

Technological need assessment and planning for empowering farm women in livestock rearing

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ABSTRACT

The farmwomen in rural India are involved in the livestock rearing for additional income generation by engaging themselves lacking with poor knowledge and skills about scientific livestock husbandry practices. The women need to be viewed not as beneficiaries but as active participants in the process of development. By increasing levels of women capabilities and knowledge in livestock rearing will provide more opportunities for employment and increase total house hold income and status in family as well as society. Hence, the present study has been conducted to explore the technological needs of women farmers related to livestock rearing practices. The knowledge test was developed for acquiring details of technological needs and their involvement in animal rearing practices

During the study aspect wise data was gathered through interview method from 120 farm women belonging to four villages namely Dhikoli, Domagor, Karari and Hastinapur in Jhansi district of Uttar Pradesh. It is evident from the overall knowledge mean score that women farmers had minimum knowledge in fodder production systems/ practices (0.24) and feeding technologies (0.24). Their knowledge about housing and sanitation (0.75) and breeding technologies (0.96) was also found very low. In case of health care (1.02) and management (1.22) also they possessed imperfect knowledge regarding cleanliness and management of calf, pregnant, lactating and adult livestock and not able to detect exact sign of diseases and their treatment.

The study revealed that to improve farm women capacity, knowledge and skills an integrated approach is required. Based on the analysis a strategy was developed for empowering women farmers in livestock rearing which include four steps ie. development of women specific technological framework, capacity building through information, education, communication (IEC) programmes, encouraging actions for better adoption and maintaining sustainability. Technological framework developed in participatory mode included (1) introduction of Improved varieties of fodder crops/ perennial grasses along with package of practices (2) fodder utilization techniques (3) improved breeding, feeding, health care and management practices of livestock rearing. The information, education, communication and training on selected technological packages will be provided for their capacity building. Demonstration will involve measures for encouraging action including essential steps leading to adoption of better technologies for fodder production, utilization and improved livestock rearing practices by farm women. For maintaining sustainability, the stakeholder investment in terms of intellectual and capital resources will be intensified. The financial institutions in the area will support entrepreneurial endeavor. Networking with other institutions will help in providing and promoting their programmes and services among farm women for their empowerment and self sustainability.

Introduction

Animal Husbandry is predominantly a female affair in case of farmers of low socio-economic status. These women are found to be involved in - cooking, working in fields, grazing cattle, collecting dung, collecting water, collecting firewood, doing manual labour at construction sites - and finally their contribution is not realized in terms of social and economic contribution.

It has been reflected that women farmers are engaged in the livestock rearing for additional income generation for their family. They provide 60 percent of the livestock farming labour. Contribution of woman folk in dairy production system, like in all other land-related activities, is enormous. She harvests fodder-yielding crops and gathers fodder and bedding material from the forest areas, makes hay and stacks it, feeds and looks after the animals, cleans animal shed, milks the animal, processes and markets the milk, and does almost everything relating to smallholder dairy farming. Men's role in dairy is limited. He participates only in the marketing of milk, looking after grazing and sick animals, and in providing service to dairy animals.

Although much of work of livestock farming is carried out by women, they have very limited knowledge about new technologies which can enhance their knowledge, skills, practices and income. Most of extension programme are designed and implemented with an assumption that all farm managers and decision makers are men. Although the contribution of women farmer is higher in livestock rearing but with traditional practices and poor knowledge base, they are not able to manage their animals properly. Lahoti *et al.* 2011 suggested the proper organization of training programs in accordance with the preference by the dairy farm women. Area of training need preference were conservation of fodder by silage making, machine milking, improvement of poor quality roughages, first aid measures, cattle shed management, finance, banking and credit, pregnancy diagnosis, preventive vaccination, calf management, preparation of balanced ration and deworming. As these are the topics of importance as per preference by dairy farm women. So it is necessary to include these topics in training programs to bridge the technological gap between existing and recommended livestock production practices. Winner of the prestigious Magsaysay Award, Mrs. Ela Bhatt, highlights the need for giving women their due place in dairy development. For their empowerment and economic well being, women's access to training in modern dairying management is essential. Hence, the present study has been initiated with the following objectives:

1. To explore the technological needs of women farmers related to livestock rearing practices
2. To design a strategy for empowering farm women in livestock rearing based on available options.

