J. Agric. Res. Technol., 51 (1) : 120-125 (2026) https://doi.org/10.56228/JART.2026.51115

Indigenous Technical Knowledge of Tribal Farmers in Ahemadnagar District of Maharashtra State

S. N. Ghadge*, S. A. Kadam, S. A. Dhenge, S. S. Sadaphal, S. D. Gorantiwar and M. G. Shinde
Centre for Advanced Agriculture Sci. and Technology Project on Climate Smart Agric. and Water Mgment,
Mahatma Phule Krishi Vidyapeeth, Rahuri - 413 722 (India)
*Corresponding author Email : sghadge12@gmail.com
(Received : 23.09.2025 Accepted : 15.12.2025)

Abstract

This study was conducted in Akole tahsil of Ahmednagar district of Maharashtra state. Ex post-facto research design was used for this study.The information was collected from the 70 old age tribal farmers from the six villages of Akole tahsil through focus group discussion and observation method. Total 42 ITKs were identified. The major Indigenous Traditional Knowledge practices identified was tobacco solution to control insect and pest, sun drying of harvested gains to prevent store grain insect pest infestation, farmyard manure to improve soil fertility and soil texture, buldh storage bin (bamboo strips + coated with cow dung slurry) and kanagi storage bin (lantana camera + bamboo strips + cow dung past) used for grain storage, tamarind dried pod solution, taak (whey) and Maharuksh (*Ailanthus excelsa*) trunk paste to control ranikhet (Mar rog) disease of poultry, nirgudi (*vitex neguda*) dried leaf paste to control the neck swelling in cattle, if more flowering in mango predicted to heavy rain will occur, fall down and turning blackish colour of peepal (*ficus religious*) leaves predicted to heavy rain will occur.

Key words : Indigenous Technical Knowledge, Tribal Farmers.

Indigenous technical knowledge is localized knowledge which is transmitted by generation to generation through mouth, song, drama, written material, videos etc. It is the systematic body of knowledge acquired by local people through the accumulation of experience, informal experiments and ultimate understanding of the environment in a given culture (5). This knowledge is based on many generations of insight gained through close interaction within the natural and physical micro environments (5). Indigenous technical knowledge is spread all over the areas viz., agriculture, engineering, medical etc. In agriculture sector, ITKs is used from ancient time due to that ample scope for identification and documentation, because agriculture is main sector for the food and employment in this context majority of the population depend on this sector. Small holding farmers have regularly been using ITKs (2). Considering the livelihood and more production, the small and marginal farmers used the local knowledge which as low cost, sustainable and eco friendly. The Indigenous technical knowledge are eco friendly and compatible to pest management practices (1). This knowledge have been transmitted generation to generation for the propose of to solving their problems in terms of home and farm. It will also help to develop alternatives to ecologically damaging agricultural practices, which will lead to sustainability in the long run (4). For fulfilling demands in terms of feed, food, fiber etc, of increasing population in changing climatic situation, its urgent need to restore and use of Indigenous Technical knowledge. In India, Maharashtra state is leading in agriculture production in crops, horticulture, dairy and fishery sector. There are 47 tribes declared as scheduled tribe in the state of Maharashtra according to Gazette notification (1991). In the Ahmednagar district, Akole tahsil large number tribal communities viz. Mahadev Koli, Katkari, Bhill and Thakar (3). In Ahmednagar district,

Fig. 1. Researchers while interviewing the respondents

Jowar, Bajara, Udid, Uung, Sugarcane as major crops taken by the majority of the tribal farmers in combination with dairy and animal husbandry. The tribal farmers mostly depend on the agronomical and dairy sector for their livelihood security. Tribal people have very good knowledge and adopted the traditional knowledge for solving the problems in every day in terms of farm and home. Considering this view present study was conducted on entitled "Indigenous Technical Knowledge for tribal farmers in Ahmednagar District of Maharashtra state"

Material and Methods

Present study was conducted in Akole tahsil of Ahmednagar district of Maharashtra state. Total six villages of were selected for this study. Villages were selected by using random sampling method for this study. Old age tribal farmers as respondents were selected for this study on the basis of more age more experience as criteria The information was collected from the 70 old age tribal (male and female) farmers with the help of focus group discussion and observation method. All in about 42 Indigenous Traditional Knowledge practices were identified under crop production, livestock management and rainfall prediction.

