

## COST OF MILK PRODUCTION OF CROSSBRED COWS MAINTAINED IN SADAK/ARJUNI TAHSIL OF GONDIA DISTRICT

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### ABSTRACT

The present investigation was undertaken during the year 2020-21 on cost of milk production of crossbred cows maintained in Sadak/Arjuni tahsil of Gondia district according to productive range (up to 5 litre, 5-10 litre and above 10 litre) on wet and herd basis.

The cost of milk production was determined as per the method employed at National Dairy Research Institute, Karnal. Under this investigation various components were considered such as food, labour and supervision, health cover (veterinary and medicine), miscellaneous expenses and replacement cost. The data were collected from the farmers by personal interview with help of a pretested questionnaire in Sadak/Arjuni tahsil.

For the productive range up to 5 litre the average gross cost of milk production litre on wet and herd basis were Rs.22.93 and Rs.39.06 respectively, which was based on 35 milch and 15 dry cows and the corresponding values of net cost were Rs.18.53 and Rs.34.46 respectively. Under productive range from 5-10 litre the average gross cost of milk production litre on wet and herd basis were Rs.16.59 and Rs.30.69 respectively, which was based on 35 milch and 15 dry cows and the corresponding values of net cost were Rs.14.53 and Rs.28.50 respectively and in productive range above 10 litre the average gross cost of milk production litre on wet and herd basis were Rs.15.24 and Rs.28.01 respectively, which was based on 35 milch and 15 dry cows and the corresponding values of net cost were Rs.13.59 and Rs.26.33 respectively.

(Key words: Cost of milk production, replacement cost, health cover)

### INTRODUCTION

Livestock is the major asset for the resource poor landless, marginal and small land holding farmers and contribute significantly to their income. Apart from being the source of milk and meat, they are an important source of draught power and traction and are able to convert otherwise indigestible crop residues into nutritious human food. Also, livestock manure plays an important role in nutrient recycling that helps to sustain crop production. Livestock agriculture accounts for 25-30 % of the agricultural GDP of developing countries and is thus, an important component in their economies (Kadam *et al.*, 2019).

White revolution is associated with a sharp increase in milk production. During 1964-65, Intensive Cattle Development Programme (ICDP) was introduced in the country in which a package of improved animal husbandry was given to cattle owners for promoting white revolution in the country. Operation Flood was started in 1970 by National Dairy Development Board (NDDB). The programme has completed its III phase in April 1996. The Operation

Flood Programme, which is the world's largest integrated dairy development programme has made considerable progress in achieving its outlined objectives (Singh *et al.*, 2017).

India occupies the first position globally with its annual milk production of million tons with an increment of 4%. milk production in India is about 187 million metric tons in year 2019, up from the previous year's 176.3 million metric tons. The milk production in the country had an increase of 6.5 per cent over the previous year. The capita<sup>-1</sup> availability of milk in the country is 394 g day<sup>-1</sup> in 2019. This represents sustained growth in the availability of milk and milk products for our growing population. The dairy and animal husbandry sector contributes around 4.2% of India's GDP farmers (Anonymous, 2019). It is a primary source of income for about 7 crore rural families. Most of the milk producers are landless or small and marginal farmers. In Thoubal district of Manipur, the cost of milk production litre<sup>-1</sup> was Rs.19.14 and Rs.53.58 for crossbred and local cow respectively (Singh *et al.*, 2019).

Keeping these in view, an attempt was made to study on the cost of milk production of crossbred cows maintained in Sadak/Arjuni tahsil of Gondia District.

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## MATERIALS AND METHODS

The present investigation entitled, "Cost of milk production of crossbred cows maintained in Sadak/Arjuni tahsil of Gondia district" was undertaken with an object to worked out the cost of milk production litre<sup>-1</sup> according to the different level of milk production during the year 2020-21 for the crossbred cows on wet and herd basis separately.

Data on 150 crossbred cows was collected from total 45 cattle owners from selected villages namely viz., Kohalitola, Khajari and Vadehao from Sadak/Arjuni tahsil of Gondia district randomly selected for the study with help of pretested interview schedule.

