REVIEW OF LITERATURE
CHAPTER-II

REVIEW OF LITERATURE

A brief review of studies pertaining to the cost and returns of milk production, milk production function, resource productivity, and milk marketing has been presented here as under:

Chhikara and Gangwar (1975) studied the relative efficiency of the different types of milch animals. They observed that the total cost of production in a lactation was Rs. 1795, Rs. 3340 and Rs. 2687 for the cow, Murrah buffalo and crossbred cow, respectively. The costs of feeds per liter of milk production of cow, murrah buffalo and crossbred cows were worked out to Rs. 0.73, 1.13 and 0.68, respectively. The net return over variable cost was highest for the crossbred cows followed by Murrah buffalo and cow. The per liter total cost of milk production from cow, Murrah buffalo and crossbred were found 1.21, Rs. 1.52 and Rs. 0.96, respectively.

Chhikara and Gangwar (1975) regressed milk yield over green fodder, dry fodder, concentrates and human labour for desi cows, crossbred cows and Murrah buffaloes separately. The significant variables were green fodder and concentrates for cows, dry fodder and concentrates for Murrah buffaloes and green fodder for crossbred cows.

Thakur (1975) studied the impact of dairy development through milk co-operative in Gujarat state. He observed that the milk societies have made a study progress continuously in terms of their membership, share capital,
reserve funds, milk collection and net profits. The milk production per animal, marked surplus of milk and total income on different size groups of milk producer were higher in the extension villages as compared to those of control villages. The milk production per animal per day of cattle and buffalo in extension villages was 3.44 and 4.64 Litres respectively as against 2.58 and 4.11 in control villages, it was further reported that the milk production per animal and the total marketed surplus of milk were higher in case of landless and small farmers as compared to that on the medium and large farmers of extension area.

Acharya and Pawar (1980) compared the performance of crossbred cows, buffalo and local cows. Study revealed per lactation profit of four times and per liter profit of two times for crossbred than of buffalo where as desi cows yielded loss. Labour use was maximum for crossbred cows among milch cattle.

Patel et al. (1982) fitted log linear production function for estimating feed- milk relation in different season for crossbred cow, buffaloes and local cows in rural Karnal. The green fodder had significant and positive effect on milk yield in all seasons for all dairy breeds except in rainy season for crossbred cows. Concentrates had positive impact on milk yield in all seasons for crossbred cows and rainy and summer seasons for buffaloes. The effect of dry fodder on milk yield was negative for crossbred cows during summer but
positive in rainy and summer seasons for buffaloes and in rainy season for local cows. Rational adjustment in feeding schedule was advocated.

Saini and Singh (1980) reported that the optimization of resources under existing technology increased the income by 40 per cent, which was further increased to 61 per cent with an increase in the number of much buffaloes. The adoption of improved technology had a much higher impact on increasing farm income. Similarly, the integrated crop and milk production showed a scope of generating on small categories of farms.

Ram (1980) reported that the employment pattern revealed that on an average, a much cow and buffalo generated 62 and 106 man-days per annum respectively and all levels of production buffalo generated more employment than cows. The operation of economics of scale in milk production with respect to labour cost was noticed.

Dhaka (1981) analyzed the pattern of milk consumption in different groups of cattle owners and showed that (he milk producers in the plains and settler farmers in extension area had a higher level of per capita milk consumption as compared to the recommended nutritional requirement (280 g/days). However, all the category of milk producer households, both in extension and control area, consumed more than 110 g of milk it was further observed that the per capita consumption has a positive relationship with average monthly income of sample households in the extension area but no
such relationship was discernable between monthly income and per capita consumption of milk in the control area.

**Patel et al. (1984)** studied the economics of different species of dairy animals kept by the weather sections belonging to villages around Karnal. Their study revealed that the annual cost of maintenance for crossbred cow was higher than that of buffalo and local cows. The variable cost contributed about 60 to 63 per cent of the total cost. Feed cost and human labour were the major items or variable cost accounting for about 31 to 38 per cent and 21 to 25 per cent respectively of the total cost. They further observed that the net income from crossbred cow was higher than that of buffalo.

**Sharma and Singh (1984)** conducted a study in the intensive cattle development project and observed an increasing trend of human labour employment per household. The dairy enterprise on an average generated 250 and 250 man days of employment on beneficiary and non beneficiary households respectively. The family labour income of Rs. 1076 obtained from cross bred cow was much higher than that of a buffalo and local cow. Further the beneficiary households recorded higher income from different types of much animal as compared to that of non beneficiary households. Therefore, they concluded that the project has been able to generate additional gainful employment in the study area and thus it can go a long way in boosting up income and employment levels specially and small cattle holdings.
Singh et al. (1984) studied the production and marketing of milk in Punjab mainly in rural areas. The study revealed that nearly 16 per cent of total produced milk was sold, 49 per cent directly consumed and 35 per cent converting into other products. Various milk-marketing channels were:

(i) Producer- Milk-vendor- Consumer,
(ii) Producer- Milk vendor- Halwai- Consumer,
(iii) Producer- Milkfed- Consumer,
(iv) Producer- Halwai- Consumer,
(v) Producer- Consumer.

