

# **To Study the Awareness and Adoption level among the Tharu Tribes towards Selected Indigenous Technical Knowledge(ITKs) for its cost Effectiveness**

## **ABSTRACT**

The frequent use of modern medicines for animal husbandry practices has reduced the usage of ITKs but still they are often used as first aid to treat various animal diseases. The objective of this research work was to level of awareness and adoption level of selected Indigenous Technical Knowledge (ITKs) among Tharu tribes in the term of reducing the production cost vis-à-vis increasing the overall production for their livestock. Investigation was carried out in the Tharuhat area of the West Champaran district, to explore the therapeutic uses of plants by local inhabitants. Information was gathered from traditional healers and livestock owners of Tharu Tribes, by using participant observation, open-ended conversations and semi-structured questionnaires. Plants used as ethno veterinary medicines were collected and identified by farmers of the study area (i.e., Tharuhat area) had well knowledge about use of indigenous practices in different areas of livestock rearing i.e., Breeding, Feeding and Health care and its awareness. Documentation of traditional knowledge related ethnoveterinary information and identification of potential species for prioritization of conservation through sustainable animal health care management is essential for the benefit of future generations. The present study contributed to the documentation of an inventory of ethno veterinary medicinal plants, which might provide a better informative database for future scientific validation studies for the sake of animal health.

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**Keywords:** ITKs, Awareness, Adoption, Tharu Tribes, Bihar, and Production cost.

## **INTRODUCTION**

Indigenous technical knowledge (ITK) refers to the unique local knowledge existing within and developed around the specific conditions of women and men indigenous to a particular geographic area (Grenier, 1998). India is a nation of Rishi, Muni and Vaidhya. India has an extremely rich legacy of indigenous wellbeing security and a few treatment frameworks that have been utilized like Ayurveda, unani, and homeopathy for the two creatures just as people since age of prehistoric and furthermore India has incredible decent variety and fluctuation in characteristic, social, culture, segment and strict viewpoints. These practices have been

permeating starting with one age then onto the next by oral transmission and viewed as the all-encompassing methodology for domesticated animals the executive's approaches embraced by no literate societies. These assorted variety and varieties give more hues in nation's viewpoint. India involves biggest number of ancestral populaces on the planets and Tharu clans are one of them, usually known as Tharu Adivasi. They live at Tharuhat zone in West Champaran region of Bihar and krishi and creature cultivation has the fundamental wellspring of employment. A number of recent works also discuss in the use of plants as an ethno veterinary medicine in the Indian subcontinent but no studies are available in Tharu Tribes of Bihar. Since no comprehensive and elite attempt has been made so far to survey the use of plants in ethno veterinary practices in West Champaran District of Bihar, the present survey was undertaken to identify, collect and document the indigenous technical knowledge (ITK) or, medicinal plants and their utilization for primary health care of animals in West Champaran district of Bihar, India.

## **Materials and Methods**

The current study was carried out in West Champaran district of Bihar, India. Out of 18 blocks of West Champaran district, four blocks which were having substantial higher Tharu tribal population namely, Bagha-2, Ramnagar, Gaunaha, and Mainatand were purposively selected for study on the basis of demographic distribution of Tharu tribes. After selecting block, a list of farmers who belong to Tharu tribes had at least one livestock animal and practising ITK was prepared from each block. From the list 50 livestock owners which are known to use of ITK's and 25 traditional healers which were considered to be knowledgeable in ITK's in animal husbandry in surrounding Tharuhat areas were selected randomly with the help of local community leaders (Gumasta) and staffs of veterinary hospitals and NGOs from each block. Thus, all together 200 livestock owners and 100 traditional healers (300 respondents) were identified for the study. The data were collected in two phases using a pre-tested interview schedule. In the first phase the researcher made informal visits to the selected blocks in Tharuhat area. During these visits the researcher has explored the general information about understanding of the used indigenous technical knowledge (ITK) in animal husbandry like documentation of ITK. In 2nd phase researcher has explored the awareness of most commonly used ITK among livestock owners in Tharuhat area.

## **Results and Discussion**

In present study, ITKs were used indifferent areas of productive purposes of livestock rearing viz, Breeding, Feeding and Health care. For improving status of the resource poor farmers it is essential that the production and health care of the animals should improve continuously in low cost that eventually helps to improve the socio-economic condition of livestock owners.

