



Research Article

SCIENTIFIC RATIONALE, AWARENESS AND ADOPTION OF THE FARMERS ON ITK PRACTICES IN LIVESTOCK MANAGEMENT

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Abstract: Livestock health management is an area of knowledge in which farmers have excelled, since the days of Nakul and Sahadeva, two of the five Pandavas who were supposed to be the first healers of the health problems of horse, elephants and cattle respectively in ancient India. India has a very rich heritage of traditional health control and treatment systems such as Ayurvedic, Unani and Homeopathic that have been used for animals since generations. Nowadays, many indigenous technical knowledge systems are at risk of becoming extinct because of rapidly changing natural environments and fast pacing social, economic, political and cultural changes on a global scale. The basic objective of this study is directed to know the rationality behind identified ITKs in Livestock management. The study was conducted among 360 respondents covering 9 selected agriculturally prominent districts of Tamil Nadu. The awareness index of the ITK Practices works out to 72 percent on the whole and adoption comes to 56 percent in cattle, 22 percent in sheep and goat and 36 percent in poultry.

Keywords: Indigenous technical knowledge, Scientific Rationale, Awareness and Adoption

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Introduction

Livestock health management is an area of knowledge in which farmers have excelled, since the days of Nakul and Sahadeva, two of the five Pandavas who were supposed to be the first healers of the health problems of horse, elephants and cattle respectively in ancient India. India has a very rich heritage of traditional health control and treatment systems (Ayurvedic, Unani and Homeopathic) that have been used for animals since generations. Indian villagers know many indigenous drugs and formulations which can cure a number of livestock diseases without causing adverse effects. It is important and fascinating about these healers and their ancestors that, just with the help of keen observation with five senses and their logic, they had developed their system of diagnosis and treatment. But with the popularity of western and synthetic drugs, the use of traditional medicine in the villages to cure livestock disorders is taking a back seat. Nowadays, many indigenous knowledge systems are at risk of becoming extinct because of rapidly changing natural environments and fast pacing economic, political, and cultural changes on a global scale. Practices disappear as they become inappropriate for new challenges or because they adapt too slowly. However, many practices withdraw only because of the intrusion of modern technologies or development concepts that promise short-term gains or solutions to problems without being capable of sustaining them. This over estimation of modern practices doesn't last long because of the side effects that triggered by the increased use of chemicals in various areas of life. This lead to a reconsideration of traditional systems of treatment and thus an increased demand of natural products in form of drugs, foods, cosmetics etc. has been noticed in recent years. The indigenous technical knowledge system also helps the ITK practitioners to cope with problematic situations and to survive even in the face of tremendous odds. Today, such indigenous technical practices are dwindling fast with the death of the owner, bearing scientific knowledge because such people

who serve the community with great sacrifice and selfless motto in their minds are afraid to tell others about the usefulness of the drug looking to their exploitation. Hence, it is necessary to identify the perceived usefulness of such indigenous practices for their further logical validation in various national and international research organizations.

Methodology

The Livestock study was conducted purposively in Erode, Coimbatore, Salem, Namakkal, Trichy, Tiruppur, Tiruvannamalai, Villupuram and Virudhunagar districts of Tamil Nadu. From each district, two agriculturally prominent taluks were identified. From each Taluk, 20 respondents *i.e.*, 360 respondents from 18 taluks. The respondents who had knowledge and were also practicing the ITKs in these arena were selected. Based on the intense ITK practices in rice cultivation villages from each of the Taluk were selected purposively. The study aimed at identification and documentation of indigenous technologies in livestock and poultry. Data were collected from three sixty randomly selected respondents (twenty from each Taluk).

Result and Discussion

The results are discussed in the following headings

Scientific Rationale of Traditional Livestock Practices for Cow

The collected data relevant to the scientific rationale of the traditional livestock practices for cow is presented in [Table-1]. The [Table-1] reveals that many of the farmers have a great opinion about the scientific rationale for traditional practices of livestock. Despite the decreasing adoption, 3/4th of them think that indigenous maintenance is important to our country. Now, awareness has increased in understanding the significance of local breeds. Hence, 96.11 percent have opined that local breeds are good.

