			
Jersey cross		Brown Swiss cross	
age at initial service 698(94)			age at initial service 801(36)
age at 1st calving 1059			age at 1st calving 1148
No. of days in milk 364(94) (Milk yield 1868kg (94))	P.P.O. 120 (98) I.F.P. 81 (94)	106(24) 64(36)	P.P.O. No. of days in milk 319(29) I.F.P.
age at 2nd calving 1547			Milk yield 1665 kg (29)
No. of days in milk 343(57) (Milk yield 1843kg (57))	P.P.O. 94(80) I.F.P. 89(97)	105(20) 105(24)	P.P.O. age at 2nd calving 1617 I.F.P. No. of days in milk 324(21)
age at 3rd calving 2032			Milk yield 1913 kg (21)
No. of days in milk 342(36) (Milk yield 1967 kg (36))	P.P.O. 81(42) I.F.P. 106(78)	99(11) 131(20)	P.P.O. age at 3rd calving 2098 I.F.P. No. of days in milk 322 (8)
age at 4th calving 2485			Milk yield 2214 kg (8)
No. of days in milk 317(15) (Milk yield 2023kg (15))	P.P.O. 92(21) I.F.P. 89(42)	96(9) 82(11)	P.P.O. age at 4th calving 2588 I.F.P. No. of days in milk 313(2)
age at 5th calving 2963			Milk yield 2653 kg (2)
No. of days in milk 350(10) (Milk yield 2393kg (10)).	P.P.O. 71(11) I.F.P. 81(20)	54(2) 58(9)	P.P.O. age at 5th calving 3096 I.F.P. No. of days in milk 401(2)
			(Milk yield 3096 kg (2))

(1) All periods are in days.

(2) Figures given in brackets are sample size.

(3) P.P.O. - Post partum Oestrus interval.

(4) I.F.P. - Infertile period.

Importance of Integrated Approach for the Development
of Dairying in Kerala.

(K.P.P.Kurup, Senior Manager (P&I), Kerala Co-operative
Milk Marketing Federation Ltd., Trivandrum)

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Milk production in the state has gone up by 200 per cent between 1965-66 and 1977-78. From the available records it is seen that the milk production of an average crossbred cow in the field is 1800 kg. per lactation whereas the expected yield under optimum conditions is 2500 kg., thus indicating that the genetic potential has not been fully exploited. Roughage provides cheap nutrients and, hence, good quality herbage can reduce the cost of milk production appreciably. Such herbage can be in the form of catch crop, inter crop or component in crop rotation. One study has revealed that majority of households keep cows for home consumption of milk. But recently many milk producers have started producing milk availing bank finances and sale has become important part of the production process. But the problem is that the producer has not been able to sell regularly for want of proper, steady and remunerative outlet.

As against an estimated daily consumption of over 4 lakh litres in the urban areas of the state, the organised marketing sector supplies around 1.25 lakh litres. This is due to the inadequate marketing infrastructure in the state. Besides, there is also the problem of reduced consumption owing to high milk prices. The transportation costs of procuring milk by the organised sector have ranged between 8 and 45 paise per litre of milk. To this must be added the processing, chilling and distribution costs to realise the wide marketing margins involved in marketing milk. High procurement costs are due largely to the widely scattered nature of production and poor condition of the roads.

Production and procurement costs vary widely in different ecologies. There is, therefore, no logic behind the decision that milch cattle should be reared in all places or market infrastructure should be developed alike in all ecologies. Similarly, the land utilisation pattern in the state is not suitable for the development of dairying as a specialised farming activity. The cattle sustain mainly on crop residues and the scope for introduction of fodder cultivation is rather poor. Further, we have to depend on other states almost entirely for the requirements of raw materials for manufacturing balanced feed. So enrichment of crop residue may help partly, in solving the problem of feed shortage.

