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Extensional approaches for enhancing the livestock productivity in the rural areas

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Abstract

The productivity of livestock could be enhanced by providing effective Extension Advisory Services (EAS) with a focus on capacity building of farmers involved in livestock rearing.

Different extension approaches are required to address varied needs of the livestock owners in rural areas. The poultry rearers were trained in rearing of improved backyard poultry (Swarnadhara) from day old to egg laying stage. Although this project (M.V.Sc) was completed in the year 2014, several farmers are purchasing chicks from Bengaluru till November, 2019 (16,220 chicks in 34 batches). This increased the production and consumption of eggs in the families who were rearing these birds. This experience helped the authors in building very good rapport in training the backyard poultry farmers under the CSSPF project. About 1006 farmers in 32 villages of Pondicherry were trained and many of them are purchasing day old chicks (Giriraja) from veterinary college Pondicherry. Based on earlier experiences training programmes are being organised to enhance the capacity of dairy farmers under NABARD funded project. The small ruminants and backyard poultry are mostly neglected by the vets as well as livestock owners, resulting in heavy losses to livestock owners. Regular deworming and vaccination campaigns are being organised in the villages during weekends with veterinary college student volunteers. The Narikkuravars (tribes), the most neglected families are regularly provided deworming and vaccination services for their goats and poultry.

The training programmes helped the livestock owners to enhance their capacity by adopting improved practices and also avail extension services which ultimately helped them in improving the production and reducing mortality in poultry and goats.

Keywords: Change, extension services, improved backyard poultry, training

Introduction

The productivity of livestock could be enhanced by providing effective Extension Advisory Services (EAS) with a focus on capacity building of farmers involved in livestock rearing.

The demand for information on livestock production is growing, both in the sense of demands expressed by the producers themselves, and in the more general sense of a growing potential for increasing production through the delivery of information. (John and Richard, 1996) [5].

The world-wide experience shows that the farmers temporarily adopted the technologies while they were offered incentives, but stop practicing them when incentives are withdrawn. Activities based on active farmer participation in research and extension has showed potential for increasing adoption rates and, thus, improving natural resource management and food security (Singh *et al.* 2015) [15].

I. The capacity building of the livestock owners was done under three different projects and the same are presented below

Backyard poultry rearing was identified as one of the pathways to counter the nutritional deficiency in rural areas (Pathak *et al.* 2013) [9]. Gabanakgosi *et al.* (2013) [4] reported that family chicken was mainly used for consumption and also sold to meet family needs contributing to improved household income and nutrition of their respondents in Botswana. These studies clearly indicated that households tend to consume more of eggs and chicken if they are available in their backyard.

It is now very well accepted and recognised that the farmers discontinue adoption of practices when once the incentives were withdrawn (Rogers, 2003) [13]. The departments of Animal Husbandry of different states have been implementing backyard poultry development programmes by distributing six to eight weeks old chicks of improved varieties of poultry (Vanaraja, Giriraja, Swarnadhara etc) to people on subsidised prices. These people are expected to rear them for about a year to get eggs and chicken meat that could be used for

household consumption. But most of the people either sold the birds or consumed without rearing them for egg production thus defeating the purpose for which they were given. Athilakshmy (2012) [1] showed that the poultry farmers purchased and reared day old giriraja chicks and the egg consumption of these households increased. Taking clue from this study an effort was made to train the poultry farmers to rear day old chicks through purchased inputs including chicks.

A total of 137 poultry farmers from eight villages were contacted through group meetings to ascertain their interest to purchase day old chicks of improved backyard poultry. Out of these 65 farmers expressed their interest and underwent training on artificial brooding, feeding and management in the poultry farm of the veterinary college. After the training, only 50 were ready to rear the chicks without any external inputs or subsidy. The perceived attributes of an innovation are one important explanation of the rate of adoption of an innovation (Rogers, 2003) [13]. Group leaders collected money from their fellow farmers and purchased Swarnadhara chicks from veterinary college Bengaluru and distributed to them as per their requirement. The services like vaccinations, deworming, vitamin and antibiotic supplementation and extension advisory services were provided by the author. The cost of chicks, feed, vaccinations, travelling for attending training

etc. were totally borne by the poultry rearers.

