ADOPTION OF GOAT PRODUCTION TECHNOLOGY AND ITS IMPACT AMONG RURAL FARMERS IN NAWALPARSI DISTRICT OF NEPAL

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ABSTRACT

Nayabelhani VDC of Nawalparasi district was chosen to judge the effectiveness of goat production technology supported by Heifer International Nepal. Field survey with before and after approach was employed in the study. Information obtained from Stratified random sampling technique from 90 households with structured questionnaire and was compared with the baseline data. Adoption index was calculated through scoring technique after content validation. Participatory rural appraisal for problems identification. The research revealed that the extent of adoption of scientific goat production technology after project was higher than before project (80% Vs 32%, P<0.01). Further, the average herd size after the project was slightly decreased from 6.585 to 5.677 while the kid mortality dropped from 15% to 11%. The average number of kidding in 2 years was increased from 2 to 3 and the average number of kids per kidding was increased from 1 to 2. Goats were more frequently marketed at an average age of 12 months with an average weight of 24kg after the project. Similarly, the average annual income from the goat per household was found to be almost doubled from Nrs. 8,489 to Nrs. 15,084. Predator was found to be the most serious problem out of seven identified problems.

INTRODUCTION

Nepalese farming system is mixed where crops and livestock forms a major constituent. Agriculture play a pivotal role in economic development and contributes approximately 33% in national GDP and the livestock sub-sector of agriculture contributes 26% of the total AGDP (MoAD, 2014). Among various livestock subsector goat farming holds the major portion in sustaining the rural life. About 49.8% of the rural people rare goat as a living bank because it can be liquidate whenever necessary (CBS, 2014). Goat in recent years has been recognized as one of the most important livestock commodities that have widely been adopted for poverty alleviation, livelihood enhancement and food and nutrition security in Nepal (Rota & Sidahmed, 2010). The importance of goat has increased significantly in recent years as a means of poverty alleviation program of Government of Nepal. Four types of indigenous goat breeds identified in Nepal (Khanal, Rasali, Dhaubhadel, Joshi, & Karki, 2005; Shrestha, 1996) such as Khari, Chyangra, Sinhal and Terai goat, other breeds Jamunapari, Beetal, Barbari, Kiko, and Saanen have been introduced and crossbred (Upreti & Mahato, 1995). Terai and Khari goat represent about 20% and 56%, respectively are being imported annually from neighboring country constituting 15% of the goat market (Gorkhali, Shrestha, Shrestha, & Pokharel, 2011). Despite a sizeable population of National goat herd, it is still not sufficient to meet the requirement of the nation and more than 0.5 million live goats. This is primarily due to the subsistence nature of goat farming in the country. The main

reasons for the stagnation of the goat enterprise in Nepal are unscientific management practices, improper breeding, lack of nutrition and problem related to the health and marketing management (HIA, 2012). In order to make the goat rearing profitable enterprise, technologies have been developed and diffused by the various governmental and non-governmental organizations around the nation. Such improved practices have not been adopted by the farmers so far. Therefore proper adoption of these improved technologies by the goat farmers will be the only means to hasten the further development of this sector. This study seeks to judge the effectiveness of goat production technology supported by Heifer International Nepal in terms of extent of adoption and its impacts among the beneficiaries.

METHODS

Study Area and Sample Size

Nayabelhani VDC of Nawalparasi District was purposively selected to study the impact of adoption of goat production technology. A field survey was conducted in January, 2016. Altogether 90 households (10 from each wards) were taken using stratified random sampling technique. A co-ordination schema was prepared and the information were collected with the structured questionnaire and it was compared with the baseline data from the secondary source. Firsthand information was obtained by face to face interview based on pre-structured questionnaire, focal group discussion (FGD) and key informant. Secondary data was taken from DADO Nawalparasi, books, internet along with reports of different INGO/NGOs. The pre-testing of questionnaire was done on 5 households of Gaidakot municipality and correction was made in finalized questionnaire. Participatory Rural Appraisal (PRA) was conducted for problem analysis. After, collection of primary data from the field survey was entered in MS-Excel version 2010. Different statistical tests were done whenever appropriate. The analyzed data was presented by using text, table, graph and pie-charts with the help of MS-Excel, SPSS version 20.

Methodological Approach of Impact Evaluation

Before and after approach was employed and paired t-test was done for the study of extent of adoption of goat production technology. Information before the project like housing, feeding, breeding, health, care and management were compared with the information after the project for impact evaluation.

