



Assessing the Knowledge Level of Tribal Farmers on Indigenous Agricultural Practices in Paddy

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ABSTRACT

In the recent decade, the indigenous practices are mainly focused on by the researcher because of the high rate of urban people causes many diseases by use of the high amount of fertilizers and pesticides in the cultivable land. These latest technologies affect people and land directly and indirectly. From the above-mentioned problem, the study was undertaken in kalrayan hills where the tribal people highly living in the Villupuram District. Thus, the study was selected in Kalrayan Hills of Villupuram District of Tamil Nadu. Among 50 revenue villages, twelve revenue village was selected where the tribal population accounted for high habitation. The paddy is the main crop being cultivated in the zone. The paper discussed, particularly about the indigenous practices which have been practiced by the respondents in paddy growing. The paper also discussed the paddy which has been highly focused on by the tribal farmers like seed germination and storage. The tribal farmers mainly followed the practices during the seed born diseases and storage practices. Always the tribal people used the special container called as kudhir to protect the pest and diseases with effectively in storage, in this context the indigenous knowledge was used by the tribal respondents with low cost with reliable and viable which was traditionally followed by their ancestors in their tribal paddy cultivable belt.

Keywords: *Indigenous knowledge, Paddy Cultivation, Assessing the knowledge level, Tribal farmers, Kalrayan Hills*

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agribusiness. In this way, the examination was directed to distinguish the knowledge of Indigenous learning in paddy cultivation among the tribals of kalrayan Hills.

1. INTRODUCTION

Indigenous learning gives the records of inborn individuals in a given network have created. It depends on understanding, frequently tried over an extensive stretch of utilization, adjusted to nearby culture and customs, dynamic changing, and lay accentuation on limiting danger instead of expanding benefits. Information, aptitude, and survival procedure of inborn ranchers working with low outer data sources have regularly disregarded to advance present-day agribusiness (Yasin, et al., 2020; Kanjekar, 2019; Yasin, et al., 2020; Qusti, et al., 2018). Ranchers based indigenous information has a logical level headed and extraordinary arrangement of importance for horticultural efficiency and supportability. Indigenous learning is observed to be socially attractive, financially reasonable, feasible, and includes the least hazardous and rustic ranchers and makers. The disappointment of present-day compound cultivating to convey success to agriculture and horticulture networks; increment in nuisance assault of harvests, deterioration of soil and water resources, the cost to human and creature wellbeing has faced more constraints. The researcher is to inspect whether indigenous practices are innate to the tribal's as ranchers by their traditional wisdom. Even though the current issues cause more problems in agricultural development in the tribal zone with cope up of current

2. METHODOLOGY

Based on the hypothesis and objectives the study was conducted to assess the knowledge level of tribal respondents in indigenous agricultural practices to run the study to give a clear picture of the locale. The study was conducted in kalrayan Hills of Villupuram district in Tamilnadu State. Kalrayan Hill was selected purposively because paddy is the main crop being cultivated in the area. The Kalrayan Hill consists of fifty revenue villages among the fifty revenue villages based on the highest tribal population twelve villages were selected from the entire hilly zone. In this study, 300 tribal respondents were selected by the proportionate random sampling method. The first-hand information was collected and send to the judge's opinion from various SAU scientists, professors, State Agricultural Department, Research Station, and KVK to prepared a well-structured interview schedule. The data were collected and analyzed by appropriate statistical tools and examined the results.

3. RESULTS AND DISCUSSION

The extent of the knowledge level of various indigenous agricultural practices in paddy are presented in Table

Table 1. Distribution of respondents according to their Knowledge level on Indigenous Agricultural Practices in Paddy (n=300)

S.No.	Indigenous Agricultural Practices	No. of Respondents	Percent
(A)	Indigenous Agricultural Practices in Nursery preparation		