Other technical and organisational problems that need solution are:-

1. Reduction in feed cost, this being the major component in cost of milk production. The possibility of enriching crop residues should be explored.
2. The selection and popularisation of quick growing fodders as catch crop or inter crop.
3. The proper coordination and periodical evaluation of breeding programmes.
4. Cheap methods for preservation of milk at farmers level for procurement in bulk from remote areas.
5. The frequent complaint of lower values of SNF in milk of crossbred cows needs to be looked into as exotic breeds might inherently have lower SNF values in milk.
6. The problem of development of milk products has to be looked into in order to widen the market for milk.

Briefly, it will be illogical to start dairying in all ecologies, (instead of in those areas suitable for milk production) and thus creating problems on the procurement front, which in turn result in high marketing costs.

DISCUSSION SUMMARY. (Dr.V.Radhakrishnan, Professor of Agrl. Economics)

The discussions on the bovine economy can be grouped into three major categories, viz:

1. those relating to production of dairy products.
2. those relating to marketing, and
3. those of a general nature.

1. Production:

It was generally agreed that dairying, having come to stay in the state and having gained some momentum in development, is a potent instrument of rural change and is capable of socio-economic upliftment of the vast majority of small farmers and agricultural labourers. However, the problems relating to escalation of feed costs, low productivity levels and poor income generating capacity of dairying remained, which, if not tackled urgently, it was feared, will adversely affect the dairy sector.

Dairying as large scale commercial units is uncommon and it is evident from the existing distribution pattern and, perhaps, justifiable from the social objective of rural development, that the production base which is wide and scattered will continue to be so and become even wider resulting in small outputs from large number of producers.

The non-availability of feed and fodder in sufficient quantities within the state and the high prices for these items were matters for concern and should receive a good deal of attention. It was essential to bring down the cost of production through increasing the production of concentrates and roughages within the state and through the

development of alternative feeds. Though it is generally believed that land is the major constraint in increasing the production of fodder, it was pointed out that fodder production can be augmented considerably through the cultivation of fodder in the rice fallows during summer. For this purpose it was necessary to identify appropriate short duration fodder crops and propagate their cultivation. There was also the suggestion that Government or cooperative agencies should take up manufacture of high quality feeds and make them available to farmers at reasonable prices, in order to break what was called the monopoly of the feed industry. It was also suggested that the high costs of compound feeds was due to the necessity to import from outside the state almost all the ingredients, and that the manufacturers' margin was generally small. Due to low availability and high prices of raw materials, it was felt essential to explore feed materials from non-conventional sources. But when non-conventional feeds like ^{rubber seed} cake and tapioca starch waste are proved to be satisfactory substitutes for conventional feeds their prices rose considerably.

Overemphasis on increasing genetic potential for milk production without providing for adequate environment, particularly feed resources, has been observed as detrimental to the dairy sector. It was, therefore, suggested that what was required was emphasis on the type of animal which would best suit the resources of the farmer and those of his area or neighbourhood. The cross breeding programme has brought in its wake the problem of lower percent of solids Non-Fat (S.N.F) in the milk produced than minimum prescribed as essential. At first this poor quality might give the impression of milk being adulterated though it may be of genetic

origin. Hence it was essential to look into the breeding programmes vis-a-vis the quantitative and qualitative aspects of milk production so that standards may be revised to the benefit of both producers and consumers.

The fact that proper feeding can improve growth and production is clear as evidenced by the experiences gained with special animal husbandry programmes, wherein feeds are distributed at concessional rates. However, the problem of increasing feed costs remains which is a major issue to be faced in milk production.

Expected yields from cross bred cows are much higher than the average obtained. The reasons for low productivity in general and varying productivities under different ecologies need to be looked into. So also the wide disparities in the cost of production in different regions need thorough probing. Such studies may reveal the relative advantages of areas for milk production, fodder cultivation and type of animal suitable and may give proper direction to the economic production of milk.

2. Marketing:

Inability of the organised marketing system to lift all the surplus, particularly during the flush season, was one of the major problems on the marketing front. Since some profit can be made by producers only during the flush season, they are severely handicapped by lack of proper marketing

facilities. It was stated that there should be vertical integration in the dairy sector. There was also need for market studies for indentifying profitable product mix acceptable to consumers.

