



**ECONOMICS OF MILK PRODUCTION IN GUNTUR DISTRICT
OF ANDHRA PRADESH****B. Nirmala¹ and Prof. K. Madhu Babu²****¹Research Scholar, Dept of Economics, Acharya Nagarjuna University, Guntur.****² Professor of Economics, Dept of Economics, Acharya Nagarjuna University, Guntur.****ABSTRACT:-**

The main objective of the paper is to analyse the economics of buffalo's milk production in Guntur district of Andhra Pradesh. The paper is based on the primary data, the primary data is collected through a structured questionnaire covering a number of features on specified aspects and canvassed among the respondents. A multi-stage random sampling technique is used for the study. Samples of 300 respondents are selected by using multi-stage random technique. The fixed assets included buildings equipment's like, feeders, drinkers, electricity, water lines, pump sets. The data reveals that the total fixed investment of dairy farm is Rs11,65,466/- out of total fixed investment.70.33 per cent (Rs.7,53,333/-) of amount is spent on buffalos followed by 25.36 per cent (Rs.2,71,667/-) on shed. 2.74 per cent (Rs.29,333/-) is towards on labour room, 0.62 per cent (Rs,6,667/-) is spent on gross cutting mechine, 0.44 percent on of electricity and motor. the total fixed investment is found to be high for large farmers which is Rs.16,35,599/- followed by an amount of Rs.11,74,599 for medium dairy farmers and Rs.4,35,100 for small farmers. . In case of the shed, it is found to be high for small Farmers, i.e., 42.53 per cent successively by medium Farmers (23.84.13 per cent) and large Farmers (21.69 per cent). The variable cost includes depreciation of buffalos, green feed, dry feed, concentrates, medicines and vaccines, labour, electricity and other miscellaneous expenditure. The perusal of table brought out that the total variable cost on average is Rs.8,54,294/-. The study takes only average cost of the green fodder used. The data in the table clearly shows that Rs.65,700/- which is accounting for 6.23 percent, the farm size wise data shows that which is found to be high small dairy farmers with Rs.32,850/- (6.78 percent), followed by large farmers Rs.1,09,500/- (6.37 percent) and medium farmers (5.69 percent).

**KEYWORDS:** *Buffalos, labors, concentrates, feed, Green, and dry feed.***INTRODUCTION :**

India is predominantly an agrarian economy with nearly 70 per cent of the population living in villages, and the majority depending on agriculture, animal husbandry and allied activities for their livelihood. Among many livestock enterprises, dairying is the most ancient occupation and it has come a long way. The country has emerged today as the largest milk producer in the world with production of 127.9 million tonnes in 2020-21. Dairying, being an important source of livelihood to a large proportion of landless labourers and small and marginal farmers, milk production has increased more than sixfold since 1950-51.

Cattle rearing in India has a long history. It is as ancient as the Aryan civilization and symbolizes a long tradition of keeping milch animals as part of the farm household. At present, the livestock sector is emerging as an engine of growth as well as economic symbiosis of the agricultural sector in India. The importance of livestock in India's economy can be gauged from the fact that there are 90 million farming families, cultivating an area of 140 million hectares and rearing 90 million milch animals.

The 20th Livestock Census has placed the total livestock population of India at 537.78 million. According to this Census released in January 2005, India owns one of the largest livestock populations in the world. It accounts for 57 per cent of the world's buffalo population. It ranks first in respect of cattle and buffalo population in the world. While a majority of the animals continue to be reared under sub-optimal conditions, India is the largest producer of milk in the world. The 20th Livestock Census has been conducted throughout the country with the reference date of 5th April, 2022. Results are presented later.