Milk vendors dominate in the milk marketing. The price spread ranged from 33 per cent to 40 per cent under major channels. It was profitable to all directly to consumer but had limitations. So milk fed was dominated in the marketing.

Sharma and Singh (1986) reported that the production of milk being relatively higher for the beneficiary households that of non-beneficiary ones on all the categories of cattle owners. The milk production per household had been found to have positive relationship with size of cattle holding.

Higher milk production in the beneficiary households can be attributed to the keeping of crossbred cows on the cattle holdings. With the rise in production, there was a corresponding rise in milk being marketed (11.6%) in
the beneficiary households than non-beneficiary ones. The overall marketed surpluses of milk for beneficiaries and non-beneficiaries have been seen to be about 44% and 28% respectively.

The proportion of marketed surplus has shown as rising trend with increase in the size of herd in both beneficiary and non-beneficiary household.

Singh and Singh (1987) revealed that the per day maintenance cost of buffalo was Rs. 8.36 and Rs. 8.29 on the progressive and less progressive farms. The per day per buffalo maintenance cost and cost per litre of milk decreased with increase in the size of holding showing that the medium and small formers are better manages. The MVP analysis revealed that on less progressive farms an additional rupee spent on concentrate fodder would bring an additional return on progressive farms was Rs. 1.90 and Rs. 1.02.

Gangawar and Sastry (1988) observed that the milk yield was found generally low in rainy season and highest in the winter season, but cost of milk production followed the reverse trend. There was wide fluctuation in the maintenance of buffaloes. The cost of production also showed wide variation due to variation in milk yield and minimum cost.

Hirevenkanagoudar et al. (1988) studied the impact of dairy development programmes of the Karnataka Dairy Development Cooperation (KDDC) on the selected economic aspects of small and marginal farmer and
agricultural labours. The study revealed that over 56 per cent of KDDC been were getting 5-0-75 per cent of their family income from dairy enterprises whereas, 60-87 per cent of non-KDDC farmers getting 5 per cent of their income from dairy enterprises. All KDDC farmers were selling milk to dairy co-operative societies. Mostly small farmers, marginal farmers and agricultural labours in the KDDC programme and 60 per cent of the non-KDDC category through that dairy co-operative societies were the best agencies for milk marketing.

More than 64 per cent of KDDC farmers had repaid 75 per cent to 100 per cent of the dairy loan, whereas only 10-25 per cent at non-KDDC farmers had repaid 75-100 per cent of their dairy loan.

Chattaraj and Singh (1988) conducted a study on return to capital investment through dairy co-operatives in Kisan Co-operative Milk Union, Ranaghat, in Nadia district of West Bengal. The study revealed that investment per milch animal was higher on member group than non-member group. The proportion of investment and income was highest on landless labour in both groups as also the profit per rupee investment.

Kainth (1988) reported that marketing efficiency depends on various channels of distribution, which were affected by marketing margin and costs. They further reported that there was directed relationship between marketing costs and the length of the channels. The most efficient channel was found to
be the producer-consumer in which both the producers and the consumers were benefited in term of total effectiveness, as it was the shortest one.

In order to reduce the marketing costs and margin, it is suggested that an attempt should be made to strengthen the milk marketing system through co-operatives which should be allowed to process and distribute milk.

Gupta and Patel (1988) conducted the study on marketed surplus of milk in rural Karnal and observed that milk production was the single most important variable affecting the marketed surplus of milk in all the three seasons. Its regression was for all the categories of households except for large category farmers in the rainy season when it was significant at 5% level. It was further observed that the income and negative relationship of marketed surplus with family size and monthly income implies that both these factors increase propensity to consume and thereby diminish marketed surplus of milk.

Saxena (1988) studies on measure the returns to scale value of productivity of various input factors in rearing in Gangatiri cows. The study concluded that the analysis of contribution of various input factors viz. feed cost labour unit and fixed cost, feed cost alone shows significant and positive impact while other factors show negative impact on value of milk production by Gandatiri cows. Returns to scale show the negative elasticities on value of milk produce. Therefore a crossbred programme be launched to felch the highest net returns to dairy from a good quantity of milk produce.
Biradar and Shresthi (1989) reported some of the problems like inadequate availability of feeds and fodder, inadequate space for keeping buffaloes, lack of veterinary facilities and water supply are basic in nature. Out of these, non-availability of qualitative and quantitative feeds and fodder and its rising prices. This has become a major obstacle in the operation of this business. Next major problem is that of the space required for the buffaloes. Due to the faster urbanization, educational and technical progress, the problem of space has become very acute.

Gangwar et al. (1989) concluded that average maintenance cost of milch buffalo in Hisar district of Haryana state was Rs. 3425 per year. Operational cost was 70 per cent of the total cost and fixed cost accounted of only 30 per cent. On an average, per litre return from milk in the state was Rs. 0.36. Sixty two per cent of the total milk production in the farms was consumed by the family itself and 38 per cent was sold as milk and milk products.

