

## Preserving Indigenous Traditional Knowledge (ITK): Documentation of Agricultural and Household Practices in Hisale Village, Maharashtra

K.V. Patil<sup>1\*</sup>, Shivam Mahajan<sup>2</sup>, Jayesh Wadile<sup>2</sup>, Poonam Patil<sup>2</sup>, Atul Girase<sup>2</sup> and Rajap Shivakumar<sup>1</sup>

<sup>1</sup>Assistant Professor, School of Agricultural Sciences and Technology, SVKM's Narsee Monjee Institute of Management Studies (NMIMS) Deemed to be University, Shirpur (Maharashtra), India.

<sup>2</sup>B.Sc. (Hons.) Agriculture students, School of Agricultural Sciences and Technology, SVKM's Narsee Monjee Institute of Management Studies (NMIMS) Deemed to be University, Shirpur (Maharashtra), India.

(Corresponding author: K.V. Patil\*)

(Received: 16 August 2023; Revised: 13 September 2023; Accepted: 29 September 2023; Published: 15 October 2023)

(Published by Research Trend)

**ABSTRACT:** The sustainability of indigenous people's sustainable practices and cultural heritage depend on the preservation of their technological knowledge. This abstract explores the passing down of generational traditional knowledge and practices using a case study in Hisale Village. It seeks to record, preserve, and advance indigenous technical abilities, including knowledge of medicinal plants, artisanal workmanship, and agricultural methods. The study faces obstacles along the way, including the impending danger of cultural deterioration and outside pressures. In addition, it talks about how important it is to incorporate contemporary preservation techniques like digital archiving and knowledge sharing throughout generations to guarantee the survival of indigenous technological knowledge from Hisale Village for upcoming generations. This study recognizes the need of preserving the wide range of indigenous wisdom that adds to global biodiversity and cultural diversity, and it serves as a model for similar efforts worldwide.

**Keywords:** ITK, Documentation, Agriculture, Household.

### INTRODUCTION

Indigenous Traditional Knowledge (ITK) is a collection of regional wisdom that has been handed down through the centuries (Sullivan, 2016). It covers a wide range of topics, including healthcare, food production, agriculture and food preservation. These skills, which are developed via practical experience and adaptability to climatic circumstances, are essential for rural populations. In light of urbanization and modernity, which threaten to undermine these priceless practices and expose them to biopiracy, documentation of ITK is crucial to maintaining this traditional expertise (Pandey *et al.*, 2017). A recent study was conducted in Hisale village, which is located in the Shirpur tehsil of the Dhule district, Maharashtra, in order to preserve this priceless heritage. Numerous examples of ITK were identified in the study, including both domestic and agricultural operations.

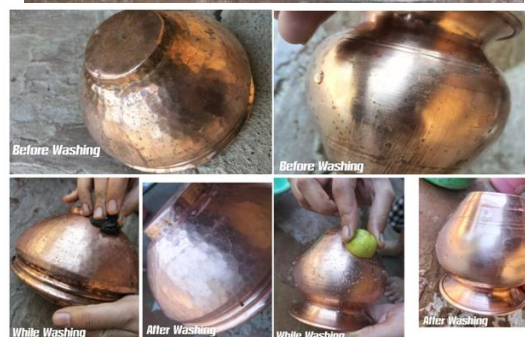
**Resources and Approaches.** The research team engaged in direct contact with farmers, farm women and villagers in Hisale Village as well as group discussions, well-structured questionnaire administrations and interpersonal interactions to acquire information on ITK

**Observations and Analysis.** The study identified a number of ITK practices in both agricultural and domestic settings

#### Application of ITK at Household level & in Agricultural Practices

##### Household ITK:

**1. To clean brass utensils:** Old women in the village to clean brass utensils, a mixture of tamarind, lemon, and salt is used as a cleaning agent.



**Fig. 1.** Use of Tamarind, Lemon and Salt for cleaning brass utensils.

**2. Usage of clove:** People of Hisale village were using cloves, a natural way to repel ants due to their strong scent, which disrupts ant trails and creates a barrier to

keep ants away from your home. You can use whole cloves or clove-infused solutions in areas where ants are a problem, offering a safe and non-toxic method to prevent ant infestations (Kafle and Chinkangsadarn 2022).