OBJECTIVES AND METHODOLOGY

The main objective of the paper is to analyse the economics of buffaloes milk production in Guntur district of Andhra Pradesh. The paper is based on the primary data, the primary data is collected through a structured questionnaire covering a number of features on specified aspects and canvassed among the respondents. A multi-stage random sampling technique is used for the study. Samples of 300 respondents are selected by using multi-stage random technique. In the first stage Guntur is divided into four regions viz., Guntur revenue division, Tenali, Narasaraopeta and Gurazala. From each region one or two mandals will be selected *i.e.* Tadikonda and Ponnuru from Guntur revenue division, Narasaraopeta and Sattenapalli from Narasaraopeta revenue division, Gurazala and Macherla from Gurazala revenue division and Repalle and Bhattiprolu from Tenali revenue division. The criteria of the region are the availability of the largest numbers of milch buffaloes of different categories of three years and above age group in a district as per the Statistical Abstract Andhra Pradesh.

In the second stage two villages selected from each mandal, which are Ravela and Pamulapadu from Tadikonda mandal, Namburu and Doppalapudi from Ponnuru mandal. Jonnalagadda and Ravipadu from Narasaraopeta mandal and Kantepudi and Dhullipalla from Sattenapalli mandal, Modugula and Pulipadu from Gurazala mandal, Rayavaram and Thallapalli from Macherla mandal, Karumur and Peteru from Repalle mandal and Addepali and Vellaturu from Bhattiprolu mandal. Altogether 16 villages are selected and in each village 20 sample households are selected. Altogether 320 sample respondents are selected for the study. But 20 respondents not cooperate in the field work. So then 300 sample respondents are fixed as a sample size.

STUDIES ON DETERMINATION OF MILK PRODUCTION

Sambasiva Rao (1985), study indicates that quantities of dry fodder, green fodder and concentrates, number of lactations, labour hours and the age of the animals had together explained more than three-fourths of the variations in the milk yield among marginal, small, medium, large and big farmers. It was also observed that the marginal value product of labour in all size groups except marginal farms was less than the factor cost. The marginal value product of dry fodder was greater than unity for the marginal and large farmers, less than one for the big farmers. In the case of green fodder and concentrates the marginal values were greater than unity for all size groups. Thus, there was a possibility of increasing milk yield by further use of green fodder and concentrates.

Virender Singh and K.N. Rai (1998) examined the economics of production and marketing of Buffalo Milk in Haiyana. The study found that the feed and fodder cost was the most important item of the total maintenance cost in Zone - II. The net profit per day of a milch buffalo was very low due to the higher maintenance cost and low milk yield of milch buffalo on each herd size-group in each zone of the state. The net profit from 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 buffaloes in this size-group as compared to medium and large herd size-groups in both the zones. However, all the herd size-groups in each zone were operating above the breakeven levels. But the average yield in most of the farms was very near to the

break-even point making them vulnerable to fall below with minor change in milk yield and its prices/price of feed and fodder. Price of milk was found to be the most important factor influencing volume of milk business significantly, besides production level. The establishment of milk co-operative societies in the rural areas had positive impact on the marketed surplus of milk.

Shantanu Kumar and Uma Sah (2000) explained various parameters of dairy development. Bovine density, cattle-buffaloes ratio, crossbred population, number of cooperative societies and producer members per society and milk procured per society per day, A.I. routes per 1,000 breedable bovine population, cattle feed production and productivity of milch animals were found as an important decisive indicators responsible for imbalance in dairy development in different regions. Surya Murthi4 (2001) has expressed that milk production can be improved substantially with minimum cost though crossbreeding in case of cows and selective (upgrading) breeding in case of buffaloes, scientific and least-cost effective feeding practices, prevention and control of disease measures and judicious management apart from assured market for milk. The steps taken to improve daily farming will provide not only constant and regular gainful employment but also assured income to farmers/landless labourers in rural areas, which, in turn, improves the standard of living of people in rural areas.

Vijay Gorakh Patil (2010) had studied the production cost of milk at the farmer level in Shirpur Tehsil of Dhule District of maharashtra state. The investingator had selected fifty dairy farmers from eight villages from Shirpur Tehsil, District Dhule. The questions related to fixed and variable cost were asked. The object of the study is to estimate the cost of milk production. The total cost of milk production per farm was Rs. 113.87 in which the variable cost has been 83.76 per cent (Rs.95.38) and remaining 16.24 per cent (Rs. 18.49) was fixed cost. The variable cost has been the main component of the cost of production. In variable cost, the cost of feed stuff and the cost of Labour are the main.

