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Impact of ASCI Sponsored Skill Development Trainings on Dairy Farming Practices: An Empirical Analysis

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ABSTRACT

Background: The present study assessed the impact of Agricultural Skill Council of India (ASCI) funded dairy training programme conducted at CSKHPKV Palampur, Himachal Pradesh. These skill development training programs of 200 contact hours trained 40 participants in two trainings conducted in 2018 and 2019. Impact of these trainings was understood by studying changes in adoption, herd size, milk production and capital investments made before and after the trainings.

Methods: A semi-structured interview schedule was designed for the collection of data before the start of training programme to assess socio-economic profile, herd size, milk production and adoption of various dairy farming practices. Post training data in March 2021 was collected to study the impact of trainings. The adoption index was calculated by procedure laid out by Mande and Thombre (2009) and Godara *et al.* (2018).

Result: Significant differences in adoption of various practices before and after training were observed with few notable practices such as silage making, castration of male calves, screening of animals for sub clinical mastitis, cattle insurance and biogas production which scored lower adoption even post training. Lack of proper financial support from the banks, poor milk marketing and other socio-psychological factors prevented farmers from reaping full benefits post training.

Key words: Adoption index, Agriculture Skill Council of India, Constraints, Dairy training.

INTRODUCTION

Agriculture sector in India suffers from poor farm productivity and resultant poor income. Farming is often regarded as a livelihood option of last resort in most of developing countries including India (Tadele and Gella, 2012) and developing agricultural skills has always remained a lower priority. Less than 0.5% of work-force (in the age group of 15-59) engaged in agriculture have some sort of formal technical training Mehrotra *et al.* (2013).

Lower dairy technical skills have been a key deterrent for improving the state of dairy farming in India Hemme *et al.* (2015). Extension interventions through capacity building of farmers result in better adoption of dairy farming practices (Ponnusamy *et al.* 2019). Dairy training programme improve adoption of scientific dairy farming practices and enhance income and livelihood of trainee farmers Sharma *et al.* (2015). The department of Veterinary and Animal Husbandry Extension Education, DGCN College of Veterinary and Animal Sciences, CSKHPKV Palampur, Himachal Pradesh, India organized two such Agriculture Skill Council of India (ASCI) sponsored skill development courses of 25 days duration (200 contact hours) each on job role “Dairy Farmer Entrepreneur” for rural youth, men and women during the year 2017-19. The present study elucidates the impact of these trainings on adoption of scientific dairy farming practices and expansion of dairy enterprise among dairy farmers. The empirical data generated through the study would help in future designing, customizing and implementation of such training programme in future.

MATERIALS AND METHODS

Selection of trainee participants

All forty trainee participants who had undertaken training in the year 2018 and 2019 were part of this study. These participants were selected for training through open applications for undergoing 25 days (200 contact hours) training on job role “Dairy farmer entrepreneur” either directly or through recommendation of veterinary officers of state department of animal husbandry, Himachal Pradesh. National Skill Development Council of India defines “Dairy farmer entrepreneur” as a person who is responsible for various activities involved in dairy farm management. The applicants were screened through application form details and telephonic interview. Socio-economic variables such as gender, caste, education and feedback from recommending veterinary officer were criteria followed for screening of applications so that adequate representation was followed across various socio-economic categories. Two trainings were conducted at Department of Veterinary and Animal Husbandry Extension Education, CSKHPKV Palampur Kangra, Himachal Pradesh, in which forty individuals were

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imparted training (200 contact hours) in two batches of twenty each as per ASCI guidelines.

Collection of data

The 200-contact hour's capacity building programme comprised of technical lectures and discussions on various aspects of dairy farming, working in dairy farm, exposure visits to progressive dairy farms, processing units and feed units *etc.* A semi-structured questionnaire was formulated for collection of data before the start of training programme to assess socio-economic profile, herd size, milk production and adoption of various dairy farming practices. Adoption index was calculated by procedure laid out by Mande and Thombre (2009) and Godara *et al.* (2018). The statements or questionnaire designed was used under four major subheads: Feeding, breeding, health care and management. Adoption of each of the practice under major sub-head was studied through a statement which had three responses always, sometimes and never. The respective scores of 2, 1 and 0 were assigned to always, sometimes and never response for each statement. Total score obtained was divided by total obtainable score which gave adoption index (AI) using following formula:

$$\text{Adoption index} = \frac{\text{Total obtained score}}{\text{Total obtainable score}} \times 100$$

To assess the impact of training on adoption of various dairy farming practices, herd size and milk production, the data were again collected in March, 2021 through semi-structured interview schedule on areas in which data was previously collected. Paired t test was applied to assess the difference in adoption index on four areas of feeding, breeding, health care and management before and after training.