High marketing margins and low volumes handled are two interrelated facets of the organised marketing system. The producers are increasingly looking forward to the organised market for marketing their milk. Owing to the dispersed nature of production there is no prospect of reduction in transport costs even if more volumes are purchased. The sizeable margins of 35 to 40 paise, which at times goes upto as much as Re 1/=, per litre of milk handled, forces the organised market to pay less to producers in as much as consumer resistance was observed to increasing retail prices. Doubts were also expressed on the efficiency of management of many cooperative milk societies. These and other constraints imposed on infrastructural facilities have slowed down the growth of the organised market resulting in about one-fifth of the urban demand only being met.

The basis on which milk prices are fixed by cooperatives is an important factor which determined the receipts to producers. While the organised market has fixed SNF at 8.5% it was pointed out that many producers were getting much lower values.

One way in which the problem of low volumes and high transport costs could be tackled may be to develop technologies suitable for preservation of milk at the household level so that collection can be at convenient intervals when there is sufficient volume.

Marketing system for animals particularly of those to be sold for meat was considered to be ill-organised with the result that the salvage values realised by owners of animals are meagre. This is in spite of the high demand and increasing prices for meat existing in the state. Slaughter statistics published by Government agencies were considered gross under-estimates, since, not only that many organised slaughter houses, particularly in Panchayats, do not report animals slaughtered, but also that there is considerable unauthorised slaughter (or slaughter where there is no regulatory influence) going on in the state. The situation only indicates the high demand for meat existing in the state. Briefly there is much to be studied on the marketing aspects of milk and milk products and meat.

3. General:

If animal husbandry is to be an instrument for economic development, it has to be studied from the direction of those to whom it could provide a livelihood. The animals should not become a burden on those who possess them. It was pointed out that in cases where financial aids like loans and subsidies were involved for acquiring animals, very little emphasis is made to convert these into opportunities to increase owner equity by guiding them for proper management of animals. Doubts were expressed on the wisdom of indiscriminate extension of financial aids as, more often than not, many undesirable, unskilled

an illequipped persons are attracted resulting in very low turn-over in real terms on the investments.

This is more so in situations where farmers are either silent spectators or active partners in a process of sharing the subsidies and low interest loans rather than utilising them properly. There is evidence to show the considerable variation in production and profits due primarily to differences in management skills. Thus proper training and orientation must precede as well as succeed financial assistance, if the latter is to achieve its social and economic objectives. It is also essential to study the socio-economic environment of the selected beneficiaries of dairy programmes.

It was pointed out that dairying as independent enterprise has no viability economically, and that it must be viewed as a supplementary or complementary to other occupations or enterprises, preferably integrated with crop cultivation. Therefore, it is essential that studies for planning for optimisation^{of} milk production with the appropriate breed, feed and other input mix are undertaken in different size holdings and ecologies to determine viable units under various conditions. A glaring lacuna in the implementation of livestock development programmes was pointed out to be the lack of any form of assessment, monitoring and/or evaluation. The necessity for continuously evaluating projects and also monitoring them concurrently was emphasised. Overall evaluations should, preferably, be carried out by outside agencies.

Lastly, the multiplicity of Government agencies in the dairy sector with no coordination among them, but at the same time involved in identical functions in the same areas were observed to be confusing to producers/^{and} detrimental to dairying, besides indulging in wasteful investment of scarce resources. There must therefore, be proper coordination with delimitation of functions for these agencies to be effective.

Problem areas for investigation (Summary-Dr.A.Vaidyanathan).

The problem areas identified may be grouped into five broad categories. The first category relates to cost of production - Not much attention has been paid to this aspect. The cost includes the important component of feed and rearing of calves and dry cows. Feed conversion efficiency of cattle under field conditions is, on the average, lower than under controlled conditions. Also there appears to be considerable variation between farms. It will be worth while to identify factors of management responsible for these variations, which may show avenues for cost reduction.