Results and Discussion

Indigenous technical knowledge practices used by tribal farmers : It is observed from the Table 1 that regarding crop production the tribal farmers used tobacco solution to control the insect and pest followed by wooden plate for leveling of soil (Fig. 6), Ash broadcasting to control insect, pest and diseases, sun drying of harvested gains to prevent stored grain insect, pest infestation, 1 to 2 ploughing in summer to prevent insect, pest and disease infestation, farmyard manure to improve soil fertility and soil texture, cattle grazing on hill to improve soil fertility, dried leaves of trees buried in soil to improve the soil fertility, cow urine to control the fruit dropping in chili and blast disease of rice crop, paddy straw and dried branched of tree is burnt in nursery plots after the first ploughing to prevent insect, disease infestation and soil sterilization, grass broom used for spraying, stone bunding to prevent soil erosion and protected from animal, traditional wooden plough for ploughing upper layer of soil which have fresh nutrient available, crop rotation (rice + chickpea) to improve the soil fertility, Bajara stubble buried in soil to improve the soil fertility and soil texture, buldh storage bin (bamboo strips and cow dung slurry) used for grain storage (Fig. 4), kanagin storage bin (lantana camera + bamboo strips + cow dung paste) used for grain storage (Fig. 2), use of traditional rice varieties like kalbhat, tamkul, dhavul, raybhog, ambemohar to minimize risk of disease and pest (Fig. 5), mixture of cow dung and ashor mud paste used for preparation of threshing yard, use of dead frog/crab to control bug in paddy.

Table 1. Indigenous technical knowledge practices used by tribal farmers

ITKs	Purpose
Crop production	
Tobacco solution	To control insect, pest and diseases
Wooden plate	Leveling
Ash broadcasting	To control insect, pest and diseases
Sun drying of harvested gains	To prevent store grain insect pest infestation
1 to 2 ploughing in summer	To prevent insect pest infestation
Farmyard manure	To improve the soil fertility and soil texture
Cattle grazing on hill	To improve the soil fertility
Dried leaves of trees buried in soil	To improve the soil fertility
Cow urine	To control the fruit dropping in chili and blast disease of rice crop
Paddy straw and dried tree branches burnt in nursery plots after the first ploughing	To prevent insect pest, disease infestation and soil sterilization
Grass broom	Use for spraying
Stone bunding	To prevent soil erosion and protect from animal.
Traditional wooden plough	Ploughing upper layer of soil which have fresh nutrient available
Crop rotation (rice + chickpea)	To improve the soil fertility
Bajara stubble buried in soil	To improve the soil fertility and soil texture
Buldh storage bin (bamboo strips + cow dung slurry)	Grain storage
Kanagi storage bin (lantana camera + bamboo strips + cow dung paste)	Grain storage
Use of traditional rice varieties like kalbhat, tamkul, dhavul, raybhog,ambemohar	To minimize risk of disease and pest
Mixture of cow dung and ashor mud paste.	Preparation of threshing yard
Use of dead frog/crab	To control bug in paddy
Livestock management	
Custard apple leaf juice	Wound treatment of cattle
Mixture of Coriander powder and edible oil	Tympani treatment in cattle
Edible oil	Mouth wound treatment of cattle
Ajwain (Local name OvaTrachyspermumammi)	Tympani treatment of goat
Tamarind dried pod solution, Taak (whey) and Maharuksh (Ailanthus excelsa) trunk paste	To control Ranikhet (Mar rog) disease in poultry
Nirgudi (Vitex negundo) leaf paste	Neck swelling treatment in cattle
Castor oil	Deworming treatment
Turmeric and mustardoil paste	Antiseptic ointmentmanagement
Bahuda dried trees root paste	Cattle swelling management
Fogg of Cowpea dried nutshell	To control the ephemeral disease in cattle

Table 1. Contd.

ITKs	Purpose
Biba seed (Semecarpusanacardium)	To control mad cow disease
Rainfall prediction	
More flowering of mango	Predicted to heavy rain will occur
If wind is blowing east to west	Predicted to heavy rainfall will occur after a few days.
If birds makes their nest in lower portion of the trees	Predicted to heavy rain will occur
Fall down and turning blackish colour of peepal(ficus religious)leaves	Predicted to heavy rain will occur
Human going to four to five time urine in a day	Predicted to heavy rain will occur
Mango flowering at east side of the tree	Predicted to heavy rain will occur from west side
Cooku bird hatch their egg	Predicted to heavy rain will occur
If there is more flower on the top of the Palash (Butea monosperma)	Predicted to heavy rain will occur
If dragonfly swarm over open dry lands or fields,	Early rainfall ispredicted.
If there are more number of fruits and maximum of them ripen on the neem (azadirectindica) tree	Predicted to heavy rain will occur
Stored tamarind (tamarindusindica)) and mahua (madhucalongifolia) softens	Indicates incoming of rains shortly