Krishnaiah and Maraty (1989) conducted a study on impact of primary milk producer's co-operative societies on beneficiaries in nalgonda district of Andhra Pradesh. The study revealed that primary milk producer’s co-operative society has not created impact on its members through expectations was on the positive side. However, an awareness has been made among the dairy farmers for improvement of their socio economic conditions through group actions.
Das et al. (1990) studied performance of dairy co-operative involved in production of dairy co-operative involved in production and distribution of milk in Tarai region of district Nainital (Uttarakhand) during the year 1986. The study revealed that the co-operative societies had a positive and significant impact on the size of milch breed, level of milk production and marketed surplus of milk per member household. The size of much herd increased by 55 per cent, the level of milk production by 65 per cent and marketed surplus of milk by 72 per cent in the societies group as compared the non-societies group. The income generated through dairying was 30 per cent of the total cash income in the societies group as against 21 per cent in the non-societies group.

Chauhan et al. (1992) concluded that the size of herd had a highly significant and positive influence on the marketed surplus of milk for the entire district of Fatehpur. The size of operational holding had a negative influence in almost all the tehsils but was significant at 10 percent level of significance in Khaga tehsil. The total milk produced in a household per day was highly significant and had positive relationship for the entire district indicating that the increase in the production of milk in a household resulted in the increase of marketed surplus of milk.

Mattigatti et al. (1992) studies the marketing of milk in Dharwad district of Karanataka and observed that the net price received by the producer
was comparatively higher (Rs. 3.66 per litre) in case of channel I (through dairy co-operative society) as against Rs. 2.92 in case of channel –II (through milk vendor). The producer’s share in the consumer’s rupee was 73.2 and 53.09 per cent in channels-I and II, respectively indicating the efficiency of organized marketing channel.

Chahal and Gill (1993) revealed that the production elasticity were higher in case of members as compared to non-members of milk co-operatives which shows that members are generating higher marketed surplus as the production increases. It was also observed that the income affects the marketed surplus positively for both members and non-members. As accepted, consumption affects the marketed surplus negatively, which means that as the consumption per capita increase, the marketed surplus decreases significantly in case of both members and non-members.

Kaur et al. (1993) conducted a study on marketed surplus of milk in the rural areas of Ludhiana district of Panjab and observed that the milk producers made disposal of surplus milk to the extent of 44.5, 41.9, 6.9 and 6.7 per cent of milk vendors, milk fed consumers and sweet makers, respectively. Production of milk was the most significant factor influencing the marketed surplus of milk positively. The consumption of milk turned out to be significantly but inversely related to the quantity of milk marketed for all categories of producers. There existed a scope for increasing the potentials
of marketed surplus of milk by increasing the price of milk in the area under investigation.

Singh and Singh (1993) attempted to study the price spread and marketing margins in the marketing of milk in Hisar district of Haryana and revealed that a large portion of producer's share except in case when milk was sold directly to consumer was taken away by middleman. It was suggested that higher net price to the producers can be ensured by encouraging milk producer's co-operatives. Various agencies such as milkfed should extend its operation so as to ensure remunerative prices to producers and good quality milk at reasonable prices to the ultimate consumer.

Siwach and Dhaka (1993) made a study on production and marketed surplus of milk in Rohtak district of Haryana. The study showed that the proportion of milk sold through milk vendors was the highest (75.37 percent) while sale to the co-operative society and directly to the consumer was 15.10 and 9.53 per cent, respectively in the study area.

Gauraha (1995) reported that the average cost of production per litre of milk for crossbred cow came to Rs. 5.16 and Rs. 5.44 in the urban and rural dairies respectively. While the corresponding figures for a buffalo were worked out to Rs. 6.32 and Rs. 6.33 only. The net returns were Rs. 3.84 and Rs. 5.68 per litre in case of crossbred cow and buffalo milk respectively in the urban area. These were however, Rs. 2.55 and Rs. 3.67 per litre in case of
crossbred cow and buffalo milk in the rural dairies. The negative return per litre of milk for local cow were due to lower milk yield. The per day per animal yields of milk was higher in crossbred cow than that of buffalo in both the areas.

Kalra et al. (1995) studied that the maintenance cost of buffaloes, crossbred cows and local cows were Rs. 19.11 Rs. 20.25 and 14.22 per day per animal respectively. The milk producing cost was Rs. 4.95, Rs. 3.53 and 6.91 per liter for buffalo crossbred and local cows respectively 37.6 and 83.8 percent buffalo and cow milk were sold to milk vender and 8.67 and 2.88 percent was sold to the milk producing co-operative societies.

Rout and Tripathi (1995) made an attempts to identity the agencies involved and the channels through which milk is marketed in both the rural and urban areas and to study the marketing costs, margins and price spread in the marketing of milk among different size classes of milkmen in Khurda district of Orissa. They found that, in the direct selling of milk the milk producers receive about 93 per cent of the price paid by the consumers in rural area. The price received by the producers cover the variable costs but it does not cover the total cost of production. In the marketing channel having one middleman also, the producers recovered the variable costs but could not recover the total cost of production. In the marketing channels having two middlemen, the producers received a marginal return over the variable costs, which varies from Rs. 0.89 to Rs. 0.99 per litre but failed to recover the total
cost of production. In the marketing channel having three middlemen, the price received by the producers was to the extent of 50 per cent of the price paid by the consumers. The milkmen’s share over variable cost was to the extent of Rs. 0.64 per litre. But the producers failed to get profit over total cost of production per litre. In the existing marketing scenario the milkmen got a marginal profit over the variable costs but could not recover the total cost of production.

