International Journal of Veterinary Sciences and Animal Husbandry 2024; 9(3): 473-476

ISSN: 2456-2912
VET 2024; 9(3): 473-476

www.veterinarypaper.com
Received: 11-04-2024
Accepted: 13-05-2024

V Sasikala
Assistant Professor, Department of Veterinary and Animal Husbandry Extension Education, Veterinary College and Research Institute, Orathanadu, TANUVAS, Tamil Nadu, India

KP Saravanan
Assistant Professor, Department of Veterinary and Animal Husbandry Extension Education, Veterinary College and Research Institute, Orathanadu, TANUVAS, Tamil Nadu, India

V Senthilkumar
Professor and Head, Department of Veterinary and Animal Husbandry Extension Education, Veterinary College and Research Institute, Orathanadu, TANUVAS, Tamil Nadu, India

N Narmatha
Dean, Department of Veterinary and Animal Husbandry Extension Education, Veterinary College and Research Institute, Orathanadu, TANUVAS, Tamil Nadu, India

Corresponding Author:
V Sasikala
Assistant Professor, Department of Veterinary and Animal Husbandry Extension Education, Veterinary College and Research Institute, Orathanadu, TANUVAS, Tamil Nadu, India

Impact of training to enhance the knowledge level of livestock farmers on integrated farming systems in Cauvery Delta Zone of Tamil Nadu

V Sasikala, KP Saravanan, V Senthilkumar and N Narmatha

Abstract
The present study was conducted in the Thanjavur district of Cauvery delta zone to assess the knowledge level of farmers on integrated farming systems through training progrmmes. The study was conducted among 206 farmers who have attended the training progrmmes on integrated farming systems at Veterianry College and Research Institute Orathanadu in the year 2020-21. A well-structured interview schedule was prepared to assess the knowledge level of the farmers before and after attending the training progrmmaes. The knowledge gain was assessed based on the difference of knowledge level before and after attending the programme on the integrated farming systems. The findings of the study revealed that only 17.75 % of the farmers had knowledge on integrated farming systems before attending the training programmes and the same was increased to 50.66 % and gained 32.88 per cent knowledge on integrated farming systems.

Keywords: Cauvery Delta Zone, integrated farming systems, training programme

Introduction
The Indian economy is chiefly tilting towards agriculture but, operational area of farming in India continues to decline. The declining trend of per capita land availability poses a serious challenge to the sustainability and profitability of farming (Siddeswaran, *et al*. 2012) [8]. Moreover, population of the country increases, more and more, there is practically no scope for horizontal expansion of land for food production and ensuring nutritional security. Vertical expansion is only possible through the integration of appropriate agricultural components that require less space and time to ensure reasonable periodic income for farm families. Integration of crop and livestock in the farming systems ensures nutritional security (Gill *et al*., 2009) [3]. However, in the Era of Green Revolution, farmers have mainly concentrated on single-enterprise *i.e.* intensive farming systems that lead to deterioration in soil health, increased risk of crop failure and downward trends in productivity (Rahman and Sarkar, 2012) [6]. Rapid population growth, urbanization and income growth in developing countries like India, the demand for food of animal origin is increasing, while besides aggravating the competition between crops and livestock. This situation urges to establish a system approach for fulfilling the demand of constantly increasing population without disturbing the ecological balance. In this aspect, an integrated farming system appears to be the possible solution to the continued increase in demand for food production, income stability and nutritional security, especially for small and marginal farmers with limited resources (Kapil Deb Nath *et al*., 2020) [4]. However, farming community is lacking the knowledge and skills about the farming systems to produce more with maximum profit. In this regard, training programmes act as facilitating mechanism for the farming community since, it is a continuous and ongoing process that promotes technical advancement, accessibility of information, empowerment and facilitation (Rahman *et al.*, 2018) [6] and also it is witnessed as a significant, crucial and continuous requirement to improve the skills of the farming community about the technologies of farm enterprises (Bimal *et al*., 2022) [1]. Effectiveness of the training programmes can be measured at four different levels according to Kaufman and Keller (1994).