The second category relates to market costs and prices - Collection costs and margins are said to be high, and the inefficiencies of agencies in marketing have been pointed out. The quality of the product and the market structure are different with different marketing institutions. While private agencies can manipulate product specifications, Government agencies cannot. Hence studies on the prices in organised and other markets, market structure and market channels, relative economics of different market channels and also on cost reduction possibilities by state agencies can be undertaken.

The third category relates to the economics from the users' end.

The fact that Government assistance is partitioned may be a reality with the actual beneficiary receiving only a fraction of the assistance. There may be social and political aspects to this. Generally the bigger people corner the benefits. Further,

working efficiencies of cooperatives are generally low with high failure rates. Studies must be undertaken on cooperatives to identify reasons for failure or success and also on beneficiaries to identify utilisation of financial assistance.

Fourth category relates to impact of programmes - There are two aspects to this:

1. to have built in checks on the veracity of reporting; this the managers can take up through special assessments, and
2. effective systems of monitoring by outside agencies to understand what is really happening in terms of total production, productivity, costs, relative distribution of animals and benefits and so on.

As it is there is no arrangement for a continuous survey. Some aspects like production, numbers, productivity etc. can be done statewide annually. Comprehensive surveys of households in small areas can be done periodically at longer intervals depending on money and personnel. Such comprehensive surveys can concentrate on animal husbandry matters like feed, health, mortality, breeding etc. These are not to be tied up with evaluation. But the information will be useful for impact studies.

There can also be special purpose studies; like use of different breeds and types of bulls, role of scrub animals, effectiveness of artificial insemination etc. These are one time investigations.

Fifth category relates to policy implications - Issues like what are the breed requirements? should there be different breeds for different areas? what effect these may have on quality of milk and minimum specifications of constituents? Such and many similar aspects should be studied from regional and state angles to give clear and appropriate direction to policy makers.

Session II (Livestock economy - other than bovine)

Extracts from papers presented.

Economics of broiler rabbit production.

(Rajagopala Raja, C.A. and Joy, A.D., College of Veterinary & Animal Sciences, Mannuthy)

Rabbitry in developed countries has undergone revolutionary changes and broiler rabbits are competing with the traditional broiler (poultry) industry. Rabbits breed fast and achieve rapid weight gain. Some of its qualities are: high prolificacy (8 - 10 offsprings per kindling), short gestation period (about 30 days) and early market weight (about 2 kg at 8 weeks of age). Rabbits are efficient converters of vegetable protein into meat, the conversion ratio being about 3.5 kg of feed per kg of body weight gain. Outputs from rabbits other than meat are pelts, offals and manure. Being capable of rearing under backyard method, rabbits are referred to as the "poor man's pig". Colony rearing requires 0.13 m^2 and caging 0.75 m^2 of floor space per rabbit. Cages can be arranged in single or multityre system.

Whither economics of goat production.

(Krishnan Nair, B.R., All India Coordinated Research Project on Goats, Mannuthy).

Goats are widely distributed over Kerala. There were 1.7 million goats in the state in 1977 against 70 million in the country, and the goat population has increased over time. High fertility & prolificacy and short generation interval are the prime economic characteristics. Besides milk

they contribute meat and a variety of other products. In fact there is no part of goat they is not put to use. There is large scale trade in goats and demand for goat meat is rising. Goat skins are valuable foreign exchange earners.

Cross bred goats (local X Swiss) have relatively higher birth weights, body weight gains and larger milk production. Thus it is advisable to implement cross breeding of goats on a massive scale to augment the availability of milk and meat.

Goats contribute three per cent of the total milk produced in the country and about 27 million goats are slaughtered providing an estimated 244 million kilogram of meat. There is no market for goat milk as such, as exists for cow-buffalo milk, hence trade in goat milk is practically non-existent. And the rearing pattern consists of 2 or 3 goats per household. The strength rarely exceeding 6 goats except in the highland areas.