Table-1 Scientific Rationale of Traditional Livestock Practices for Cow

SN	Particulars	Number	Percentage
1	Do you think indigenous livestock maintenance is suitable to our country?	277	76.94
2	Do you think it is right to use bullocks for ploughing?	272	75.56
3	Did you think local breed is good?	346	96.11
4	Do you have the practice of tying the forelimb of the livestock with the neck before allowing them for free grazing?	249	69.17
5	Do you wake up with cow as the first object of sight?	267	74.17
6	Have you heard about Kangeyam bulls?	324	90.00
7	Do you buy cattle on the basis of luck whorls?	311	86.39
8	Are you specific about the coat colour of the cow while buying?	283	78.61
9	Do you think it is inauspicious to have a cow delivering on a Sunday?	320	88.89
10	Have you seen cow/buffaloes attaining heat on full moon and new moon days?	226	62.78
11	Do you use the nose rope for controlling cattle?	348	96.67
12	Do you retain the nose rope after selling the cow?	273	75.83
13	Do you discard fore stripes of milk while milking?	259	71.94
14	Do you use cattle for extracting oil through oil expellers?	169	46.94
15	Will you use livestock for lifting water for irrigation purpose (<i>kamalai</i>)?	176	48.89
16	Do you affix horseshoes for bullocks?	266	73.89
17	Do you assess the age of the cattle based on dentition?	344	95.56
18	Do you rear bulls for jallikattu?	197	54.72
19	Do you use the local material to construct shed?	322	89.44
20	Do you light camphor and do prayer for the cattle shed?	296	82.22
21	Is it right to deny colostrum to calf?	213	59.17
22	Do you allow the calf without cutting navel chord after delivery?	273	75.83
23	Will you tie the placenta on a tree?	326	90.56
24	Will you allow the calf to suckle dam from 3 to 6 months after birth?	340	94.44
25	Will you apply mouth bib to the calves to prevent licking?	287	79.72
26	Do you rear the calf without weaning from the cow?	347	96.39
27	Will you feed the calf with the leftovers of the food?	343	95.28
28	Will you feed the calf with the vegetable waste?	314	87.22
29	Will you feed the livestock with rice porridge in the pot?	343	95.28
30	Will you feed the young calf with rice gruel porridge with jaggery?	321	89.17
31	Do you cultivate forage crops?	305	84.72
32	Do you fertigate with fertilizer?	306	85.00
33	Do you keep the paddy straw for a longer period?	347	96.39
34	Do you purchase the concentrated feed from outside?	341	94.72
35	Do you construct manure pits?	351	97.50
36	Do you utilize cow dung as fuel?	304	84.44
37	Do you utilize cow dung and urine as manure?	343	95.28
38	Do you use the cow dung to plaster the mud floor?	341	94.72
39	Do you use biogas plants?	288	80.00
40	Do you sprinkle cow urine in front of the house?	310	86.11
41	Do you follow indigenous treatment for livestock?	318	88.33
42	Do you refrain from selling livestock on Friday and Saturday?	344	95.56
43	Do you sell the livestock by bargaining under cover through finger palpation code?	321	89.17

Table-2 Scientific Rationale of Traditional Livestock Practices for goat

SN	Particulars	Number	Percentage
1	Have you heard about the native goat breeds?	253	97.31
2	Have you done penning?	148	56.92
3	Do you protect sheep and goat from chillness during winter?	159	61.15
4	Have you heard about Mecheri breed of sheep?	244	93.85
5	Will you offer goat milk for neighbors during night time?	121	46.54
6	Will you allow the goat for grazing in farm land?	243	93.46
7	Will you use the goat milk for eye treatment?	160	61.54
8	Do you castrate sheep and goats to ensure better weight gain?	131	50.38
9	Do you tie forelimb with neck while allowing for grazing?	140	53.85
10	Do you sprinkle the enchanted water with neem leaves on the goats with ailments for speedy recovery?	110	42.31
11	Do you offer tree leaves?	235	90.38
12	Do you feed goat on rice gruel?	164	63.08
13	Do you buy the goat based on whorls?	117	45.00
14	Do you hot brand for curing disease?	41	15.77
15	Do you chant mantras for curing the disease?	79	30.38

Table-3 Scientific Rationale of Traditional Livestock Practices for poultry (Nattu Kozhi)

SN	Particulars	Number	Percentage
1	Are you rearing local breed of fowls in your home?	275	94.50
2	Are you using bamboo baskets for housing?	221	75.95
3	Do you have the practice of feeding fowls with vegetable waste?	160	54.98
4	Do you feed broken rice, millets?	220	75.60
5	Have you seen hens laying eggs on lofts?	151	51.89
6	Do you store eggs in pot?	192	65.98
7	Do you offer as sacrifice black hen during festive times?	146	50.17
8	Do you have the tradition of leaving the cockerel in burial grounds when someone dies on a Saturday?	173	59.45

