It is a fact that the farmers with high level of education and scientific orientation and having exposure to various mass media like radio, newspapers, leaflet and booklet etc., might have naturally gained better knowledge to utilise various infrastructural facilities existing over a space than other farmers. It is also fact that the farmers who are economically sound could have respect in the area and utilise the facilities with some command.

With regard to facility-wise utilisation of infrastructural facilities, cent per cent of the three categories of farmers had utilized the fertilizer shop facilities. It was also found that majority of all the categories of farmers had utilised seed shop, pesticide shop, services of Assistant Agricultural Officers, Agricultural Officers and Veterinary Sub-Centre. It was discouraging to note that none of the rice farmers had utilized the facilities storage and ware housing and regulated market. The utilisation of primary agricultural cooperative society was comparatively very low among all the three categories of farmers. It was also found that no one marginal farmer had utilized the nationalised bank facility.

Lack of credit facilities and non-availability credit in time were the major problems for poor utilization among the marginal and small farmers, since finance was not a constraint to them (Table 3). Lack of marketing and non-availability of credit in regulated market was the second major problem as this got the second rank in all the categories of farmers. Lack of facilities for the purchase and repair of agricultural implements was the third major problem expessed by marginal and big farmers whereas it was ranked as fifth by small farmers.

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ECONOMICS OF MILK PRODUCTION IN HOMESTEADS - A CASE STUDY IN TRIVANDRUM DISTRICT

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ABSTRACT

Average milk yield per animal per annum was observed to be 1217 litres and 1989 litres respectively for buffaloes and cows. On the basis of a comparative study of feed, fodder and other costs on buffaloes and cows, it was observed that the expenditure on feed and labour was productive in both cases to such an extent that the income increased by 144 and and 135 per cent respectively of the additional expenditure on feed and labour in the former and 228 and 194 per cent in the case of latter. On the contarary, expenditure on other costs was productive in the case of buffaloes and a source of loss in the case of cows to such an extent that income from buffaloes increased by 8.62 per cent and in the case of cows it decreased by 7.21 per cent of the additional expenditure on other coats.

KEY WORDS : Milk Production, Economics.

In our rural economy, livestock raising provides an important means of livelihood to the agriculturists. Livesotck plays a complementary role in crop production, since fodder provides food for animals and farm yard manure is a valuable source of organic manure. Milk and milk products besides providing valuable food for the rural population also serve as an important source of income. India occupies 191

million cattle and 69 million buffaloes. Eventhough milk production of the country has risen from 17.41 million tonnes in 1951 to 38.7 million tonnes in 1985, the daily per capita availability of milk during 1985-86 has been reported to be of the order of 147 g as against the requirement of 210 g.

In this study conducted in the Athiyannoor block of Trivandrum district, an attempt was made to estimate cost of milk per unit, milk production per annum etc. in the case of buffaloes and cows.

MATERIALS AND METHODS

Data were collected from 72 holdings in the Athiyannor block of Trivandrum district, selected through simple random sampling. Details pertaining to various aspects of costs and returns with respect to 27 milch buffaloes and 45 milch cows were collected using a scheduled questionnaire. The average milk production per annum was estimated using the notation $(M \times L)/p \times 365$ (Telang and Chavan, 1965), where M = average milk yield per day per animal during lactation period (l), L = average lactation period (days), P = average period between tow calvings (days). A stepwise regressior analysis was conducted to estimate the contribution of each item of expenditure or income from milk. Income from milk (Y) was taken as the dependent variable and cost o fodder (X_1), cost of concentrates (X_2), labour costs (X_3), other costs (X_4) and the maintenance cost during dry period (X_5) a the independent variables.

RESULTS AND DISCUSSION

Itemwise break up of costs and return per cow and baffalo between two calving is presented in Table 1. The results showe that the major component of cost was fee which accounted for 94.44 per cent in th case of buffaloes (58.07 per cent by way c concentrates and 36.37 per cent fodder and 93.05 per cent in case of cows (59.4 per cent by way of concentrates and 33.6 per cent fodder). Since more than 80 pe cent of farmers were purchasing fodde from outside in bundles, physical quantitie could not be assessed. Concentrate included oil cake, dried tapioca, cotto seeds etc. Labour costs included both hire and family, utilised for milking, groomin and rearing the animals and in a few case

Table 1. Itemwise break up of costs and returns per buffalo and cow between two calvings.

Items	Costs (Rs)		Items	Returns (Rs)	
	Buffalo	Cow		Buffalo	Cow
Straw	1337.31 (15.72)	1299.72 (15.06)	Yield (litres)	1543.63	2107.01
Green fodder	1756.12 (20.65)	1602.22 (18.57)	Income Milk	9254.49 (90.52)	8954.80 (91.36)
Concentrates	4939.12 (58.07)	5126.90 (59.42)	Manure	969.70 (9.48)	846.78 (8.64)
Total feed costs	8032.55 (94.44)	8028.84 (93.05)	Total Income	10224.19 (100)	9801.58 (100)
Labour	320.00 (3.76)	339.88 (3.94)	Net Income	1718.68	1173.46
Other costs	152.96 (1.80)	259.40 (3.01)			
Grand total costs	8505.51 (100)	8628.12 (100)			

Figures in parantheses are percentage

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gathering green fodder. Costs of ropes, buckets and veterinary charges were accounted under other costs. Ramasubban and Goel (1965) observed that of the total costs incurred on different inputs going into production, about 63 per cent was accounted by feed, where only 10 per cent of the fodder was purchased from outside.

