



Goat farming for livelihood improvement of tribal farmers at Gawandh tribal village of Maharashtra

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ABSTRACT

Livestock is an important integral part to the sustainability of economy of this nation and livelihood improvement of farmers, especially resource poor tribal farmers. Tribal Sub Plan (TSP) programme is a developmental programme of Government of India meant solely for the development of tribal area throughout India. So a pilot study was made at Gawandh tribal village of Peint taluka, Nashik, Maharashtra for the economic upliftment and livelihood improvement of tribal people with the object of overall development of tribal area. It was revealed that implementation of goat farming by 20 women tribal farmers at Gawandh tribal village, located at Nashik district of Maharashtra has benefitted tribal beneficiary immensely. Survey report revealed that the average total income of the farmers at the beginning of the programme was ₹ 15,180 from all sources like agriculture, daily wage, but after four years of continuing this programme, tribal woman farmer on an average earned ₹ 50,565 from goat farming, besides 12 goats were remaining in their herd. So, income of tribal farmers has become more than triple in a period of four years through rearing of goat. Performance of Osmanabadi goat in the agro-climatic condition of Nashik was also good with high growth and twinning per cent (53.40%).

Keywords: Goat farming, Livelihood improvement, Maharashtra, TSP programme

Livestock sector plays an important role in socio economic development of our country. The livestock sector produced 135.6 million tonnes of milk, 69.8 billion eggs, 6.00 million tonnes of meat and 46.5 million kg of wool in 2012–13. This sector alone contributes nearly 25.6% of value of output at current prices of total value of output in agriculture sector. Livestock sector provides employment to 38 million people and among these 65 to 70% are small, marginal farmers and land-less labour. Therefore, livestock is an important integral part to the sustainability of economy of this nation and livelihood improvement of farmers, especially resource poor tribal farmers. Maharashtra is rich source of livestock population. As per 20th Livestock Census (2019) in Maharashtra cattle, buffalo and goat population was 15.48, 5.59 and 8.44 million respectively. As per report of SEEDS (2007), Tribal Sub Plan (TSP) programme is a comprehensive strategic approach adopted by Government of India for the welfare and development of Scheduled Tribes in the country. As per Statistical Profile of ST in India (2013), in Nashik district of Maharashtra tribal population was 25.6% of total population of Nashik district. Goat farming was chosen for implementation in tribal area and improving livelihood due to which 70% of the landless agricultural labourers, marginal and small farmers in the

country are associated with goat husbandry (Kumar *et al.* 2010). Goat is hardy animal that thrives on different agro-climatic condition with very limited resources. So, it is easy for the tribal people to manage goat with limited housing, feeding and management. Moreover, goat fetches very good income due to high demand and high price of mutton in local market. Osmanabadi breed of goat was chosen as it was dual purpose breed with high twinning per cent. So, a pilot study was done at Gawandh tribal village of Peint taluka, Nashik for the economic upliftment, self-employment and livelihood improvement of tribal people with the overall development of tribal area.

MATERIALS AND METHODS

Benchmark survey was conducted intensively to know the status of farmers and animal husbandry practices of tribal dominated taluka of Nashik district. Survey and interactive meeting with the farmers was arranged at Gawandh tribal village of Peint taluka, Nashik for implementing Tribal Sub Plan (TSP) programme. Nashik comes under Western Ghat Zone as per NARP with sub-temperate climate and high rainfall. The area is basically hilly with undulating topography. Training was organised for the tribal farmers on 'Goat farming' for upgradation of knowledge. So, after necessary training 20 tribal farmers were selected in consecutive two years on the basis of economic condition, experience on goat farming and interest of the farmers. They

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were instructed to make and renovate low cost goat shed with locally available materials. Each and every farmer was given one unit of Osmanabadi goat consisting of one male and four female of age group around 12 months, 2 qt of pelleted goat feed, sapling of Marvel grass, tarpaulin sheet for roofing the goat shed, feeder and waterer, anthelmintics and mineral mixture. Initially goats were physically checked for health condition; afterwards number tags were put for insurance. MoU was signed between IVRI and each individual farmer with the object to maintain goat properly. Regular deworming was done thrice a year and afterwards enterotoxemia vaccine was injected. Regular visit was made to farmers' door to check health of goat, treat sick animals, record data on live weight, kidding, morbidity, mortality and selling of goat. Moreover necessary information on scientific housing, feeding and management was imparted to the farmers for good health, production and reproduction of the animals directly or by arrangement of *kissan gosthi*. Animal health camps were organised in different villages of Peint taluka for ensuring good health of other livestock besides goat of that area. Study was conducted during end of 2016 up to the end of 2020. Finally collected data were analysed as per Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