## **A. ITKs used by Tharus for Breeding Purposes**

### **1. Mixture of Mung Sprouts and Wheat Sprouts**

This ITK is mainly practiced in cattle and buffalo in which 250-300 gms mung (*Vignaradiata*) sprouts and 400-500 gms wheat (*Triticumaestivum*) sprouts fed to animal daily for 15 days to one month to induce heat and increase conception rate.

### **2. Boiled Grains of Methi**

One kilogram Methi (*Trigonellafoenum-graecum*) grains were boiled and fed empty stomach to animals for one week to induce heat.

### **3. Extracted Solution of Satawar Root Powder, Jaggery (Gur) and Ajwain**

100-200 gms of satawar (*Asparagus racemosus*) root powder, 1 kg of Jaggery (Gur), 100-200 gms of ajwain (*Trachyspermumammi*), are mixed and boiled in 5.0 liters, of water. The extract liquid is cooled and provided to the animal for the treatment of retention of placenta (50-100 ml BID for 4-5 days).

### **4. Mixture of Unripe papaya, Bael, Satawar and Methi**

Unripe papaya 4-5 kg per adult animal is fed by cutting it into small pieces followed by feeding 100-150 gms mixture prepared from bael (*Aegle marmelos*), satawar (*Asparagus racemosus*) and methi (*Trigonellafoenum-graecum*) for treatment of retention of placenta (ROP).

### **5. Leaves of Bamboo**

Bamboo leaves (*Bambusaarundinacea*) about 4-5 kg were fed to animal for expulsion of placenta after parturition.

### **6. Paste of Haldi and Mustard oil**

100-150 gms each of turmeric or haldi (*Curcuma longa*) powder and 100 gms mustard (*Brassica juncea*) oil mixed are fed to the animal in case of retention of placenta.

### **7. Paddy seed or Dhan**

The animals were provided 1-2 kilogram of Paddy seed or dhan (*Oryzasativa*) which helps in expulsion of placenta.

Among the all above ITKs that are used for breeding practices like induce heat and increase conception rate in animal's "mixture of mung sprouts and wheat sprouts" was most common among livestock farmers and in treatment of retention of placenta (ROP) "Extracted Solution of Satawar Root Powder, Jaggery (Gur) and Ajwain" was most common among farmers.

## **B. ITKs used by Tharus for Feeding Purposes**

### **1. Mixture of Berseem, Maize, Bajra and Til oil**

One kg of Berseem (*Trifoliumalexandrinum*), 1/2 kg makka or maize (*Zea mays*), 1/2 kg bajra (*Pennisetumglaucum*) and 50 ml til oil (*Sesamumindicum*) was fed to animal once a day. It was increased the milk yielding potential of animals.

### **2. Root of Satawar**

The dairy animals were provided 200 gm satawar (*Asparagus racemosus*) root 7-10 days in a month to increase the milk yielding of animal. It also helps to improve the uterine health.

### **3. Extract liquid of Bair leaves**

Bair or Badar leaves (*Ziziphusmauritiana*) 400-500 gms were boiled and extract liquid is cooled and provided to the animal once in a day for 10-15 days in a month to increase milk production.

### **4. Mixture of Masoor and Mung dal, Satawar and Sweet Saunf**

Animals are fed equal proportions of mixture of masoor (*Lens culinaris*) dal, mung (*Vigna radiate*) dal, satawar (*Asparagus racemosus*) and sweet saunf (*Foeniculumvulgare*) @50 gms mixed with 250 gms of gur (Jaggery) in empty stomach to increase milk production and general body health.

### **5. Leaves of Khajur or, Date palm**

3-5 kg of leaves of khajur or Date palm (*Phoenix dactylofora*) was fed to animals. It increases the fat content of milk and milk production also.

### **6. Pieces of Ripe Banana**

12-15 pieces of ripe kela or banana (*Musa acuminata*) was used as galactagogue and improve the udder issues.

For increasing milk production and fat content most common ITK followed in the Tharuhat area was feeding of the “root of satawar”(*Asparagus racemosus*).

