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Working with farmers: The key to adoption of improved fodder technologies

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Introduction

The lack of a close working relationship between agricultural research organizations, different extension organizations and with different categories of farmers is one of the most difficult institutional problems of agricultural technological implementation in India. Agricultural research and extension organizations generally fight over the same limited government resources and they try to increase the flow of resources coming to their respective institutions to solve day-to-day management problems, rather than ensuring that their respective organizations contribute to the broader goal of getting improved agricultural technology to all major categories of farmers. In addition, the researchers and extension workers of many research and extension organizations overlook the important roles that farmers can play, in implementing and disseminating technology and, through effective feedback mechanisms, in helping set priorities and improving programme relevance (Parwada *et al* 2010). Agricultural production technologies especially improved fodder technologies which may be production, utilization and conservation are developed by researchers for fulfilling their objectives with their available resources and conditions (Sethi and Sharma, 2011). The choices of farmers are ignored and ultimately these developed technologies are not fitted to different categories of farmers who live in community basis with poor resources (Mwamuye *et al*., 2013). The objective of this abstract is to outline an approach for identifying research-extension-farmer linkage problems, and then to describe different mechanisms that might be used to solve these problems. The basic assumptions that underlie are agricultural technology is a complex blend of materials, processes, and knowledge, difficulty in transfer of different types of technologies to technology users and, most small-scale farmers operate relatively complex farming systems (Quddus, 2012). The identification of different technology adoption rate linked with farming communities will help in formulating of new technologies for better adoption.

Materials and Methods

The study was conducted in three adopted village of *Adarsh Chara Gram* of Datia District during 2013-14 and 2014-15 taking different improved fodder technologies developed by the IGFRI which were identified and categorized based on different farmer's requirements. For this purpose three villages namely Garera, Dhobia and Awas of District Datia of Madhya Pradesh were selected. Initial survey was done to categories the different group of farmers based on the farming community *i.e* crop based farming, animal husbandry based farming, silvi/hortipasture based farming and land less farming community. These categories are based on fifty percent farm income from major farming system. Different fodder based technologies *i.e.* forage on bunds, fodder varieties through PVS at farmers field, cereal-legume intercropping for quality forage, seed of improved fodder crops, seed treatment / seed bio-priming, round the year fodder production, Horti/silvipasture system, participatory seed production, cactus cultivation for fodder during lean period, area specific mineral mixture, IPM of forage crop, leaf meal, silage preparation, urea treatment, vermicomposting, azolla cultivation, soil testing and issuing soil health card and various activities like capacity building on value addition, food safety, nutrition education and awareness, livestock management, FIG formation, market linkage, animal health camp and development of E- chara Kendra developed by IGFRI were selected for different categories of farmers. These given technologies were assessing for adoption rate of different farming communities. Different key components were thus measured and analyzed with joint effort of IGFRI and IARI to see how they affecting the adoption rate of technology with different categories of farming communities.

Results and Discussion

Results clearly indicated that among different farming community, maximum 32.6 percent adoption rate of different fodder technologies was observed by farming community having crop based animal husbandry farming system followed by 26.6 percent who had only animal husbandry as occupation with small land holding (Fig 1). By adoption of different improved fodder technologies highest benefit was obtained by FS III farming category those having crop based animal

husbandry followed by FS IV (30 %), FS II (23%) and FS I (14 %) only. FS III was not only able to fetch maximum benefit but also enhanced nutritional security in comparison to other categories. Similarly the highest family income increased percentage was observed with FS II (41.3 %) which was triple than FS I increased income percentage. All the farming community benefited by adoption of different improved fodder technologies with the varied in ratio. It was clear that the improved fodder technologies had higher adoption percentage with increased family income by the farming communities having cropped based animal husbandry or even animal husbandry (Fig 2).

Factors affecting the adoption rate of different improved fodder technologies by farming communities study showed that broadly availability of family labours, good farmer's resources along with sound economy and education helps in technology adoption. Any one of them significantly has strong affect on technology adoption. In FS IV category of farming community, non-availability of family labour drastically reduces the technology adoption although that farming community had good resource with sound economy (Table 1).