Methodology

The study was conducted in Jhansi district of Uttar Pradesh. Two blocks namely Babina and Baragaon has been selected using stratified random sampling from Jhansi district. Four villages namely Dhikoli and Domagor from Babina block and Ronija and Hastinapur from Baragaon block have been selected randomly. From each village 30 women farmers from small and marginal families involved in livestock rearing have been selected purposively for assessing their technological needs and developing a need

based strategy for their empowerment. By this way total 120 women respondents have been selected for the study purpose. A knowledge test was developed to explore the technological needs of women farmers in livestock rearing and all the recommended practices related to breeding, feeding, health care and management were included in the test. Accordingly their knowledge score was measured in three categories as low (0-1), medium (>1-2), high (>2-3).

Results and Discussions

Technological needs of women farmers

Technological needs were assessed on the basis of their knowledge regarding various livestock rearing technologies. It is evident from the knowledge mean score presented in Table 1 that Women farmers had minimum knowledge in fodder production systems/practices (0.24) and feeding technologies (0.24). This may be due to that they were only growing berseem and oat local varieties for their animals during rabi season. In kharif they feed straw +natural grasses+ concentrate and in summer they feed straw+ concentrate *saani* to their animals and various feeding technologies like mineral mixture feeding, crop residue treatment, leaf meal, bailing, complete feed blocks, feed pellets, urea molasses mineral block, silage, were very new for them.

Their knowledge about housing and sanitation (0.75) and breeding technologies (0.96) was also found very low because they use to keep their livestock in mixed, open shed with no proper drainage and no use of spraying and white washing. They were having very poor knowledge about symptoms of heat, pregnancy and parturition, treatment of subclinical reproductive inefficiency, Treatment of anestrus, artificial insemination and pregnancy diagnosis.

. In case of health care (1.02) and management (1.22) also they possessed imperfect knowledge about measures for FMD, HS, BQ, mastitis, ecto parasites, Isolating the sick animals, deworming and exact sign of diseases and their treatment along with marketing, banking, finance and credit facilities. Kanaujia *et al.*, (2003) also emphasized that women spent much of their time in unpaid activities like working in family farm or receiving income in kind by working for others and in domestic work. They are the main responsible person who manages all the domestic chores. Being illiterate and confined to four walls of the house, they have no knowledge about new technologies which can enhance their productivity and alleviate drudgery

Table 1: Overall knowledge level of women farmers about improved livestock rearing practices

Major livestock rearing practices	Knowledge Level		
	Mean score	Total score	Rank
Breeding technologies	0.96	115.2	III
Feeding technologies	0.67	80.4	V
Fodder production systems/ Fodder production technologies	0.24	28.8	VI
Health care	1.02,	122.4	II
Management	1.22	146.4	I

Housing and sanitation	0.75	90	IV
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Aspect wise knowledge level of women farmers about improved livestock rearing practices:

Women farmers knowledge on all the aspects like breeding, feeding, health care, management, housing and sanitation of livestock were assessed to identify their specific technological needs. Data on table 2 clearly indicates that in case of breeding practices, women farmers had medium level of knowledge regarding disposal of placenta (2.1) followed by drying of livestock before parturition (1.8), care at the time of pregnancy and parturition (1.2) and symptoms of heat, pregnancy and parturition (1.1). while their knowledge level was found very low in case of treatment of subclinical reproductive inefficiency (0.5), Treatment of anestrus (0.4) artificial insemination (0.3) and pregnancy diagnosis (0.3). In the area of they possessed low level of knowledge regarding all the technologies like balanced ration, Importance of clean water (0.8), feeding to different categories of livestock, conservation of fodder crops (0.65), improvement of low grade roughages (0.46) and post harvest technologies (0.4). As regards the fodder production systems and practices, farmwomen possessed very poor knowledge on fodder production systems (0.2) and package of practices of fodder crops (0.28). As far as the health care is concerned the knowledge of women farmers was found of medium level on health care (1.5) and Identification of sick animals(1.5) followed by vaccination schedule (1.2). But they found to have low level of knowledge regarding measures for FMD, HS, BQ, mastitis (0.89), ecto parasites (0.75), Isolating the sick animals (0.7)) and deworming (0.6). In case of management practices they possessed medium level of knowledge on management of milking animal (2), pregnant animals (1.5) and calf management (1.3). While on marketing of milk (0.8), finance, banking and credit (0.6), they possessed low level of knowledge. Lastly housing and sanitation practices shows that women respondents possessed low level of knowledge in all aspects of housing and sanitation practices like clean milk production (0.9), cleanliness (0.8), type of sheds (0.8) and spraying shed against parasites (0.5).This may be due to poor exposure, less access to trainings and extension programmes and lack of time due to over burden of work. Hence, it has been planned under the project to built the capacity of women farmers on selected technologies with is their own villages. For proper functioning of the programme a strategy have been developed prior to its implementation.