### **C. Most Commonly ITKs used by Tharus for Health Care Practices**

#### **1. Mixture of Jeera and Black Salt**

50-60gm of jeera or, cumin (*Cuminumcynimum*) seed powder and 10 gm of black salt were mixed with 1 litres of water and given orally for 4-5 days in case of mild indigestion occurred during monsoon season.

#### **2. Leaves of Amaltas**

Leaves of amaltas or haedma (*Cassia occidentalis*) were grind boiled and the decoction was given to the animal to cure the indigestion problem.

#### **3. Fleshy Leaves of Aloevera**

5-10 piece of fleshy leaves of gheekumari or Aloe vera (*Aloe barbadensis miller*) was fed to animal to cure anorexia and indigestion.

#### **4. Tisi or, Flax Seed Oil**

200-400 ml of Tisi or flax (*Linum usitatissimum*) seed oil was given to the animal in case of indigestion.

#### **5. Mixture of Pudina, Leaves of Peepul, Ajwain, Salt and Karela**

Pudina (*Mentha viridis*), leaves of peepul tree (*Ficus religiosa*), Ajwain (*Trachyspermum ammi*), salt and bitter gourd or karela (*Momordica charantia*) each of 50 gms are grinded and use to cure tympany and indigestion problem.

The most common ITK among livestock farmers for preventing indigestion in the study area was “Tisi or, Flax Seed Oil”.

#### **6. Leaves of Kadam and Molasses**

1-2 kg of leaves of kadam (*Neolamarckia cadamba*) along with molasses was fed to animals in case of constipation.

#### **7. Mixture of Leaves of Kadam and Bark of Mango**

1-2 kg of leaves of kadam(*Neolamarckia cadamba*) and 100-300 gms of bark of Mango (*Mangifera indica*) tree are grinded and use to cure constipation.

#### **8. Mixture of Ajwain, Hing, Til Cake, Amaltas Seeds and Black Salt**

25-50gms each of Ajwain (*Trachyspermum ammi*), Hing (*Asafoetida*), til cake, amaltas (*Cassia fistula*) seeds and Black salt are grinded, powdered and fed @ 50-100gms BID for 2 days to the animals in case of constipation.

#### **9. Mixture of Desi Ghee and Concentrates**

Desi ghee 50-100 gms mixed with concentrates was fed orally to the animals suffering from constipation.

#### **10. Mixture of Isabgol Husk and Water or, Milk**

250-300 gms of Isabgol (*Psyllium*) husk mixed in 1-2liters of lukewarm water or milk and fed to the animals in the treatment of constipation.

#### **11. Mixture of Saumf and Wheat flour**

100-200 gms of saumf (*Foeniculum vulgare*) was mixed in wheat flour and fed to animal once a day.

The most common ITK practiced by the livestock farmers in Tharuhat area for management of the constipation in animals was the use of “Tisi or, Flax Seed Oil”.

#### **12. Leaves of Gumma**

Gumma leaves (*Leucasaspera*) 200-250 gms is used to control the diarrhoea and other related issues in animals.

#### **13. Mixture of Unripe Bael Fruits and Leaf of Shisham**

Unripe bael (*Aegle marmelos*) fruits mixed with fresh leaf of shisham (*Dalbergiasissoo*) was fed orally to the animals to cure the bloody diarrhoea or, dysentery in animals.

#### **14. Plant of Doodle or, Asthma**

200-500gms doodle or asthma plant (*Euphorbia hirta*) commonly called as ‘Doodhkijadi’ was fed to animal once a day to cure diarrhoea or, dysentery.



Image1: Bair or Badar leaves (*Ziziphus mauritiana*)



Image2 Date palm (*Phoenix dactylofora*)



### 15. Ash of Datura fruits

Datura fruits (*Datura stramonium*) 100 gms burned in fire and ash is fed orally to the animal with normal diet to cure diarrhoea or, dysentery.

### 16. Paste Prepared from Banana and Turmeric

Paste prepared from Banana (*Musa acuminata*) flower and turmeric (*Curcuma longa*) 250 gms were fed orally to the animal to control diarrhoea.

Among the all above ITKs that are used for cure and treatment of diarrhoea or, dysentery in animal husbandry “mixture of unripe bael fruits and leaf of shisham” was most commonly used by livestock farmers in Tharuhat area.

