Farmers Field School – A Sustainable Approach in Technology Transfer and Skill Development of Livestock Farmers

Akila, N[1]. and N. Bharathi[2]

1. Prof. and Head, KVK, Namakkal, Tamilnadu, 2. Asstt.Prof., Veterinary College and Research Institute, Namakkal, Tamilnadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu

Corresponding author e-mail: akila2528@gmail.com

Paper Received on November 11, 2019, Accepted on December 21, 2019 and Published Online on January 01, 2020

ABSTRACT

Farmers' field school (FFS) is a season long training programme to impart training to the farmers generally for three months or till the results achieved. FFSs on livestock farming in Karur district under National Livestock Mission was conducted with the objective of diffuse field oriented technologies that result successful and profitable farming. Six Farmer Field Schools on dairy farming, sheep & goat farming, poultry farming, fodder cultivation, value addition in milk and farm waste utilization were selected, three schools on need basis in each block was conducted and totally 24 programmes in eight blocks were conducted in one year (2015 – 16). In each block, the Selection of 25 interested farmers / School and totally 75 farmers / block were selected based on the livestock species owned and the scope for processing and marketing. So in total for eight blocks 600 farmers and farm women were selected to conduct 24 Farmers Field School. Pre evaluation of trainees was conducted by preliminary survey, Blood, dung, urine and water samples analysis. To overcome the major constraints viz., disease outbreak, disorders in livestock and poultry, low milk yield/body weight, high cost of feed and fodder, delayed calving interval and kid mortality ranked by the farmers, suitable package of practices were imparted to the trainees at their field and the results are indicated that the overall adoption behaviour of the farmers showed that majority of them were partial adopters (61.29 per cent) followed by high adopters (22 per cent) and low adopters (16.71 per cent).

Key words: *National Livestock Mission; FFS; Livestock farming; Adoption;*

The FFS approach was developed in the late 80's by FAO in South East Asia as a way for small-scale rice farmers to investigate, and learn for themselves the skills required for and the benefits to be obtained from adopting integrated pest management (IPM) practices in their paddy fields. Since then, the approach has been extended to several countries in Asia, Africa and Latin America. At the same time there has been a shift from IPM for rice-based systems towards other annual crops and vegetables and integrated soil fertility management. The number of FFS in the world has risen greatly but the question still remains unanswered whether the FFS extension approach would be suited in even more complex situations where quick responses may be expected such as animal health and husbandry. The animal health programme of the Department for International Development (DFID-UK) and FAO decided to support a research and development project lead by the International Livestock Research Institute (ILRI) to adapt the Farmer Field School methodology for livestock production systems. It was reported by *Helali and Ahmadpour in 2013* that that the farmers who attended the FFS have benefited higher levels of adoption and attitude toward the biological control compared to those did not attend the course Based on this, Farmers Field schools in animal husbandry enterprises were started in Veterinary University Training and Research Centre, Karur district since 2009 and disseminating varying technologies from lab to land on different species by conduct of nine schools in four blocks.

It was found that the adoption rate in deworming,

vaccination and green fodder cultivation is nearly 82 per cent. 14 per cent of the farmers started using chaff cutter. 66 per cent of the farmers were started clean milk production practices. 45 per cent of the farmers are doing replacement of rams on a regular interval as the outcome of nine FFS with 225 farmers. Overall the group behavior got improved. Hence it is opined that conduct of FFS may encourage adoption of technologies on a higher rate. Hence it was planned to conduct 24 farm schools under National Livestock Mission in all blocks of Karur district to cover maximum number of farmers. Hence conduct of FFS on dairy, sheep and goat, poultry, fodder, value addition and waste utilization in Karur district was planned with the following objectives.

- Operationalizing front line demonstrations in animal husbandry activities to learn the new technologies by "learning by doing".
- Providing training to target farmers by having interactive sessions and group activities
- Conducting exposure visits to the learning farmers to learn the new technologies by "Seeing is Believing"
- Upgrading knowledge of the surrounding farmers through field days and training programmes

METHODOLOGY

Karur District was selected to conduct the Farmer Field School and the district is located at 10°572 N78°052 Eÿþ /ÿþ10.95°N 78.08°Eÿþ / 10.95; 78.08. It has an average elevation of 122 m (400 ft). The district comprise of eight blocks namely Karur, Thanthoni, Krishnarayapuram, Aravakurichi, K. Paramathi, Thogamalai, Kulithalai and Kadavur and all the blocks were selected for the programme. Six Farmer Field Schools on livestock farming and processing like dairy, sheep & goat, poultry, fodder, value addition of milk and farm waste utilization were planned and totally 24 programmes for eight blocks were conducted in one year (2015 – 2016) @ three schools / block on need basis..