Some of conventional beliefs are also vouched by the farmers. However, they are of sentimental values. Now, with electric motors and free power supply lifting water from well using livestock has reduced to 49 percent. This may also be due to the low water table that necessitates electrical contrivances. Forty percent of people are not aware of the importance of Colostrum that increases the immunity of the calf. This is due to the fact that the Colostrum is converted into a sweet dish by adding sugar, cardamom, etc. By and large, the response to this section is highly encouraging. Therefore, it could be safely concluded that intensive extension methods can educate the farmers on ITK and make them adopt sincerely. Again, steps should be taken to breed, rear and promote local breeds among the farmers. Special programmes, exclusive farms and extra incentives can make significant impact in this regard.

Scientific rationale of traditional livestock practices for goat

The result pertaining to the scientific rationale of the traditional livestock practices for goat is presented in [Table-2]. It is evident from the [Table-2] that farmers are aware of the native breeds including the Mecheri sheep. However, the practice of penning is vanishing. People are ready to allow the goats to graze in the farmland. Certain beliefs like branding with hot iron for disease and chanting mantras to cure disease, are given a go-by and this is a positive trend. The overall response seems to be tilted in favour of native breeds and native practices.

Scientific rationale of traditional livestock practices for poultry (Nattu Kozhi)

The result related to the scientific rationale of the traditional livestock practices for poultry is furnished in [Table-3]. From the [Table-3] it could be seen that Poultry management also elicited positive responses from the farmers and they have vigorously battled for indigenous practices. Majority of the farmers (95 percent) rear only desi breeds in the backyard. It reveals that the modern strainers are reared only for commercial purposes. The farmers use the unusable food grains to feed the fowls.

Awareness about the scientific rationale of traditional livestock practices

Totally, 20 questions regarding awareness formed part of the questionnaire, out of which 72 percent found to be in the affirmative. This indicates that the overall awareness is present among the farmers about native breeds, local practices and the scientific reasons behind indigenous exercises. The awareness is high in cattle as they are the most important livestock in terms of remuneration as well as contribution. Cost factor also plays a vital role. Moreover, sentimental reasons are also there for bestowing maximum care for the cattle. The results are represented in pictorial form [Fig-1].

Table-4 Awareness about the Scientific Rationale of Traditional Livestock Practices

Scientific Rationale	No. of Questions	Yes (%)	No	Total Responses
Cows	14	4246 (84)	794(16)	5040
Goats	5	814 (45)	986 (55)	1800
Hens	1	151 (42)	209 (58)	360
Total	20	5211(72)	1989 (28)	7200

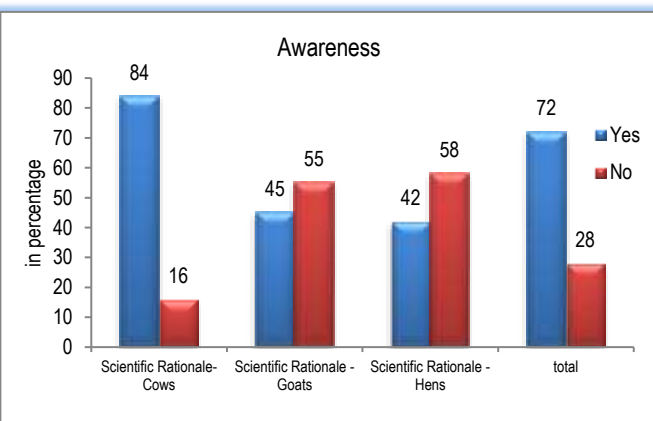


Fig-1 Awareness about the Scientific Rationale of Traditional Livestock Practices

Adoption of the ITKs by the farmers

The results regarding the adoption of the ITKs are presented under the following sub heads. The findings regarding the adoption of the ITKs with respect to cattle are furnished in Table 5 and also depicted in the [Fig-2].