### 17. Mixture of Hing and Ajwain

25-50 gms of each hing (*Asafoetida*) and ajwain (*Trachyspermum ammi*) mixed and fed orally 50-60 gms twice daily to the animal in case of bloat as well as abdominal pain and discomfort.

### 18. Mixture of Aloe vera, Ajwain, Kalajeera and Kalanamak

250 gms of Gheekumari or Aloe vera (*Aloe barbadensis miller*) was given to animal. Outer layer of Aloe vera was peeled off and remaining portion was roasted in fire. To it, 200 gms Ajwain (*Trachyspermum ammi*), 200 gms of kalajeera (*Cuminum cyminum*) and kalanamak (Black salt) were and its mixture was fed to animal once a day in case of bloat.

### 19. Leaves of Tulsi

Leaves of ‘Tulsi’ (*Ocimum sanctum*) 100 gms were given orally to the cattle to relieve tympany or, bloat.

### 20. Mixture of Mattha, Black salt, Ban-Kundri, Water and Mustard oil

1-2 liters of whey or mattha, 50-100 gms of black salt, 100-200 gm of kachri or, ban-kundri (*Cucumis callosus*), 500-1000 ml of water and 50-60 ml of mustard (*Brassica nigra*) oil is fed orally to control tympany and bloat.

The most common ITK practiced by the livestock farmers in Tharuhat area for management and care of tympany or, bloat “Mixture of Hing and Ajwain”.

### **21. Paste prepared from Bark of Sahajan tree, Lime and Haldi**

Paste prepared from equal part of bark of moringa or, sahanjan tree (*Moringa oleifera*), lime and turmeric or, haldi (*Curcuma longa*) and it is heated and applied with external fixation to the animal.

### **22. Paste prepared from Mehdi leaves, Haldi, Harjora Leaves and Cactus stems**

A paste prepared from equal part of mehdi (*Lawsonia inermis*) leaves, turmeric or, haldi (*Curcuma longa*), harjora (*Cissampelos quadrangularis*) leaves and cactus (*Cactaceae*) stems is applied and support is provided by bamboo stick (*Bambusa auriculata*) externally in treatment of fracture or, sprain.

### **23. Paste prepared from Methi seeds and Til oil**

Paste prepared from 200 gms of methi (*Trigonella foenum-graecum*) seeds in 200 ml of til (*Sesamum indicum*) oil was applied in case of sprain.

Among the all above ITKs that are used for cure and treatment of fracture or, sprain in animal husbandry “Paste prepared from Mehdi leaves, Haldi, Harjora Leaves and Cactus stems” was most commonly used by livestock farmers in Tharuhat area.

## **Level of awareness about most commonly used indigenous technical knowledge (ITKs) in Tharuhat area**

This segment presents the degree of awareness of indigenous technical knowledge (ITK) for various animal husbandry practices among selected livestock owners of selected Tharuhat region i.e., (Bagaha-2, Ramnager, Mainatanr and Gawnaha blocks) of Bihar. The degree of awareness was studied for the most commonly utilized five documented ITK's i.e., use of satawar root (*Asparagus racemosus*) for increase milk production, Paste prepared from Mehdi leaves, Haldi, Harjora Leaves and Cactus stems for fracture or, sprain, Mixture of Hing and Ajwain for bloat as well as abdominal pain, mixture of unripe bael fruits and leaf of shisham for diarrhoea or, dysentery and Tisi or, Flax Seed Oil for indigestion by the selected respondent in their animals for various animal husbandry practices.

**Table 01:** Awareness of most commonly used ITKs to reduce production cost and increase production of livestock in selected areas.

