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Periodic Research

Quantification of Indigenous Livestock Health Care System

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Abstract

The significance of traditional technology should not and cannot be undermined if development has to be sustainable. Validation of indigenous knowledge (IK) is a logical step to qualify and quantify the effectiveness of the practices. Keeping this in mind, an attempt was being made to validate IKs in livestock health care system through farmers' assessment. QuIK develops the PRA (Participatory Rural Appraisal) tool matrix ranking or rating to assess farmers' technical knowledge in order to test hypothesis about agriculture and dairy performance. Parameters for the matrix are defined in order to test hypothesis, which was derived from interactive farmer - researcher discussion. The study was conducted in Birbhum district of West Bengal. Participant observation tool was adopted to collect indigenous knowledge (IK)/traditional/local knowledge. Five QuIK matrices were employed to validate performance of 11 IKs used in five different health care practices, viz. FMD, wound healing, diarrhoea, bleeding dysentery and bleeding from injury against five parameters (extent of cure, cost effectiveness, ease in use, recovery time and resource availability). Mean scores of farmers' response for each practice against the identified parameters with respect to use of practices for control of these diseases of livestock were tabulated. It was evident from the result of Kruskall –Wallis or H test that all the practices were equally effective in all the cases.

Keywords: Traditional Technology, Indigenous Knowledge, Quik, Livestock, Health Care

Introduction

India through its systematic planning in the form of various Dairy Development Programmes has reached the present milk production level of 88.1 million tones topping the world in terms of Milk Products. The importance of livestock in Indian agricultural economy has been well recognized and next to land and irrigation, livestock is the single largest productive asset in rural India. Modernization of dairying is becoming technology propelled and have generated a search for better conceptualization and approaches. Dairy development demands mobilizing the innovative capacities of farmers. Farmers' knowledge and skills are certainly an important complement to formal research and extension. Modern technology has today become indispensable for development in any field. However, the significance of IK should not and cannot be undermined if development has to be sustainable. It is logical that we first ground ourselves in the knowledge that we already have. But in the mad race for modernization, we seem to have mortgaged our traditional wisdom. The technologies developed through integration of indigenous knowledge will i) provide diversified technological options, which enable farmers to choose from using their own decision-making systems; ii) originate from the farmers' own knowledge and iii) use diversified sources in active participation of research - minded farmers (Rajshekaran, 1993). Indigenous knowledge (IK) refers to the unique, traditional, local knowledge existing within and developed around the specific conditions of women and men indigenous to a particular geo-graphic area (Grenier, 1998). Some of the synonyms to the term are "traditional knowledge", "folk knowledge", "local knowledge" and "wisdom of the elders". These synonyms refer to the local origin and promotion by a community (Seeland, 2000). Indigenous practices were evolved through constant observation of animals, understanding of day-to-day behavioral pattern; trial and error and refining the techniques based on experiences made during application. These experiences have been handed over from one generation to the other and many of the practices are time-tested, environment friendly, cost-effective, readily available involving minimum risk and location specific. The use of IK has an ethical dimension by encouraging transparency and accountability.

Validation of IK is a logical step to qualify and quantify the effectiveness of the practices. Suitable modifications of the local practices, through research and development will help to develop appropriate and acceptable technologies that are more suited to our farming situations. Considering this, an attempt was being made to validate IKs in livestock health care system through farmers' assessment.

Methodology

The study was conducted in Birbhum district of West Bengal. Snow-ball sampling technique was applied to identify the key informants. Participant observation and unstructured interview methods were adopted to document indigenous knowledge. Documentation is the conversion of traditional/indigenous knowledge information processed by communities into written documents, drawings or audio recordings. The main aim of such documentation is to ensure that information is not lost and also to protect communities by showing that such information is prior art. Participant observation is an omnibus field strategy in that it simultaneously combines document analysis, interviewing of respondents and informants, direct participation and observation and introspection. The purpose of unstructured interactions is to elucidate relevant information pertaining to indigenous practices that are documented during participant observation (Parasar, B, 1994).

A total of 11 IKs commonly used in five different health care practices, viz. FMD, wound, diarrhoea, bleeding dysentery and bleeding from injury, were selected based on the extent of their use throughout the region under study for assessment / validation by QuIK(Quantification of Indigenous Knowledge) method. QuIK provides a systematic method of assessing this knowledge and may be especially useful in diverse environments with multiple niches since these have their own unique research needs, which formal research cannot possibly access (De Villiers, 1996; Arya, 2003; Padaria *et al.*, 2003**;** De, *et al.*, 2004). Prior experience in using PRA (Participatory Rural Appraisal) matrix ranking methods combined with the use of basic statistics led to the idea that the two could be linked, and hence to the development of QuIK. QuIK develops the PRA tool matrix ranking /rating to assess farmers' knowledge. Parameters for the matrix were derived from interactive farmer, researcher discussion. Five Quik matrices were developed for five different health care practices. The IKs were validated by the farmers in terms of extent of cure, cost effectiveness, ease in use, recovery time and resource availability. Five matrices of decision parameters with respect to use of practices for control of these diseases in dairy animals were administered to 15 key informants individually. There key informants or experienced farmers were identified through informal inquiry in the village. Ranking for the relative performance of the practices for each parameter was done with scoring pattern of 0-10 with maximum score of 10 for each cell in the matrix. Mean scores of farmers' response for each IK against the identified parameter were tabulated. Thereafter, based on the average score calculated for each of the IKs , ranking was done by giving the first rank to highest average score, then second rank to the next higher average score and so on and so forth. Kruskall - Wallis or H test was used to determine whether the IKs and modern veterinary drugs selected for each matrix were equally effective.