Table 2: knowledge level of women farmers on various aspects of livestock rearing

Aspects	Mean score	Total score	Rank
Breeding			
Artificial Insemination	0.3	36	VII
Treatment of chronic anestrus	0.4	48	VI
Timely examination and treatment of subclinical reproductive inefficiency	0.5	60	V
Pregnancy diagnosis	0.3	36	VII

symptoms of heat, pregnancy and parturition	1.1	132	IV
care at the time of pregnancy and parturition	1.2	144	III
Disposal of placenta	2.1	252	I
Drying the livestock before parturition	1.8	216	II
Mean score	.96	115.2	
Feeding			
Preparation of balanced ration	1.2	144	I
Feeding to different categories of livestock	0.78	93.6	III
Importance of clean water for drinking	0.8	96	II
Conservation of fodder crops i.e. Silage, Hay	0.65	78	IV
Post harvest technologies (Leaf meal, bales, pallets)	0.4	48	VI
Improvement of low grade roughages	0.46	55.2	V
Importance of mineral mixture and its feeding	0.4	48	VI
Mean score	0.67	80.4	
fodder production systems and practices			
Package of practices of fodder crops	0.28	0.28	I
Fodder production systems	0.2	0.2	II
Mean score	0.24	0.24	
Health care			
Vaccination	1.2	144	II
Identifying a sick animal	1.5	180	I
Isolating the sick animals	0.7	84	V
Knowledge of health care	1.5	180	I
Observing the ecto parasites in animals at regular intervals	0.75	90	IV
Regular deworming of animals -	0.6	72	VI
Preventive measures of FMD, HS, BQ, Mastitis	0.89	106.8	III
Mean score	1.02	122.4	
Management			
General management	1.12	134.4	IV
Management of pregnant animal	1.5	180	II
Management of milking animal	2	240	I
Calf management	1.3	156	III
Marketing of milk	0.8	96	V
Finance, Banking and credit	0.6	72	VI
Mean score	1.22	146.4	
Housing and sanitation			

Type of sheds (Kachcha/ Pacca)	0.8	96	II
spraying of sheds against parasites	0.5	60	III
Cleanliness of animals, sheds, utensils and workers	0.8	96	II
Clean milk production	0.9	108	I
Mean score	0.75	90	

Strategy for women empowerment

As women farmers possessed low to medium level of knowledge on all aspects of livestock rearing. Kumar and Fulzele (2002) also indicated that women spend maximum time in agriculture and dairying. Therefore, it can be recommended that the women can be actively involved in agriculture and dairying development programmes. Also they must be given training on different aspects of agriculture and dairying. Pandey *et al.*, (2006) concluded that the access of female farmers was very negligible especially in case of information channels, which shows that although the research and extension agencies have sufficient technologies to transfer at farmers' field but their reach towards farming community especially to farmwomen is very limited. Hence, there is a need to reorient and reorganize the extension programs and activities as per farmers' needs and women farmers should essentially be targeted. Hence, an attempt has been made to evolve a strategy for empowering women farmers through improved livestock rearing practices. Strategy is a systematic framework for action, a blue print and a plan for marshalling resources to accomplish a specific change in human behavior and is effect oriented. It looks at what consequences are needed and how to attain them.

Here, the developed strategy includes four components, which are as follows:

1. Development of women specific technological framework
2. Capacity building on improved fodder production and animal rearing practices
3. Encouraging actions for better adoption
4. Maintaining sustainability.

