Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.5202

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **6 (2):** 1331-1336 (2018)

Research Article

International Journal of Pure & Applied Bioscience

OPEN ACCESS

Perceived Effectiveness of Improved Indigenous Knowledge (IK) Treatments among Livestock Farmers

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Received: 12.07.2017 | Revised: 27.08.2017 | Accepted: 3.09.2017

ABSTRACT

A study was conducted in Telangana state during year 2014-2016 to know the perception of improved Indigenous Technical Knowledge (ITK) practices among livestock farmers. A list of six ITK practices which are scientifically validated for the treatment of two disease viz. Foot & Mouth Disease and Mastitis in livestock were selected. A sample of 220 respondents were selected randomly from two districts of the state i.e., Warangal and Mahabubnagar districts and were personally interviewed. It was found that most of the farmers were of old aged (43.80 %),School dropouts (64.55 %), depends on multiple occupation i.e., Livestock farming + agriculture + wage labour (34.55%) possessing marginal land holding(34.55 %), medium herd size (46.36 %) and family annual income ranging from Rs 95,447/- to 1,98,027 (40.62%). The most of respondents also had high farming experience (46.82%), Social participation (43.10%), Mass media exposure (43.12%) and innovativeness (39.38 %). The perceived effectiveness of six ITK practices with respect to seven technology traits i.e., Cost effectiveness, Adaptabilty, Observability, Trailabilty, Complexity, Relative advantage, Sustainability were analysed using Mean Perceived Effectiveness Index (MPEI). It was found that among three improved ITK practices for treatment of Mastitis, 'Topical application of Mastilep Gel' (2.237) was perceived as highly effective whereas, 'Topical application of Dermanol'(2.214) was perceived as moderately effective and 'Topical application of Chenopodium leaf paste' (1.892) was perceived as less effective. Among three improved ITK for treatment of Foot & Mouth disease (FMD), practices of 'feeding of Roasted brinjal with Ghee &Topical application of Coconut oil mixed with camphor' (2.159) and 'Feeding Lard mixed with banana & sesame oil (2.190) were perceived to be moderately effective, while the practice of 'Topical application of Babool/ Jamun bark paste' (1.892) was perceived to be less effective

Key words: *ITKs, Ethno veterinary, livestock, Perceived effectiveness, Mastitis, FMD*

INTRODUCTION

India, a country spreading over 3287.26 thousand sq. km. and inhabited by about 1000 million people has been nurturing a tradition of very rich civilization over a period of five thousand years. Livestock farming is one of the oldest professions in our country.

Cite this article: Vishwatej, R., Kadian K.S., Kartik, D. and Raja L., Perceived Effectiveness of Improved Indigenous Knowledge (IK) Treatments among Livestock Farmers, *Int. J. Pure App. Biosci.* **6(2):** 1331-1336 (2018). doi: http://dx.doi.org/10.18782/2320-7051.5202

It is a vast treasure house of indigenous knowledge in livestock farming with many systems like *Ayurveda, Siddha, Unani, and ancient texts like Atharvanaveda, Susruta Samhita,* Palakapya's *Haya Ayurveda, Gaja Ayurveda, Brahmasutras, Puranas, and* Kautilya's *Arthashastra*as well as the teachings of innumerable sayings of sages & proverbs contain profound literature of ideas, concepts and practices which are designed to address the process of building harmonious relationship among man, animal and nature[2]. Since long ago, farmers have been silently innovating, testing, and refining various farming practices to make them relevant, efficient & cost effective.This knowledge is protected and transferred from generation to generation orally through stories, songs, rituals etc. This treasures of ancient wisdom, beliefs and traditions as practiced by rural communities are eco-friendly, highly effective and sustainable in utilization of available natural resources[3].