**Sangu (1995)** studied the impact of Anand type dairy co-operative on production consumption and marketed surplus in 1991-92 at Meerut in U.P. member and non member household were selected randomly from two tehsils. It was concluded that production increased with size of holding, the highest proportion of total milk production (24.95 and 25.81 per cent) came from small farmer both categories and the greatest contribution to the total marketed surplus from landless labourers (25.41 per cent), in the member and small farmers (26.9 per cent) in non members category.

**Singh (1995)** reported that the marketed surplus of milk was higher for the marginal farmers (53.57 percent) than that for the landless laborers (52.44 percent of the total milk production). The generation of employment through dairy enterprise was higher for the landless labourers compared to the marginal farmers. Consequently, the family labour income per household was considerably higher being 52.8 percent of the total income in the case of
marginal farmers against 50 percent for the landless labourers. Thus, positive generation of income from dairy enterprise in both the categories of beneficiaries indicates the important role of the dairy enterprise plays in the alleviation of poverty among weaker sections of the society.

Singh et al. (1995) fitted cobb-douglars production fruition for estimating the factors influencing milk production of cow and buffaloes in Orissa. The results of production function analysis supported that at the aggregate level concentrates fed to wet cows and number of wet cows in herd had a positive significant impact on the milk yield of both cow and buffaloes while dry and green fodder had a negligible impact. A similar comparison of production function estimate made between farm size classes showed that in case of marginal and small farmers, the elasticity co-efficient associated with dry and green fodder had the least impact on milk yield and were negative, indicating thereby excess use of these inputs than requirement. There is, therefore, large scope for enhancing milk yield by feeding more of concentrates to milch animals than feeding dry and green fodder alone.

Yadav et al. (1995) made an attempt to find out the constraints in dairy enterprise. Their study revealed that the weak financial status, cost factor and management difficulties were the main constraints in not maintaining good quality animals on the farms. The respondent farm families strongly expressed the dire need for finance for the purchase of milch animals and also for feed and fodder.
Shah and Shah (1996) studied over the impact of a dairy cooperative on milk marketing. The study was based on a survey conducted in 1989-90 in Bulandsahar district of Uttar Pradesh. Small, medium and large milk producers were selected from villages under the Dugdh Utpadak Sahkari Sangh (DUSS) and also from non DUSS villages. Annual milk production and marketed surplus per household, percentage share of marketed surplus of milk by different agencies and prices offered by different marketing agencies are shown. The price realised per liter of milk was found to be higher in DUSS area than in the non DUSS area, primarily due to the large proportion of milk going to middlemen in the non-DUSS area.

Singh et al. (1998) made a study was conducted in Hisar and Kurukshetra districts, Haryana, India, to examine:

1. The economics of buffalo milk production;

2. The minimum production level required to cover total costs.

3. Factors affecting marketed surplus of milk of members and non-member of milk co-operatives; and

4. The economic efficiency of milk marketing through co-operative and Private channels data for 1994/95 were collected from 150 producer-Sellers selected from three herd size-groups Information was also collected from 13 milk vendors, 16 Halwais, two co-operative societies, one chilling center and two co-operative milk
plants in order to examine the pattern of price spread, marketing cost, marketing margin and producer's share in the consumer price. Net profit per day per buffalo was low due to high maintenance cost and low milk yield. Price of milk was found to be the most important factor influencing the volume of milk marketed. The establishment of milk cooperative societies has had a positive impact on marketed surplus. Net price received by producers was highest for marketing channel III (Plant-consumer). However, in terms of producers (Producer-Milk Vendor-Consumer).

Chahal (1998) studied the role of cooperatives in milk handling in Punjab. It was concluded that about 49.8 per cent of the marketed surplus of milk was purchased by the organized sector, out of which cooperatives handled 26.38 per cent. The contribution of sales through cooperatives by small, medium and large categories of milk producers was 27.74, 30.65 and 22.91 per cent respectively. Milk sellers received the highest price from sweet shops, followed by local consumers, milk producer cooperative societies and milk vendors, respectively. It was concluded that milk cooperatives were playing a positive role by providing tough competition of the private milk traders, yet the milk market was monopolized by private milk traders.

