

Perceived Effectiveness of Indigenous Technical Knowledge in Dairying

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ABSTRACT

A study was conducted to assess the effectiveness of indigenous technical knowledge (ITK) as perceived by 120 farm women in two villages of Haryana. The farm women rated each of six identified ITK practices based on seven parameters on a three point scale and Mean Perceived Effectiveness Index score for each ITK was then calculated. Based on this score, all six Indigenous Technical knowledge practices were categorised into three categories as less, moderate and highly effective. The practice relating to mastitis control was perceived as less effective while feeding neem leaves for endoparasite control was found to be highly effective. Extension strategies should be designed based on the perceived effectiveness of each ITK practice based on the actual users i.e., the farmers.

Keywords : *Indigenous Technical Knowledge, Dairy Farming, Perceived Effectiveness, Haryana*

INTRODUCTION

Enormous efforts have been made on validation of ITK practices based on judgment of researchers and in a few cases useful products have been developed. In view of cultural compatibility, social acceptability and economic viability, ITK plays a predominant role in dairy farming dominated by resource poor farm families especially women who perform more than 70 per cent of activities. Their indigenous knowledge and incidental practice of the same in the farm help to manage the dairy farming sustainably (Ponnusamy et

al, 2009). Since some of the ITK practices have a significant bearing on profitability of dairy farming, the present study was undertaken to ascertain the effectiveness of prevalent ITK practices as perceived by farm women.

METHODOLOGY

The study was undertaken in 2016 under a research project of National Dairy Research Institute (NDRI), Karnal entitled, Empowerment of farm women through livestock technologies –a collaborative project with Central Institute for Women in Agriculture

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(CIWA), Bhubaneswar. Pingli in Nissing block and Jundla in Assand block of Karnal district in Haryana were identified for project implementation. Indigenous Technical Knowledge (ITK) possessed by farm women was assessed using PRA technique. Six practices were then identified based on their expert validation from the published reports (Ponnusamy et al. 2017). Later, 60 farm women each from both the villages were requested to provide the opinion on the selected ITK practices which have been already validated by experts in order to understand the perceived effectiveness.

Perceived effectiveness implies the degree to which the farm women perceive that a positive outcome is obtainable by using a particular ITK practice in solving the field problems. It is the perception of the respondent about the attributes of the indigenous technology like relative advantage, compatibility, trail-ability, sustainability and observability. It was measured using the mean perceived effectiveness index (MPEI) methodology (Sundaramari, 2001). The index consisted of seven traits, with their relevancy weightage as given in Table 1.

Table 1.
Weightage Scores of Various Parameters of ITK Practices

Sl. No.	Parameter	Relevancy weightage
1.	Cost effectiveness	0.88
2.	Adaptability	0.76
3.	Observability	0.80
4.	Trailability	0.72
5.	Complexity	0.81
6.	Relative Advantage	0.84
7.	Sustainability	0.86

The farm women were asked to rate each identified ITK practice based on these traits on a three point scale (Concurred, No idea and Not concurred). The Perceived Effectiveness Index (PEI) score of a particular ITK practice was calculated using the formula:

$$\text{PEI score} = \frac{[W1R1+W2R2+\dots+\dots+WnRn]}{[R1+R2+R3+\dots+\dots+Rn]}$$

Where,

R1, R2, R3.....R7 were relevancy weights of the seven traits and

W1, W2, W3..... W7 were scores obtained for the traits for ITK from a respondent.

$$\text{MPEI} = \frac{[\text{PEI score of a individual farm women for each ITK}]}{[\text{Total sample size}]}$$

The above formula was used to calculate the Mean Perceived Effectiveness Index

(MPEI) score for a particular ITK practice. Based on MPEI score, all the Indigenous

Technical knowledge practices were categorised into three categories:

Sl. No.	Category	MPEI Score
1.	Less effective	Less than 2.00
2.	Moderately Effective	2.00 – 2.25
3.	Highly Effective	More than 2.25

FINDINGS AND DISCUSSION

Six practices which were prevalent in both the villages were administered

to 120 farm women and the responses have been calculated and presented in Table 2.

Table 2.
Perceived Effectiveness of ITK for Addressing Various Problems in Dairy Farming

Sl. No.	ITK practice	Response	Cost effectiveness	Adaptability	Observability	Trailability	Complexity	Relative advantage	Sustainability	MPEI score
1.	Use of <i>chapatti</i> made from mixture of 250 g jaggery 150 g <i>ghee</i> and wheat flour (<i>Triticum aestivum</i>) to feed animal once a day for inducing heat	Concur	67.5	68.8	62.5	67.5	59.4	60.7	71.6	2.247
		No idea	15.7	15.5	17.3	16.8	22.7	20.2	15.3	
		Do not concur	16.8	15.7	20.2	15.7	17.9	19.1	13.1	