The cost of milk production for crossbred cows was worked out on wet basis and herd basis separately. The cost of milk production on wet basis were determined by considering the milch cow only and on herd basis by considering milch and dry both animals together. Data pertaining to six months during the year 2020-21 on cost influencing factors such as feed and fodder, labour and supervision and daily milk yield according to productive level on 150 crossbred cows (Jersey and H.F.) maintained in Sadak / Arjuni tahsil was used for present investigation. The cost of milk production was determined according to different productive level (up to 5 litre, 5-10 litre, above 10 litre).

The details of various cost influencing factors of cost of milk production such as feed cost, labour and supervision expenses, health cover, miscellaneous cost and replacement cost was worked out. The cost of milk production was determined as per the method employed at National Dairy Research Institute, Karnal (Kuber Ram and Kulwant Singh, 1979).

## RESULTS AND DISCUSSION

### Cost of milk production according to productive range up to 5 litre

According to the productive range up to 5 litre, the average gross cost of milk production litre<sup>-1</sup> for crossbred cows on wet and herd basis were Rs.22.93 and Rs.39.06 respectively and the corresponding net cost were Rs.18.53 and Rs.34.46 respectively. Based on 35 milch and 15 dry cows, the average percentage of cost influencing factors were 68.73, 25.25, 2.09, 2.88 and 1.05 per cent on feed, labour and supervision, health cover (veterinary and medicine), miscellaneous expenses and replacement cost on a wet basis and 80.85, 15.49, 1.23, 1.77 and 0.66 per cent on a herd basis.

### Cost of milk production according to productive range from 5 to 10 litre

The average gross cost litre<sup>-1</sup> of milk production of crossbred cows for the productive range from 5 to 10 litre on a wet and herd basis were Rs.16.59 and Rs.30.69 respectively and the corresponding net cost were Rs.14.53 and Rs.28.50, based on 35 milch and 15 dry cows. The

average percentage of expenditure on feed, labour and supervision, health coverage (veterinary and medicine), miscellaneous expenses, and replacement costs were 75.23, 16.46, 2.89, 3.98 and 1.44 per cent of gross cost on a wet basis and 86.02, 9.38, 1.60, 2.15 and 0.85 per cent of gross cost on a herd basis respectively.

### Cost of milk production according to productive range above 10 litre

For crossbred cows in the productive range above 10 litre, the average gross cost of milk production litre<sup>-1</sup> on a wet and herd basis were Rs.15.24 and Rs.28.01 respectively and the corresponding net cost were Rs.13.59 and Rs.26.33. Based on 35 milch and 15 dry cows, the average percentage distribution of expenditure on feed, labour and supervision, health cover (veterinary and medicine), miscellaneous expenses and replacement cost were 76.57, 14.24, 3.22, 4.40 and 1.57 per cent of gross cost on a wet basis and 86.86, 8.03, 1.75, 2.43 and 0.93 per cent on a herd basis.

Feed was major component of milk production as highest expenditure on feed items ranging from 68.73 to 76.57 and 80.85 to 86.86 per cent in all productive range (up to 5, 5-10, above 10 litre) on wet and herd basis during the year 2020-2021.

These results are in agreement with the findings of Thakare (2011), who recorded expenditure in the range of 67.74 to 75.93 per cent. Similarly, Ghule *et al.* (2012) was also in agreement with the findings, who recorded expenditure in the range of 87.01 to 89.14 per cent. Singh *et al.* (2012) also recorded expenditure on feed component to the tune of 68.62 per cent.

However, Jayaweera (2007) recorded less expenditure on this items, which was 41.70 per cent. Likewise, Sunil *et al.* (2016) was also recorded less expenditure on this items, which was in the range of 63.22 to 64.35 per cent.

The next highest items of cost of milk production was labour and supervision. The expenditure on labour and supervision during the year 2020-2021 according to different productive range (up to 5, 5-10, above 10 litre) on wet and herd basis were in the range between 8.03 to 25.25 per cent. This is in agreement with the findings of Babar (2008), who recorded expenditure labour cost was 13.13 per cent. Similarly, Ghule *et al.* (2012) was also recorded expenditure in the range of 10.03 to 11.42 per cent.