Singh and Khattria (1998) reported that the regression analysis of milk marketed surplus pertaining to rural, semi-urban and pooled situations. All the
independent variables collectively explained about 92% of the total variation in milk marketed surplus rural area and about 91% in both semi-urban and pooled situations. The 10% increase in milk production could have increased milk marketed surplus by 7.58 in rural area and by 8.24 in semi-urban area. Similarly, with 10% increase in milk price per litre there would have been an increase of 0.96% and 1.24% in milk marketed surplus in rural and semi-urban areas respectively. The higher net price received by producer in channel-III (76.13% i.e. producer milk vendor-urban consumer) followed by channel-II (73.56 % i.e. producer-commision agent-nestle-urban consumers) and channel-I (67.33% i.e. producer-milk vendors-milk plant (crop)-urban consumer). The highest price spread in channel-II (2.38) followed by channel-I (2.24) and channel-III (1.58). From producer point of view, channel-I came out to be the most efficient.

Virendra Singh et al. (1998) a study was conducted in Hisar and Kurukshetra, districts Haryana, India to examine; (1) the economics of buff alo milk production. (2) the minimum production level required to cover total costs. (3) factors affecting marketed surplus of milk of m and non- members of milk cooperatives, and (4) the economic efficiency of milk marketing through co-operative and private channels data for 1994/95 were collected from 150 producers sellers selected from three herd size-groups. Intonation was also collected from 13 milk vendors, 16 Halwai two co operative societies, one chilling center and two corporative milk plants in order to
examine the pattern of price spread marketing cost marketing margins and producer’s share in the consumer price. Net profit per day per buffalo was low due to high maintenance cost and low milk yield. Price of milk was found to be the most important factor influencing the volume of milk marketed. The establishment of milk cooperative societies has had a positive impact on marketed surplus. Net price received by producers was highest for marketing channel III (producers milk corporative society corporative chilling center corporative milk plant consumer). However, in terms of producers share of consumer price, channel I was found to be the most efficient (producer milk vendor- consumer).

Alary, V. (1999) indicated that availability has increased from 12g/day/incumbant in India (1972-74) to 194 (1994-95). This trend was resulted from numerous technical and organizational efforts to organize a scattered supply system and mode the product accessible to urban population. The achievement of operation flood launched by NDDB were outlined but, due to liberalization of the dairy sector in 1991. The increase in number of private dairy industries has begun to threaten the monopoly of NDDB. The possible import of dried milk at low prices specially from Europe and New Zealand constitute the biggest danger to the producer and the, NDDB in the long term, to the national production of milk.

Prasad et al. (1999) studied that a study involving various categories of farmers in the Meerut district (U.P.) revealed that the highest milk production was
achieved by medium farmers (7.3 kg/animal per day), followed by marginal farmers and small farmers (5.2 and 4.8 kg/animal per day), through livestock strength was highest in small farmers followed by medium farmers (6.7 and 4.6 animals/family). Certain diseases, such as mastitis, nominal impactions and retained placenta occurred throughout the year. Fascioliasis and haesesiosis were higher in the Rainy season than in winter and summer Bronchitis was highest in winter followed by summer and the rainy season.

Tripathi (1999) observed that the average number of Buffaloes form was 1.5 and Ranged from 1 .4 in the mid-hill farms to 1 .7 in the valleys green grasses were the major source of fodder (85%). 71% of the total fodder fed was collected in the farm and the remaining 29% was from trees a grazing lands in the forests. The contribution of farm-produced straw and other crop by-products to total fodder was low (2-10%). On average Buffaloes were given 0.46 kg concentrates/day. The cost of maintenance! buffalo per year ranged from Rs. 303 1 in the volleys to Rs. 4983 in the high hills, with the major cast being green fodder (79%). Followed by concentrates (17%). Mean the annual milk yield was 692 litres and ranged from 637 litres in the valleys to 830 litres in the high hills. The average gross income from the sale of milk and dung ranged from Rs 351 8/buffalo per year in the valleys to Rs. 4530 in the high hills. Taking into account the cost of interest on capital and labour it is concluded that Buffalo Milk Production was uneconomic at the existing level of production technology. Regression analysis indicated that profitability could be increased by the grater use of concentrates.
Beohar and surawagi (1999) concluded that the quantity of milk produced on an average per household was 1930 liters/year, 59.47 percent of the total quantity of milk produced was sold and remaining 40.55 percent was consumed either directly or converted into curd, Butter etc. The milk consumption was more in large size group than others. On an average milk consumption per capita per day was only 2.04 liters. The milk producer-consumer channel was followed minimum by small and medium farmers and the second (producer-Trader Hakwai- consumer) channel was adopted by large farmers.

Bhopal (1999) reported that the study estimates the production of Milk and Milk and their relative profitability, the role of marketing channels in milk production and its market surplus with the households in Bhatinda and Ludhiana districts of Punjab State, India. Approx 240 respondents, comprising 110 respondents from Bhatinda district and 130 respondents from Ludhiana district were selected the respondents included both non-cultivator milk producers and cultivators. The study shows that about 6476 litres of milk were produced per day, of which 64% was contributed by small and medium farmers. About 46% to 54% of total milk produced is retained by them for their household needs.

The seasonal variation in the sale of milk is very-high per household sale of milk in rainy season is just about half of that sold in winter the role of
non-dairy agencies (Private vendors) in handling sale of milk is important. The price for milk paid by milk vendors is much lower (Rs. 9.42) than that offered by the private dairies (Rs. 10.88). The perception of households is that the basis at price fixed by t co-operative dairies is not transparent.