The socio-economic impact of rearing Swarnadhara chicks on these households was studied by using Bennett's hierarchy (1979) [3] which includes both formative and summative evaluation. The impact of this project is presented below:

A. Impact on behavioural changes

1. Skills

With the introduction of Swarnadhara birds in the villages the respondents acquired several skills which are necessary for rearing them. The figures in Table 1 revealed that all the 50 selected respondents acquired the skills in artificial brooding and administering medicines (mixing in water). Rajalakshmi M (2015) [10-11] observed that most of the respondents (76 %) acquired skills in using improvised waterer and feeders, whereas other 24 percent had the experience of using commercially available feeders and waterer. About 40 percent of respondents acquired skills in making improvised night shelters and the rest had the experience of using cages, poultry sheds, bamboo baskets and also allowing them to roost on the trees. While rearing the local birds in their backyard, except safeguarding the birds from predators, there was no need for the farmers to acquire skills and hence, not practised. Whereas, to rear Swarnadhara birds properly, the respondents need to learn and employ these skills.

Table 1: Skills acquired by the respondents

| Sl. No. | Skills A | No. of respondents | | Change by intervention * |
|---------|-------------------------------------|--------------------|--------------------|--------------------------|
| | | Pre- intervention | Post- intervention | |
| 1 | Artificial brooding | 0 | 50 | 50 (100) |
| 2 | Administering medicines | 0 | 50 | 50(100) |
| 3 | Using improvised feeder and waterer | 12 (24) | 50 | 38(76) |
| 4 | Making improvised night shelters | 30(60) | 50 | 20(40) |

n=50

* Figures in parentheses indicates the percentages

2. Practice change in pre and post intervention of Swarnadhara chicks

While rearing Swarnadhara chicks, the perceptible changes in the practices followed by the respondents were observed and the same are presented in Table 2.

There was cent percent change in the practice with respect to artificial brooding, vitamin and antibiotic supplementation, seeking extension advice and feeding the weak birds separately. The practice change noticed in majority of the respondents was deworming, commercial feed supplementation, vaccination and providing clean drinking water to chicks. It is not a common practice in the villages to

send the dead birds for post-mortem examination. During this study 10 respondents brought their dead birds for post-mortem examination for the first time in their respective villages. Providing night shelter for the birds was not practised by all respondents prior to the intervention even though some used cages, poultry sheds, bamboo baskets and trees but now the birds are given separate night shelter by all the respondents. These practice changes are vital for rearing BYP in the villages which necessitates very good extension contact, which was provided by the investigator to all the respondents of the study.

Table 2: Practice change in pre and post intervention of Swarnadhara chicks

| Sl. No. | Practice | No. of respondents practicing | | % Change due to intervention |
|---------|----------------------------------------|-------------------------------|--------------------|------------------------------|
| | | Pre-intervention | Post- intervention | |
| 1 | Artificial brooding | 0 | 50 | 100.0 |
| 2 | Vitamin and antibiotic supplementation | 0 | 50 | 100.0 |
| 3 | Extension advice | 0 | 50 | 100.0 |
| 4 | Feeding the weak birds separately | 0 | 50 | 100.0 |
| 5 | Deworming | 4 | 50 | 92.0 |
| 6 | Commercial feed supplementation | 4 | 45 | 82.0 |
| 7 | Vaccination against RD, Fowl Pox | 12 | 50 | 76.0 |

n=50

3. Details of production, consumption and sale of eggs (3months period)

The details on egg production, consumption and sale pertaining to the 20 respondents (who reared birds till 9

months of age) are given in Table 3. This table revealed that a total of 1,080 eggs were produced by 62 hens in 20 respondent families and most of these eggs were used for household consumption. The consumption of eggs and

chicken were high in families rearing improved BYP strains (Sasidhar, 2009; Athilakshmy and Rao, 2013) ^[14, 2]. The Table 3 also indicated that respondents with small flock size, reared mainly for egg production for household consumption, while the respondents with large flock size mainly reared for sale of birds for meat purpose. There was one respondent who sold 18 eggs produced by three hens. Whereas, another respondent

who was maintaining seven hens, gifted 18 eggs to her friends, relatives and neighbours. This respondent got 81 eggs from her small flock in one month. Only one respondent retained five eggs for brooding and got all of them hatched through natural brooding by desi hen (although not recommended). The total value of these eggs was estimated to be Rs.10,800/- based on the prevailing egg price of Rs.10/-