The advent of the concept of sustainable agriculture & growing popularity of organic farming in Indian agricultural scenario has evoked interest on Indigenous Technical knowledge (ITK) for their cost effectiveness, sustainable and eco-friendly nature. The word 'indigenous' means "native born, originating or produced naturally in a country or in a specified area" and the word 'knowledge' means "assured belief, practical skill, that which is known, learning, enlightenment"[1]. Indigenous Technical Knowledge (ITK) was defined as local, tacit knowledge, transmitted orally or through imitation and demonstration, experimental rather than theoretical, learned through repetitions, and are constantly changing[5]. There is a need to validate, standardise and incorporate these technologies into scientific knowledge. The improved Indigenous Technical Knowledge (i-ITKs) are products, practices or innovations based on indigenous knowledge systems which are scientifically validated, standardised & improved for easy application by the farmers. These improved ITK practices can be disseminated among farmers for easy application to reducing cost of production & increase the profitability of livestock farming.

MATERIAL AND METHODS

A study was conducted in Telangana state during year 2014-2016 to know the perception of improved Indigenous Technical Knowledge (ITK) practices among livestock farmers. Two districts viz. Warangal & Mahabubnagar were purposively selected for the study as these were districts were rural and had least per-capita income in the state. A sample of 40 farmers & 15 extension agents were selected randomly from each of four mandals i.e., Venkatapur & Lingala-ghanpur (Warangal), Nagarkurnool & Bijnapally (Mahabubnagar) summed up to form a total of 220 respondents. The perception of respondents was measured using the Mean Perceived Effectiveness Index (MPEI) constructed by Sundarmari (2001) involving seven traits viz. Cost effectiveness, adaptability, Observability, Trailability, Complexity, Relative advantage, Sustainability. The farmers were asked to rate each i-ITK based on these traits, on a three point scale (Agree–3, Undecided–2, Disagree–1). The expert's opinion was also considered, along with the perception of the farmers who adopted the ITKs, to measure the MPEI. The Perceived Effectiveness Index (PEI) score of a particular i-ITK was calculated using the formula:

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

$$MPEI\ Score = \frac{[PEI\ score\ of\ a\ indivdual\ farmer\ for\ each\ improved\ \ ITK\ ]}{[Total\ \ sample\ size]}$$

Where,

R1, R2, R3…. R8 were relevancy weights of the eight traits, and

W1, W2, W3……W8 were scores obtained for the traits for an improved ITK from a respondent.

The above formula was used to calculate the Mean Perceived Effectiveness Index (MPEI) score for a particular i-ITK. Based on MPEI Score, all the improved Indigenous Technical Knowledges (i-ITKs) were categorised into following three categories viz. less effective, moderately effective & highly effective. The perceived effectiveness of six ITK practices which were scientifically validated, standardised for the treatment of Mastitis & Foot & Mouth disease (FMD). The data were collected through a personal interview using a detailed pre-tested interview schedule with considerable tested validity & reliability.

RESULTS AND DISCUSSION

Socio-economic profile of farmers

It was revealed from the Table 1, that most of the farmers belonged to old age (43.80%) followed by middle age (30.60%) and young (25.60%) which shows that lack of interest among youth to take up farming as their main occupation. This trend was observed due to young people being moderately educated prefer to migration of youth to urban areas for industrial employment & declining income in agriculture & allied sector. It was also observed that majority of respondents (64.55%) were school dropouts educated up to primary school (24.55%), middle school (23.18%) and high school (16.82%). Very few respondents have education up to intermediate (15.00%), Graduation (06.82%) and only 13.75 percent farmers were illiterate, which shows positive attitude towards education among the population. Most of the respondents depend on a diversified occupations like Livestock farming+ Agriculture + Wage labour (34.55%) followed by Livestock farming + Agriculture + Business (25.91%), Livestock farming + Agriculture + Services (18.64%). Since, dependence on single income source became difficult due to the unreliable monsoons & frequent drought, farmers were looking for diverse sources of income like wage labour, Services like transport, groceries & other caste based services for income risk mitigation.