1. Development of women specific technological framework

Based on the technological needs of the women farmers, following package of technologies have been selected to increase the production and health of their animals.

Need based Improved fodder production systems

Most of the farm women are not aware about the improved package and practices for production of forage crop. All animal rearing practices done by them are traditional and lacking with knowledge of animal nutrition component. The availability of green fodder will increase the livestock productivity and also support in their livelihood system which directly enhance their income.

Green fodder availability for the livestock may be increased by adoption of various forage crop production models in the fields of women farmers. We will utilize 4-5 well

proven forage crop production models for specific situations. The details of which is given below:

01. Fodder production on farm bunds:

The marginal women farmer which has limited resources specially land, can produce sufficient quantity of green fodder on farm bunds/irrigation channels without any additional cost and land diversion for forages. In this model, recently released varieties of bajra napier hybrid (IGFRI 3, 6, 7, 10) or guinea grass (JHGG-08-1, JHGG-04-1 and JHGG-96-5), which have yield potential of about 150-200 t/ha/year will be undertaken to increase green fodder production and productivity. In this two neighboring farwomen (having common boundaries) will be benefitted by taking of green fodder for their livestock without any extra cost/land diversion.

02. Round the year fodder production:

(a) 'Guinea Grass/ Bajra Napier Hybrid + Cowpea/Berseem Cropping System'

Varieties: Guinea grass: JHGG-08-1, JHGG-04-1, JHGG-96-5

BN Hybrid: IGFRI 3, 6, 7, 10

Cowpea: Bundel Lobia-1 and Bundel Lobia- 2

Berseem: BB-2 and Wardan

Round the year fodder production will ensures green fodder availability to the livestock for whole year. This system is very much useful for medium to small farmers. Under this system, perennial grasses (BN hybrid/guinea grass) with seasonal cultivated legumes (cowpea/berseem) will provide quality green fodder for milch animals. Between wider row spaces of grasses, seasonal legumes will be incorporated to enrich green fodder (especially protein), soil fertility and minimize the competition of weeds.

S.No.	Crops	Duration	Productivity (t/ha/year)	Green fodder availability
1.	Guinea Grass/ BN Hybrid+ Cowpea/Berseem*	Whole year	250	Round the year

***Guinea grass/BN Hybrid will grown as perennial, cowpea as intercrop during summer/rainy season and berseem as intercrop during winter season**

(b) Maize + Cowpea- MP chari-Berseem+ Sarson Cropping Sequence

Varieties: Maize: African tall, J1006

Cowpea: BL-1, 2

MP Chari: PC-6, PC-9

Berseem: BB-2 and Wardan

This system will also provide quality green fodder production during whole year with sustainability and stability

S.No.	Crops	Duration	Productivity (t/ha/year)	Green fodder availability
1.	Maize+ cowpea-MP	Whole year	200	Round the

	Chari-berseem+ sarson			year
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***Maize+ cowpea will grown as intercrop/mixed crop during summer, MP Chari will be grown in kharif and berseem+ sarson will be taken as mixed crop during winter season**

03. Forage-Food cropping sequence:

Sorghum (fodder)+ Cowpea (fodder)-Wheat (food) cropping sequence

Varieties: Sorghum: PC-6 and PC-9

Cowpea: BL-1, and BL-2

Wheat: *durum*: HD 4672, HI 8627 and HI 8498

Wheat: *aestivum*: HI 1544, HI 1479 and HI 1531

This system is also very useful for marginal to small women farmers to meet the requirement of green fodder for animals as well as food requirement for their family. In this system, during *kharif* season, fodder crops (sorghum + cowpea) and during *Rabi* season durum / *aestivum* wheat for grain purpose will be grown for family requirement on the same piece of land. By adopting this system about 450-500 q/ha of quality green fodder of sorghum+cowpea and about 30-50 quintals/ha of wheat grain will be ensured on sustainable basis with stability and profitability. By this way their economic condition may be improved.

04. Seasonal fodder crops:

This system is very appropriate for the marginal women farmers and following seasonal fodder crops are grown to meet out the fodder requirements.