Findings And Discussion

Eleven common IKs were selected for validation through QuIK method.

IKs considered for **QuIK matrix - 1** were

IK_1 = Treating FMD with *neem* leaves- *Neem* leaves were boiled in water, after cooling the green water was used to wash the infected hooves.

IK_2= Walking of animal into mud to control FMD- Animals were allowed to walk into mud, so that a thick layer of mud was formed and covered the wounds of feet.

IK_3= Treating animals with *tarpin* oil and camphor for FMD- After washing the wounds in feet or mouth with luke warm water, drying of infected portion was done, then mixture of *tarpin* oil (12 g) and camphor (3 g) was applied to the infected feet.

IKs considered for **QuIK matrix - 2** were

IK_1 = Application of warm coconut oil containing garlic extract to open wound- Coconut oil was heated for few times with garlic, them luke warm oil was applied in open wound.

IK_2= Treating open wound with lime, garlic and turmeric- Paste of garlic and turmeric was prepared and lime was added to it, then this mixture was applied in open wound after that it was covered with *akand* leaves.

IKs considered for **QuIK matrix- 3** were

IK_1 = Feeding of rice husk with banana against diarrhoea- Farmers practiced feeding of rice husk with banana thrice a day to control diarrhoea. It is followed for 2-3 days.

IK_2= Feeding of whey to control diarrhoea

IKs considered for **QuIK matrix - 4** were

IK_1 = Feeding of tamarind leaves and mustard seeds to control bleeding dysentery- Animals were fed with tamarind leaves (3) and *sarsoon* (3) with some water for consecutive three days in the morning in empty stomach to control bleeding dysentery.

IK_2= Treating animal with white sandal to control bleeding dysentery- Paste of white sandal (0.5g) was prepared and it was placed in banana leaf, then these leaves were given to animal. It was helpful in bleeding dysentery.

IKs considered for **QuIK matrix -5** were

IK_1 = Treatment with *doorva* in case of bleeding from any injury- In case of bleeding from any injury, paste of d*oorva* was applied.

IK_2= Treatments with marigold leaves in case of bleeding form any injury- Paste of marigold leaves was prepared, and then it was applied in the affected part.

Mean scores of farmers' response for each IK against the identified parameters were presented in five matrices. As per ranking by dairy farmers (N=15) in matrix -1, IK_2 ie. walking of animal into mud to control FMD got 1st rank. Modern veterinary medicine had been awarded 2nd rank followed by IK_3 and IK_1

respectively. Matrix –2 revealed that IK_2 i.e. treating open wound with lime, garlic and turmeric was in the 1st position followed by IK_1 and MVD. It was obvious from matrix –3, IK_2 i.e. feeding of whey to control diarrhoea got the 1st rank followed by IK_1 and MVD. Farmers awarded 1st rank to IK_1 i.e. feeding of tamarind leaves and mustard seeds to control bleeding dysentery and 2nd rank to IK_2 in matrix 4. IK_1 i.e. treatment with *doorva* in case of bleeding from any injury was positioned at first followed by MVD and IK_2 in matrix- 5. It was evident from the result of Kruskall –Walis or H test for assessing performance of the above-mentioned IKs for five matrices that the hypothesis was separated as the calculated value was less than the table value and it was concluded that all the practices were equally effective.

Conclusions

Many indigenous veterinary beliefs and practices persist, given that the benefits of centralized, high-tech driven, and top-down approaches to animal health care have reached only a minority of the world's stock raisers and farmers. Till now, as little as 15-20% of the livestock population in developing countries has enjoyed any regular and affordable access to modern veterinary medicine. High - tech health care is beyond the reach of the dairy farmers, who cannot afford them in view of their raising cost thereof coupled with their own economic constraints and other problems like side effects associated with the conventional animal health care system. Thus leads to an increasing reliance on ethno veterinary medicine, which continues to have strong roots amongst the local community. Dairy farmers believe that this kind of traditional way of treating animal diseases by employing the knowledge passed on orally from generation to generation provides a permanent and safe cure for this commonly occurring disease. Farmers' perception provides important insights for evolving practical strategies in programmes of future development intervention in this field of study.