However, Jayaweera (2007) recorded more expenditure on labour because of inclusion of salaries of ministerial staff they recorded highest expenditure on labour was 41.10%. On the otherhand, Mankar (2003) also recorded less expenditure on this items, which was in the range of 5.59 to 6.44 per cent. This might be due to more efficient system of labour management and also probably due to engaging of less number of labour.

The expenditure on health cover (veterinary and medicine) for the year 2020-2021 according to productive range (up to 5, 5-10, above 10 litre) on wet and herd basis

**Table 1. Cost of milk production of litre<sup>-1</sup> on wet and herd basis on different productive ranges (Rs.)**

Cost components	Up to 5 litre		5-10 litre		Above 10 litre	
	Wet	Herd	Wet	Herd	Wet	Herd
Feed	15.76	31.58	12.48	26.40	11.67	24.33
	68.73	*(80.85)	*(75.23)	*(86.02)	*(76.57)	*(86.86)
Labour and supervision	5.79	6.05	2.73	2.88	2.17	2.25
	*(25.25)	*(15.49)	*(16.46)	*(9.38)	*(14.24)	*(8.03)
Health cover	0.48	0.48	0.48	0.49	0.49	0.49
	*(2.09)	*(1.23)	*(2.89)	*(1.60)	*(3.22)	*(1.75)
Miscellaneous	0.66	0.69	0.66	0.66	0.67	0.68
	*(2.88)	*(1.77)	*(3.98)	*(2.15)	*(4.40)	*(2.43)
Replacement	0.24	0.26	0.24	0.26	0.24	0.26
	*(1.05)	*(0.66)	*(1.44)	*(0.85)	*(1.57)	*(0.93)
Gross cost	22.93	39.06	16.59	30.69	15.24	28.01
Income from FYM	4.40	4.60	2.06	2.19	1.65	1.68
Net cost	18.53	34.46	14.53	28.50	13.59	26.33
Average milk yield D <sup>-1</sup> Animal <sup>-1</sup>	4.16	3.95	8.74	8.23	10.95	10.69

(\*) indicate values of percentage gross cost

**Table 2. Comparisons of cost of milk production according to different productive range up to 5 litre and above 10 litre**

Sr. no.	Cost components	Cost of milk production on wet and herd basis (Rs.) productive range				% increase (+) decrease (-) over productive range up to 5 litre	
		Up to 5 litre		Above 10 litre		Wet basis	Herd basis
		Wet basis	Herd basis	Wet basis	Herd basis		
1	Feed expenses	15.76	31.58	11.67	24.33	-25.95	-22.95
2	Labour and supervision expenses	5.79	6.05	2.17	2.25	-62.52	-62.80
3	Health cover	0.48	0.48	0.49	0.49	+2.08	+2.08
4	Miscellaneous expenses	0.66	0.69	0.67	0.68	+1.51	-1.44
5	Replacement cost	0.24	0.26	0.24	0.26	-	-
6	Gross cost	22.93	39.06	15.24	28.01	-33.53	-28.28
7	Income from manure (F.Y.M)	4.40	4.60	1.65	1.68	-62.50	-63.47
8	Net cost	18.53	34.46	13.59	26.33	-26.65	-23.59
9	Average milk yield Day <sup>-1</sup> Animal <sup>-1</sup> (litre)	4.16	3.95	10.95	10.69	-	-

were in the range of 1.23 to 3.22 per cent of gross cost. These results are in agreement with the findings of Ghule *et al.* (2012), who recorded expenditure on health cover in the range of 3.13 to 3.40 per cent. The expenditure incurred on health cover values was higher as compared to findings of Jayaweera (2007), who recorded expenditure on health cover (veterinary and medicine) to the tune of 0.6 per cent.

For the year 2020-2021 the cost incurred on miscellaneous expenses on wet and herd basis for all productive range (up to 5, 5-10, above 10 litre) were in the range of 1.77 to 4.40 per cent of gross cost. These values are lower as compared to finding of Thakare (2011), whose expenditure on miscellaneous expenses was in the range of 3.62 to 5.44 per cent.