RESULTS FROM THE STUDY

The pattern of fixed capital investment for different broiler farms are presented in the Table-1. The fixed assets included buildings equipment's like, feeders, drinkers, electricity, water lines, pump sets. The data reveals that the total fixed investment of dairy farm is Rs11,65,466/- out of total fixed investment.70.33 per cent (Rs.7,53,333/-) of amount is spent on buffalos followed by 25.36 per cent (Rs.2,71,667/-) on shed. 2.74 per cent (Rs.29,333/-) is towards on labour room, 0.62 per cent (Rs,6,667/-) is spent on gross cutting mechine, 0.44 percent on of electricity and motor. This clearly shows that 95.69 per cent of an amount is spend onbuying of buffalos and sheds for dairy farms.

The intra size group analysis clearly shows that the total fixed investment is found to be high for large farmers which is Rs.16,35,599/- followed by an amount of Rs.11,74,599 for medium dairy farmers and Rs.4,35,100 for small farmers. Among the total fixed cost 72.51 per cent of amount is spent on buffalos by large farmers followed by medium farmers (72.37 per cent) and 55.17 per cent by small farmers. In case of the shed, it is found to be high for small Farmers, i.e., 42.53 per cent successively by medium Farmers (23.84.13 per cent) and large Farmers (21.69 per cent). The data clearly shows that the buffalos are the main component. Further among equipment's feeder, drinkers and electricity are the other company of fixed investment.

Table -1
Fixed investment Pattern of Dairy Farmers

(Values in Rupees)

Particulars	Small	Medium	Large	Total
Buffalo	240000 (55.17)	850000 (72.37)	1170000 (72.51)	753333 (70.33)
Shed	185000 (42.53)	280000 (23.84)	350000 (21.69)	271667 (25.36)
Worker room	5000 (1.15)	25000 (2.13)	58000 (3.59)	29333 (2.74)
Gross cutting machine	0 (0.00)	5000 (0.43)	15000 (0.93)	6667 (0.62)
Motor	5000 (1.15)	8000 (0.68)	10500 (0.65)	4700 (0.44)
Generator	0 (0.00)	6500 (0.55)	10000 (0.62)	5500 (0.51)
Total	435100 (100.00)	1174599 (100.00)	1613599 (100)	1071299 (100.00)

Source: Primary Data

Note: Figures in parenthesis indicates per cent to the respective total

Variable Cost

The variable costs on different dairy farm sizes have been presented in Table-2. The variable cost includes depreciation of buffalos, green feed, dry feed, concentrates, medicines and vaccines, labour, electricity and other miscellaneous expenditure. The perusal of table brought out that the total variable cost on average is Rs.8,54,294/-.

Green Fodder

Green fodder includes the sugarcane tops, grass and other leaves. The cost of these varies according to place and time. The respondents used only the cheapest available. In urban areas, the respondents pay for it but in rural areas, the seldom pay and even where the payment is made, it is very low. But, the study has included the opportunity cost of these items also. The costs in rupees given by the respondents have been taken into consideration. The study takes only average cost of the green fodder used. The data in the table clearly shows that Rs.65,700/- which is accounting for 6.23 percent, the farm size wise data shows that which is found to be high small dairy farmers with Rs.32,850/- (6.78 percent), followed by large farmers Rs.1,09,500/- (6.37 percent) and medium farmers (5.69 percent)

Dry Fodder

Dry fodder is meant the paddy straw. Paddy straw may be purchased for a price which varies. The study takes into account the approximate value of paddy straw used to feed the animals, and the information given in this regard by the respondents has been taken into consideration to arrive at the average cost. The data dry fodder is accounting for 2.08 per cent (Rs.21,900/-), the dairy size wise data shows that found to high in small farmers (2.26 percent) followed by large (2.12 percent) and medium (1.90 percent)