In each block, potential villages and progressive farmers were identified by Collection of village details with the local panchayat leaders. The Selection of 25 interested farmers/farmers field school and totally 75 farmers /block were selected based on the livestock species owned and the scope for processing and marketing. The planning meeting was conducted with the identified farmers regarding the conduct of farmers field school. So in total for eight blocks 600 farmers and farm women were selected to conduct 24 Farmers Field School.

Conduct of FFS: The major constraints faced by the trainees in livestock farming were collected from the respondents and ranked for each block. Based on the constraints prioritized threeFarmer Field Schools on livestock farming and processing were planned to conduct in each block. The FFS wasconducted weekly in the farm and teaching was associated with front line demonstration. Each group was sub divided into five groups with five members in each sub group. Pre evaluation test was conducted for each group on the selected FFS topic. The trainee's knowledge level was assessed. In each class group activity was assigned to them to learn the package of practices by themselves. The livestock of one farm were selected and the FLDs on the technologies where the operation skill is needed were conducted. The classes were completed once the group accepts the results obtained from the demonstrations generally 3-4 months. In between exposure visits were arranged to take the farmers to field visits. Evaluation for each FFS was conducted after six months with 150 trainees (25% of total trainees) selected randomly. The adoption level was measured on the management practices on feeding, breeding, fodder cultivation and health. The score was assigned for the adoption of each practice as Complete adoption – 2, Partial adoption – 1 and Non adoption – 0. The total score for a respondent is obtained by summing up the score obtained on each practices. The adoption level of the respondents was measured by making use of adoption index (Karthikeyan, 1994 in Rahman, 2007).

$$\text{Adoption Index} = \frac{\text{Respondents' total score}}{\text{Total possible score}} \times 100$$

Depending upon the extent of adoption of improved technologies the respondents were categorised as Low adopters - 0-33%, Partial adopters - 34–66% and High adopters - 67–100%.

RESULTS AND DISCUSSION

The participation was voluntary and the average age of the trainees attended the school was 44±10.93. Out of total trainees, 33 per cent of farmwomen were attended FFS since the programme has conducted in their own village. Evaluation of trainees was done six months after the conduct of the programme and the results are as follows.

Adoption level in feeding: Formulation of feed ration and feeding concentrate, green fodder, dry fodder and mineral mixture was assessed. The quantity of feed and fodder given and the cost per kg of feed was also calculated. The details are presented below. Feeding concentrate ration was improved from 49 per cent to 71 per cent. Feeding mineral mixture was adopted only by 19 per cent of farmers due to non availability and high cost. But before the conduct of school it was only 4 per cent.

Table 1. Adoption level in feeding of livestock

Parameter	Yes	No	Quantity
Feeding Concentrate (kg)	107 (71%)	43 (29%)	3.90±1.21
Green fodder (kg)	101(67%)	49(33%)	12±9
Dry fodder (kg)	144 (96%)	6 (4%)	9±4
Mineral mixture (gm)	28 (19%)	122 (81%)	32±16
Water (lt)	150(100%)	0	62±11.48
Concentrate feed rate (Rs)			18±2.99

Adoption level in fodder cultivation: Area of green fodder production increased from 67 acres to 312 acres after the conduct of FFS. Out of 67 per cent farmers cultivated green fodder the different types of fodder cultivated was assessed. Most of the farmers cultivated multicut sorghum Coffs 29 since it is drought tolerant. Area of cultivation of single cut sorghum for dry fodder was 1.5±1.3 acres since all farmers need dry fodder for livestock. Area of cultivation of protein rich fodder desman thus was very less and it is not preferred by farmers. It was reported that the fodder was not palatable for animals.

Table 2. Fodder cultivation status of FFS trainees

Fodder Type	Area (acre)
Green Fodder – COFs29	1.15±0.79
CO4	0.5±0.3
Desmanthus	0.05±0.3
Sorghum	1.5±1.3

Adoption level in breeding and health: It was noticed from the results that estrus cycle was regular in 92 per cent of the animals and the calving interval is 13 months. Also farmers are aware to deworm and vaccinate their animals and poultry to protect from diseases. Disease outbreak in desi chicken reduced from 39 percent to 11 percent.Blood smear and dung analysis indicated that 94 per cent animals are free from parasites. Also clean milk production practices protect dairy animals from mastitis with 87 per cent farmers.