**Fig. 2.** Use of cloves as an ant repellent in sugar.

**Clay pot:** To a long time, cool water store as well as a purifier. The finding is similar to Tantrakarnapa (2014)

**Water filtration:** With the use of a charcoal filter and purifying the water by absorbing impurities. The finding is parallel to Musa *et al.* (2020)

**Household Medicinal ITK:**

**Piles Relief:** Villagers soak Chinese Wedelia plants in seawater to treat piles. According to Husain and Kumar (2015) findings, cardiac glycosides were abundant in *Wedelia trilobata* flower extracts. Katakai *et al.* (2012). discovered that it has anti-leishmanial, anti-inflammatory, antioxidant, and anti-carcinogenic qualities.

**Diabetes Prevention:** *Tinospora cordifolia* dried leaves, also referred to as "Gulvel," are powdered and taken daily to support health and perhaps help avoid diabetes. Similar findings are documented in Saha and Gosh (2012).

**Fungal Skin Infections:** To treat and soothe fungal skin diseases, a paste prepared of Ber (Jujube) wood skin and Desi ghee is applied topically.

**Knee Pain Relief:** External use of rui leaves (*Calotropis gigantea*) with mustard oil relieves knee pain.

**Jaundice Treatment:** Sugarcane consumption and river crab frying are two components of the jaundice treatment. Similar findings are found in Singh *et al.* (2015).

**Mango Ginger and Turti Paste:** To potentially treat swelling areas, a paste composed of mango, ginger and turti is used topically.

**Tooth strain and pain:** Take two immature leaves of umber (cluster fig) tree with capur (camphor) made mixture of it and hold on teeth for 5-10min

**Alternative of toothpaste:** Powder and combination of charcoal: salt as a 3:1 ratio

In addition, it was noted that *Tridax procumbens* leaves and *Datura* flowers were used for human and animal health

**Agricultural ITK:**

**Tobacco Dust for Pest Control**

A classic technique for controlling insects is to spread tobacco dust over fields. Tobacco dust, also known as tobacco dust powder or tobacco dust insecticide, is a natural product derived from finely ground tobacco leaves. It has been used for pest control in agriculture and gardening for many years. Tobacco dust contains nicotine, which is toxic to many insects. When applied, Patil *et al.*,

it disrupts the nervous system of pests, leading to paralysis and eventually death. This makes it an effective tool against a variety of garden and agricultural pests (Hanan *et al.*, 2018).

**Cow Dung Slurry for Seed Treatment.** Pre-sowing cow dung slurry soaking of cotton seeds increases germination rates. The practice of dipping cotton seeds in cow dung slurry and shade drying them before sowing is a traditional agricultural technique used in some regions to enhance the germination and early growth of cotton plants. Cow dung is a valuable source of organic matter and nutrients, including nitrogen, phosphorus, and potassium. These nutrients can benefit plant growth and development. By creating a slurry from cow dung, these nutrients become more readily available to the cotton seeds. Cow dung contains natural compounds that may have pesticidal and fungicidal properties. Coating the seeds with a cow dung slurry can potentially protect them from certain pests and diseases during the initial stages of growth (Shindhe and Malshe 2015).



**Fig. 3.** Seed Treatment of Chickpea with Cow Dung Slurry.

**Neem and Eucalyptus for Grain Storage.** Neem and Eucalyptus leaves successfully reduce pests that affect cereal grains during storage. Neem contains a group of compounds called limonoids, with azadirachtin being the most well-known. Azadirachtin is the primary active ingredient responsible for Neem's insecticidal properties. It disrupts the feeding, development, and reproduction of many insect species. Neem is effective against a wide range of insect pests, including aphids, whiteflies, mealy bugs, spider mites, and caterpillars. It acts as both a repellent and an anti-feedant, making it difficult for pests to establish and reproduce on treated plants. These findings are in accordance with Mishra *et al.* (2012).



**Fig. 4.** Storage of Wheat grains with Neem and Eucalyptus leaves.

**Ash for Aphid Management.** In vegetable fields, spreading ashes reduces aphid numbers. Ash is alkaline



in nature due to its high pH. This alkalinity can create an unfavourable environment for some pests, including aphids, which often prefer more neutral pH levels. The alkaline nature of ash can disrupt aphid feeding and development. Ash particles can be abrasive to soft-bodied insects like aphids. When applied to plants, ash may physically damage the outer layers of aphids, reducing their ability to feed and reproduce. These findings are similar to Yadav *et al.* (2017); Nyando *et al.* (2013).



**Fig. 5.** Application of Ash to control Aphid in Citrus.

**Penning Sheep and Goats in Fields to Improve Soil Fertility.** Sheep and goats increase soil fertility. Penning sheep and goats in fields before ploughing is a traditional agricultural practice known as "sheep and goat grazing" or "sheep and goat manuring". The manure left behind by sheep and goats decomposes gradually, releasing nutrients into the soil over an extended period. This slow-release effect can be beneficial for crops. (Nandhini and Suganthi 2018).