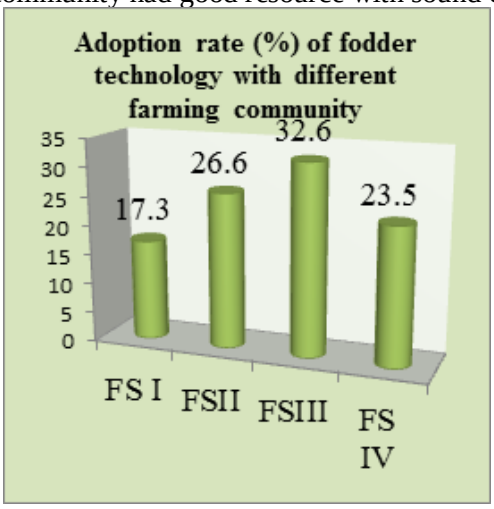

Fig.1 Adoption rate of fodder technologies
FS I – Crops only, FS II – Animal Husbandry only
FS III – Crops + Animal Husbandry
FS IV – Crops + Animal Husbandry + Fodder/fruit tree

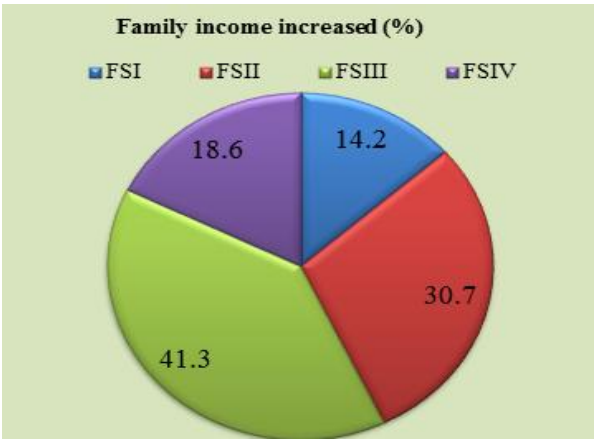

Fig.2 Family income of different farming community by fodder technology

Table 1: Fodder technology adoption by different farming community

Farmer Category	Cropping pattern	Education		Family labour availability		Economy	% age of technology adoption	Average adoption
		Male	**Female**	Male	Female			
FS I	Crops only	< metric	< metric	< 2	< 2	Resource poor	11.5	17.3
		> metric	> metric	>2	> 2	Medium -strong	23.2	
FS II	Animal Husbandry only	< metric	< metric	< 2	< 2	Resource poor	18.4	26.1
		> metric	> metric	>2	> 2	Medium -strong	33.8	
FS III	Crops + Animal Husbandry	< metric	< metric	< 2	< 2	Resource poor	28.7	32.6
		> metric	> metric	>2	> 2	Medium -strong	36.7	
FS IV	Crops + Animal Husbandry + Fodder/fruit tree	< metric	< metric	< 2	< 2	Resource poor	38.7	32.5

Conclusion

Improved agricultural technologies development to its adoption by the farmers is a sequential process involving several steps. Technology generated by scientist very much depends on their available resources and to fulfill the mandate of institution. However, its adoption by the farmers depends on the needs of farmers and its available resources while technology spread very much depends on farming community social and economic status and educational qualification of the farmer's family. Improved fodder technologies adoption rate was higher in farming community having education along with sound economic condition. Besides this availability of family labours is another criterion for higher technology

adoption. Both the factors helps in technology adoption as education helps in understanding of technological benefit and more interaction with the resource persons for knowhow. Good economic status and socioeconomic status help in taking risk and making strategy during technology adoption. Availability of family labour certainly helps in labour intensive technology adoption. This also converts the family labour to many by more time involvement of family labour in agricultural and animal husbandry based enterprising. Intercropping of legume with cereals enriched the energy rich cereal forages with proteins by above 20 percent, which in turn increased the nitrogen utilization in sheep by 13.4 percent. Intercropping (2:1) of oat with *berseem* yielded 127.4 t/ha green fodder within a span of 120 days and was found suitable for quality fodder yields and cereal-legume mix silage making.

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