RESULTS AND DISCUSSION

Socio-economic profile of trainee participants

As evident from Table 1 majority of participants (45.0%) were middle aged followed by young age. Only 12.5 per cent farmers belonged to old age group. Middle and young aged respondents were more eager or curious, interested and enthusiastic to earn additional income from dairy management to improve their livelihood status Potdar *et al.* (2018). Though majority of farmers were male (75.0%), yet 25.0 per cent farmers were females. Majority of participants belonged to general category (60.0%) followed by OBC (27.5%), ST (7.5%) and SC (5.0%). In close harmony to land holding profile of farmers in state as well as district, majority of participants belonged to marginal category (80.0%) followed by small (17.50%) and semi-medium (2.5%) category of farmers. Quite surprisingly none of the farmer belonged to landless category. Only few (5%) participants belong to low-income group *i.e.* less than 1 lakh per annum, 75% belong to middle income group (1-5 lakhs) and 12.5% had an annual income of more than 5 lakhs. So these figures indicate that the individuals across all income groups look towards skill training in dairy farming as a tool to augment their income. Maximum percentage (45.0) of trainee was educated up to matric level followed by 27.5 per cent up to graduation level, 22.5 per cent were educated up to 10+2 and 5 per cent had 10+2 with a diploma. Thus, it can be concluded that respondents of various education level participated in training which implies that dairy farming enterprise can be taken up by persons of wide education level. Majority (72.5%) of participants were engaged in farming followed by 20.0% in private jobs. About 2.5% respondents were engaged in full time dairy farming, 2.5 per cent were involved in milk marketing and 2.5 per cent were unemployed.

Change in feeding practices before and after training

As evident from Table 2 feeding animal as per physiological status of animal showed highest adoption (76.0%) followed by feeding of colostrum, mineral mixture, improved grasses and fodder crops. Preparation of feed at home did not show much significant improvement in adoption by the farmers. Further, adoption of silage feeding showed no considerable improvement. Mariammal *et al.* (2018) reported that less knowledge on silage among dairy farmers might be due to

Table 1: Socioeconomic profile of trainees.

A. Age	Young (Up to 35)	17 (42.5)
	Middle (36-50)	18 (45.0)
	Old (More than 50)	5 (12.5)
	Average Age	38.875
B. Gender	Male	30 (75
	Female	10 (25)
C. Caste	General	24 (60)
	SC	2 (5)
	ST	3 (7.5)
	OBC	11 (27.5)
D. Land holding size	Landless	(0) (0)
	Marginal	32 (80)
	Small	7 (17.50)
	Medium (2-4 hectares)	0
	Semi medium (4-10 hectares)	1 (2.50)
	Large (>10 hectares)	0
E. Total income from all sources	Less than 1 lakh	5 (12.5)
	1-5 lakhs	30 (75)
	More than 5 lakhs	5 (12.5)
F. Education	Matriculation	45 (30)
	Upto 10+2	9 (22.5)
	Diploma	2 (5)
	Upto graduation	11 (27.5)
G. Occupation	Farming (Agriculture and animal husbandry)	29 (72.5)
	Dairy farming	1 (2.5)
	Milk marketing	1 (2.5)
	Unemployed	1 (2.5)
	Private job	8 (20)

Figures in parenthesis indicate percentage in the last column.

the inherent difficulty in understanding and availability of this technology. Sekhar *et al.* (2017) also reported that dairy farmers of Telangana neglected silage making and special treatment methods to feed and fodder.

Change in breeding practices before and after training

The adoption index score of all the breeding practices improved significantly post training as evident from Table 3. The difference in adoption index among breeding practices was found to be statistically significant. However, adoption index of insemination of animal at right time post parturition was lowest (0.55) among all the breeding practices. One of the reasons of lower adoption may be that this particular practice is also dependent on front line service provider (AI technician/Paravet/veterinarian) who also may influence the rate of adoption.

Change in health practices before and after training

The adoption index score of all the health practices improved significantly post training as evident from Table 4. As a result of training, farmers became more careful about the control of ectoparasites, early treatment of animal by veterinary personnel followed by vaccination and deworming. The screening of sub-clinical mastitis, practicing castration of male calves and isolation of sick animals were less adopted practices. Referring to change in health management practices, Biswas *et al.* (2008) reported significant increase in knowledge level of deworming and vaccination after training among farmers of West Bengal, India.