Kharif: Cowpea/ Pearl millet /Maize /Sorghum

Rabi: Berseem/oat

Kharif crops/Varieties:

1. Cowpea: BL-1, and BL-2
2. Pearl millet: AVKB-19
3. Maize: African Tall. J-1006
4. Sorghum: PC-6, PC-9

Rabi Crops/varieties:

1. Berseem: BB-2, Wardan
2. Oat: JHO-822, JHO-851, Kent and RO-19

Fodder conservation and animal rearing technologies

Bundelkhand region is the most vulnerable part of the central India and drought is a common phenomena. The non availability of fodder during lean period and its mismanagement is a major concern. As most of the farm women engaged in managing, preparing and providing feed and fodder to their animals lacking with scientific knowledge and benefits of fodder utilization as well as animal rearing technologies. The understanding of preparation of the fodder utilization techniques/products and need based animal rearing practices under the expert supervision will increase the efficiency of farm women and they will manage the livestock in more scientific way. Following technologies related to fodder conservation and animal rearing are selected for implementing at their field.

Fodder conservation and animal rearing technologies
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1. fodder conservation technology such as silage, Hay
2. Crop residue enrichment
3. Feed Manger
4. Chaff cutter
5. Fodder based ration for dairy animals
6. Management of anoestrus / silent estrus
7. Area specific mineral mixture
8. Control of endo and ectoparasites of animals

2. Capacity building on improved fodder production and animal rearing practices

The information, communication, training, knowledge and technological package etc. that assist more involvement of the women farmers for adoption of the technology will be imparted to raise awareness levels and encourage participation and action in the processes.

This will promote participatory interactions to enhance awareness and build capacities of target groups. A series of training programmes that blend technical knowhow for managing fodder and animal resources including inter institutional HRD, programmes, research-extension–farm women interface meetings, workshop and exposure visits will be organized during the initiation process. Capacity building packages will be delivered on all improved technologies and practices related to breeding, feeding, fodder production systems and practices, health care, management, housing and sanitation.

3. Encouraging action for better adoption: Demonstration will involve measures for encouraging action leading to adoption of better technologies for fodder production and utilization by farm women. Capacity will be developed to respond rapidly to the proposed interventions. Successful women adopters in the area will be used for motivating others. The early adopters of fodder and livestock rearing practices will be the ‘speakers and carriers’ of the message and SHG groups and federation will serve as the ‘promoters’ of the message for other farm women.

4. Maintaining sustainability: The stakeholder investment in terms of intellectual and capital resources will be intensified. The financial institutions in the area will support entrepreneurial endeavor. Networking with other institutions will help in providing and promoting their programmes and services among farm women. In addition, technological inputs will come from IGFR and will be tested in participatory mode by involving local institution. This will bring more role players into the intervention which will favor its sustainability.

The establishment of fodder and animal production units will be worked out in consultation with farm Women, SHG member and stakeholders. A dialogue will be carried out to identify the location and financial investment required. Contribution from community and other stakeholders and credit from banks will assist in its establishment. Enterprise packages of forage and animal production will be developed according to the

needs of the community as a whole. This package will consist of business plan and cash flow projections.

This will assist potential farm women and group to understand their need in the area, service require, favorable attitude, value addition and marketing of animal based products for more profitability.

All activities to be implemented will be based on participatory planning with the target community on the outline of micro-plans drawn in the initial phase. Coordination with other organizations will ensure the implementation of most suitable tested technology based on available resource base on the field level.

The developed strategy has a strong in-built component for capacity building for target group. Awareness creation and training on all activities will ensure the dissemination of the correct practices and its implementation for income generation. The series of demonstrations and on farm trials will be undertaken which will not only promote adoption and generate awareness but also build up confidence, a sense of unity and collective responsibility among SC women farmers.

Conclusions

It is concluded here that women farmers possessed low to medium level of knowledge on all aspects of livestock rearing. This may be due to poor exposure, less access to trainings and extension programmes and lack of time due to over burden of work. Hence, it has been planned under the project to built the capacity of women farmers on selected technologies with in their own villages. For proper functioning of the programme a strategy have been developed prior to its implementation. Developed strategy included four components i e development of women specific technological framework,Capacity building on improved fodder conservation and animal rearing practices, encouraging actions for better adoption and maintaining sustainability.

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