Survey and interactive meeting with the farmers was organized on 10.11.16 and 16.2.17 at Gawandh tribal village of Peint taluka, Nashik for implementing Tribal Sub-Plan (TSP) programme. Around 60 tribal farmers attended this programme. On the first occasion 32 farmers were interviewed for gathering information about livestock production system, farmer's profile, annual income etc. Tribal farmers (25) were interviewed in next occasion. Information was taken in pre constructed proforma for further planning and implementation of TSP programme. So, altogether 57 farmers were interviewed and necessary information was collected in the proforma. It was revealed (Table 1) that most of the farmers were male (59.65%) and having education levels 1–5th Std. (56.14%). Land holding of most of the farmers (38.60%) were 0.5–2.5 acre and main crop produced by them was rice (64.91%). 21.05% tribal farmers reported landless labour, so they do not produce any crop. 43.86% farmers reported that they maintain bull for ploughing purpose and sometimes for pulling cart. However, 35.09% farmers maintained poultry birds for household consumption of egg and meat. Most of the farmers informed that they need training on goat farming (47.37%). It was found that annual income of farmers was ₹ 15,180 approximately from agriculture, daily wage, etc.

Organized one day training programme on 28.2.17 for tribal farmers on 'Goat farming for livelihood improvement' at Sinnar, Nashik. 38 tribal farmers including 14 women farmers of Gawandh village, Peint taluka of Nashik district participated in the programme. Second training was also organized on 9.11.17 for tribal farmers on 'Goat farming for livelihood improvement' at Sinnar, Nashik, Maharashtra. 45 tribal farmers consisting of 17 female and 28 male

Table 1. Survey on farmer and status of agriculture done at Gawandh, Peint, Nashik

Parameter	Number	Per cent (based on number of respondents = 57)
<i>Sex</i>	57	100.00
Male	34	59.65
Female	23	40.35
<i>Education</i>	57	100.00
Illiterate	20	35.09
1 – 5 th Std	32	56.14
6 – 10 th Std	5	8.77
<i>Land holding of farmers</i>	57	100.00
Land less	12	21.05
0.5 – 2.5 acre	22	38.60
2.6 – 5.0 acre	12	21.05
5.1 acre and above	11	19.30
<i>Types of crop produced</i>	76	133.33
No crop	12	21.05
Rice	37	64.91
Wheat	10	17.54
Millet (Ragi)	9	15.79
Pulse (Urad, Arhar, Blackgram)	4	7.02
Vegetable (Onion, green pea, green chilli, brinjal, tomato)	4	7.02
<i>Types of livestock maintained</i>	82	143.86
Bull (2 – 3 number)	25	43.86
Cow (1 – 2 number)	9	15.79
He buffalo (1 – 2 number)	18	31.58
She buffalo (1 – 2 number)	5	8.77
Goat (2 – 10 number)	5	8.77
Poultry (5 – 50 number)	20	35.09
<i>Training requirement</i>	57	100.00
Goat farming	27	47.37
Poultry farming	22	38.60
Dairy farming	8	14.03
<i>Average annual income</i>	57	₹15,180/-

farmers participated. Third training programme was organised on 'Goat farming for livelihood improvement' for tribal farmers at Gawandh, Nashik, Maharashtra on 2.2.18. 58 tribal farmers including 22 female farmers participated. Dhara *et al.* (2016) in a study found that the socio-economic status of the goat farmers mostly women farmers could be uplifted through training, particularly on goat husbandry.

Goat and other inputs were distributed to tribal farmers at Gawandh village, Peint taluka of Nashik district under TSP programme on 17.3.17. Around 75 tribal farmers attended this programme. Similarly second phase of goat and other inputs distribution programme to tribal farmers was organized on 1.2.18.

Goats were being maintained in semi-open shed made of locally available materials i.e. bamboo or wood with GI sheet or thatched roof and earthen floor. Few farmers made wooden platform to avoid dampness of floor. Few farmers made paddock with bamboo attached with the shed for roaming and exercise of goat for better health and production. Sometimes goats are allowed for grazing in



Fig.1. Body weight of goat recorded.

fallow land and forest land.

Goats were fed with cut grass on the floor, sometimes grass or tree leaves were tied by rope from roof to create browsing facility. Sometimes they were allowed for grazing on range land. Tree leaves, acacia pod, weeds, etc. were also provided by the farmers. Besides those, pelleted feed was provided @ 100 g twice daily. Marvel grass is a perennial grass easily available in Maharashtra. Even demonstration of planting Marvel grass sapling was done in the farmer's field with the object of feeding goats. Water was available throughout the day, but it was changed twice daily for maintaining hygienic condition and temperature of water.