Table 3: Details of egg production, consumption and sale (3 months period)

| n=50 Sl. No. | Flock size of birds reared | No. of respondents | Existing stock of hens | Number of eggs | | | | | Estimated value of eggs (Rs) |
|-----------------|----------------------------|--------------------|------------------------|----------------|----------|------|--------|-----------------------|------------------------------|
| | | | | Produced | Consumed | Sold | Gifted | Retained for brooding | |
| 1 | Up to20 | 15 | 37 | 938 | 897 | 18 | 18 | 5 | 9,380 |
| 2 | 21to40 | 04 | 7 | 142 | 142 | 0 | 0 | 0 | 1,420 |
| 3 | 41to100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | >100 | 01 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 20 | 62 | 1,080 | 1,039 | 18 | 18 | 5 | 10,800 |

Market Price of eggs = Rs 10

Although this project (M.V.Sc) was completed in 2014, the first author facilitated the purchase of chicks and till Nov, 2019 (16,220 chicks in 34 batches were purchased by several farmers). As expected, the increase in egg production contributed to the increased household consumption of eggs. This study lend credence to i) the farmers were ready to acquire skills and rear the day old chicks by bearing the entire cost of rearing through provision of assured EAS (Rajalakshmi *et al.* 2015) ^[10-11] ii) The farmers continue to rear the chicks even after the completion of the project.

B. CSSPF project

Under this project, it was contemplated to train 960 poultry rearers in one year. By the end of the project period a total of 1006 respondents (220 men and 786 women) belonging to 32 villages in Pondicherry were trained. The previous experience helped the first author in building very good rapport with the backyard poultry farmers under the CSSPF project. The trainees who came for training were interested in rearing backyard poultry and many of them were members of M.S. Swaminathan Research Foundation and Agricultural Technology Management Agency. Very few had idea to become entrepreneurs.

The trainees were first exposed to the college poultry farm and later trained on artificial brooding. They were given a demonstration on the arrangement of litter material, brooder

guard, feeder, waterer and bulb to give warmth to the chicks. The trainees were exposed to the hatchery unit and explained to them about artificial hatching without a brooding hen. This was followed by sessions on the scope of improved backyard poultry, different strains, management of chicks from day one, feeding and health care management of chicks and adults, and marketing of the birds. The trainees took lot of interest in learning new knowledge and skills necessary to rear day old chicks. The training was given July 2015 to July 2016 it was observed that many of the trainees were found purchasing day old Giriraja chicks from the veterinary college farm.

Feedback from trainees (Methodology)

After the completion of training, feedback was obtained from 100 randomly selected trainees from 1st August to 3rd November 2016 through mobile phones with a pre structured interview schedule. The trainees' responses were analysed and the same are presented below:

1. Best thing remembered in training

Incubating and hatching of eggs without hens was considered as the best thing by 33 respondents because first time they could see artificial hatching and brooding. This was followed by artificial brooding, vaccination and feeding of commercial feed by 31, 29 and 28 respondents respectively (table 4).