Table-5 Adoption of the ITKs (Cattle)

Title	No. of Questions	Yes (%)	No (%)	Total Responses
Livestock Management	18	3234(50)	3246(50)	6480
Disease Management	22	2148(27)	5772(73)	7920
Scientific Rationale	29	8605(82)	1835(18)	10440
Total	69	13987(56)	10853(44)	24840

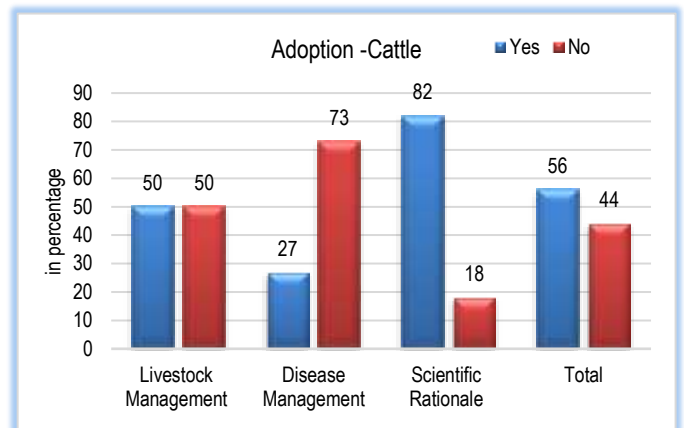


Fig-2 Adoption of the ITKs (Cattle)

Result from [Table-5] indicates, general management is 50 percent whereas disease management is just 27 percent. This is because of lack of awareness, skepticism and lack of proper guidance available locally on the exact procedures to be followed. The indigenous adoption practices with strong scientific rationale are found to be very high. Nearly 82 percent of the farmers understand the implications of the traditional practices and follow them systematically while they deal with the overall rearing of the cattle.

Adoption of the ITKs (Sheep and goats)

The result pertinent to the adoption of ITKs (sheep and goat) is furnished in the Table 6 and depicted in the [Fig-3].

Table-6 Adoption of the ITKs (Sheep and goats)

Title	No. of Questions	Yes (%)	No (%)	Total Responses
Livestock Management	18	1528(24)	4952(76)	6480
Disease Management	22	985(12)	6935(88)	7920
Scientific Rationale	10	1531(39)	2429(61)	3960
Total	50	4044 (22)	14316 (78)	18360

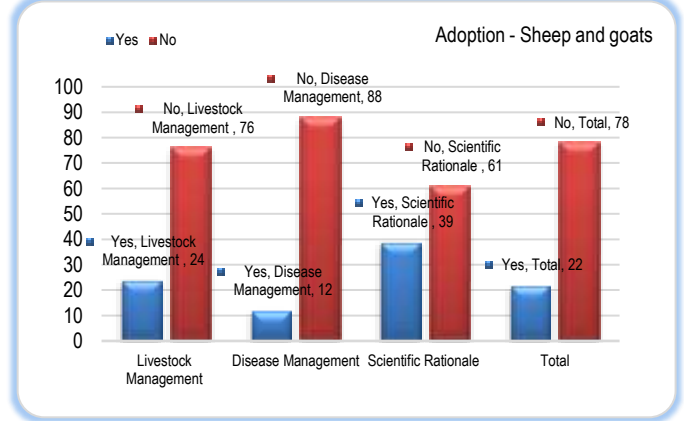


Fig-3 Adoption of the ITKs (Sheep and goats)

In the goats, the adoption is found to be less. Particularly, disease management is not done as per the practices prevalent in our state. The population of sheep and goats is not very high. This clearly indicates the decline of sheep and goat population as well as managing them with indigenous wisdom. There is a scope for improving this particular area considering the uncertainties in crop production.

Adoption of the ITKs (Poultry)

The collected data related to the adoption of ITKs (Poultry) is tabulated in the [Table-7] and depicted in the [Fig-4].

Table-7 Adoption of the ITKs (Poultry)

Title	No. of Questions	Yes (%)	No (%)	Total Responses
Livestock Management	10	1658(46)	1942(54)	3600
Disease Management	11	589(15)	3371(85)	3960
Scientific Rationale	7	1387(55)	1133(45)	2520
Total	28	3634 (36)	6446(64)	10080

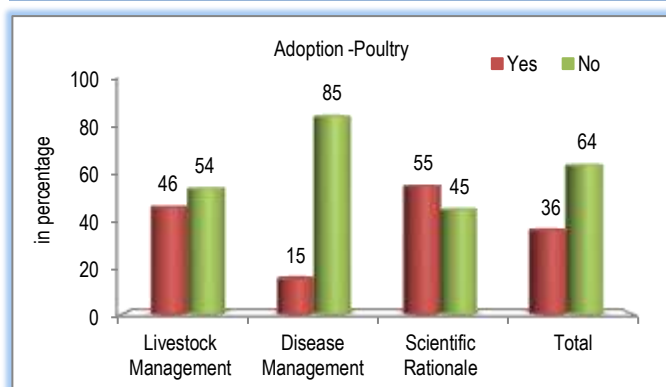


Fig-4 Adoption of the ITKs (Poultry)

In poultry, the issues with scientific rationale are followed to a reasonable degree. The indigenous practices regarding disease management are neglected to oblivion. In this sector, the backyard poultry could not be managed with modern practices either. Therefore, popularizing the indigenous methods for preventing disease attack can go a long way in rendering the farmers to have more poultry and to have additional assured income.