Change in management practices before and after training

The adoption index score of most of the management practices improved significantly after training Table 5. Post training, farmers became more watchful on the regular cleaning and disinfection of cow shed, ensuring sufficient clean water supply and had pucca cattle sheds. There was improved hygiene for milking micro-environment and use

Table 2: Change in feeding practices before and after training.

Feeding practices	Before training						After training					
	Always (2)	Sometimes (1)	Never (0)	TAS	MS	AI	Always (2)	Sometimes (1)	Never (0)	*TAS	**MS	***AI
Feeding animal as per physiological status of animal	8	4	28	20	0.5	0.25	36	4	0	76	1.9	0.95
Feeding of sufficient colostrum (10% of body weight)	18	18	4	54	1.35	0.68	32	7	1	71	1.8	0.89
Feeding of mineral mixture	1	11	28	13	0.33	0.16	21	19	0	61	1.5	0.76
Feeding of improved fodder grasses	12	18	10	42	1.05	0.53	16	32	24	56	1.4	0.70
Proper feeding of green fodder (Oats/Berseem)	12	14	14	38	0.95	0.48	16	16	8	48	1.2	0.60
Proper feeding of dry grass	12	14	14	38	0.95	0.48	16	16	8	48	1.2	0.60
Making feed at home	4	26	10	34	0.85	0.43	6	32	2	44	1.1	0.55
Silage feeding	0	0	40	0	0.0	0.0	0	2	38	2	0.05	0.03
P value=.019												

*TAS: Total adoption score **MS: Mean score. ***AI: Adoption index.

Table 3: Change in breeding practices before and after training.

Breeding practices	Before training						After training					
	Always (2)	Sometimes (1)	Never (0)	TAS	MS	AI	Always (2)	Sometimes (1)	Never (0)	TAS	MS	AI
Keeping watch on estrous cycle and heat symptoms	18	22	0	58	1.45	0.73	32	8	0	72	1.8	0.90
Insemination of cow after 12-18 hours of onset of heat	14	24	2	52	1.3	0.65	32	8	0	72	1.8	0.90
Proper identification of good quality animal	22	0	18	44	1.1	0.55	32	0	8	64	1.6	0.80
Giving optimum dry period to cow	6	18	16	30	0.75	0.38	21	16	3	58	1.45	0.73
Keep a proper watchand disposal of removal of placenta	6	21	13	33	0.825	0.41	22	14	4	58	1.45	0.73
AI within 2-3 months post parturition	2	11	27	15	0.375	0.19	14	16	10	44	1.1	0.55
P value = .0001												

*TAS: Total adoption score **MS: Mean score. ***AI : Adoption index.

Table 4: Change in health practices before and after training.

Health practices	Before training						After training					
	Always (2)	Sometimes (1)	Never (0)	TAS	MS	AI	Always (2)	Sometimes (1)	Never (0)	TAS	MS	AI
Control of ecto-parasites	9	29	2	47	1.175	0.59	36	4	0	76	1.9	0.95
Early treatment of sick animal by vet	22	18	0	62	1.55	0.78	30	22	10	70	1.75	0.88
Routine vaccination	8	24	8	40	1	0.50	21	17	2	59	1.475	0.74
Regular deworming	4	19	17	27	0.675	0.34	26	6	8	58	1.45	0.73
Treatment of infertility in animals	12	14	14	38	0.95	0.48	20	12	8	52	1.3	0.65
Timely dehorning of animals	15	17	8	47	1.175	0.59	21	11	9	51	1.275	0.64
Isolation of sick animals	2	6	32	10	0.25	0.13	10	20	6	26	0.65	0.33
Castration of male calves	2	2	36	6	0.15	0.08	4	4	32	12	0.3	0.15
Screening of subclinical mastitis	1	1	38	3	0.075	0.04	2	2	36	6	0.15	0.08
P value=.003												

*TAS: Total adoption score **MS: Mean score. ***AI: Adoption index.

Table 5: Change in Management practices before and after training.