Recorded body weight of adult goats and average weight of adult male and female goats was found to be 34.570 ± 1.130 and 30.025 ± 0.761 kg respectively (Fig. 1). Average birth weight of kids was recorded to be 2.607 ± 0.234 kg. Average daily gain of kids was recorded to be 120.45 ± 11.27 g/day. However, Das *et al.* (2017) reported growth of Osmanabadi goat in coastal climate of Goa 122.86 ± 14.58 g/day which was slightly better than the present findings as the earlier study was done in organized farm of an institute. Milking of goat was done by few farmers (Fig. 2). Average daily milk yield was found to be 400 ml/day which was utilised for household consumption. The initial body weight, i.e. birth weight of Osmanabadi



Fig. 2. Milking of goat done by a farmer.

kids was reported to be 2.20 to 2.38 kg in different housing systems in Konkan region of Maharashtra (Bharambe and Shinde 2014). So, in this present study better result was noticed. In another study Das *et al.* (2017) reported birth weight of Osmanabadi goat 2.445 ± 0.084 kg in Konkan region of Goa which was also lower than the present findings.

So far in first phase 214 (108 M + 106 F) kids were born with single, twinning and triplet per cent was found to be 42.42, 53.03 and 4.55% respectively. Similarly in second phase 122 kids (59 M + 63 F) were born with single, twinning and triplet % was found to be 40.54, 54.05 and 5.41% respectively. So, overall single, twinning and triplet per cent were recorded to be 41.75, 53.40 and 4.85% respectively. The twinning percentage in Osmanabadi goat in Vidarbha region was reported to be 10.52% ranging from 0 to 26.31% (Sahare *et al.* 2009) which was much lower than the present findings. In the year 2017–18, 649 farmers visited our TSP programme at Gawandh village, Peint taluka of Nashik district and around 35 farmers started goat farming in small scale.

In phase 1, farmers sold goats and earned ₹ 701,300. In phase 2, farmers sold goats and earned ₹ 310,000. So, 20 farmers earned ₹ 1,011,300 by selling of 154 goats with an average gross income of ₹ 50,565 per farmer till the end of 2020. So, earning of tribal farmers has become more than triple in a period of four years through rearing of goat. Moreover, they had 155 goats in P1 (Table 2) and 96 goats in P2 (Table 3) after disposal of goats.

Table 2. Herd strength of goat in phase 1

Year	Initial strength	New born	Death	Sold/ sacrificed	Final strength
2017	50 + 6 (R) = 56	76	14	Nil	118
2018	118	80	17	8	173
2019	173	58	28	62	141
2020	141	55	8	33	155

R, Replaced by insurance company.

Table 3. Herd strength of goat in phase 2

Date	Initial strength	New born	Death	Sold/ given to relative	Final strength
2018	50	91	17	2	122
2019	122	31	31	26	96
2020	96	39	16	23	96

So, in total, 251 goats were remaining in the herd of farmers with an average of 12 goats per farmer. It was also reported by them that they utilised earned money for renovation of house, education purpose of children, treatment, marriage of daughter and purchasing agricultural inputs like power tiller, fertiliser, etc besides purchasing feed ingredients for their goats.

In phase 1, mortality of goat in 2017, 2018, 2019 and 2020 was 10.61, 8.59, 12.12 and 2.70% respectively with

an overall mortality of 8.51%. Similarly, in phase-2, mortality of goat in 2018, 2019 and 2020 was 12.06, 20.26 and 11.85% respectively with an overall mortality of 14.72%. So while two phases were considered together overall annual mortality was found to be 11.62%.

So far two *kissan gosthi* were organized, one on 11.11.16 at Shaukandi village, Peint and another on 11.4.17 at Bordapara tribal village, Peint taluka of Nashik and 120 tribal farmers attended altogether. Lecture on different aspects of goat husbandry was delivered. Afterwards problems of farmers and their necessary solutions were discussed at length. So far eight health camps were organized at different villages of Peint taluka and 1,378 animals were treated and vaccinated. Tribal farmers (320) were benefitted by availing treatment and immunization facility through these animal health camps.

So, implementation of goat farming by 20 women tribal farmers at Gawandh tribal village, located at Nashik district of Maharashtra has benefitted tribal beneficiary immensely. Gross income of farmer became more than triple in a period of four years through rearing of goat. Therefore goat rearing helped the tribal farmers to enhance economic condition and self employment which ultimately leads to food security and livelihood improvement. Organisation of different programmes such as training, *kissan gosthi* and animal health camps in the area increased their awareness about scientific animal husbandry practices significantly.

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