

Traditional wisdom of Apatanis – a way to sustainable wet rice cultivation

The art of rice cultivation has descended from one generation to another in Apatani tribes. The practice based on traditional wisdom which has sustained over generations, has made rice production economically viable, ecologically safe and often energy efficient.

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Rice is one of the most important crops of the North Eastern Hill states. It occupies a distinct position and has well defined role in the food and nutritional security of tribal, backward and hilly areas. In North Eastern Region, the agricultural practices are diverse, ranging from shifting agricultural system, fallow system and secondary system such as wet rice cultivation. These traditional technologies developed over many generations are often energy efficient, providing high economic returns to the farmers.

Highly evolved agro-ecosystem in Apatani plateau

The Apatanis, are mainly concentrated on upper subansiri district of Arunachal Pradesh. They are one of the relatively advanced tribal societies in North Eastern Region of India. They have a highly developed valley cultivation of rice perfected over centuries. Apatani rice ecosystem is highly productive (40-45 q/ha), around 3-4 times the average yield of rice in the state. Use of low external inputs makes it not only economically viable but also sustainable.

Land preparation starts in the month of April and all the operations are done manually by indigenous wooden tools like *hilta* and *hitta*. The terraces in the main valley are quite broad, perfectly leveled and provided with strong bunds. These bunds are made up of soil and supported by bamboo at base, to prevent soil erosion due to runoff. Slope of land in the main valley ranges from 1-8%. Perfect leveling of plots and well managed irrigation cum drainage channels reduce the soil erosion considerably.

Farmers prefer local varieties viz., *Emo*, *Pyaping*, *Pyat*, *Mipya*, etc. having long duration i.e. 190 - 278 days. *Emo* variety covers 68%, *Pyaping* covers 15% and *Pyat* covers 10% of the total rice area. In Apatani village, people make effective use of their irrigated

land by planting early and late varieties of rice. Closer to the village where conditions are more favorable, late variety is preferred. Early variety is sown farther away from the village where disturbances by animals and poorer irrigation facilities could be major constraints. Thus, the rice plots closer to the village are nutritionally richer than those farther away. Fish culture done here synchronizes well with late ripening rice variety. Further, rice is supplemented with finger millets cultivated on elevated partition bunds between the rice plots.

The Apatanis do not use draught animal power for the cultivation of rice as well as other crops. There are many traditional practices used for minimizing the insect pests and diseases of crops. For example, *Gundhi* bug is managed by fixing several short wooden/bamboo stick randomly at certain intervals in the rice field. Dead frog/crabs or dry salted fish are placed on the top of each stick to attract the adult *Gundhi* bugs.

Productivity of rice varieties is high in *Emo* variety with 52 q/ha followed by *Pyaping* (40 q/ha) and *Pyat* (32 q/ha). Around 40 % of the rice produced is sold to the economically weaker neighbouring tribes such as Nishis and the hill Miris.

The Apatani village ecosystem is a good example of economic self sufficiency of a traditional agricultural society that produces ecologically sound sedentary agriculture in the North Eastern Hill Region of India. However, the agro-ecosystem of Apatanis could be improved through appropriate crop rotation and product utilization of the land during the winter season.

Though not scientifically validated, these traditional practices which have descended from one generation to another have been sustained through experience. There is a need to learn about additional indigenous practices so that these could be improved.

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