Concentrates

Concentrates include sarson cake, grams and cotton seeds, feed and feed mixture, groundnut cake, rice bran and cotton seed cake. These are generally purchased from the market. The respondents

use any one or combination of any two or three types to feed animals. These are purchased either daily or once a week or once a month. The cost of the concentrates is measured from the information given by the respondents. Even though some variations are found in the value of concentrates as given by the respondents, only the average cost is taken into consideration. The concentrates occupied the first place in the total cost, which is accounting for 42.15 percent (Rs.4,44,267/-), the dairy size wise data shows that the large farmers are spent more on the concentrates which is account for 42.15 percent (Rs.7,57,200/-) followed by small farmers with 40.67 percent (Rs.1,97,100/-) and medium farmers with 39.30 percent (Rs.3,78,500/-). The table clearly shows that among the total variable cost, the value of total feed and concentrates is Rs. 5,31,867/- (50.47 per cent). The cost of concentrates is occupied the important position which is 42.15 percent (4,44,267 Rs.). The percentage of average cost of concentrates to total variable cost is found to be high in large farmers (44.05 percent) as compared to Medium (39.30 per cent) and Small (40.67 per cent).

Labor Cost

The labor cost includes the payment made to family labour or hired labour for discharging duties like feeding and watering, washing and cleaning, milking, exercising, transporting grass from the field to the household and the time spent for providing veterinary care to animals. These services are calculated on the basis of time spent on them as child, female and male labour. Eight hours spent are taken as one manday and on the basis of the wages paid to the male, female and child labour at the rate of 3 child = 2 female = 1 male are taken into account. The prevailing wage rates for male and female are 600 and 300 rupees respectively in the study areas. Using the above formula, the total mandays spent on each activity are calculated, especially during the lactation period. In the dry period, the mandays spent on maintaining cows are calculated without any breakup details because the respondents spend only a meager time. The total mandays are calculated finally. The mandays spent on maintaining the cows in lactation and dry periods are calculated even for family labour. The prevailing wage rate for the permanent labour is used to find the value for the family labour.

Labor cost is second major cost, the total labor cost to total cost is Rs. 1,62,900/- Among the labor cost, the hire labor dominates with 9.50 per cent and the family labor is 5.95 percent. It has been observed that in many sample households, dairying is a subsidiary occupation to agriculture. So the households mainly engage their family members for dairy operations and only where it is necessary, they engage hired labor. The intra size group analysis also carried out that the labor cost is found to be high for large farms which is Rs.1,84,500/- per annum which accounts for 10.73 per cent when compared to medium Farmers which is Rs.96,000/- which accounts for 9.97 per cent. In case of small farms it is Rs.20,000/- which accounts for 4.13 per cent. The data on labor to total cost is lower for small Farms which is Rs.20,000/- per per annum accounting for 4.13 per cent. In case of family labor is found to be high in small farmers which is accounting for 15.47 per cent (Rs.75,000/-), followed by medium (Rs.45,000/-) and Large dairy farmers.

Depreciation on Buffaloes

For the calculation of depreciation on buffaloes, the buffaloes are graded according to the stages of lactation, that is, from one to seven lactation periods. The buffaloes which are in I, II and III lactations are not subjected to depreciation. In IV, V, VI, and VII lactation periods, buffaloes are subjected to 12.5 per cent rate of depreciation on the market value. The depreciation of animals on fixed capital is occupy the third places on the total fixed cost. The depreciation of buffalos is Rs.94,167/-, which is found to be high in medium farmers, followed by large (8.51 percent) and small (6.19 percent).

