Indigenous Techniques Employed by Tribal Farmers in the Kalrayan Hills to Promote Environmental Sustainability

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Abstract: Sustainable development aims to produce goods to meet the current generation's needs while conserving resources to ensure future production. Western technologies and methods typically do not support sustainable development and often harm the environment. In contrast, indigenous knowledge systems are increasingly recognized for their significant contributions to sustainable development. This study, conducted in Kalrayan Hills, Villupuram District, Tamil Nadu, highlights the rich indigenous wisdom of tribal people. Ten common indigenous agricultural practices were identified. Data were collected using a well - structured and pre - tested interview schedule, and appropriate statistical tools were used for analysis. The study found that 60 to 90 percent of respondents regularly adopt these indigenous agricultural practices.

Keywords: Environmental sustainable development, Tribal and Indigenous knowledge

1. Introduction

Indigenous knowledge is specific to a particular culture or society, serving as the foundation for communication and decision - making within that community. This knowledge is dynamic, evolving through local creativity, innovation, and interactions with other systems. Indigenous knowledge systems encompass strategies and techniques developed by local people to adapt to socio - cultural and environmental changes. Tribes are often recognized for their rich indigenous knowledge. In Tamil Nadu, the tribal population is relatively small and dispersed throughout the state, primarily residing in hilly areas. The tribal population in Tamil Nadu is approximately 520, 000, representing 1.10 percent of the state's total population. The literacy rate among tribes is 20.45 percent, compared to the general state literacy rate of 46.79 percent. In the Kalrayan of Villupuram district, Tamil Nadu, agriculture is the primary occupation of the tribal farmers.

2. Research Methodology

As the main objective of this study was centered on the tribal people, it was planned to select a three blocks of Kalrayan Hills to have a unique representation. Accordingly, the three blocks viz., the Vellimalai, Melpacherry and Kariyalur, were selected for the study. The three blocks in Kalrayan Hills having large areas under paddy, tapioca, and sorghum cultivation were purposively selected. Twenty villages were selected based on their maximum area under paddy, tapioca and sorghum crops. Among the total villages selected, eight villages were selected for the study. A sample size of 120 respondents was considered based on proportionate random sampling.

3. Results and Discussion

S. No.	Indigenous agricultural practices	No. of Respondents	Per cent
1	Tying of polythene sheets to scare away the birds	102	85.00
2	Beating drums to scare away the birds	76	63.33
3	Displaying a crow's carcass to scare away the crows	82	68.33
4	Summer ploughing	92	76.67
5	Shallow ploughing after summer rain	94	78.33
6	Dusting of ash to control pests	91	75.83
7	Digging the field burrows to kill the rats	73	60.83
8	Sheep penning and cattle penning	106	83.33
9	Adding organic waste and FYM to the soil	115	95.83
10	Fumigation in closed containers for ripening of fruits	78	65.00

Table 1: Extent of Adoption of Indigenous Agricultural Practices, (n=120)

The extent of adoption of various common indigenous agricultural practices is presented in Table 1. The findings reveal that almost all the common Indigenous agricultural practices found to be adopted by three fourth of the respondents except four practices viz. 'beating drums to scare away the birds (63.33%) ', 'displaying a crows carcass to scare away the birds (68.33%) ', 'digging the field burrows to kill rats (60.83%) ' and 'fumigation in closed container for ripening (65%) were adopted by the

respondents respectively. Among the individual practices namely 'summer ploughing' was adopted by 76.67 of the respondents followed by 'tying of polythene sheets to scare away the birds' (85%), 'shallow ploughing after summer rain' (78.33%), 'dusting of ash to control pests' (75.83%), 'adding organic waste in FYM in the soil' (95.83%) and 'sheep penning and cattle penning' (83.33). It is because the summer ploughing helps in moisture conservation, eradication of weeds and control of soil erosion during off

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off - season. It involves only less expenditure and it controls the bird damage during the maturity stage of the various crops in the hilly tracts. Because of these benefits, most of the farmers have adopted these practices. The other two practices namely 'beating drums to scare away the birds', and 'displaying crow's carcass to scare away the birds' are common and well - established among tribal farmers. Most of the respondents opined that beating the drums and displaying a crow's carcass in their main field would result in scaring away the birds effectively and saving the crops during the matured grain stage and it is also a low - cost technology. 'Fumigation in a closed container for ripening of fruit' is being followed traditionally and it leads to earlier ripening of fruits.

4. Conclusion

The results vividly concluded that most of the respondents found a medium to high levels of adoption of indigenous agricultural practices. Hence, it is suggested that the extension workers utilize the services of the farmers with indigenous knowledge in educating the other farmers.

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