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Table-1

QuIK matrix(1) for assessing performance of IKs to control FMD against different parameters

Max. marks =10	No. of respondent, N = 15			
Parameters	Practices			
	IK_1	IK_2	IK_3	MVD
1. Extent of cur	1.67	1.33	3.0	4.0
2.Cost of effectiveness	2.00	4.67	2.33	1.0
3. Ease in use	1.33	5.33	1.50	2.0
4. Recovery time	1.67	1.33	1.67	4.67
5.Resource availability	2.67	3.67	2.33	1.33
Average score	1.87	3.27	2.17	2.60
Ranks	IV	I	III	II

IK_1 = Treating FMD with *neem* leaves
IK_2= Walking of animal into mud to control FMD
IK_3= Treating animals with *tarpin* oil and camphor for FMD
MVD = modern veterinary drug

Table-2

The results of Kruskall –Wallis or H test for assessing performance of IKs to control FMD

H – value		Conclusion
Calculated value	Table value	
1.097	$\chi 2$ 0.5 with 3df = 7.815	Practices were equally effective

Table-3

QuIk matrix(2) for assessing performance of IKs to treat open wound against different parameters

Max. marks =10	No. of respondent, N = 15		
Parameters	Practices		
	IK1	IK2	MVD
1. Extent of cure	1.53	3.20	5.93
2.Costof effectiveness	4.53	3.47	2.00
3. Ease in use	3.47	3.53	3.00
4. Recovery time	1.53	3.53	4.93
5.Resource availability	3.93	4.53	1.53
Average score	2.99	3.65	3.478
Ranks	III	I	II

IK_1 = Application of warm coconut oil containing garlic extract to open wound

IK_2= Treating open wound with lime, garlic and turmeric
MVD = modern veterinary drug

Table-4
The results of Kruskall –Wallis or H test for assessing performance of IKs to treat open wound

H – value		Conclusion
Calculated value	Table value	All the practices wire equally effective
0.506	χ^2 0.5 with 2 df= 5.991	

Table –5
Quk matrix(3) for assessing performance of IKs to control diarrhoea against different parameters
Max marks=10 No. of respondents, N=15

Parameters	Practices		
	IK_1	IK_2	MVD
1. Extent of cure	2.73	2.47	5.00
2. Cost of effectiveness	4.07	4.47	1.47
3. Ease in use	3.47	4.53	2.00
4. Recovery time	3.00	2.47	4.53
5. Resource availability	3.53	4.47	2.00
Average score	3.36	3.68	3.00
Ranks	II	I	III

IK_1 = Feeding of rice husk with banana against diarrhoea
IK_2= Feeding of whey to control diarrhoea
MVD = modern veterinary drug

Table-6
The results of Kruskall –Wallis or H test for assessing performance of IKs to control diarrhoea

H – value		Conclusion
Calculated value	Table value	All the practices were equally effective
- 1.552	χ^2 0.5 with 2 df = 5.991	

Table –7
Qulk matrix (4)for assessing performance of IKs to control bleeding dysentery against different parameters
Max marks=10 No. of respondents, N=15

Parameters	Practices		
	IK_1	IK_2	MVD
1. Extent of cure	2.00	3.33	4.67
2. Cost of effectiveness	6.67	2.00	1.33
3. Ease in use	5.67	3.00	1.33
4. Recovery time	2.67	3.33	4.00
5.Resource availability	5.33	3.00	1.67
Average score	4.47	2.93	2.60
Ranks	I	II	III

IK_1 = Feeding of tamarind leaves and mustard seeds to control breeding dysentery
IK_2= Treating animal with white sandal to control bleeding dysentery
MVD = modern veterinary drug

Table –8
The results of Kruskall –Wallis or H test for assessing performance of IKs to control bleeding dysentery

H – value		Conclusion
Calculated value	Table value	All the practices were equally effective
3.155	χ^2 0.5 with 2 df = 5.991	

Table-9
Qulk matrix(5) for assessing performance of IKs to stop bleeding from wound against different parameters
Max marks=10 No. of respondents, N=15

Parameters	Practices		
	IK_1	IK_2	MVD
1. Extent of cure	2.00	2.53	5.47
2. Cost of effectiveness	4.53	3.47	2.00
3. Ease in use	4.00	3.47	2.53
4. Recovery time	1.47	2.47	6.07
5. Resource availability	5.53	3.47	1.00
Average score	3.51	3.08	3.41
Ranks	I	III	II

IK_1 = Treatment with *doorva* in case of bleeding from any injury
IK_2= Treatments with marigold leaves in case of bleeding form any injury
MVD = modern veterinary drugs

Table-10
The results of Kruskall –Wallis or H test for assessing performance of IKs to stop bleeding from wound

H – value		Conclusion
Calculated value	Table value	All the practices were equally effective
0.155	χ^2 0.5 with 2 df = 5.991	

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