The first level is to observe the participants reaction to the program is considered that indicated the level of satisfaction about training (relevance level) the second level of assessment is attributes pertaining to knowledge, skills and attitude referred to as participant learning; the application of learning on farms (transfer of learning) and the fourth level is to increase in productivity and efficiency of trainees (results). In this present study the second dimension of evaluation has been applied and carried out to assess the effectiveness of training on Integrated Farming system (IFS) in terms of Knowledge gain.

Methodology

The present study was conducted purposively in the Cauvery delta Zone of Tamil Nadu since, the zone is prone to number of disasters, viz. floods, cyclones, and even drought. Hence, the farmers of this zone are experiencing problems in getting year-round income and sustaining their livelihood. The present study was conducted among 206 farmers of Thanjavur district were participated in the training programmes organized on integrated farming systems at Veterinary College and Research Institute, Orathanadu from December 2020 to August 2021. Need of the farmers on integrated farming systems were identified by adopting focus group discussion and key informant techniques. Besides, identified needs were discussed with experts, subject matter specialists and faculties of the line departments to finalize the suitable Integrated Farming System model for the Cauvery Delta Zone of Tamil Nadu. Training programmes were organized based on the prioritized need of the farmers and identified integrated farming system model. Among the participated farmers, pre and post knowledge level was assessed before and after attending the training programmes through a well-structured pre tested interview schedule.

Training programme

Among many different models of integrated farming systems, experts opined that agriculture + dairy farming + fish production + poultry rearing was the most suitable and profitable model for the farmers of the Cauvery delta zone. Hence, training programmes were concentrated on this aspect and covered different subject matter areas like paddy production, fodder production, dairy farming practices, poultry rearing practices, vermicomposting, fish production, etc.

Preparation of statements on integrated farming systems to assess the knowledge level

To assess the pre and post knowledge level of farmers about integrated farming systems, a total of 40 statements regarding general aspects of integrated farming systems (10 statements), dairy farming (8 statements), goat/sheep rearing (4 statements), backyard poultry rearing (3 statements), vermicomposting (3 statements), fodder production (6 statements) and fish farming (6 statements) were prepared based on the review of literature and expert opinion. The prepared statements were content validated through a three-point continuum (most relevant, relevant and not relevant) and finalized the statements. Further, all possible care was taken in the incorporation of the statements covering all aspects of integrated farming systems.

Assessment of knowledge level

Knowledge gain is defined as the difference between level of knowledge before and after attending the training programmes on integrated farming systems. The data was collected from the farmers by a well-structured pre tested interview schedule with validated knowledge statements to assess the knowledge level of farmers before and after training programmes to assess the knowledge gain. The collected data was subjected to statistical analysis, specifically frequency and percentage analysis, to determine whether there was a difference in knowledge level about integrated farming systems.

Knowledge Index

Knowledge statements consisted of 40 statements. Hence, an individual farmer, minimum and maximum knowledge score was 0 and 40, respectively. The score of 1 is given to the right answer and 0 for the wrong answer. Each segment is measured independently and an overall knowledge level was calculated through the knowledge index.

$$\text{Knowledge Index} = \frac{\text{Score obtained by the respondents}}{\text{Maximum obtainable score}} \times 100$$

Results and Discussion

From Table 1, the results clearly explains that only 17.75 per cent of the farmers had knowledge on IFS before attending the training programmes whereas it was increased to 50.63 per cent after attending the programmes. It shows the 32.88 % of knowledge gained among the farmers on various aspects of integrated farming systems.

Table 1: Knowledge test for farmers before and after attending the training programmes (N=206)

SL. No	Statements	Before (%)	After (%)	Knowledge gain (%)
I. General aspects of IFS				
1.	Meaning of IFS	19.42	68.93	49.51
2.	Components of IFS	31.55	65.53	33.98
3.	Utilization of crop residues in IFS	38.83	80.10	41.26
4.	Role of IFS in saving water	14.56	49.51	34.95
5.	Advantages of IFS	21.84	53.88	32.04
6.	Family labor can be utilized in IFS	33.98	55.83	21.84
7.	Cost of production is less in IFS	22.82	70.39	47.57
8.	Advantage of manure recycling in IFS	25.24	54.37	29.13
9.	Importance of IFS during disasters	29.13	46.60	17.48
10.	Suitable fodder crops for IFS	16.99	47.57	30.58
II. Vermicomposting				
11.	Meaning of vermicomposting	5.83	43.69	37.86
12.	Materials needed to prepare vemicomposting	4.85	41.26	36.41
13.	Vermicompost has good nutrients than farmyard manure	9.71	53.40	43.69
III. Dairy farming				