**Chahal (2000)** conducted a study to examine the role of cooperatives in milk handling in the Indian Punjab. The study showed that on an average 49.8 percent of the marketed surplus of the milk was purchased by the organized sector (co-operative and privately owned mok plants) of which co-operative handled 26.58 percent. The contribution of sales through co-operatives by small, medium and large categories of milk producers was 27.74, 30.65 and 22.91 percent respectively. Milk seller received the highest price from sweet shop followed by local consumer milk co-operative societies and milk vendors, respectively. It is concluded that milk co-operatives are playing a passive role by providing tough competition to the private milk production. However, the milk market is still monopolized by private milk trader.

**Chandra and Agarwal (2000)** the present study was conducted in Farrukhabad district of Utter Pradesh. Linear and Cobb Douglas type of milk production functions using daily milk yield as dependent and expenditure on green fodder, dry fodder, concentrate and labour as explanatory variables were tried. Linear regression model was preferred over log linear to examine
resource use efficiency. The feed and labour inputs together explained 77 and 78 percent of total variation in milk production for crossbreed cows and buffaloes respectively. The positive and highly significant regression coefficients of expenditure on green fodder and concentrate both in crossbreed cows and buffaloes indicate further scope of increasing milk production. It was also evident from the positive and significant higher marginal value products of expenditure on green fodder and concentrate than acquisition cost both for cow and buffaloes.

Singh et al. (2000) observed that net profit per day per buffalo was low due to high maintenance cost and low milk yield. Price of milk was found to be the most important factor influencing the volume of milk marketed. The establishment of milk cooperative societies has a positive impact on marketed surplus. Net price received by producers was highest for marketing channel III (producer-milk cooperative society – cooperative chulling center-cooperative milk plant- consumer). However, in terms of producers share of consumer price, channel I was found to be the most efficient (producer-milk vendor-consumer).

Shah and Gupta (2001) conducted a study on a sample of 100 milk producing households of different categories in murshidabad district of west Bengal revealed that bulk of the milk produced (84 percent) was sold in the market in the study area owing to a low propensity to consume milk. The
marketed surplus as a proportion of total milk production was the highest in the case of small farmers and lowest in the case of large farmers. Among the different factors affecting the marketed surplus, milk production was found to be most significant having positive relationship with the marketed surplus of milk in all categories of households. The annual household income and family size were also significant but they had negative relationship with the marketed surplus of milk. The effect of family size on marketed surplus of milk was observed only among landless labours category.

Kiresur (2002) analysed the composition of dairy animals, input output relationship and cost and return profiles in milk production in someerwadi sugar factory operational are of northern Karnataka during the year 1999-2000. For the purpose of the study the data was collected from 120 sample farms from different size group of farms from 8 villages of four taluks in two district of northern Karnataka. Net returns and befit cost ratio were maximum in the case of crossbread cow compared to indigenous cow and buffaloes, particularly on small and medium farms than on large farms. Cost of feeds and labour and accounted for the major share not only in the variable costs but also in total cost concentrate was the major cost component in the variable cost followed by labour and dry fodder. Farmer category wise analysis revealed that milk yield obtained by small farmers was higher than that was obtained by the medium and large farmers.
Singh and Banafar (2003) the present study was conducted to examine cost and return of milk production and to find out marketing cost, margin are price spread in the marketing of milk under different marketing channels in Raipur district of Chhattisgarh. The study revealed that the total cost of milk production increases as size group increases, whereas the net profit follows the increasing trend with respect to size. The major portion of total cost per animal per day was observed to be Rs. 46.88 and 18.87 in dairy unit respectively. There is a tendency on the part of the milk producers to sell their produce to co-operatives (channel IV). Though they are aware that their share in consumers rupee is high in channel I (milk producer-consumer). It can be concluded that dairy enterprises are economically viable in Raipur district.

Dhaliwal et al. (2003) conducted that the dairies have acquired an increasing significance in the farm sector. In the era of stagnation of yield in crop farming dairies have been adopted as an augmenting subsidiary occupation by the peasants of Punjab, India. The main objective of this study was to examine the problems and policy suggestions regarding dairy farming in Punjab. The study revealed that the main problems being faced by the dairy farmers of Punjab were lack of good marketing network, low price of milk, costly medicine and health care, lack of quality breed animals and low price of young stocks. Therefore, good marketing network and modern health care
system and processing units/slaughter houses must be developed to compete in the global market.