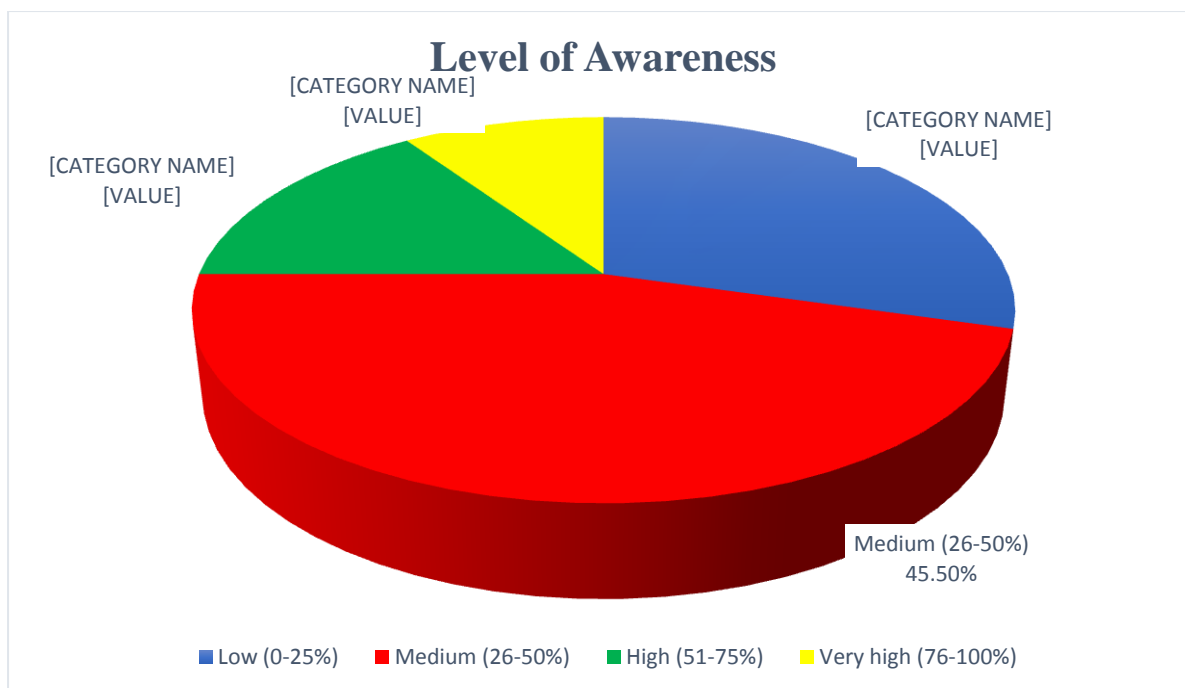
S.N.	Category	Blocks				
		Bagaha-2 (n=50)	Ramnager (n=50)	Mainatanr (n=50)	Gawnaha (n=50)	Pooled value (N=200)
1	Low (0-25%)	15 (30.00)	23 (46.00)	13 (26.00)	08 (16.00)	59 (29.50)
2	Medium (26-50%)	22 (44.00)	20 (40.00)	28 (56.00)	21 (42.00)	91 (45.50)
3	High (51-75%)	09 (18.00)	07 (14.00)	04 (08.00)	11 (22.00)	31 (15.50)
4	Very high (76-100%)	04 (08.00)	00 (00.00)	05 (10.00)	10 (20.00)	19 (09.50)

(Figures in parenthesis indicate percentage)

The table revealed that the maximum (46.00 per cent) respondents of Ramnager block had low level of awareness. Whereas in the blocks Bagaha-2, Mainatanr, and Gawnaha, majority of the respondent i.e., 44.00 per cent, 56.00 per cent and 42.00 per cent respectively showed medium level of awareness. It is very much distinguished that none of the respondent of the block Ramnager had very high level of awareness of most commonly used ITK practices.

The pooled value indicated that 45.50 per cent of the respondents were in the medium category and only 09.50 per cent of respondents had very high level of awareness of most common used ITK practices. This trend was might be due to their low education level and due to rearing of low cost animals with lesser concuss towards their health issues.

**Fig 01:** In this figure distribution of Livestock owners according to their Awareness of most commonly used indigenous technical knowledge (ITK) practices