Table 3. Adoption level in breeding and health

Parameter	Result	
Estrus cycle (%)	Regular	138 (92%)
	Irregular	12 (8%)
Breeding Method (%)	AI	141 (94%)
	Natural	9 (6%)
Place of AI (%)	Door step	111 (74%)
	Dispensary	32 (21%)
	Milk Society	7 (5%)
Cost of AI (RS)	Rs.20/- to 150/-	
Calving Interval (Years)	12.82±2.8	
Deworming Interval (Months)	4±2 months;	
	Regular – 131 (87%)	
Vaccination Interval (Months)	6±4 months;	
	Regular – 131 (87%)	
Occurrence of mastitis	Yes 19 (13%); No 131 (87%)	

Overall adoption behavior of FFS trainees: The data about the overall respondents' adoption behaviour in different practices indicated that the farmers were high adopters in health (87%) with the mean score of 72.47 and breeding (92%)with the mean score of 70.01.More than half of the farmers were high adopters in green fodder production (67%). But the mean score was 59.71. The farmers were partially adopting the technologies in formulating feed ration and feeding concentrate feed (71%) with the mean score of 52.33 and farmers are low adopters in feeding mineral mixture (19%) with the mean score of 20.38. The overall adoption behaviour of the farmers showed that majority of them were partial adopters (61.29%) followed by high adopters (22%) and low adopters (16.71%).

*Production status of animals:*The production status of animals indicated that the performance of the animals improved better by feeding concentrate feed and green fodder.

Table 4. Production status of animals

Parameter	Result	
Lactation length (days)	Cattle	280±27
	Buffalo:	250±43.5
Lactation yield	Cattle (Lt)	2406±227
Lactation yield	Buffalo (Lt)	1167±134
Fat%	Cattle	4.08±0.48;
	Buffalo	7.16±2.65
SNF%	Cattle	8.01±0.87;
	Buffalo	8.5±0.66
Body weight of kids and lambs	Lambs – 3 months: 12±1.4kg	
	Kids – 6 months: 21±1.9 kgs	

The production status of dairy cattle increased to 2406±226 lt in 280±27 lactation days and for buffaloes, it was 1167±134 in 250±43.5 days. The average body weight of lambs was 12±1.4kg at three months of age and 21±1.9 kgs in kids at 6 months of age. Overall the feedback of trainees revealed that 89 per cent of trainees experienced new skills in livestock farming.

CONCLUSION

Conduct of FFS in one year improved the adoption behaviour of scientific practices among the livestock farmers of Karur district. The finding was in line with *Mallikarjuna, et al. (2012)*.Organising FFS at field level resulted in establishment of strong linkage between scientist – extension worker –lead farmer-fellow farmers. The FFS groups provide potentially powerful platformson which more holistic communitydevelopment interventions, and promote businessdevelopment services on a more commercial basis forsustained small livestock micro-enterprise development.But FFS is not an end in itself, but a means to an end capacity building for improved smallholderlivestock management and income generation. It istherefore not a stand-alone tool, but rather a pivotalelement in a broader pro-poor strategy for addressingthe development needs and constraints thatsmallholders face.

REFERENCES

Helali and Ahmadpour (2013). Impact of farmers' field school approach on knowledge, attitude and adoption of rice producers toward biological control: the case of Babol township, Iran. *World Applied Sci. J.*, **21** (6): 862-868, 2013

Rahman, S. (2007). Adoption of improved technologies by the pig farmers of Aizawi district of Mizoram, India. Livestock Research for Rural Development,19, Article #5. Retrieved from http://www.Irrd.org/Irrd19/1/rahm19005.htm. (file:///C:/Users/Jitendra/Downloads/211-Article%20Text-408-1-10-20141022.pdf)

Mallikarjuna B.; Subramanium, R.K.; Qadri, S.M.H.; Shivashankar; Srinivas, B.T.; Naidu, W. Damodar; Rao, T.V.S.; Srinivasa, Reddy; P., Srinivasulu, Mogili, T.; Ravikumar, J.; Selvaraj, N.G.; Vijyakumar, R. (2012). Farmer's field school – an appropriate extension method for transfer of technologies to sericulturists. *J. of Global Comm.*, **5**(2):148-154.

• • • • •