Deokate et al. (2003). An attempt has been made in the present study to identify the channels involved in marketing, to estimate the marketing cost, market margins, price-spread and producer’s share in consumer’s rupee in different marketing channels of milk in Amravati district of Maharashtra. The primary data for the year 2002-2003 were collected by survey method from 80 milk producers, 16 each randomly selected from five villages of the study district. Four breeds of animals, viz., local cow, crossbred cow, local buffalo and improved buffalo were considered for the study. The information was collected for a group of 20 milk producers of each breed and the data were analysed using simple tabular analysis. For the present investigation, in all five types of marketing channels were identified viz., channel I - Producer-Consumer, channel II - Producer - Vendor - Consumer, Channel III-Producer-Private milk collecting agency- Distributor- consumer, Channel IV-Prooducer-Hotel Owner —Consumer and Channel V Producer- milk co-operative society- Government milk scheme- Distributor- Consumer. Analysis indicated that in Channel V the selected buffalo milk producer were not interested in selling milk to co-operative societies as they pay lower price to buffalo milk although the fat percentage in the buffalo milk was found to be more Among the various channels of milk marketing, channel I (producer-
consumer) has the highest producer's share in consumer's rupee for buffalo milk and cow milk being 97.26 per cent and 96.52 per cent, respectively. Thus channel I was found to be more profitable in regard to sale of milk directly to the consumer.

Choudhary et al. (2004) conducted the study to estimate the resource use efficiency of a dairy unit and to suggest policy implication for enhancing dairy enterprise in Chhattisgarh. It was found that the cost of milk production was the highest for Holstein Friesion followed by Murrah. The returns of milk production was gained maximum by Holstein Friesion followed by Jersey and buffalo. The effect of concentrate on milk output was found to be highly significant in almost all the seasons. Labour also showed it significance in summer season. The study suggests that high yielding exotic breads like Holstein Friesion and Jersey should be reared and to generate more net income, market integration practice should be adopted to reduce the channel of marketing.

Rao et al. (2004) conducted a study to examine the economics of milk production and resource use efficiency in the milk production in district Kanpur (Dehat) of Uttar Pradesh. The study reveals that the total maintenance cost of a milk animal per lactation increased as farm size increased. On an average the maintenance cost of a milk animal during a lactation period came to Rs. 10,278.63. Amongst all costs labour charges accounted for the highest
share followed by fodder and concentrates. The cross income from milk production was higher on large farm because of excess utilization of concentrate by large farmers. Input-output ratio was the highest on small farms and it was 1:1.31. Elasticity of production for fodder was the highest followed by human labour and concentrates for all farms. The marginal value productivity analysis show under utilization of resource used in milk production and there is great scope for increasing milk production.

Sujatha et al. (2004) conducted to comparative a study the market structure, price spread, marketing costs and marketing efficiency for milk in co-operative and private sector of Andhra Pradesh. The study was found that producer’s in consumer’s rupee is the highest in channel I. Price spread was minimum in channel I and highest in channel IV. The highest price spread is due to the fact that the intermediary incurred some costs and retained some portion of profit, which added to the inflated price spreads channel I was found to be the most efficient channel with a marketing efficiency of 94.81 percent. It was observed that in all the channels price paid to the producer was high in the private sector compared to co-operative sector. It was also found that price spread was less in private sector and hence the consumer price was also less.

Singh and Dayal (2004) conducted a study to examine the economics of production and marketing of milk in the state of Uttar Pradesh. The results
of the study indicate that the feed and fodder cost was the most important item of the total maintenance cost accounting for 55 to 65 percent of the total cost in zone I and 51 to 66 percent in zone II. The net profit per day of a milch buffalo was very low due to the higher maintenance cost and low yield of milch buffalo on each herd size group in each zone of the state. The net profit of milk production per buffalo per day was observed to be higher in the case of small size group due to higher milk yield of milch buffalo in this size group as compared to medium and large herd groups in both the zones. Price of milk was found to be the most important factor influencing the volume of milk business significantly, besides production level.

The study further showed that the milk vendor being an important intermediary in adopting various types of malpracticas. Lender utilization of plant capacity was the major factor for incurring losses by co-operative milk plant in fluid milk marketing. The regression coefficient of milk variable was positive and significant at one percent probability level in all the three season in the case of both private and co-operative systems as well as for pooled data.

The analysis revealed that about 65 percent of the total marketed surplus of milk in the state was marketed through channel I and channel II of the private sector and about 30 percent of the total marketed surplus moved
through the co-operative sector in channel III. The remaining 7 percent was marketed through channel IV, V and VII.

**K. N. S. Banafar (2005)** The study aims to examine the production and marketing of milk in Raipur district of Chhattisgarh. A multistage random sample technique was used to select the district, block, village and dairy units out of fourteen blocks of Raipur district. Two blocks, namely, Dharsiwa and A Range, were selected for the study on the basis of maximum number of dairy units. Nineteen dairy herds were finally selected for the present study. The data pertains to the year 2004-05. The study concluded that the average number of buffaloes and its calves of dairy unit were found to be 10.63, 24.89 and 64.48 per cent to small, medium and large size groups, respectively. The total cost (operational and fixed cost) of milk production increases as size grouping as the net profit follows the increasing trend with respect to size. The major portion of total cost is covered by operational cost in all the size groups. On an average, the feed cost per animal per day was observed to be Rs. 46.88 and Rs. 8.87 in dairy unit respectively. There were four marketing channels prevailing in the study area: Channel I- Producer- Consumer, Channel II- Producer- Milk Vendor - Consumer, Channel III- Producer- Retailer- Consumer and Channel IV- Producer-Co- operative- Retailer- Consumer.