Perceived merits in the adoption of ITK

From the responses given by the respondents the merits in adopting ITK practices were ranked and the results are given in Table 8.

Table-8 Perceived merits in adoption of ITK

SN	Particulars	Percentage	Rank
1	Increasing the quality of milk in ITK	95.56	II
2	Increasing the quantity of milk in ITK	87.22	V
3	Availability of organic manure in ITK	82.78	VII
4	Improving the soil fertility in ITK	80.00	VIII
5	Increasing the Quality of Egg and meat in ITK	95.56	II
6	Increasing the cost of Egg and meat in ITK	91.11	IV
7	ITK is more suitable for organic farming	93.61	III
8	ITK is low cost technology compared to modern methods	100.00	I
9	Increasing the lifespan	84.44	VI
10	Controlling the spreading of disease in ITK	48.89	X
11	Increasing the Income of ITK farmer	33.89	XI
12	Increasing the security/protection of country animals	21.11	XII
13	Reduce the toxicity in ITK products	76.67	IX

Table 8 reveals that when the farmers were asked to list for adoption of ITK practices all the farmers responded that the ITK results in low cost in the livestock management. 95.56 percent farmers opined that ITK results in the increasing quality of milk, quality of egg and meat. 93.61 percent of farmers felt that ITK practices are more suitable for organic farming especially for raising the fodder. The other advantageous cited by the farmers are higher selling price, increase in quantity of milk, increase in the lifespan of animals, availability of organic manure, improvement in the soil fertility and less toxicity in ITK products. Small number of farmers felt that ITK results helpful in increasing the income, increase in the

security of country animals and controlling the spreading of diseases.

Perceived demerits in the adoption of ITK

From the responses given by the respondents the merits in adopting ITK practices were ranked and the results are given in Table 9.

Table-9 Perceived demerits in adoption of ITK

S	Particulars	Percentage	Rank
1	Delay in recuperation in ITK	84.44	IV
2	Some diseases are not curable in ITK	98.89	II
3	Decrease the milk production	82.78	V
4	Maintaining the livestock in large scale is difficult	48.89	VIII
5	Increase in the labour cost	55.00	VII
6	Lack of availability of feed	92.78	III
7	Create Pollution	67.50	VI
8	Increase in the animal mortality rate	100.00	I
9	Diseases spread to humans from animals easily	43.33	IX
10	In rainy season difficult to maintain the animals	34.17	X

The [Table-9] reveals that when the farmers were asked to cite the demerits of the ITK practices, all the farmers responded that the native breeds have high mortality rate. The important demerits cited are inability of ITK to cure some diseases, non-availability of animal feed, delay in curing diseases, and reduction in milk production. Small number of farmers believed that due to ITK practices the diseases spread from animals to humans easily, and in rainy seasons it is difficult to maintain animals.

Conclusion

ITK regarding bovine management there are numerous practices prevalent in our state. The farmers are convinced about native breeds. It requires less care and the produce is outstanding. Important to preserve the native breeds in a very big way. Otherwise, they may become extinct very shortly. Native practices are crucial to make the livestock management less taxing and more lucrative.

Application of research: To identify the perceived usefulness of such indigenous practices for their further logical validation in various national and international research organizations.

Research Category: Extension and Economics

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References

- [1] Afifa S. Kamili (2017) *Summer school, Summer school capacity building programme, Division of Agricultural Education, ICAR, New Delhi.*
- [2] Agarwal Arun (1995) *Indigenous knowledge and development monitor*, 3 (3), 3-5.
- [3] Reinjtjes C., Haverkort B. and Bayer A.W. (1992) *Leusdan, Netherlands*, 52, 210-218.
- [4] Rollefson-Kohler I. and Rathore S.H. (1996) *Pashudhan*, 11 (10), 1-8.