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Sl. No.	ITK practice	Response	Cost effectiveness	Adaptability	Observability	Trailability	Complexity	Relative advantage	Sustainability	MPEI score
2.	200 g wheat flour (<i>Triticum aestivum</i>) boiled in water and mixed in 100 gm ghee and 100 g jaggery apply to animal body for retention of placenta	Concur	46.7	68.7	60.4	51.6	57.5	54.3	56.4	2.131
		No idea	27.2	15.3	20.2	23.5	26.1	21.4	21.9	
		Do not concur	26.1	16	19.4	24.9	16.4	24.3	21.7	
3.	Application of common salt on teats or combination of turmeric (<i>Curcuma longa</i>), alum and black pepper grind and apply on teats or application of only alum or <i>phitkari</i> on teats for mastitis control	Concur	59.4	37.3	54.3	35.4	39.6	40.7	42.5	1.998
		No idea	20.5	34.0	26.0	24.8	28.2	25.8	26.2	
		Do not concur	20.1	28.7	19.7	39.8	32.2	33.5	31.3	

Sl. No.	ITK practice	Response	Cost effectiveness	Adaptability	Observability	Trailability	Complexity	Relative advantage	Sustainability	MPEI score
4.	Powder of half ripe <i>bael</i> (<i>Aegle marmelos</i>) fruit + powder of <i>shisam</i> (<i>Dalbergia sissu</i>) leaves give to animal for diarrhoea control	Concur	52.6	59.7	70.2	55.1	61.4	52.5	61.4	2.138
		No idea	24.0	22.1	14.6	18.3	20.5	23.1	20.7	
		Do not concur	23.4	18.2	15.2	26.6	18.1	24.4	17.9	
5.	Salt added to mustard oil (<i>Brassica compertris</i>) applied all over the body for control of ectoparasites	Concur	75.6	56.6	65.4	65.7	71.0	47.5	56.7	2.243
		No idea	11.9	27.3	17.8	21.5	19.2	29.3	19.2	
		Do not concur	12.5	16.1	16.8	12.8	9.8	23.2	24.1	
6.	Feeding leaves of <i>Neem</i> (<i>Azadirachta indica</i>) to animal for endoparasite control	Concur	67.3	61.4	67.2	69.1	61.3	64.1	59.5	2.307
		No idea	20.5	25.5	17.6	19.5	20.9	16.4	21.9	
		Do not concur	12.2	13.1	15.2	11.4	17.8	19.5	18.6	

The ITK on mastitis control was perceived to be less effective by farm women (Table 2). An NDRI study had revealed that Rs.4000 is being lost by the farmer when he misses each heat in dairy animal. ITK can play a major role in inducing heat in animals at right time. Cereals being the rich source of protein can have significant effect on inducing heat in the animals. Molasses or jaggery is

added to increase palatability of mixture. (Ponnusamy et al., 2017).

Perusal of Table 2 shows that decoction prepared from wheat flour, ghee and jaggery as a treatment is practised commonly in study area instead of feeding whole plant or parts of it as a solution for retention of placenta.

Mastitis disease causes heavy economic losses and also affects the

quality of milk. Turmeric contains curcumin, and terpenoids which work as cooling agent, astringent, anti-inflammatory and antibacterial effect. This ITK practice is not perceived as so effective in curing mastitis but only aids in reducing swelling and pain in affected udders.

Diarrhoea is most common in dairy animals. The problem is more acute in calves. Bael fruit might have antidiarrhoea ingredients such as alkaloids, tannins, flavanoids, saponins and triterpenes which may be responsible for ameliorative potential of bael. *Shisam (Dalbergia sissu)* leaves contains alkaloids, tannins and saponins. Salt is used in certain combinations as it restores electrolytic imbalance.

Ectoparasites such as mosquitoes, flies, triatomines, fleas, bees and ticks cause severe health problems to the dairy animals. Salt added to mustard oil was perceived to be moderately effective. Use of Neem (*Azadirachta indica*) helps in effective control of both ectoparasite and endoparasites as it contains Azadirachtin and other compounds which act against insects such as antifeedancy, growth regulation, fecundity suppression and sterilization, oviposition repellence changes in biological fitness and blocking development of vector-borne pathogens.

Implications of the study

Documentation on mastitis control in dairy animals needs to be further explored in view of the low perceived effectiveness score. A ready to use (RTU) product prepared from well validated ITK would enhance the adoption, profitability

and sustainability. There is a need to develop appropriate extension mix to disseminate the locally relevant ITK targeting the resource poor farm families. Local innovators need to be promoted as role models for outscaling the adoption of ITK.

CONCLUSION

The ITK practices used for treating various ailments of animals are wealthy traditions in animal husbandry. With the trend of modernization, knowledge of ITK practices are disappearing fast. Making use of local biodiversity is very important for treating animals at low cost. The traditional healers need to be motivated to spread this vital knowledge to future generations for promoting sustainable dairy husbandry.

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