

**Short Communication**

## **Traditional Thinking and Indigenous Innovations of Paderu Tribes of Eastern Ghats of India for Sustainable Livelihood**

**Sravan Kumar, G<sup>\*1</sup>, Ilahi Shaik<sup>2</sup> and Hephzibah Rani Singh<sup>1</sup>**

<sup>1</sup>Department of Biotechnology, Gayatri Vidya Parishad College for Degree and P.G. Courses (A), Visakhapatnam, Andhra Pradesh-530045

<sup>2</sup>Department of Biochemistry, Gayatri Vidya Parishad College for Degree and P.G. Courses (A), Visakhapatnam, Andhra Pradesh-530045

\*Corresponding Author Email: [sravang2010@gmail.com](mailto:sravang2010@gmail.com)

**Received:** August 04, 2023

**Accepted:** August 21, 2023

**Published:** August 29, 2023

### **Abstract**

The study unveils the traditional thinking and indigenous innovation among the tribal communities in Hukumpeta mandal of Paderu District of Andhra Pradesh to document the innovations to sustain their livelihood with limited natural resources. The study was conducted in the year of 2023 and the information was collected using interviews, photo documentation and field observation. This study states that the tribal's indigenous knowledge is ahead than the present day scientific advancement and to showcase the knowledge level of tribal's to maintain ecological balance with their Indigenous innovations.

**Keywords:** Indigenous, Innovations, Traditional Thinking, Tribes, Eastern Ghats.

### **Introduction**

Indigenous knowledge is a system of beliefs, ideas, and behaviors that guide people residents in their usage of the land and natural resources. Local tribal community people create and maintain indigenous knowledge in order to meet their basic requirements for food, shelter, health, spirituality, and savings. Indigenous knowledge is frequently customized and adapted to the local natural conditions as well as the social and cultural beliefs of community members. This is not static but rather changes in ecological, economic, and socio-political situations, depending on community members' originality and innovation, as well as the influence of other cultures and local technologies. Through the long path from primitive agriculture, tribal progenitors have developed several farming techniques through their age-old experiments by their experience in an attempt to overcome numerous problems faced during the farming operations. This knowledge is based on many generations of insight gained through close interaction within the natural and physical micro-environments (Taba *et al.*, 2021). Indigenous people have the knowledge on how to live sustainably developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. Their isolation in a particular region helped them to preserve their rich tribal wisdom and indigenous technical knowledge in agriculture and allied activities (Swangla *et al.*, 2021).

### **Study Area**

Paderu Mandal comes under Visakhapatnam agency and is the largest tribal area in Andhra Pradesh, India. It is positioned geographically in between the latitudes 17° 55' 48" - 18° 32' 59" North and longitudes 82° 18' 41" - 83° 01' 04" East, occupies an area of 435 km<sup>2</sup> (Desavathu *et al.*, 2018).

### **Materials and Methods**

Hukumpeta mandal of Paderu district was studied or observed for their innovative practices in their daily life, as a part of research project under G-Tribal, Gayatri Vidya Parishad College and GVP Medical College, we use to trace the SCD patients in all the schools of Hukumpeta mandal of Paderu district of Andhra Pradesh, the field trips took place in July 2023, while visiting different MPP schools in this mandal which were extremely interior to Paderu district headquarters, the villages are located in top mountains and almost 46-60 km from the Paderu headquarters, as a biologist and ecological biodiversity researcher I use to collect different variety of plant species and also photo documented the various innovative techniques they use for

their sustainable development. I understand they are extracting something or everything from nothing; it is a kind of best out of waste.



**Figure 1. Terrace agriculture in Hukumpeta mandal of Paderu district of Andhra Pradesh.**

It is difficult to think about cultivation or practicing agriculture in those sloppy mountains but for their survival and living purpose they have to cultivate their own food, for this they designed a new method of agriculture called as terrace farming which is an age old practice since ages in hilly areas around the world. The author contend that it is their traditional thinking to utilize the water resources precisely and indigenous innovation which is been practiced by the local people living in the deepest mountain forest (Figure 1).