1.	Soaking of paddy seeds in water at night for sprouting	248	82.67
2.	The Seed rate @20-25 Kg per acre	278	92.67
3.	Raising nursery in an isolated place in the field	156	52.00
4.	In the nursery area, no other crop is grown	123	41.00
5.	Application of green manure and FYM	293	97.67
6.	Planting 2-3 seedlings per hill	241	80.33
7.	Maintaining water during the flowering stage	232	77.33
(B)	Indigenous Agricultural Practices in Seed Treatment		
8.	Paddy seeds are treated with ash to control seed-borne diseases	285	95.00
9.	Neem oil 5ml with 1 litter water for treated the seeds before sowing	211	70.33
10.	Cow dung treated with seeds are controlled seed-borne diseases	274	91.33
(C)	Indigenous Agricultural Practices in Soil Fertility Management		
11.	Deep ploughing by thorn made wooden plough in the summer season	232	77.33
12.	Decomposed leaves, crop residues, and forest waste materials are decomposed in the field	253	84.33
13.	Forest residue and soil broadcast over the field during the rainy season to increase the soil fertility	295	98.33
(D)	Indigenous Agricultural Practices in Water Conservation and Irrigation		
14.	The water conservation is done by canals and groundwater for irrigation	296	98.67
15.	Farmers irrigate field with help of bucket made to the leather handle	256	85.33
(E)	Indigenous Agricultural Practices in Plant Protection (Entomological, Pathological and Animal aspects)		
16.	Application of neem oil and castor cake for control the termite before seed sowing	202	67.33
17.	Summer plough in the crop field for control of termite caterpillar and grasshopper	162	54.00
18.	A man-made structure known as (Marapachi doll) is used for supervision of crops and protection of animals	171	57.00
19.	Neem leaf and neem cake used to control insect pest in the earlier stage of crop grown	280	93.33
20.	Lantana camera leaf, fruit paste (50gm) + wild tulsli leaf (10 to 20gm) + 50 gm pepper and chili powder boiled with 5 liters of water for 1-2 hour and filter solution are used to control rice earhead bug	270	90.00
21.	The mixture of cow dung, urine, chilly and garlic with the ratio of 1.5:1.0:0.25:0.25 are mixed with 10-liter water and kept for three weeks for proper decomposition in a pit for controlling the pests	263	87.67
22.	Neem seed extract solution spray is efficient for controlling leaf minor insects	197	65.67
23.	Nerium + ipomoea plant leaf extract (2 kg), with 5 litter water boiled for 30 min and filtered solution is mixed with soap solution + jaggery use against leaf-eating insect of all crops	175	58.33
24.	Rust in "khajulaiyan" trees shows that during the month would be more chances of rust in paddy	155	51.67
25.	Bhelana (<i>Anacardium spp.</i>) stem twigs are being used in transplanting rice for protecting the Rice Gundhibug	252	84.00
26.	Maize cob without seed is pierced in standing crop filled to control bunky insect (<i>Nemphula depunctalis</i>) in a paddy field	263	87.67
27.	Farmers use the ash in the early morning to the paddy crop for aphid control	281	93.67
28.	Rice bran (2 kg) + kerosene (1 lit) mix made pellets kept in the field for protection from rice yellow stem borer	292	97.33
(F)	Indigenous Agricultural Practices in Detection of Underground Water		
29.	The availability of frog below the soil indicates sources of water	215	71.67
30.	Nearby Bargad (<i>Ficus benghalensis</i>) and khijda (<i>Prosopis cineraria</i>) trees. People believe that there will be sufficient groundwater available	206	68.67
31.	The plants like ber, babool and bamboo growth on 10 meters in north and west direction indicates water	226	75.33
32.	Water availability will found to be more near the termitarium	198	66.00
33.	Farmer believed that person walk with "V" shaped stick of Imali (<i>Tamarindus indica</i>) or Neem or Jamun attached with their abdomen horizontally at which spot it erects vertically assumed that to identify the groundwater	220	75.33