It was also found that most of the farmers possess marginal land holdings (34.55%) followed by small land holdings (23.64%), semi-medium land holdings (17.27%), medium land holdings (15.45%). Majority of farmers possessed medium herd size (46.36%) i.e., 4 to 9 livestock units and small herd size (35.45%) i.e., less than 4 livestock units. Only 09.09 percent and 18.19 percent farmers possess large land holdings (> 25 acres) and herd size (> 9 LSU), respectively. Most of the farmers earn medium annual income (40.62%) ranging from Rs. 95,447 /- to Rs. 1, 98,027 /- from all sources followed by low annual income (34.37%) and high annual income (25.00 %). It can be explained that since farmers had the small & marginal land holdings, they have diversified their sources of income by livestock farming & other services to obtain considerable income for their families.

The data also reveals that the most of the farmers have high farming experience (46.825), social participation (43.10%) followed by medium farming experience (31.36%), social participation (31.30%) and low farming experience (21.82%), social participation (25.60%). Majority of farmers have medium mass media exposure (43.12%), low innovativeness (39.38%) followed by low mass media exposure (35.62 %), medium innovativeness (33.13%), high mass media exposure (21.20%) and high innovativeness (27.50%), respectively. This explains that the respondents were of traditional in approach, highly experienced, socially cohesive in nature with moderate to low exposure & openness to innovations.

Perceived effectiveness of ITK practices

The table -2 illustrates that among three improved ITK for treatment of Foot & Mouth disease (FMD), practices of 'feeding of Roasted brinjal with Ghee &topical application of Coconut oil mixed with camphor' (2.159) and 'Feeding Lard mixed with banana & sesame oil (2.190) were perceived to be moderately effective, while the practice of 'Topical application of Babool/ Jamun bark paste' (1.892) was perceived to be less effective.It was also observed that the practice of 'Feeding roasted brinjal with Ghee &topical application of camphor with coconut oil on wounds' have positive opinion about cost effectiveness, trailability & complexity

among 70.5 percent, 67.7 percent & 60.5 percent of respondents respectively. Whereas, the practice of 'Feeding bananas mixed with lard &sesamum oil' had received positive responses from 67.7 percent, 64.5 percent & 63.2 percent of respondents in parameter like cost effectiveness, adaptability & sustainability. Since these formulations can be made with local available ingredients, the farmers will benefit by reducing the disease management cost and can reduce their losses in times of epidemics.

The Table - 2 also elicit that among three improved ITK practices for treatment of Mastitis, 'Topical application of Mastilep Gel' (2.237) was perceived as highly effective 'Topical application of Dermanol' (2.214) was perceived as moderately effective and 'Topical application of Chenopodium leaf paste' (1.892) was perceived as less effective. Out of three i-ITKs for treatment of mastitis, Mastilep was perceived to be highly effective for treatment of mastitis with MPEI Score of 2.307. Whereas, usage of Dermanol was found to be moderately effective with MPEI Scores of 2.214. Whereas, Topical application of *Chenapodium album* leaf paste was found to be less effective. It was also found that, 68.2 percent, 66.4 percent & 66.4 percent of respondents were positive about cost effectiveness, observability & trailability, respectively regarding effectiveness of Mastilep.

Table 1: Socio- Economic profile of respondents (n=220)