Level of Technology Adoption

First of all content were validated from the experts and score was allotted to different technology by the techniques of scoring. The extent of technology adoption was calculated by using the formula:

$$\text{Extent of technology adoption} = \frac{\text{Score obtained by the respondent}}{\text{total score alloted}} \times 100$$

RESULT AND DISCUSSION
Extent of Adoption

Fig. 1 showed the overall extent of adoption of goat production technology after the project (80%) was significantly higher than before project (32%). Further generalization showed that extent of adoption of housing technology after the project (65.61%) was significantly higher than before project (40.21%). Similarly, 73.75% of feeding technology was adopted after the project which was found significantly higher than before project (48.79%). Further the extent of adoption of breeding, health and care and management technology were 82%, 97.67%, 79.31% which was found significantly higher than before project respectively which is shown in figure 1. This significant increase in extent of adoption after the project was due to facilitation of the trainings, arrangement of farmer field tour and supply of the short term credit to the farmers. Trainings and farmers field tour increases the farmer's ability to acquire, analyze and use the information relevant to the adoption of agriculture technology (Koirala, Dutta, Dhakal, & Pant, 2018; Joseph, 2008) and also it makes people more change prone and realize the importance and benefits of adopting new technology whereas supply of credit makes the farmers financially strong to adopt the new innovation (Margaret & Kariuki, 2012). We conclude that

extent of adoption of goat production technology after the project run by Heifer international project lead to positive impact among the farmers.
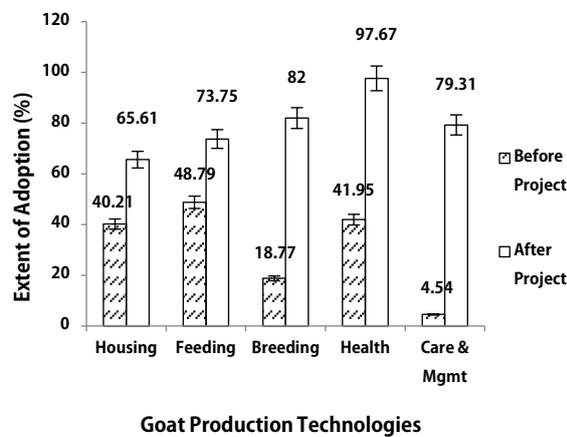

Fig 1. Extent of adoption of goat production technology before and after project

Impact of Adoption

Table 1 showed the impact of adoption of goat production technology. The research revealed that with the adoption of goat production technology after the project the average herd size was decreased from 6.585 to 5.677. The decrease in herd size was mainly due to the selection of the best performing goats from the herd and also due to more frequently marketing of the goats. The major problems identified was the occurrence of the predator which cause the farmers reluctant to increase their herd size. Similarly after the project the kid mortality was decreased from 15% to 11%, average number of kidding in 2 years was increased from 2 to 3 and the average number of kids per kidding was increased from 1 to 2. The average selling age of the goat before the project was 17 months whereas after the

project it was 12 months. Similarly, the average annual income from the goat per household was increased from Nrs. 8,489 to 15,084 after the project. The increase in annual income was due to increased number of marketable goats and the increased price of the live goat.

Problems Associated with Goat Production and Their Mitigation Strategy at Farmer Levels

Table 2 showed the PRA result of goat producer problems and mitigation study. From the problem ranking tool PRA it depicts that occurrence of predator was found to be the most serious problems faced by the goat keepers followed by year round shortage of fodder and forage, diseases, high kid mortality, abortion of the pregnant does, high cost of treatment and lack of grazing area respectively. Nayabelhani VDC lies near the Chitwan National park so huge loss made by predators like Tiger, Jackle etc. to mitigate the predators problems Shepherding, arrangement of the locally made sirons, reducing the flock size, community level insurance were practiced.

CONCLUSION

Application of innovation is one of the paramount means of increasing productivity primarily in subsistence farming where factors of production are highly scarce. The findings decision is strongly influenced by trainings facilitated, arrangement of farmer field tour, supply of credit. Further project interventions has decreased the kids mortality and increase the number of kidding and kids per kidding as well as the income of the rural farmers. This depicts that the goat production technology has brought effective change in

Table 1. Impact of adoption of goat production technology

Parameters	Before Project	After Project
Average Herd Size	6.585	5.677
Kids Mortality	15%	11%
Average number of Kidding in 2 years	2	3
Average number of kids per kidding	1	2
Average Selling Age	17 months	12 months
Average Selling Weight	24kg	24kg
Annual income from the goat per household	Nrs.8,489	Nrs.15,084

Table 2. Problems associated with the goat production and their mitigation strategies at farmer levels

Problems Associated with goat production	Rank	Mitigation strategies at farm level
Year round shortage of fodder and forage	II	Planting of the perennial fodder in the bunds of field and the public area
		Reducing the flock Size
Diseases	III	Regular medication
		Regular Vaccination and de-worming
		Regular cleaning of the goat shed
Predator	I	Shepherding
		Arrangement of the locally made sirons
		Reducing the flock size
		Community level insurance
High kids mortality	IV	Care and management of the pregnant does
		Care and management of the newly born kids
Abortion of the pregnant does	V	Arrangement of the separate stall for pregnant does
Lack of grazing area	VII	Grazing in crop after math
High cost of treatment	VI	Loan from the farmers group

rural livelihood through adoption and such interventions should be replicated elsewhere.

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