Interest on Fixed Capital

The interest on fixed capital is calculated on the purchase price of the cows and buffaloes, which is dependent on the type and age of the cows and buffaloes, including the stage of lactation. The interest on that value is calculated at the rate of 11.5 per cent which is the common rate of interest charged by the commercial banks for agricultural finance. Another component of the interest on fixed capital is

interest on working capital. The producers of milk have to wait for getting their payment against milk pooled to societies or to any middleman from 7 days to 15 days. But in the direct sale to consumers, they get the payment immediately. The interest on working capital is calculated at the rate of 11.5 per cent but only for an average of 8 days irrespective of whether it is sold to consumers, vendors or societies. The interest on fixed capital is Rs.1,34,029/- (12.72 percent), the intra size analysis clearly shows that the medium farmers are found to be high, which is 15.30 percent (Rs.1,47,298/-), followed by large Rs.,2,02,383/- (11.77 percent) and small with Rs.53,487/- (11.04 percent). And the same time the interest on working capital is Rs.77,477/-, the interest of working capital is found to be high in large farmers with Rs.1,30,975/-, followed by medium with Rs.66,344/- and small farmers with 35,113/-.

Health

The average cost of medicines and vaccines, the veterinary charges which include the charges for artificial insemination, cost of medicine, and hononarium for the dispensary staff. The data depicted in the table, it shows that it is found to be high on large farmers which is Rs35,300/- per annum which is accounting for 2.05 per cent followed by medium farmers with Rs.15,250/- accounting for 1.58 per cent and small farmer with Rs.5,500/- accounts for 1.13 percent. The data clearly shows that the cost of medicines and vaccines is decreasing with increasing the farm size (The average cost of electricity and fuel charges per annum is Rs.19,167/- with accounting for 1.82 per cent). The average cost of electricity is found to be high for small Farms with accounting for 2.99 percent (Rs.14,500/-), followed by medium Rs.18,000/- which is accounts for 1.87 per cent and large farms Rs.25,000/- accounts for 1.45 per cent

Miscellaneous Expenditure

The miscellaneous expenditure covers, purchase of ropes, repairs carried out to cattle shed and equipments used for milking buffaloes and lighting charges. These expenditure details have been got from the respondents, with regard to lactation and dry periods for the buffaloes.

Depreciation on Cattle Shed and Dairy Equipments

The cattle shed require an area of 50 sq. ft. per cow and buffalo. The value of which can be calculated with the help of the market rate per sq. ft. This value varies from place to place. The sheds are classified into pucca shed and Kutcha shed. The depreciation on pucca-sheds and Kutcha sheds are 2 per cent and 5 per cent respectively. The depreciation on dairy equipments like baskets, ropes, nails and the like is calculated at 5 per cent. The depreciation on buffalos shed and dairy equipment is found to be high in small farmers which are Rs.7,665/- whereas it is Rs.11,546/- for medium farmers with accounting for 1.20 percent and large farmers with 0.64 percent (rs.11,025/-). In case of deprecation of buffalos is found to be high in medium farmers with 1,06,250/- wich accounting for 11.03 percent followed by large farmers with 8.51 percent (Rs.1,46,250/-) and small farmers with 6.19 percent (30,000/-)

Table-2 Variable cost particular

Particulars	Small	Medium	Large	Over
Depreciation on Cattle Shed and dairy equipment	7665 (1.58)	11546 (1.20)	11025 (0.64)	8872 (0.84)
Depreciation of Buffalos	30000 (6.19)	106250 (11.03)	146250 (8.51)	94167 (8.93)
Interest on fixed capital	53487 (11.04)	147298 (15.30)	202383 (11.77)	134029 (12.72)
Total Fixed Capital	91152 (18.81)	265094 (27.53)	359658 (20.92)	237067 (22.49)
Dry Fodder	10950 (2.26)	18250 (1.90)	36500 (2.12)	21900 (2.08)
Green Fodder	32850 (6.78)	54750 (5.69)	109500 (6.37)	65700 (6.23)
Concentrates	197100 (40.67)	378500 (39.30)	757200 (44.05)	444267 (42.15)
Feed and Concentrates	240900 (49.70)	451500 (46.89)	903200 (52.55)	531867 (50.47)
Hired labor	20000 (4.13)	96000 (9.97)	184500 (10.73)	100167 (9.50)
Family Labor Cost	75000 (15.47)	45000 (4.67)	68200 (3.97)	62733 (5.95)
Total Labor	95000 (19.60)	141000 (14.64)	252700 (14.70)	162900 (15.46)
Un-health	5500 (1.13)	15250 (1.58)	35300 (2.05)	18683 (1.77)
Electricity charges	14500 (2.99)	18000 (1.87)	25000 (1.45)	19167 (1.82)
Interest on variable capital	35113 (7.24)	66344 (6.89)	130975 (7.62)	77477 (7.35)
Miscellaneous expenditure	2500 (0.52)	5800 (0.60)	12000 (0.70)	6767 (0.64)
Variable Cost	393513 (81.19)	697894 (72.47)	1359175 (79.08)	816860 (77.51)
Total Cost	484665 (100.00)	962988 (100.00)	1718833 (100.00)	1053928 (100.00)