Since goats have been reared traditionally as part of the family very little attention has been paid to the economic exploitation of goats, although goats are ready source of cash. Recently prices for goat meat have considerably increased so also the demand for meat. But the marketing system for goats would appear to work at a disadvantage to goat keepers. It would be desirable to investigate into factors influencing consumer preferences and to work out economics of goat production under different systems of rearing and under different ecologies.

-: 26 :-

What is holding back commercial poultry production in Kerala.

(A. Ramakrishnan, College of Veterinary & Animal Sciences)

Poultry production in the country has witnessed phenomenal growth during the last two decades. Around 1960, there were only about 35 million layers producing about 2300 million eggs and the per capita consumption of eggs was five per year. By 1980 the layer population increased to 90 million producing 13,000 million eggs and a per capita consumption of 19 eggs per year. From small flocks of five to 10 birds in backyard the flock size in organised commercial farms ranged from 1000 to 10,000 birds or even more. Similar spectacular changes have also taken place in broiler production. In the southern states there has been considerable development in poultry industry except Kerala.

The poultry population in Kerala was 13 million in 1977 with an egg production of 1,120 million. By 1982-83 the estimated egg production increased to 1,400 million. This production has been due to backyard poultry farming and there was no commercial unit worth the name. Kerala, which was an exporter of eggs, is, for the last 2-3 years importing eggs from neighbouring states. This must obviously be due to the attractive market for eggs in Kerala. Under such a situation it is surprising that farmers or others have not come forward to start commercial units. This calls for indepth study of the poultry production in the state.

Though not to the extent in other states, appreciable progress has been made in broiler production. But the demand for meat is rising and the supply falls short of demand. Studies on demand

analysis for eggs and meat and identification of the constraints in expanding production or commercialisation of poultry farming seem to be called for.

DISCUSSION SUMMARY (Sri.M.Mohandas, College of Cooperation and banking)

Regarding rearing of broiler rabbits it was agreed that we have to take up studies to generate data indicating the type of rearing feasible under Kerala conditions and the economics of production. The idea of rabbit rearing for meat will not catch up unless backed up by appropriate technology which is yet to be developed. Hence studies under controlled conditions are to be initiated.

The fact that demand for meat has considerably increased is well known although concrete evidence in the form of demand projections is not available. In Kerala the principal suppliers of meat are goats and cattle/bufaloes, followed by poultry and pigs. Unlike other animals, pork production is confined to certain traditional areas with very little expansion over time. Hence there seems to be limitations to increasing availability of meat from pigs. Except in a few cases of broiler poultry production, meat production is mostly from culled animals. In other words there is no conscious effort at meat production through scientific management of animals. The emphasis on milk production has relegated meat to the background. This perhaps may be due to the anti-slaughter policy in the country, even though there is no inhibition to slaughter in Kerala.

Clearly, when the meat market is quite lucrative and expanding, indigenous production through goats and poultry has not risen to the occasion resulting in high prices. It was suggested that consumption, demand and other related aspects be studied in selected areas.

In the area of egg production, there also considerable increase in demand was recognised. Not only over 50% of the poultry population consisted of improved birds, the productivity of layers has also increased considerably. By 1978-79, the egg production per layer per year was 85 among desi and 166 among improved varieties. The overall availability of eggs per capita per annum also seems to have increased from 26 in 1966 to 39 in 1978-79. Ducks have contributed to the extent of 10% to the total egg production, but their improvement has not received adequate attention. One of the reasons for poultry farming not gaining momentum was recognised as the high rate of mortality. It was also suggested that the right type of bird, though moderate in production but capable of surviving under the backyard system, is lacking and that efforts in this direction to develop an appropriate type is essential. This assumes importance since commercialisation with large flocks will be quite impossible with the high feed costs involved. These aspects of poultry, however, needs close scrutiny and in depth studies.