**Vedamurthy et al. (2005)** observed the estimated function was strongly dependent on level of milk production family size and operational
land holding. It was observed that 54 percent of marketed surplus was still marketed to the unorganized sector. Therefore the study suggest the necessity of establishment of co-operative societies and strengthening of the organized sector, so that producer can get optimum price for his produce. It was found that price spread was lower in channel II than channel III, but if verify on shepherd's formula, it shown that channel III is more efficient than channel I. Hence the high marketing efficiency of channel III is in line with the ground realities. (i) Producer- consumer (ii) Producer- Vender- consumer III producer-vender- processor consumer.

Chauhan et al. (2006) have been observed that all the products, except the milk, double toned milk are being produced above the recommended break even level. A comparison of unit manufacturing cost with unit price received by the plant for different products has revealed that ice-cream manufacturing has been the most profitable proposition among different dairy products and standardized milk has provided maximum profit margin among milk pouches manufactured during study period year 2000-01 The double toned milk has revealed a less therefore the study has suggested that the quantity of double toned milk production should be raised at least equal to recommended break even avoid losses if there is a market demand for this product.

Mallayya et al. (2007) conduct a study investigate the relationship between the marketed surplus and level of milk production and market price in Uttar Pradesh, India. Data were collected on milk yield, feed and fodder
under a large scale sample survey in Uttar Pradesh. On average a farmers in Uttar Pradesh produced 6.11 litres of milk per day, with the cow and buffalo sharing 30 and 70 percent, respectively. 46 percent of the total milk produced was consumed by the family either in fluid from or converted to different products. The extent of marketed surplus of milk varied according to the level of milk production, family size and economic condition of producers. The per capita consumption of milk in the state was 386 g. The profitability of milk production enterprises depend on the cost of production of milk and price at which the milk was sold in the market. Cow and buffalo milks were sold at an average price of Rs. 9.35 and 11.18 respectively. The prices of cow and buffalo milks varied from Rs. 8.00-11.25 and Rs. 11.64-13.70, respectively. Study of marketing agencies in the area showed that both the organized and unorganized sectors were engaged in the procurement of milk. About 45 percent of the producers sold milk, whereas the remaining 55 percent produced the milk for self consumption. About 5 percent of the total producers supplied the milk to co-operatives, less than one per cent to halwais and tea shops and 9 per cent directly to the consumers. Over 85 per cent of the producers supplied milk directly to milk vendors.

Rangasamy et al. (2007) concluded that the economic efficiency of dairy plants was severely influenced by a variety of constraints at 3 important value addition stages (milk procurement processing and manufacturing and distribution of dairy products). This study was conducted to compare the
constraints faced by cooperative and private dairy plants at these vital value addition stages. One dairy plant from the cooperative sector and one dairy plant from private sector were selected purposively in Coimbatore district of Tamil Nadu. To identify the major constraints faced by the dairy plants in procurement, processing and manufacturing and distribution of dairy products, the number of respondents was also selected based on probability proportion to sample size method. Some of the member of the cooperative society selling the milk to private milk vendors and some of the collection centers taking the inadequate quantity of milk were the very scour problems faced by cooperative and private dairy plants, respectively.

Rao et al. (2007) indicated the need for upgrading the technology for the production of more quantity of milk and milk products in India. The role that the technology upgrade plays in the sustainability of dairy sector, employment and income in rural areas was discussed. The areas that require immediate action on the part of dairy entrepreneurs as well as possible interventions were outlined; management of animals and surrounding; personnel management; hygienic milking and animal care and collection cooling and storage at collection point and transportation.

Singh et al. (2007) study was observed that two thirds of the total milch cows were found in milk. The average fixed investment on dairying per household was highest (Rs. 54697) on milch cows. On an average, a crossbreed cow in milk was fed 20.8 kg of green fodder, 9.6 kg of dry fodder
and 6.2 kg of concentrates while a local cow per milch local and crossbreed cows were 1.15 litres and 6.45 litres respectively, which increased with increase in herd size category. The dairy gross maintenance cost per milch local cow and crossbreed cow was Rs. 22.89 and Rs. 72.95 respectively. The net returns from milk production per local milch cow were negative except for large herd size category. For crossbreed cow it was positive and highest for large herd size category followed by medium and small.

Sukhpal Singh (2007) examined the dairy industry and milk market in Ahmadabad that it was only the small scale and traditionally well entrenched unorganized sector players who have been able to move to the organized and branded market in milk due to various factor like understanding of the local overs heads innovations in marketing and selling. Private dairy operator in the organized and unorganized dairy sector in India used a strategies to build comparative advantage like making timely cash payment to producers.

N. Ran Gasmay and J.P. Dhaka (2008) examined the marketing of milk and milk products by dairy plants co-operative and private sector in Ta Nadu has been compared. it has been found that the marketing cost for toned milk is same in both dairy plant. Whereas flavored milk marketing cost is higher. The study has suggested that the development of cooperative dairy industry in sustainable manner, the co-operative dairy plants should formulate long term vision and strategy.

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