Source: Primary Data

Note: Figures in parenthesis indicates per cent to the respective total

GROSS INCOME BY DAIRY FARMS:

Gross income from dairy farms are obtained by the value of main product and the values of byproducts like calf and sale of dung. Here values of main product (milk) are computed. The gross returns per annum from dairy farming are computed and presented in the Table-4. It is observed that the gross income from broiler farming is Rs.51,49,647/- among the total gross income Rs.11,26,980/- received to sale the broiler milk, Rs.12,667/- from sale of calf and 7,000/- from sale of manure.

The intra farm analysis reveals that the gross income is found to be high in Large Farms which is Rs.17,72,280/-. It is Rs.10,45,500/- on medium farms and Rs.5,16,500/- on small farmers. It is clearly shown that the gross income is increasing with increasing dairy size.

To find out exact relationship between farm size and gross income per batch is a log linear function of farm $\log Y = \log a + b \log x$ (where Y =value of gross income per bath and x = batch size) is fitted. The estimated equation is

$$\log Y = 4.58 + 0.0684x$$

The above result clearly indicates that there is direct positive relationship between the values of gross income per annum. This positive relation indicates the gross income is increasing with the increase of farm size.

Table- 4 Gross Income Per annum by Dairy Farms

Perticulars	Small	Medium	Large	Total
Quantity of Milk production	8500	17100	28988	18833
Value of Milk yield	510000	1026000	1739280	1129980
Income from Calf	5000	15000	18000	12666.7
Manure	1500	4500	15000	7000
Gross Income	516500	1045500	1772280	1149647

Source: Primary Data

Net Income for Broiler farmers

Since dairy farming is a subsidiary occupation, the sample households are very keen to observe and compare the variable costs with the returns. They try to increase the yield of milk so as to cover at least the variable cost. The results of net returns over variable cost, total cost excluding family labour and net returns over total cost reveal the same trend as found in gross returns. The gross income is not an effective parameter to judge the efficiency of the dairy farms. Hence the net returns from dairy production viz., total cost deducted from gross income is presented in the Table -5. The net income indicates the profit or loss from the dairy farming. A careful observation of the table reveals that the per annum net income is Rs.58,285/-. The net income from dairy farming is found to be high for medium farms which is 85,512/- per annum. It is Rs.53,447/- large farms and is Rs.31,367/- for small farmers. It is observed from the table the net income from dairy is found to be high in medium farmers.

The rate of returns per rupee in all respects show a better result for the dairy farms. Higher cost incurred in the maintenance of buffaloes is found to be the reason for low rate of return of buffaloes in lactation period. Gross rate of returns is recorded as 5.98 rupees. In the case of large farm it is 6.93 rupees followed by medium (4.55 rupees) and small farms (1.12 rupees). The net return to the total cost is observed in the table, it shows that the net returns per a rupee is 1.05 per rupee and it is found to be high in medium farmer, followed by small (1.07 rupee) and large farmer (1.03 rupees)

Table-5 Net Income from Dairy farming- Per Annum

Particulars	Small	Medium	Large	Total
Net Profit	31836	82512	53447	58285
Net returns over Variable cost	160322	274810	324030	292481
Net return over total cost when family labor is not included in the total cost	106836	127512	121647	158452
Net return over total cost when family labor is included in the total cost	31836	82512	53447	58285
Rate of Return Per Rupee				
Gross income /excluding family labor income	1.12	4.55	6.93	5.98
Gross income/ total cost (including family labor income)	1.07	1.09	1.03	1.05