14.	Ideal traits to select a dairy animal	21.84	44.66	22.82
15.	Concept of balanced feeding	19.42	43.69	24.27
16.	Importance of inclusion of mineral mixture for dairy animals	6.80	31.55	24.76
17.	Calves fed with colostrum improves the immunity	31.55	54.37	22.82
18.	Right time of insemination	41.26	77.67	36.41
19.	Important breeding problems in dairy animals	43.69	72.82	29.13
20.	Deworming interval for young calves	19.42	54.37	34.95
21.	Important vaccines to be given for cattle	31.55	65.05	33.50
IV. Goat / Sheep farming				
22.	Criteria to purchase goat/ sheep	26.70	54.37	27.67
23.	Fodders to be given for sheep and goats	4.85	41.26	36.41
24.	Regular interval of deworming sheep and goats	21.84	58.25	36.41
25.	Common vaccines to be given for sheep and goats	24.27	57.28	33.01
V. Backyard Poultry				
26.	Breeding age of desi chicken	14.56	47.57	33.01
27.	Common diseases affecting desi chicken	19.42	63.11	43.69
28.	Protecting desi chicks from disease outbreak	18.45	54.37	35.92
VI. Fodder production				
29.	High yielding green fodder varieties	19.42	57.28	37.86
30.	High yielding leguminous fodder varieties	10.68	53.40	42.72
31.	High yielding tree fodder varieties	4.85	61.17	56.31
32.	Harvesting period of Co4	5.83	70.39	64.56
33.	High yielding sorghum variety	7.28	66.99	59.71
34.	Yield of Co4 / acre	4.85	68.93	64.08
VII. Fisheries				
35.	Fingerlings needed to 1/2 acre pond	21.84	74.27	52.43
36.	Common fish varieties used in IFS	33.98	78.64	44.66
37.	Feeding management of fish	29.13	67.96	38.83
38.	Optimum time to harvest fishes	7.28	54.85	47.57
39.	Disease management of fishes	19.42	47.57	28.16
40.	Yield from ½ acre fish pond	31.55	76.21	44.66
Overall knowledge level		17.75	50.63	32.88

Among the general aspects of IFS, increased knowledge gain was observed in meaning of IFS (49.51%) followed by lower cost of production (47.57%) and utilizing crop residues in IFS (41.26 %). 34.95 % of knowledge gain was observed in the role of IFS in saving water and then 33.98 per cent of them gained knowledge in different components used in IFS. Similarly, increased knowledge gain was observed in the advantages of IFS over traditional farming systems (32.04%) and suitable fodder crops for IFS (30.58 %). The increased knowledge gain may be due to the eagerness and necessity of earning more profit along with minimizing the cost of production (Singh *et al*., 2012) [9].

Regarding vermicomposting, farmers had a high level of knowledge gain on nutrients in vermicompost (43.69 %) followed by basic knowledge on vermicomposting and materials needed for preparation of vermicompost, which were 37.86 % and 36.41 % respectively after the intervention of training programmes.

Table 1 reveals that the farmers received a high level of knowledge gain on the right time of insemination (36.41 %) followed by deworming interval of young calves (34.95%) and the importance of vaccination in rearing dairy cattle (33.5%). Following participation in the training programs, each 36.41 % of farmers obtained high knowledge gain on regular intervals of sheep and goat deworming and fodders to be given for sheep and goat rearing. In terms of backyard poultry rearing, the farmers achieved a high level of knowledge gain on common diseases affecting the desi chicken (43.69%), followed by the prevention of disease outbreaks in desi chicks (35.92%). These results clearly explains about the importance of training to enhance the knowledge level of the farmers in economically important activities and are correlated with the results of Nirmala *et al*., 2019 [5]. Regarding fodder production, 64.56% of respondents acquired knowledge about the harvest period of Co4, followed by 64.08% of the farmers received knowledge about the yield of Co4 per acre and high-yielding sorghum varieties (59.71%). Towards fish production, a significant rise in knowledge was noticed in the quantity of fingerlings needed for fish rearing (52.43%) followed by the yield of fish per ½ acre (44.66%) and common fish varieties (44.66 %) as compared to before attending the training programmes.