Table 4: Best thing remembered in Training

| S. No | Things remembered | Frequency | Percentage |
|-------|------------------------------------|-----------|------------|
| 1. | Incubator hatching | 33 | 33 |
| 2. | Artificial brooding | 31 | 31 |
| 3. | Vaccination | 29 | 29 |
| 4. | Feeding of commercial feed | 28 | 28 |
| 5. | Different variety of birds in farm | 20 | 20 |
| 6. | Chick rearing | 14 | 14 |

*Multiple responses

2. Usefulness of the training

The study also revealed that 22 respondents expressed their interest in rearing back yard poultry rearing mostly with improved birds. Eighteen respondents reported that they got information and going to start backyard poultry rearing and will help others by disseminating the information. Noor and Dola (2011) ^[8] reported that 68.5 percent of their respondents acquired 70 percent or more skills, knowledge and abilities

(SKAs) as a result of attending the training courses. They also reported that 81.4 percent of trainees were able to apply and practice more than 50 percent of those acquired SKAs on their respective farms. Analysis of findings also indicated that majority of the farmers or 79 percent agreed that they were able to work much faster and easier on their farms as compared to before attending the training sessions.

Table 5: Usefulness of the training

n=68*

| S. No | Usefulness | Frequency | Percentage |
|-------|--------------------------------------|-----------|------------|
| 1. | Helped to initiate rearing | 22 | 32.5 |
| 2. | Got information | 18 | 26.5 |
| 3. | Easy to rear now | 13 | 19.1 |
| 4. | Confident to rear birds continuously | 5 | 7.3 |
| 5. | Management of chicks | 5 | 7.3 |
| 6. | Alternate way to earn money | 5 | 7.3 |
| | | 68 | 100.0 |

* 32 respondents were not specific in their answer

3. New knowledge gained by respondents

Details of new knowledge gained by respondents through training are given in Table 6. More than 25 percent respondents learnt about purchase and feeding of commercial feed (32 %), artificial brooding (28 %), hatching eggs with incubator (26%) and vaccination practices (25%). Earlier studies reported that their respondents fed their birds kitchen wastes, insects and grain sorghum (Malik *et al.*,2012) [6], household kitchen wastes, supplementary grains and feed resources eaten by scavenging in/around the house Rangnekar and Rangnekar (1999) [12] and Mandal *et al.* (2006) [7] broken rice and rice bran to their birds as supplementary feed (Athilakshmy 2012) [1].

Table 6: New knowledge gained by respondents

n=100*

| S. No | New things learned | Frequency | Percentage |
|-------|-----------------------------------------|-----------|------------|
| 1. | Purchase and feeding of commercial feed | 32 | 32 |
| 2. | Artificial brooding | 28 | 28 |
| 3. | Incubator hatching | 26 | 26 |
| 4. | Vaccination for birds | 25 | 25 |
| 5. | Cleaning the surroundings | 14 | 14 |
| 6. | Everything new to them | 10 | 10 |
| 7. | Chick rearing | 10 | 10 |
| 8. | Poultry rearing in a small premise | 6 | 6 |
| 9. | Knowing the new variety of birds | 5 | 5 |
| 10. | Construction of poultry house | 2 | 2 |

*Multiple responses

4. Best aspect of training

The figures in Table 7 revealed that best aspects of training as indicated by the respondents were interesting sessions conducted by the college faculty (65 %), visit to college poultry farm (55 %), and visit to a rural poultry farm managed by a poultry entrepreneur (30 %).

Table 7: Best aspect of training

n=100*

| S. No | Aspect of training | No. of Respondents | Percentage |
|-------|-------------------------------|--------------------|------------|
| 1. | Sessions by college faculty | 65 | 65 |
| 2. | Visit to college poultry farm | 55 | 55 |
| 3. | Visit to Rural poultry farm | 30 | 30 |
| 4. | Transport | 6 | 6 |
| 5. | Refreshments | 3 | 3 |

*Multiple responses

Visible immediate impact of training programme

The trainees started to realise the importance of vaccination to protect their birds against Ranikhet disease. This was perceptible as there was a sudden spurt in the demand for Lasota vaccine and the vaccine suppliers were surprised by this sudden hike in demand. Most of them started to vaccinate desi birds along with the improved poultry birds. The RB strain vaccine was administered to their birds (at 10 weeks age) by injecting the vaccine with the help of B.V.Sc. & A.H. interneers of the veterinary college.

Poultry farmers who used to rear desi birds only on scavenging, started giving commercial feed to the bird after the training. The availability of feed for poultry both in the college outlet and in the open market made its adoption easier.