(G)	Indigenous Agricultural Practices in Weather Prediction		
34.	Farmers make forecast the intensity of rain by observing the direction of the wind that is East to west-less rain, West to east-more rain	268	89.33
35.	Clouds of dark brown color cause heavy rain for a fortnight	276	92.00
36.	Based on vast experience, farmers generally believe that if thick dark clouds are seen at the last Shukla paksha indicates heavy rain	280	93.33
37.	Termites and dragonfly near the ground is an indication of rain	276	92.00
38.	Extreme heat during June month is an indication of extreme rain in the rainy season	256	85.33
39.	If the moon is shining clear at night in Sawan month indicate no rain	282	94.00
40.	Flower drop in Tesa (<i>Butea monosperma</i>) Plant indicates the onset of rain	262	87.33
41.	Thick clouds in the day but cloudless night and blowing of wind from the east are an indication of no rain	255	85.00
42.	Wind blowing from the north-west direction is an indication of more rain	272	90.67
43.	Frog portends sound at night in Sawan month indicates no rain	275	91.67
44.	Four soil clods kept in all four directions for 24 hours then the moisture level of clods is observed that the direction of rain	202	67.33
45.	The forecasting of the intensity of rain is done by the size of the moon and sun appeared in the sky	226	75.33
46.	Dengari system: In this system farmers keep seven soil clods upon each other and on the top one small water-filled soil pot kept at the night of no moon day of June month and the next morning they observe these clods that how moisture by this they become able to forecast the rain	215	71.67
(H)	Indigenous Agricultural Practices in Postharvest		
47.	Sun drying of harvesting paddy for one or two days in the field itself	271	90.33
48.	Threshing by hitting the paddy bundles with wooden blocks	296	98.67
49.	Cattle threshing for removal of grains	293	97.67
50.	Winnowed the grains by a winnower called 'Muram'	292	98.00
51.	Parboiling of paddy	298	99.33
52.	Dehusking of paddy	292	97.33
53.	Separation of husk by the use of Muram	297	99.00
54.	Grinding of rice in a heavyweight wooden grinder called Urral	294	98.00
55.	Storing the seed with a small wide-mouthed earthen pot	294	98.00
56.	Storage of paddy grains in "Kudhir"	298	99.00
57.	The spread of Nochi and Neem leaves over the storage container to control rice moths	295	98.33
58.	Spraying of cow dung solution in paddy grains for protection of pest and diseases	297	99.00
59	The straw of methi (fenugreek) is kept in the bottom and top of the grains to be stored to protect insect and pest attack	196	66.00

It could be observed from the Table that out of 7 indigenous practices in nursery preparation in Paddy, five practices are found to be more than seventy-five percent of the respondents and they were viz., Application of green manure and FYM (97.67 percent), The seed rate @ 20-25 Kg per acre (92.67 percent), Soaking of paddy seeds in water for sprouting (82.67 percent), Planting 2-3 seedlings per hill (80.33 percent) and Maintaining water during flowering stage (77.33 percent) followed by Raising nursery in an isolated place in the field (52.00 percent) and In nursery area no other crop grow (41.00 percent). The finding is in accordance with the findings of Rizwana and Lyaqet (2011).

The above Table revealed that out of 3 indigenous practices in Seed Treatment in Paddy, two practices are found to be more than 90.00 percent of the respondents and they were viz., Paddy seeds are treated with ash to control seed-borne diseases (95.00 percent), Cow dung treated seeds are sown by the farmers to control seed-borne diseases (91.33 percent). The remaining one practice was nearer to three fourth of the respondents, Sowing of ash coated seed by tribal farmers and Neem oil (5ml + 1 litter water) treated

seeds are sown (70.33 percent) due to the lack of agricultural officers conduct. This finding is similar to the findings of Srinivas *et. al* (2018).

The Table also revealed that out of 3 indigenous practices in Soil Fertility Management in Paddy all practices are found to be more than three fourth of the respondents due to high traditional knowledge gained by their forefathers. This finding supported to the findings of Gosai Kuldip, *et.al.* (2011).

From the above Table, it is quite interesting to see the result in Water Conservation and Irrigation in Paddy all the practices found to be more than three fourth of the respondents due to the traditional cultivation practices followed by one generation to another generation. This finding is coined with the findings of Smith Mishra *et. al* (2012).

The Table observed that out of 13 indigenous practices in Plant Production in Paddy, Seven practices are found to be more than three fourth of the respondents and they were viz., Rice bran (2 kg) + kerosene (1 lit) mix it well and made pellets and these pellets kept in the field for protection from rice yellow stem borer (97.33

percent). Farmers use the ash on early morning to the paddy crop for control aphids (93.67 percent). Farmers use neem leaf, neem cake for control insect pest control in earlier stage of crop grown (93.33 per cent). The mixture of cow dung, urine, chilly and garlic with the ratio of 1.5:1.0:0.25:0.25 are mixed with 10 litter water and kept for three weeks for proper decomposition in a pit for control the pests (87.67 per cent), Maize cob without seed are pierced in standing crop filled to control bunky insect (*Nemphula depunctalis*) in paddy field (87.67 percent) and Bhelana (*Anacardium spp.*) stem twigs are being used the tribals in transplanting rice for protecting the incidence of Rice Gundhibug (84.00 per cent). The remaining result shows that nearly half propionates of the respondents knew the following practices like Application of neem oil and castor cake for control the termite before seed sowing (67.33 percent). Neem seed extract solution spray is efficient for controlling leaf miner insects (65.67 percent). Nerium + ipomoea plant leaf extract (2 kg), with 5-liter water boiled for 30 min and filtered solution is mixed with soap solution + jaggery use against leaf-eating insect of all crops (58.33 percent), A man-made structure known as (Marapachi doll) is used for supervision of crops as well as protection from animals (57.00 percent), Summer plough in the crop field for control of termite caterpillar and grasshopper (54.00 percent) and Rust in “khajulaiyan” trees shows that during the year there would be more chances of rust in paddy (51.67 percent). The finding is similar and followed by Vishwambhar prasad sati and P.Rinawma (2014).