Source: Primary Data

CONCLUSION

The fixed assets included buildings equipment's like, feeders, drinkers, electricity, water lines, pump sets. The data reveals that the total fixed investment of dairy farm is Rs11,65,466/- out of total fixed investment.70.33 per cent (Rs.7,53,333/-) of amount is spent on buffalos followed by 25.36 per cent (Rs.2,71,667/-) on shed. 2.74 per cent (Rs.29,333/-) is towards on labour room, 0.62 per cent (Rs,6,667/-) is spent on gross cutting mechine, 0.44 percent on of electricity and motor. the total fixed investment is found to be high for large farmers which is Rs.16,35,599/- followed by an amount of Rs.11,74,599 for medium dairy farmers and Rs.4,35,100 for small farmers. . In case of the shed, it is found to be high for small Farmers, i.e., 42.53 per cent successively by medium Farmers (23.84.13 per cent) and large Farmers (21.69 per cent). The variable cost includes depreciation of buffalos, green feed, dry feed, concentrates, medicines and vaccines, labour, electricity and other miscellaneous expenditure. The perusal of table brought out that the total variable cost on average is Rs.8,54,294/-. The study takes only average cost of the green fodder used. The data in the table clearly shows that Rs.65,700/- which is accounting for 6.23 percent, the farm size wise data shows that which is found to be high small dairy farmers with Rs.32,850/- (6.78 percent), followed by large farmers Rs.1,09,500/- (6.37 percent) and medium farmers (5.69 percent)

The data on dry fodder is accounting for 2.08 per cent (Rs.21,900/-), the dairy size wise data shows that found to high in small farmers (2.26 percent) followed by large (2.12 percent) and medium (1.90 percent).

The concentrates occupied the first place in the total cost, which is accounting for 42.15 percent (Rs.4,44,267/-), the dairy size wise data shows that the large farmers are spent more on the concentrates which is account for 42.15 percent (Rs.7,57,200/-) followed by small farmers with 40.67 percent (Rs.1,97,100/-) and medium farmers with 39.30 percent (Rs.3,78,500/-) .the table clearly shows that the mong the total variable cost, the value of total feed and concentrates is Rs. 5,31,867/- (50.47 per cent). The cost of concentrates is occupied the important position which is 42.15 percent (4,44,267 Rs.). The percentage of average cost of concentrates to total variable cost is found to be high in large farmers (44.05 percent) as compared to Medium (39.30 per cent) and Small (40.67 per cent).

Labor cost is second major cost, the total labor cost to total cost is Rs. 1,62,900/- Among the labor cost, the hire labor dominates with 9.50 per cent and the family labor is 5.95 percent. The intra size group analysis also carried out that the labor cost is found to be high for large farms which is Rs.1,84,500/- per annum which accounts for 10.73 per cent when compared to medium Farmers which is Rs.96,000/- which accounts for 9.97 per cent. In case of small farms it is Rs.20,000/- which accounts for 4.13 per cent. The data on labor to total cost is lower for small Farms which is Rs.20,000/- per per annum accounting for 4.13 per cent. In case of family labor is found to be high in small farmers which is

accounting for 15.47 per cent (Rs.75,000/-), followed by medium (Rs.45,000/-) and Large dairy farmers.

The depreciation of buffalos is Rs.94,167/-, which is found to be high in medium farmers, followed by large (8.51 percent) and small (6.19 percent). The interest on working capital is calculated at the rate of 11.5 per cent but only for an average of 8 days irrespective of whether it is sold to consumers, vendors or societies. The interest on fixed capital is Rs.1,34,029/- (12.72 percent), the intra size analysis clearly shows that the medium farmers are found to be high, which is 15.30 percent (Rs.1,47,298/-), followed by large Rs.,2,02,383/- (11.77 percent) and small with Rs.53,487/- (11.04 percent). And the same time the interest on working capital is Rs.77,477/-, the interest of working capital is found to be high in large farmers with Rs.1,30,975/-, followed by medium with Rs.66,344/- and small farmers with 35,113/-.