Sl. No.	Variables	Categories	F	%
1.	**Age**	Young (Up to 35 years)	56	25.60
		Middle age (36 to 50 years)	68	30.60
		Old (Above 50 years)	**96**	**43.80**
2.	**Education**	Illiterate	30	13.75
		Primary school	**54**	**24.55**
		Middle school	51	23.18
		High school	37	16.82
		Intermediate	33	15.00
		Graduation	15	06.82
3.	**Occupation**	Livestock farming + Agriculture + Business	57	25.91
		Livestock farming + Agriculture + Services	41	18.64
		Livestock farming + Agriculture + Wage labour	**76**	**34.55**
		Livestock farming + Agriculture	23	10.45
		Livestock farming + Business	08	3.63
		Livestock farming + Wage labour	15	6.82
4.	**Land Holding** (Mean= 5.32, S.D. = 3.91)	Marginal (Up to 2.50 acres)	**76**	**34.55**
		Small (2.51 to 5.00 acres)	52	23.64
		Semi- medium (5.01 to 10.00 acres)	38	17.27
		Medium (10.01 to 25.00 acres)	34	15.45
		Large (Above 25.00 acres)	20	09.09
5.	**Herd Size** (Mean= 6.44, S.D.= 2.43)	Small (< 4 LSU)	78	35.45
		Medium (4 - 9 LSU)	**102**	**46.36**
		Large (> 9 LSU)	40	18.19
6.	**Farming experience** (Mean=20.33, S.D.= 10.81)	Low (<19 years)	48	21.82
		Medium (20-31 years)	69	31.36
		High (>31 years)	**103**	**46.82**
7.	**Annual income** (Mean = Rs.146,737 /-, S.D.= Rs51,290 /-)	Low (<Rs.95,447 /-)	76	34.37
		Medium (Rs. 95,447 – Rs. 1,98,027 /-)	**89**	**40.62**
		High (>Rs. 198,027 /-)	55	25.00
8.	**Mass media Exposure** (Mean = 6.22, S.D. = 2.57)	Low	78	35.62
		Medium	**95**	**43.12**
		High	47	21.20
9.	**Social participation** (Mean = 5.53, S.D. = 1.72)	Low	56	25.60
		Medium	69	31.30
		High	**95**	**43.10**
10.	**Innovativeness** (Mean = 20.10, S.D. = 4.33)	Low	**63**	**39.38**
		Medium	53	33.13
		High	44	27.50

Table 2: Perceived effectiveness of improved Indigenous Technical Knowledge (i-ITK) treatment of FMD & Mastitis in livestock (n=220)

AILMENT	Improved ITK treatment	Cost effectiveness	Adapt-ability	0bserv-ablity	Trail-ability	Compl exity	Relative Advantage	Sustain ability	MPEI Score	Result
Weightage score		*0.88*	*0.76*	*0.80*	*0.72*	*0.81*	*0.84*	*0.86*		
		%	*%*	*%*	*%*	*%*	*%*	*%*		
FOOT & MOUTH DISEASE (FMD)	Topical application of Babool / Jamun bark paste	60.5	51.8	40.5	45.0	42.7	41.8	53.6	**1.981**	Less Effective
	Feeding of Roasted brinjal + Ghee & Topical application of Camphor + Coconut oil	70.5	51.4	58.2	67.7	60.5	43.2	58.2	**2.159**	Moderately Effective
	Feeding of Lard, banana & sesame oil	67.7	64.5	58.2	49.5	58.6	51.8	63.2	**2.190**	Moderately Effective
MASTITIS	Topical application of Mastilepherbal gel	66.4	60.5	66.4	68.2	60.5	63.6	58.2	**2.237**	Highly Effective
	Topical application of Dermanol herbal ointment	73.6	56.4	59.5	68.6	57.7	54.5	60.0	**2.214**	Moderately Effective
	Topical application of *Chenapodium album* leaf paste	59.5	54.5	49.5	42.7	36.4	41.8	51.8	**1.892**	Less Effective

CONCLUSION

The study found thatmost of the respondents belonged to old age group i.e. above 50 years of age and are school dropouts who were educated only up to primary school level and middle school level. About one- third of the farmers earn their livelihood through combination of livestock rearing, agriculture and wage labour and have marginal holdings i.e., less than 2.50 acres. About half of the respondents were having medium herd size containing high farming experience and were having medium annual income. Most of the respondents had medium level of mass media exposure, high level of social participation and low level of innovativeness.

The study also reveals that out of six improved ITK practices, one practice is perceived to be highly effective, while three practices were perceived to be moderately effective and two practices to be moderately effective. The livestock owners perceive ITK more favourably owing to its cost effectiveness, local availability of herbs, less complex in preparation and administration, compatible to social and cultural habitats and sustainable. The extension official should be sensitised about these practices & encourage them to disseminate these practices among livestock farmers by conducting extension campaigns or awareness programmes can help the farmers to reduce their cost of production and increase the profitability of livestock farming.

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