Fig 2. Kanagi storage bin

Fig 3. Kanagi storage bin

Fig 4. Buldha storage bin

Fig 5. Local varieties

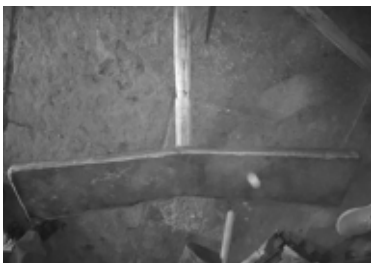

Fig 6. Wooden plate

Fig 7. Thread

Regarding livestock management, custard apple leaf juice used for wound treatment of cattle, mixture of coriander powder and edible oil used for tympani treatment in cattle, edible oil used for mouth wound treatment of cattle, ajwain (local name: Ova *Trachyspermumammi*) used fortympani treatment of goat, tamarind dried pod solution, taak (whey) and maharuksh

(*ailanthus excelsa*) trunk paste to control ranikhet (Mar rog) disease of poultry,nirgudi (*vitex negundo*) leaf paste used for neck swelling treatment in cattle, turmeric and mustardoil paste used for antiseptic ointment management, bahuda dried trees root paste used for cattle swelling treatment, fogg of cowpea dried nutshell to control ephemeral disease in cattle, biba seed (*semecarpusanacardium*) to control mad cow disease.

In case of prediction of rainfall, more flowering of mango to predict heavy rain will occur, if wind is blowing east to west to predict heavy rainfall willoccur after a few days, if birds makes their nest in lower portion of the tree to predict heavy rain will occur, fall down and turning blackish colour of peepal (*ficus religious*) leaves to predict heavy rain will occur, human going to four to five time urine in a day to predict heavy rain will occur, mango flowering at east side of the tree to predict heavy rain will occur from west side, cooku bird hatch their egg to predict heavy rain will occur, if there is more flower on the top of the palash (*butea monosperma*) to predict heavy rain will occur, If dragonfly swarm over open dry lands or fields early rainfall ispredicted, if there are more number of fruits and maximum of them ripen on theneem (*azadirectindica*) tree to predict heavy rain will occur, stored tamarind (*tamarindusindica*)) and mahua (*madhucalongifolia*) softens to indicate incoming of rains shortly.

Conclusion

The present study concluded that, there were 42 ITKs identified for climate smart agriculture belonging to three groups, crop production, livestock management and rainfallprediction. Buldh storage bin (bomboo strips + cow dung slurry) and kanagi storage bin (lantana camera + bamboo strips + cow dung paste) for the grain storage as well as custard apple green leaf juice and mixture of coriander powder & edible oil used for livestock disease management is confined very local and traditional knowledge. In traditional societies and communities the local indigenous people is the major actor. In many way, the indigenous communities are not well aware of the value of their indigenous traditional knowledge which has been passing from generation to generation. The scientific institute, Agricultural universities, private and government NGOs should play a major role in this context of capacity building among the indigenous societies and popularization of indigenous methods and technologies. The various research organizations their research should be conducted on the indigenous technologies as well as efforts should made for its dissemination. Indigenous traditional knowledge is cost effective and sustainable for agriculture and ecofriendly with the nature which means useful for coping the climatic conditions well as eliminating the poverty. Tribal farmers are rich in traditional knowledge which have been transferred from generation after generation. Such type of knowledge and technologies is worth validating and exchanging with the national and international level which have to make sustainable agriculture and coping the climate change which is importance for locally and globally. The concern agencies need to organized the seminar, conference, training on indigenous technologies which improve the knowledge of the people and easily adopt changing climatic situation. In this context, proper identification, documentation, validation and integration of indigenous traditional knowledge on global basis to helpful providing good quality of food on sustainable basis with minimizes the impact of climate change.

Acknowledgement

The authors grateful thank to all tribal people

for sharing knowledge on crop production, livestock management, rainfall prediction in their area and also thankful to those assisting for this work.

References

Deka, M. K., Bhuyan, M. and Hazarika, L , K,, Traditional pest management practices of Assam. Indian J. Traditional Knowledge, 5 (1) (2006) 75-78.

Nath, R. K., Ahme, P. and Sarmah, A. C., Indigenous Technological Knowledge (ITK) for pest management in Tinsukia district of Assam. Rashtriya Krishi, 12(1) (2017) 1-3.

Pawar, R, S,, A Geographical Study of Concentration of Tribal Population and Their Literacy in Akole Tahsil, District Ahmednagar (MS). International J Science and Research, 4(4) (2015) 2924-2928.

Ponnusamy, K,, Jancy Gupta and Nagarajan, R, Indigenous Technical Knowledge (ITK) in dairy enterprise in coastal Tamil Nadu. Indian J Traditional Knowledge, 8 (2) (2009) 206-211.

Rajasekaran, B. D., Warren, D. M., and Babu, S. C., Indigenous natural resource management systems for sustainable agriculture development - A global perspective. J International Development, 3 (4) (1991) 387-401.