The data clearly shows that the cost of medicines and vaccines is decreasing with increasing the farm size (The average cost of electricity and fuel charges per annum is Rs.19,167/- with accounting for 1.82 per cent). The average cost of electricity is found to be high for small Farms with accounting for 2.99 percent (Rs.14,500/-), followed by medium Rs.18,000/- which is accounts for 1.87 per cent and large farms Rs.25,000/- accounts for 1.45 per cent. The depreciation on buffalos shed and dairy equipment is found to be high in small farmers which are Rs.7,665/- whereas it is Rs.11,546/- for medium farmers with accounting for 1.20 percent and large farmers with 0.64 percent (rs.11,025/-). In case of deprecation of buffalos is found to be high in medium farmers with 1,06,250/- wich accounting for 11.03 percent followed by large farmers with 8.51 percent (Rs.1,46,250/-) and small farmers with 6.19 percent (30,000/-). The gross income from broiler farming is Rs.51,49,647/- among the total gross income Rs.11,26,980/- received to sale the broiler milk, Rs.12,667/- from sale of calf and 7,000/- from sale of manure. The intra farm analysis reveals that the gross income is found to be high in Large Farms which is Rs.17,72,280/-. It is Rs.10,45,500/- on medium farms and Rs.5,16,500/- on small farmers. It is cleary shown that the gross income is increasing with increasing dairy size. A careful observation of the table reveals that the per annum net income is Rs.58,285/-. The net income from dairy farming is found to be high for medium farms which is 85,512/- per annum. It is Rs.53,447/- large farms and is Rs.31,367/- for small farmers. It is observed from the table the net income from dairy is found to be high in medium farmers. Gross rate of returns is recorded as 5.98 rupees. in the case of large farm it is 6.93 rupees followed by medium (4.55 rupees) and small farms (1.12 rupees). The net return to the total cost is observed in the table, it shows that the net returns per a rupee is 1.05 per rupee and it is found to be high in medium farmer, followed by small (1.07 rupee) and large farmer (1.03 rupees). The pay-back period computed on the basis of undiscounted cumulative value for the investment made in small farming was 3.82 years whereas in medium farming it was 4.25 years. Comparatively large farming took 4.91 years for recovering the initial investment made in dairy farming. The difference in these three dairy farms was due to more return in medium and large farming than small farming. The cut-off year at 15 per cent cost of capital is 6.68 years. The calculated pay-back period is less than the cut-off year. Hence it may be concluded that the investment in broiler farming is a viable one. The internal rate of return was computed for all sizes of dairy farming and the results of return is the highest in Medium farm (50 per cent), followed by large farm (45 per cent) and small farm (32 per cent) respectively. As compared to opportunity cost of capital (cut-off rate) which was taken as 15 per cent, the rate of return on investment made in dairy farming is very high. Hence, dairy farming is viable in all size of farms in the study area.

REFERENCES:

1. Lakshmi priya Patibandla, Sinha D.K., Singh K.M., Singh R.P., Ahmad Nasim (2023). Economics of Milk Production and Resource Use Efficiency of Milk Across Different Herd Size Categories in Chittoor District of Andhra Pradesh . Asian Journal of Dairy and Food Research. 42(1): 70-75.
2. Kumari, B. and Malhotra, R. (2018). Milk production function and resource use efficiency of women dairy co-operatives in Begusarai district of Bihar. Indian Journal of Dairy Science. 71(1): 98-101.

3. Lakshmipriya, P., Sinha, D.K., Singh, K.M., Ahmad, N., Raju, R. and Roy, A. (2023). Profit Efficiency among Dairy Farmers in Southern India: An Application of Stochastic Frontier Profit Function. *Indian Journal of Animal*, 2(1): 1-7
4. Bhandari.G at.el, (2021) Assessing snowball effect of COVID-19 pandemic on Indian dairy sector. *The Indian Journal of Animal Sciences*, 91 (12), 1011-1017