Cost of production per litre of milk was worked out and presented in Table 2. Cost of production per litre of milk was found to be Rs. 5.51 and Rs. 4.09 respectively for buffaloes and cows.

Table 2. cost of production per litre of milk (Rs.)

Particulars	Buffalo	Cow
Total cost per animal	8505.51	8628.12
Yield per animal (litres)	1543.63	2107.01
Cost per litre	5.51	4.09

Average milk production per annum is presented in Table 3. It is assumed that the locational yield estimated as M X L is the total milk yield between the two calvings, so that the average yield per breeding animal per annum is given as (M X L) / p x 365. The milk production per annum was found to be 1217 litres for buffalo and 1989 litres for cow.

The regression equations for buffaloes and cows were found to be as follows:

			2.798**	9.630**	2.599*	
Buffaloes	Y =	-511.229 +	1.444 X_1 +	1.354 X_2 +	0.862 X_5	(1)
			(0.5161)	(0.1406)	(0.3317)	
			17.765**	5.797**	1.4841	(2)
Cows	Y =	-861.746 +	2.281 X_1 +	1.943 X_2	-0.721 X_5	
			(0.1284)	(0.3352)	(0.4858)	

(The influence of other variables included was found to be very negligible).
Figures in parentheses are Standard Errors.
** Significant (P < 0.01) * Significant (P < 0.05)

Co-efficient of determination and variance ratios were,

Buffalo R = 0.9779; F = 89.50 significant at 1 per cent level; R^2 = 0.9563

Cow R = 0.9711; F = 109.8 significant at 1 percent level R^2 = 0.9431

The regression equation (1) explains the dependence of income from milk on the independent variables *viz.*, fodder, concentrates and other costs to the extent of 95.63 per cent. The co-efficient of multiple correlation 0.9779 was highly significant at 1 per cent level of significance, which indicated that there is a very close correspondence between the observed income and expected ones for the known values of fodder concentrates and other costs.

From the study of partial regression co-efficients, it was observed that the income from milk increased by Rs. 1.444, Rs. 1.354 and Rs. 0.862 respectively for every rupee of expenditure on fodder, concentrates and other costs. From this we may infer that it is profitable to spend on these items.

Table 3. Estimates of lactation period, average period between two calvings and average milk production per annum per animal

Estimate of	Buffalo	Cow
1. Average milk yield rate per day per animal during lactation period (litres)	4.83	7.10
2. Average lactation period (days)	321	297
3. Average period between two calvings	4.64	387
4. Average yield rate per animal per annum (litres)	1217	1989

The regression equation (2) explains the dependence of income from milk on

independent variables *viz.*, fodder, concentrates and maintenance cost during dry period to the extent of 94.31 percent. The co-efficient of multiple correlation 0.9711 is highly significant at 1 per cent level of significance.

The study of the partial regression co-efficients revealed that the income from milk increased by Rs. 2.281 and Rs.1.943 respectively with every rupee of expenditure on fodder and concentrates and diminishes by Rs. 0.721 for every rupee of expenditure during dry period.

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EFFECT OF SOIL DRENCHING WITH BORDEAUX MIXTURE ON THE MANAGEMENT OF PHYTOPHTHORA WILT OF BETELVINE (*PIPER BETLE* L.)

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ABSTRACT

Field trials conducted revealed that for effective and economical control of *Phytophthora* wilt, Bordeaux mixture 0.25 per cent has to be applied either by forming furrows along the hills or forming basins around the hills at 30 days interval.

KEY WORDS : Betelvine, wilt, Bordeaux mixture, *Phytophthora palmivora*.

Betelvine is one of the most economically important cash crops of Tamil Nadu. Betelvine cultivation is a highly specialised job and the crop requires greater care and huge investment when compared to any other crop. In Tamil Nadu betelvine is threatened with many diseases; by far, the most important one is the wilt caused by *Phytophthora palmivora* which takes a very heavy toll which runs into lakhs of rupees year after year (Marimuthu and Samiyappan, 1982). Since its first report by Dastur (1926), attempts have been made to control this disease by using various fungicides (Subramanian and Venkata Rao, 1970; Venkata Rao *et al.*, 1969; Antoni Raj *et al.*, 1973; Narasimhan *et al.*, 1976). Perusal of the work on the chemical control of wilt shows that the workers who attempted chemical control of *Phytophthora* wilt through Bordeaux mixture have tried only higher concentrations. Further, not much work has been done to determine the effect and economical concentration and proper method of application of Bordeaux mixture and hence the present study was undertaken.

MATERIALS AND METHODS

Experiments were laid out in Randomised Block Design at Pothanur from 1982 to 1985 to assess the effective and