Management practices	Before training						After training					
	Always	Sometimes	Never	TAS	MS	AI	Always	Sometimes	Never	TAS	MS	AI
Regular cleaning and disinfection of cow shed	16	24	0	56	1.4	0.70	34	6	0	74	1.85	0.93
Ensuring sufficient clean water supply	30	10	0	70	1.75	0.875	32	8	0	72	1.8	0.9
Pucca cattle sheds	12	0	28	0	0	0.3	31	0	9	0	0	0.775
Ensuring basic hygiene for milking	8	12	20	28	0.7	0.35	16	20	4	56	1.4	0.7
Use of mats for resting cattle	1	0	39	2	0.05	0.025	16	0	24	0	0	0.4
Follow cattle insurance	0	0	40	0	0	0	0	0	40	0	0	0
Biogas production	0	0	40	0	0	0	0	0	40	0	0	0
P value =.03												

*TAS: Total Adoption Score **MS: Mean Score***AI : Adoption Index.

of mats for resting of cattle was also adopted by farmers. However, there was no change in the adoption of cattle insurance and biogas production by the farmers. The difference in adoption index among management practices was found to be statistically significant.

Effect of training on herd size, milk production and capital investment

As evident from Table 6 before trainings, majority of farmers (67.5%) reared up to three animals while after training the percentage of farmers rearing up to three animals decreased to 52.5%. The percentage of farmers rearing up to 10 animals increased from 12.5 to 17.5 per cent post training. Also, the percentage of farmers rearing more than 10 animals increased from 2.5 to 17.5 per cent. The average herd size increased from 4 to 6 indicating positive change of about 41.25 per cent. The average milk production increased from 26.7 to 29.4 liters of milk with a positive change of about 11.0%. However, the difference in increase in milk production was statistically non-significant. Sharma *et al. (*2015) reported that capacity building of dairy farmers' improved scientific dairy farming practices especially feeding of mineral mixture. This resulted in increased milk yield of dairy animals and enhanced income from Rs. 1500-3000.Post training majority of trainees (72.5%) modified and constructed their cow sheds. Forty percent purchased new dairy machinery and 22.5 per cent purchased new dairy animals.

Challenges faced post training in undertaking scientific dairy farming

As evident from Table 7 majority of farmers (70%) reported that lack of proper milk marketing facilitates prevented them from realizing full potential of dairy farming business. Sharma *et al.* (2015) and Ponnusamy *et al.* (2020) reported that market tie ups are essential for sale of dairy products and fortnightly interaction between experts and self-help group members over long period of time helps in sustainable dairy farming in the region. Value addition of dairy products from surplus milk are useful market driven interventions in milk and milk products (Ponnusamy *et al.* 2019).

Further, 45.0 per cent trainees reported lack of proper financial support from the banks to undertake dairy business activity. This suggests that besides training, availability of capital is also important to improve occupational choices in dairy farming.

Table 6: Impact of training program on herd composition, milk production andcapital investment decisions.

	Before	%	After	%
Average number of animals				
< 3	27	67.5	21	52.5
< 5	7	17.5	7	17.5
< 10	5	12.5	7	17.5
>10	1	2.5	5	12.5
Average herd size	4		5.6	
Milk production in liters				
Less than 5	9	22.5	7	17.5
5-10	18	45	11	27.5
11-20	7	17.5	9	22.5
21-50	3	7.5	6	15
51-100	2	5	6	15
100	1	2.5	1	2.5
Total	40	100	40	100
Average milk production	26.7		29.4	
P Value	litres	.133	litres	
Have you made any investments made post training				
Cow shed preparation /Modification	-	-	29	72.5
Purchase of dairy machinery	-	-	16	40
Purchase of dairy animals	-	-	9	22.5

Table 7: Challenges faced post training in undertaking scientific dairy farming.

Lack of proper milk marketing	28 (70)
Non availability of proper financial support	18 (45)
Outbreak of COVID-19	12 (30)
Socio-personal factors	11 (27.5)
Death/disease of livestock	2 (5)

Also, 30 per cent reported that COVID-19 had impacted their dairy farm operations especially in milk marketing. 27.5 percent reported socio-psychological factors (lack of motivation, demise/ill health of family members and lack of family support) affected dairy farming operations. Few (5.0%) reported disease/death in dairy animals had affected their business operations.

CONCLUSION

Significant differences among adoption of various feeding, breeding, health and management practices were observed before and after training. Silage making, castration of male calves, screening of animals for sub clinical mastitis, cattle insurance and biogas production scored lower adoption scores even post training. Challenges faced by trainees prevented them from accruing the optimal benefits of training programme. This means enabling favorable wider social environment remains crucial to realize the full benefits post training.

Conflict of interest: None.

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