**Fish Water for the Treatment of Animal Foot Infections.** Fish water is used to cure animal foot infections. Fish water often referred to fish tank water is sometimes used as natural treatment for animal foot infection. The concept behind this treatment is based on belief that fish water contain beneficial bacteria and microorganism that can help combat infection and promote healing.



**Fig. 6.** Application of Fish water to control Cow foot infection.

***Tridax procumbens.*** *Tridax procumbens* leaves are very useful to cure injury. It's used to wound healing and as an anticoagulant, antifungal, and insect repellent. It is also used as a treatment for boils, blisters, and cuts by local healers in parts of India. In *Tridax procumbens* leaves contain several main active chemical compounds that were found to be present. First, take several leaves and a bit of the stem, rub them together with hands, and then apply the liquid to the injury. It can also apply as solid leaf paste at the same time. This remedy followed generation to generation by the grandparents / elders (Thalkari *et al.*, 2020).

**Datura Flower.** For gastrointestinal problems in animals, there are many more things in India that even scientists are unaware of. However, rural residents are aware of it. That is, datura, well-known for its Lord Shiva worship. This has numerous therapeutic qualities. There are therapeutic characteristics in every section of the plant. Datura flower contains antispasmodic, analgesic or anodyne, sedative, hypnotic, digestive and expectorant properties (Neha *et al.*, 2022).

**Seed Drying.** Seeds are exposed to fires smoke before storage, to deter pest and pathogens (Boeke *et al.*, 2001).

## RESULTS

In this study, we collected indigenous technical knowledge from Hisale village in the Shirpur tahsil. Our findings reveal a rich repository of traditional knowledge that has been passed down through generations within the indigenous community of Hisale. The knowledge encompasses a wide range of fields, including agriculture, herbal medicine and sustainable resource management. One key result of our research is the documentation of specific indigenous techniques and practices that have been crucial for the livelihoods and cultural identity of the community in Hisale. These practices have contributed significantly to their resilience in the face of environmental and societal changes. Through interviews and participatory research methods, we discovered that the community's indigenous technical knowledge is deeply interconnected with their cultural heritage and worldview. This knowledge not only aids in their subsistence but also plays a vital role in maintaining their unique identity and fostering a sense of community cohesion.

## CONCLUSIONS

In conclusion, our research in Hisale village, Shirpur tahsil, highlights the invaluable indigenous technical knowledge that exists within this community. This knowledge represents a vital resource for both the community and the broader society, offering insights into sustainable practices, biodiversity conservation, and cultural preservation. It is evident that the indigenous knowledge of Hisale village is a dynamic and adaptive system that has evolved over generations. As our findings demonstrate, this knowledge can provide innovative solutions to contemporary challenges, such as climate change, food security, and healthcare. However, it is essential to recognize the

need for the ethical and respectful engagement of indigenous communities in research and knowledge-sharing processes. Our study underscores the importance of acknowledging the intellectual property rights of indigenous knowledge holders and ensuring their active participation in decision-making related to the use and dissemination of their knowledge.

## FUTURE SCOPE

Collaborate together with experts studying agriculture and the environment to investigate the ITK's ecological and sustainable qualities. Examine the ways in which these methods may support soil health, biodiversity preservation, and contemporary sustainable agriculture. Studies can confirm the efficiency of conventional techniques and even incorporate them into modern farming systems. The creation of community-based training programs emphasizing customary household and agricultural methods might ensure that knowledge is passed down to the next generation while also empowering the local populace. These initiatives could also encourage small-scale enterprises and entrepreneurship that are focused on conventional knowledge-based goods. The creation of an interactive web platform that is available to scholars, decision-makers, and the neighbourhood might help to preserve and share this information.

**Acknowledgement.** Authors are thankful to SVKM's NMIMS School of Agricultural Sciences and Technology (SAST) for support to conduct this documentation. I would like to thank co-authors for their ideas and valuable suggestions during the writing of paper.