Table 2: Overall knowledge level of farmers on various aspects of integrated farming systems before and after attending the training programmes (N=206)

Sl. No	Items	Before (%)	After (%)	Knowledge gain (%)
1.	General aspects on IFS	25.44	59.27	33.83
2.	Dairy farming	26.94	55.52	28.58
3.	Goat / Sheep farming	19.42	52.79	33.37
4.	Backyard Poultry	17.48	55.02	37.54
5.	Vermicomposting	6.80	46.12	39.32
6.	Fodder production	8.82	63.03	54.21
7.	Fisheries	23.87	66.59	42.72

Overall knowledge gain of farmers on IFS

From the table 2, there is rise in knowledge level when compared to prior to and after attending the training programmes. Among various components of IFS, farmers obtained a high level of knowledge on fodder production (54.21%), followed by 42.72 per cent gained knowledge on fish production, and 39.32 percent gained knowledge on vermicomposting. These results explain the motive for income generation of integrated farmers and their willingness to include fisheries and fodder production as income generating components of IFS (Dhavale *et al*., 2022) [2].

Conclusion

The study concludes that there was a low level of knowledge on integrated farming systems before attending the training programmes and the same was enhanced after attending the programmes. Hence the findings strongly recommend that training is an effective strategy for improving the knowledge of farmers at the field level. Hence, sustainable and continuous training programmes need to be organized to transform the knowledge level of farmers into practice. Further, in-depth research needs to be conducted to explore the economic and social impact of integrated farmers for enhancing sustainable livelihood of farmers.

Acknowledgements

The authors are highly thankful to Tamil Nadu Veterinary and Animal Sciences University and Veterianry College and Research Institute, Orathanadu for granting permission to conduct this study.

References

1. Bimal Bashir P, Bipin KC, Anjali Babu K. Effect of Training on knowledge gain of livestock inspectors. *Journal of Krishi Vigyan*. 2022;10(2):107-111.
2. Dhavale ND, Kapse PS, Lad AS. Awareness of farmers towards integrated farming system. The Pharma Innovation Journal. 2022;SP-11(8):897-901.
3. Gill MS, Singh JP, Gangwar KS. Integrated farming system and agriculture sustainability. Indian Journal of Agronomy. 2009;54:128-139.
4. Nath KD, Rajbangshi P, Borah D, Saharia PKR. Doubling farmers income through adoption of integrated farming system - A Case Study. Krishi Vigyan 2020 2020;(Special Issue):59-62.
5. Nirmala G, Pankaj PK, Ravi Shankar KR, Nagarjuna Kumar, Vidyasekhar SM. Effectiveness of training on Integrated Farming Systems on knowledge gain and choice of crop-animal technology among tribal farmers in Telangana State. Indian Research Journal of Extension Education. 2019;19(2&3).
6. Rahman FH, Sarkar S. Efficient resource utilization through integrated farming system approach in the farmers' field at Burdwan district of West Bengal. Extended Summaries 3rd International Agronomy Congress, held during at New Delhi; c2012. p. 26-30.
7. Rahman MS, Khatun M, Rahman ML, Haque SR. Assessment of training needs on crop production for farmers in some selected areas of Bangladesh. Bangladesh Journal of Agricultural Research. 2018;43(4):669-690.
8. Siddeswaran K, Sangetha SP, Shanmugam PM. Integrated farming system for the small irrigated upland farmers of Tamil Nadu. Extended Summaries: 3rd International Agronomy Congress held during 26-30 November at New Delhi; c2012. p. 92-93.
9. Singh JP, Gangwar B, Kochewad SA, Pandey DK. Integrated farming system for improving livelihood of small farmers of western plain zone of Uttar Pradesh, India. SAARC Journal of Agriculture. 2012;10(1):45-53.

How to Cite This Article

Sasikala V, Saravanan KP, Senthilkumar V, Narmatha N. Impact of training to enhance the knowledge level of livestock farmers on integrated farming systems in Cauvery Delta Zone of Tamil Nadu. International Journal of Veterinary Sciences and Animal Husbandry. 2024;9(3):473-476.