As it could be observed from the above Table, out of 5 indigenous practices in Detection of Underground Water in Paddy two practices are found to be more than three fourth of the respondents and they were viz. Any point within 10 meters in north and west direction from small leaves plants like ber, babool and bamboo indicate sources of water (75.33 percent) and Farmer believed that person walk with “V” shaped stick of Imali (*Tamarindus indica*) or Neem or Jamun attached with their abdomen horizontally at which spot it erect vertically itself, It could be assumed that the most efficient tool to identify the groundwater (75.33 percent), The practices like detection of underground water in paddy. The other there practices are also nearest to the above two practices viz., Availability of frog below the soil indicates sources of water (71.67 percent), Nearby Bargad (*Ficus benghalensis*) and khijda (*Prosopis cineraria*) trees. The people believe that there will be sufficient groundwater available (68.67 percent). Water availability was found to be more near termitarium (66.00 percent). It is a belief that there will be sufficient groundwater available nearby Bargad (*Ficus benghalensis*) and khijda (*Prosopis cineraria*) trees (68.67 percent) and Water availability was found to be more near termitarium (66.00 percent). This might be due to the high experience followed by the tribal people on indigenous practices traditionally. This finding is similar and followed by Ashwani Kumar Sharma *et. al* (2015).

The Table resulted that out of 13 indigenous practices in Weather Prediction of Paddy. Eleven practices are found to be more than five fourth of the respondents and they were viz if moon is shining clear at night in Sawan month indicate no rain (94.00 per cent). Based on vast experience, farmers are generally imagining that if thick dark clouds are seen at the last shuklapaksh indicates heavy rain (93.33 per cent). Clouds of dark brown colour cause heavy rain for a fortnight (92.00 per cent). Termites and dragonfly flying near the ground is an indication of rain (92.00 per cent). Frog portends sound at night in sawan month indicates no rain (91.67 per cent). Wind blowing from north-west direction are indication of rain (90.67 per cent). Farmers make forecast the intensity of rain

by observing the direction of wind that is East to west-less rain, West to east-more rain (89.33 per cent). Flower drop in Tesa (*Butea monosperma*) Plant indicates the onset of rain (87.33 per cent). Extreme heat during June month is an indication of extreme rain in rainy season (85.33 per cent). Thick clouds in day but cloudless night and blowing of wind from east are indication of no rain (85.00 percent) and The forecasting of intensity of rain is done by size of moon and sun appeared in the sky (75.33 per cent) followed by Dengari system: In this system farmers keep seven soil clods upon each other and on the top one small water filled soil pot kept at the night of no moon day of June month and at the next morning they observe these clods that how moisture by this they become able to forecast the rain (71.67 per cent). Four soil clods kept in all the four direction for 24 hours then moisture level of clods is observed and based on, they decide the direction of rain (67.33 per cent). This finding is similar and followed by Chinlapianga, M. (2011).

It could be observed from the Table that out of 12 indigenous practices in Postharvest in Paddy all practices are found to be high-level knowledge of the respondents, due to the reason of high experience gained by their ancestors. This finding is coined and followed by Velavan (2013).

4. CONCLUSION

In the recent era, the study is most important for future generations to cope with the indigenous practices for traditional wisdom. In the study, the result vividly concluded that among 59 indigenous agriculture practices in paddy cultivation, the majority of the tribal farmers had a high level of knowledge in paddy cultivation. Most of the local paddy varieties are tolerant against disease and insect pests and help to reduce the expenditure of farming and increase the benefits of financial support for their livelihood. These farming practices also provide opportunities to manage the gene flows between different local varieties and to conserve the genes for further crop improvement. The result also showed that less than 50 percent of the respondent had a low level of knowledge due to the modernization of cultural practices spread over the area by the rich yield to generate the income in a short duration. Due to the above results, the respondents had to involve innovative technology, followed the paddy cultural practices.

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