Problem areas for investigation: (Summary -

Dr.M.Krishnan Nair)

The problems associated with poultry production are complex. Many farmers prefer to have low input technology with less risk. Disease prevention is a major factor to be reckoned with in large scale poultry and, perhaps, due to the high mortality, financial institutions are shy of extending loans towards egg production. But financial aids are being extended to broiler farming as the gestation period is short and risk is minimal. So, much more studies are required on the technical front, associated with economic studies, before an appropriate technology can be recommended for adoption. If productivity and survival rate can be improved, the backyard system will help in boosting egg production, at practically negligible cost.

On the meat production front, goats have proved their potential but rabbits are yet to prove their viability and economics under Kerala conditions. Farmers look towards goat more as meat than milk producers. Goats are the one species capable of solving important social and nutritional problems, particularly of the under-privileged. As such their potential as dual purpose animals - meat and milk - has to be exploited in full measure through cross breeding programmes. But studies are required to delimit areas suitable for goat rearing so that their exploitation can be fully justified on economic grounds.

RECOMMENDATIONS:

The recommendations, classified into three broad categories viz, technical, economic and general, are as follows.

I. Technical.

1. Identification and development of short and long duration varieties of fodder crops that can be cultivated in different agro-climatic conditions based on land availability.
2. Improving the nutritive value of paddy straw with cheap additives that can be adopted by farmers.
3. More intensive studies on feeds from unconventional sources.
4. Identifying reasons for low feed conversion efficiency of cattle under field conditions.
5. Development of appropriate type of cattle taking into account ecological variations and resource availability.
6. Investigating into quality of milk from different cross breeds to determine appropriate content of Solids Non Fat (SNF).
7. Development of technologies suitable for preservation of milk at the household level. (this will help in bulk collection of milk to reduce transportation costs).
8. Conducting comprehensive ^{as} well/special purpose surveys to understand feeds provided, health conditions, breeds & breeding, effects of artificial insemination, mortality etc.
9. Development of technology for rearing rabbits under Kerala conditions.

10. Evolving efficient dual purpose type of goats for milk and meat production through cross breeding.
11. Evolving a proper type of bird suited to backyard system of rearing with low mortality, although moderate in egg production.
12. Improvement of productivity of ducks under existing rearing patterns.

II. Economic:

1. Investigation into constraints (including management and cost considerations) on milk production since, average yields of cross bred cows are far below their potential yields and there are wide inter-regional differences.
2. Identification of ecology and breed type suitable for economic milk production.
3. Market studies relating to milk to be undertaken to identify -
 - a) Profitable product mix acceptable to consumers;
 - b) ~~Market~~ structure and marketing channels contributing to marketing costs; and
 - c) Infrastructural facilities in procurement and marketing of milk by the organised sector.
4. Exploration of the potentiality of meat market to help augment sources of meat production.
5. Developing optimum size of units of dairy, with appropriate breed, feed and other input mix for profitable integration with crop cultivation and other occupations under broad categories of resource endowments.

6. Studies to assess impact of development programmes need to be undertaken.
7. Efficiency of the working of cooperatives and other institutions in the procurement and marketing of livestock products has to be assessed to identify factors influencing their working.
8. Studies relating to goat rearing to assess their potential under different ecologies and to identify constraints in development have to be undertaken.
9. Comprehensive surveys of household in different regions at regular intervals to understand the contribution from different species and products of livestock.

III. General:

1. Government agencies must take up manufacture of compound feeds and distribute at subsidised rates to deserving producers.
2. Financial aids for livestock production should be extended only to the needy and deserving after due process of selection of beneficiaries. Training and guidance of beneficiaries to improve their managerial skills should form part of the aid programmes.
3. Multiple agencies are involved in production and marketing in the dairy sector; often carrying out similar functions in same areas. There must be proper coordination between such agencies for the benefit of dairy industry.
4. Livestock Development Projects must have built in procedures for self assessment and monitoring, including the testing of the veracity of reporting.
5. Issues like breeding, ecological delimitation of livestock production, quality specifications of products, price etc. having policy implications must be taken up at the regional/state level.

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