**Conflict of Interest.** None.

## REFERENCES

- Boeke, S. J., Loon, V., Huis, A. V. Kossou, D. K. and Dicke, M. (2001). The use of plant products to protect stored leguminous seeds. Backhuys Publishers, Netherland p.1-108.
- Hanan, O. H., Afaf, E.M.S., Hassan, F. M. A. and El-Sayed, M. S. M. (2018). Insecticidal and biochemical effects of tobacco dust extracts against the Egyptian cotton leaf worm, *Spodoptera littoralis* (Boisd.). *Egyptian Scientific Journal of Pesticides*, 4(2), 1-5.
- Husain, N. and Kumar, A. (2015). Comparative study of phytochemical constituents in flower of *Wedelia trilobata*, *Achyranthes aspera* and *Chrysanthemum* from Durg District of Chhattisgarh, India. *International Journal of Current Microbiology and Applied Sciences*, 4(4), 150-156.
- Kafle, L. and Chinkangsadarn, S. (2022). Clove and its constituents against urban pests: Examples from ants and cockroaches. Academic Press. In *Clove (Syzygium aromaticum)*, p. 335-345.
- Kataki, M. S., Ahmad, M. Z., Awasthi, D., Tomar, B., Mehra, P., Yadav, R. S. and Rajak, P. (2012). *In-vitro* antioxidant profile of *Wedeliacalandulaceae* leaves. *Pharmacologia*, 3, 75-83.
- Mishra, B. B., Tripathi, S. P. and Tripathi, C. P. M. (2012). Repellent effect of leaves essential oils from *Eucalyptus globulus* (Mirtaceae) and *Ocimum basilicum* (Lamiaceae) against two major stored grain insect pests of Coleopterons. *Journal of Nature and Science*, 10(2), 50-54.
- Musa, A., Saleh, S., Mohammed, K., Labaran, Y.H., Yau, J. Z. and Mato, H. (2020). Evaluation of potential use of charcoal as a filter material in water treatment. *International Research Journal of Engineering and Technology*, 7(5), 1930-1939.
- Nandhini, U. and Suganthi, S. (2018). Role of sheep penning in organic farming. *Approaches in Poultry, Dairy & Veterinary Sciences*, 4(5), 371-373.
- Neha, R. S., Rai, G., Mourya, P. and Pandey, V. (2022). Therapeutic and detrimental effects of *Datura*: A systematic review. *Advance Pharmaceutical Journal*, 7(6), 181-188.
- Nyando, V., Tsingalia, H. M. and Onyango, C. A. (2013). Awareness and adoption of indigenous technical knowledge in agroforestry practices in Kenya's Maseno Region. *Research Journal of Agriculture and Environment Management*, 2(11), 467-473.
- Pandey, V., Mittal, R. and Sharma, P. (2017). Documentation and application of indigenous traditional knowledge (ITK) for sustainable agricultural development. *Asian Journal of Agricultural Extension, Economics and Sociology*, 15(3), 1-9.
- Saha, S and Ghosh, S. (2012). *Tinospora cordifolia*: One plant, many roles. *Ancient Science of Life*, 31(4), 151-159.
- Shindhe, V. V. and Malshe, K. V. (2015). Effect of cattle urine and cow dung slurry as seed treatment on germination and growth of Khimi. *Journal of Eco-friendly Agriculture*, 10(2), 128-130.
- Singh, A., Lal, U. R., Mukhtar, H. M., Singh, P. S., Shah, G. and Dhawan, R. K. (2015). Phytochemical profile of sugarcane and its potential health aspects. *Pharmacognosy Review*, 7(17), 45-54.
- Sullivan, A. M. (2016). Cultural heritage and new media: A future for the past. *The John Marshall Review of Intellectual Property Law*. p 604-645.
- Tantrakarnapa, K. (2014). Suitable types and constituent ratios for clay-pot water filters to improve the physical and bacteriological quality of drinking water. *Environment Asia*, 7(2), 117-123.
- Thalkari, A. B., Karwa, P. N., Shinde, P. S., Gawli, C. S. and Chopane, P. S. (2020). Pharmacological actions of *Tridax procumbens* L.: A Scientific Review. *Research Journal of Pharmacognosy and Phytochemistry*, 12(1), 27-30.
- Yadav, Manju, Patil, K. V., Kavitha, S. and Sreenivasulu, M. (2017). Indigenous Technical Knowledge (ITK) regarding agriculture and household practiced by the farmers in Reddypalem village of Kuthur Mandal of Telangana. *Agriculture Update*, 12, 2107-2109.

**How to cite this article:** K.V. Patil, Shivam Mahajan, Jayesh Wadile, Poonam Patil, Atul Girase and Rajap Shivakumar (2023). Preserving Indigenous Traditional Knowledge (ITK): Documentation of Agricultural and Household Practices in Hisale Village, Maharashtra. *Biological Forum – An International Journal*, 15(10): 976-979.