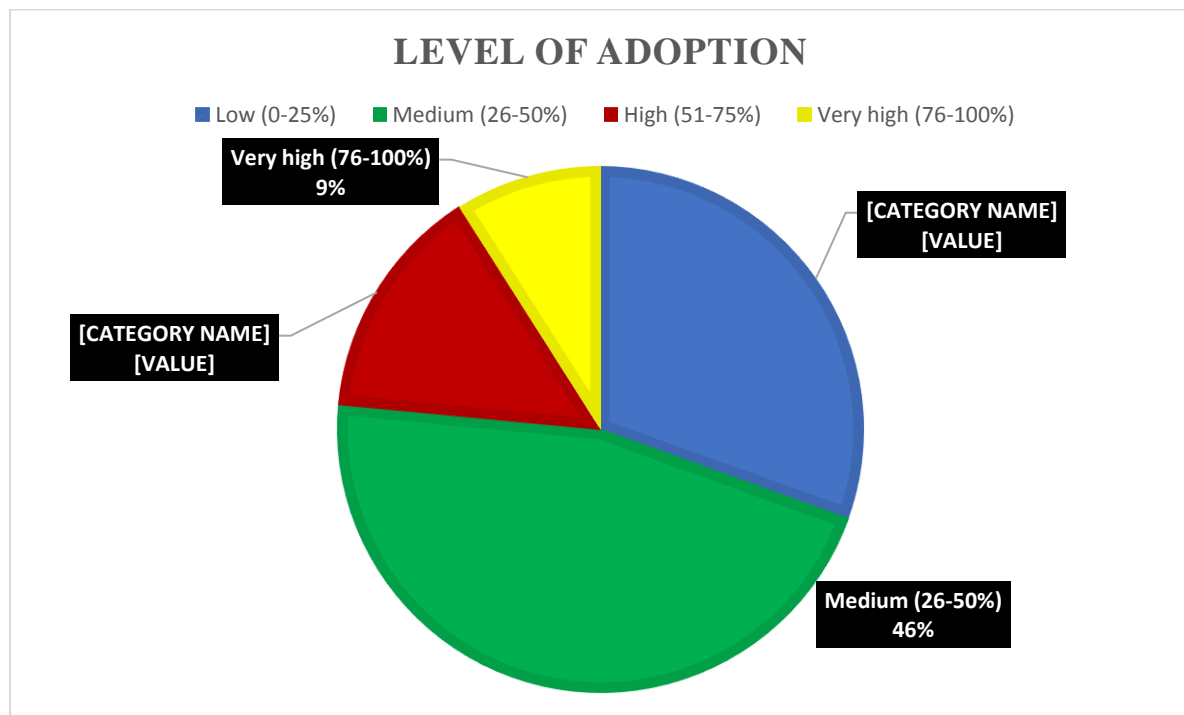
**Table 02:** Adoption of most commonly used ITKs to reduce the production cost and increase the production of livestock in selected area.

S.N.	Category	Blocks				
		Bagaha-2	Ramnager	Mainatanr	Gawnaha	Pooled value
1	Low (0-25%)	14 (28.00)	22 (44.00)	15 (30.00)	10 (20.00)	61 (30.50)
2	Medium (26-50%)	24 (48.00)	20 (40.00)	27 (54.00)	21 (42.00)	92 (46.00)
3	High (51-75%)	10 (20.00)	08 (16.00)	03 (06.00)	08 (16.00)	29 (14.50)
4	Very high (76-100%)	02 (04.00)	00 (00.00)	05 (10.00)	11 (22.00)	18 (09.00)

(Figures in parenthesis indicate percentage)

The pooled data revealed that majority (46.00 per cent) respondents showed medium adoption level towards most common used ITK practices of animal husbandry whereas only 09.00 per cent of the respondents were having very high level of adoption regarding most common used ITK practices. This trend might be due to their low educational level and concuss towards animals health conciseness in remote rural areas.

**Fig 02:**In this figuredistribution of Livestock owners according to their Awareness of most commonly used indigenouse technical knowledge (ITK) practices



### Conclusion

The presence of the considerable number of ITKs in the area under research indicates the richness of the age antique expertise of the Tharu hat peoples. In spite of the presence of the less or non-availability of adequate veterinary facilities Tharu tribes people are still relying upon ITKs and treat their animals themselves because Tharu tribes people mostly lives in forest area. The Tharu hat peoples have to take lively component and create provisions for documentation and maintenance of this precious expertise. The need of the hour is to discover the medical purpose at the back of the documented ITKs in order that their benefit can be harvested at a massive scale. After documentation the ITKs can be included with the contemporary medical knowledge on the way to be useful to the farmers, scientists, environment, and biodiversity and to the countrywide economy.

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