**Figure 2. Showing the arrangement of stones as walls between the street roads made by the tribal people for their walking purpose.**

According to my observation I found there is an undividable relationship between the mountain rocks and their lively hood they use these rocks as their household structural item, perimeter and to control soil erosion. They build their houses in the mountain slopes; it is not easy to build a house in these sloppy areas so there should be a mitigative solution such as an enhanced catchment area would not be effective because the raveling lower slope would destabilize the upper slope. The specified solution to this problem is to build a stone retaining wall; figure 2 shows the locally built retaining wall between houses to support the lower slope, thus stabilizing the upper slope (Maerz *et al.*, 2023). We can compare these structures with gabions that are widely used for artistic decoration of highways, road stabilization and erosion control of slopes, structural purposes in highway architecture (Kuchkarovich *et al.*, 2023). These walls are typically not “designed” using engineering analysis, but rather are empirically designed which means the adaptation of



the surrounding environment to solve the problems accordingly by using the resources that are available locally which we call it as design thinking. Gabions is an inspiration by the indigenous technology of tribal's who are practicing since ages.



**Figure 3. Construction of water channel or canal from the higher altitude to lower altitude where the water flows from higher to lower region.**

In the same way the water harvesting canal constructed with the help of rocks is also an amazing piece of innovative work by them, we should definitely appreciate their design thinking and making use of the natural resources available in their habitat for constructing a water canal for agricultural purpose. They have nicely built a catchment canal where water flows from higher to lower region through gravity.



**Figure 4a. Indicates the use of bamboo sticks as natural ladder, the chopped branches are used as steps of the ladder.**



**Figure 4b. The wooden storage system that is using a tree as half part.**

After the mountain rocks, the bamboo is naturally available abundantly in this region. Earlier some biologists reported the use of bamboos in irrigation system as pipes in Arunachal Pradesh for water transportation (Taba *et al.*, 2021). Here in this study I found interesting that the bamboo is used as a ladder to climb a large tree for fruits harvesting. This is a theme of best out of waste for sustainable ecosystem. Some other dried



wood pieces to store the dried grass for cattle feed by nicely reducing the wood to build a storage cot by using the large tree for one side (Figure 4b).



**Figure 5. Showing the latest inventions or modern technology that correlates with the tribal indigenous innovations.**

To conclude with the author compares and correlates the indigenous innovations of the tribal's with the modern technology we use now. The technology or the latest technologies have inspirations or imitations of nature. Here from this study we can say that the ladder used to harvest fruits is the exact resembles or imitation of the ladder that is been used by the tribes since ages. The water harvesting canal constructed with rocks and the stone retaining wall is compared with gabions of modern day world (Figure 5 a, b & c) confirms the same.

### **Conclusion**

The study documented the design thinking and their indigenous innovative practices of tribal people of Hukumpeta mandal of Paderu region to solve the problems like soil erosion, water management, cropping system, farm implements, post-harvest storage technology etc.

### **Declarations**

**Acknowledgements:** This study was part to conduct SCD screening medical camp at Hukumpeta Mandal of ASR District financially supported by our Institute, G-Tri-Bal. The authors wish to thank the institute for supporting with necessary arrangements.

**Conflict of Interest:** The authors declare that they have no conflict of interests.

**Informed Consent:** Not applicable.

**Ethical Approval:** Not applicable.

**Author Contributions:** All authors contributed equally to this manuscript.

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**Citation:** Sravan Kumar, G., Ilahi Shaik and Hephzibah Rani Singh. 2023. Traditional Thinking and Indigenous Innovations of Paderu Tribes of Eastern Ghats of India for Sustainable Livelihood. *International Journal of Recent Innovations in Academic Research*, 7(8): 34-38.

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