The trainees developed rapport with the staff of the college during the training and started visiting college often for various purposes like purchase of chicks and/or feed, to avail advisory services and to get the post-mortem of dead birds.

The impact of the training programme on various aspects of poultry management is going on.

C. Capacity building of women in dairy farming (NABARD – FSPF)

Based on the positive developments of the earlier training programmes, trainings are being organised to enhance the capacity of the dairy farmers under a project funded by NABARD. Under this project 486 dairy farmers (318 women and 168 men) from 115 villages were trained for 7 days. The skill training programme includes orientation, feeding management (balanced feeding, feeding of mineral mixture and least cost ration formulation), breeding management (oestrous detection and right time of insemination), measures to reduce repeat breeding, exposure visits to commercial farms to give them hands on practise on machine milking and chaff cutter. They were also exposed to preparation of value-added milk products, use of dung as farm yard manure and vermicomposting, procedure to avail bank loans and insure their animals.

II. Service delivery in the Villages

The small ruminants and backyard poultry are mostly neglected by the vets as well as livestock owners, resulting in heavy losses to livestock owners. Small ruminants and BYP rearers knew that deworming and vaccination is important but it is difficult for them to approach the service providers for various reasons. This leads to mortality of the small ruminants and poultry reared by them. The mortality of the birds and small ruminants can be prevented by making these services accessible to them at their doorsteps.

Regular deworming and vaccination campaigns are being organised in the villages during weekends with B.V.Sc. student volunteers. About 4500 goats and 2400poultry were protected from PPR and Ranikhet disease respectively through organising campaigns (Table 8).

Table 8: Details of animals covered in vaccination and deworming campaigns

| S. No | Service done | Species | No. of Animals | No. of Villages |
|-------|--------------|---------|----------------|-----------------|
| 1 | Vaccination | Goat | 2455 | 12 |
| 2 | Deworming | Goat | 410 | 2 |
| 3 | Health camp | Goat | 2103 | 8 |
| 4 | Vaccination | Poultry | 2457 | 18 |
| Total | | | 7425 | 40 |

III. EAS delivery to Narikkuravars

The Narikkuravars (tribes), the most neglected families are residing in a colony in Pondicherry. They do rear goats, pigs and poultry for sale as well as for household consumption. Some maintain Aseel birds for conducting cock fights. These Narikkuravars are regularly provided with deworming and vaccination services for their goats and poultry. They were initially not ready to believe that vaccination is going to help their birds. They didn't even keep the birds in the safe enclosure when the team reached their colony. Later, they realised that the birds vaccinated against RD were surviving whereas the unprotected birds were dying. Slowly, they developed good acquaintance with the team and started availing the services. So far, the team visited six times to deliver the EASs free of cost to this neglected lot. The team will be visiting the colony as and when the services are sought by the Narikkuravars. The details are given in table 9 which are self-explanatory.

Table 9: Vaccination to Livestock reared by Narikkuravars

| Sl.no | Livestock | No. of Animals | No. of beneficiaries * |
|-------|-------------|----------------|------------------------|
| 1 | Desi Chicks | 137 | 22 |
| 2 | Adult birds | 283 | 25 |
| 3 | Goats | 51 | 10 |
| Total | | 471 | 57 |

*repeated vaccinations in several visits

Conclusion

Different extension approaches are required to address varied needs of the livestock owners in rural areas. Evidence showed that the capacity of the poultry farmers could be improved substantially which helped them to learn new knowledge and skills. This paved the way for them to adopt new methods in rearing poultry. Similarly, well designed skill development training programme helped the dairy farmers in acquiring skills in rearing dairy cattle.

It is also important to provide EAS at the door steps of the small ruminant owners and backyard poultry farmers to protect the animals from diseases. Well organised deworming and vaccination campaigns in the villages reduced the mortality of the small ruminants and poultry due to internal parasites as well as PPR and Ranikhet diseases.

The farm and home visit by a team to Narikkuravars made them start availing the EAS which reduced mortality among the small ruminants and poultry.

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