The average replacement cost litre<sup>-1</sup> of milk production according to productive range (up to 5, 5-10, above 10 litre) on wet and herd basis were in the range of 0.66 to 1.57 per cent of gross cost. These findings are in agreement with Thakare (2011), who recorded expenditure in the range of 0.92 to 1.75 per cent of gross cost. However, Jayaweera (2007) recorded higher proportion of expenditure on this component (4.9 per cent of gross cost).

#### **Comparisons of cost of milk production according to different productive range up to 5 litre and above 10 litre during the year 2020-2021**

The details of comparison cost of milk production according to different productive range up to 5 litre and above 10 litre for the crossbred cows on wet and herd basis during the year 2020-21 are presented in Table 2.

The average gross cost of milk production litre<sup>-1</sup> on a wet basis for the productive ranges up to 5 litre and above 10 litre were Rs.22.93 and Rs.15.24 respectively with corresponding net costs of Rs.18.53 and Rs.13.59. The gross and net wet costs for the productive range above 10 litre were reduced by 33.53 and 26.65 per cent respectively compared to the cost for the productive range up to 5 litre.

The average gross cost of milk production litre<sup>-1</sup> on a herd basis were Rs.39.06 for the productive range up to 5 litre and Rs.28.01 for the productive range above 10 litre,

respectively with corresponding net costs of Rs.34.46 and Rs.26.33. On a herd basis, the gross and net costs of milk production were also reduced by 28.28 and 23.59 per cent respectively.

## **REFERENCES**

- Anonymous, 2019. Cattle and dairy development, Department of animal husbandry, dairying & fisheries, Government of India.
- Babar, A. P. 2006. Economics of milk production in Parbhani district of Maharashtra. M.Sc.Thesis (Unpub.) Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani.
- Ghule, A. K., N. K. Verma, A. K. Cahuhan and P. Sawale, 2012. An economic analysis of investment pattern, cost of milk production and profitability of commercial dairy farms in Maharashtra. *Indian J. Dairy Sci.* **65** (4): 329-336.
- Jayaweera, T. S. P., H. A. D. Ruwandeepika, K. M. S. B. Kendaragama, W. A. P. Fernando, H. M. K. P. Jayarathne and T. S. J. Thotawatthe, 2007. Analysis of cost of milk production in Ratnapura district. *J. Agric. Sci.* **3**(1): 24-32.
- Kadam, N. P., A. B. Motghare, A. A. Bhondave and S. B. Bhalerao, 2019. Feeding practices followed by crossbred cattle owners in Seloo tahsil of Wardha district. *J. Soils and Crops* **29**(1): 112-116.
- Kuber Ram and Kulwant Singh, 1979. Comparative economics of crossbred and pure-bred zebu cow in milk production. *Indian J. Agric. Econ.* **30**(3): 151.
- Mankar, M. G. 2003. Economics of milk production and disposal pattern in Wardha district of Maharashtra. M.Sc. Thesis (Unpub.) NDRI (Deemed University), Karnal, Haryana.
- Singh, J. K., R. Singh, J. P. Singh, S. K. Mishra, R. Kumar and T. Raghuvanshi, 2017. A study of the cost and returns of milk production of cow in Faizabad district of Eastern Uttar Pradesh, India. *Int. J. Curr. Microbiol. App. Sci.*, **6**(11): 3928-38.
- Singh, K. M., M. S. Meena, R. C. Bharati and A. Kumar, 2012. An economic analysis of milk production in Bihar. *Indian J. Anim. Sci.* **82** (10): 1233-37.
- Singh, O. K., Y. C. Singh, K. R. Singh and N. O. Singh, 2019. Economics of milk production and marketing in Thoubal district of Manipur, India. *Int. J. Curr. Microbiol. App. Sci.* **8**(6): 1397-1407.
- Sunil, V. R., B. S. Chandel and G. Makarabbi, 2016. Economics of milk production in Mandya district of Karnataka. *Economic Affairs*, **61**(4): 659-65.

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