

Original Research Article

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Rationality and Validity of ITKs on General Agriculture by Tribal Farmers in Telangana Region

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ABSTRACT

This study was conducted in Adilabad, Khammam and Warangal districts of Telangana. Ex post-facto research design was followed in this study, since different variables chosen for the study had already occurred. An effort was made to document the indigenous technology of tribal farmers. For testing the rationality of the ITKs, a questionnaire containing lists of ITKs was prepared and exposed to the scientists for judging their rationality and validity on a three point scale wherein, 3 is rational, 2 undecided and 1 is irrational. The mean score was calculated by summing the scores overall and divided by the number of judges for a given item and if it is more than two then the item was considered as rational and less than two was considered as irrational. For validity, the scientists were asked to find out the valid ITKs among rational ITKs which were validated, tested and verified on the basis of research. Out of 63 ITKs in general 41 ITKs (65.08%) were judged rational by the scientists and 22 ITKs (34.92%) were judged as not rational. Out of 41 rational ITKs of general agriculture, 36 ITKs were found valid by the scientists as the test verification was already completed for those ITKs like ploughing, levelling, pre-sowing season for land preparation and incorporation of FYM in the soil for improving soil fertility were judged as rational as well as valid by the scientists.

Keywords

Rationality,
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Introduction

Tribals in course of their close interactions with nature and natural resources have to make certain decisions to solve the problems they encounter in their day to day life while managing the land and environmental resources for survival. Compelling situations motivate them to generate knowledge out of necessity. Therefore, indigenous knowledge so developed is based on necessities, curiosity and observations of ethnic groups to mitigate the immediate situations. Tribals in the

districts are mostly below poverty line and alienated from development and basically survive on subsistent agriculture which is primitive in nature.

Tribals are generally steeped with a number of superstitious and primitive beliefs related to crop production and protection practices. Some of the beliefs play a vital role in deciding the sustainability of a technology to reduce the cost of cultivation and to propagate eco-friendly agriculture (Sundaramari and Ranganathan, 2003). According to Haverkort

(1995) ITK is the actual knowledge of a given population that reflects the experiences based on tradition and includes more recent experiences with modern techniques. ITKs are broad based, ecologically sound, environmentally safe, socially acceptable and economically resilient. Identifying, documenting and incorporating the indigenous knowledge systems into agriculture extension organizations is essential to achieve sustainable agriculture development (Rajasekharan, 1993). Hence, an attempt has been made in this study with the following specific objectives.

To identify and document the indigeneous agricultural practices of tribal farmers in Telangana region of Andhra Pradesh.

To ascertain the scientific rationality and validity of ITKs on General Agriculture of Tribal Farmers in Telangana.

This can create favourable attitude towards rational ITKs for quick dissemination of technology and increase the area under cultivation.

Materials and Methods

The study was conducted by adopting an ex-post facto research design method to study the rationality and validity of ITKs towards indigenous agricultural practices. The study was conducted in Adilabad, Khammam and Warangal districts of Telangana. From each district four mandals were selected, and from each mandal three villages were selected and from each village six farmers were selected for this study by following random sampling method. Thus the study represents 3 districts, 12 mandals, 36 villages and 216 respondents. For testing the rationality of the ITKs, questionnaires containing different lists of ITKs pertaining to Plant Protection and Post-harvest technology were prepared and exposed

to the scientists for judging their rationality and validity by giving three point scale viz., a score of 3 for rational, 2 for undecided and 1 for not rationale. The mean score was calculated by summing the overall scores and divided by the number of judges for a given item and if it was more than two then the item was considered as rational and less than two was considered as irrational. For validity, the scientist respondents were asked to find out the valid ITKs among rational ITKs which were validated, tested and verified on the basis of research in the State. Out of 63 ITKs in general 41 ITKs (65.08%) were judged rational by the scientists and 22 ITKs (34.92%) were judged as not rational.

Results and Discussion

It could be observed from the above Table 1 that out of 63 ITKs in general 41 ITKs (65.08%) were judged rational by the scientists and 22 ITKs (34.92%) were judged as not rational.

Out of 41 rational ITKs of general agriculture, 36 ITKs were found valid by the scientists as the test verification was already completed for those ITKs. ITKs which are recommended by the scientists in agriculture like ploughing, levelling, pre-sowing season for land preparation and incorporation of FYM in the soil for improving soil fertility were judged as rational as well as valid by the scientists.

The ITK No.1 was judged as rational and valid because during the season farmers were advised to incorporate FYM in the soil to improve soil fertility. Whereas ITK No.16 was found rational but validation of ITK was not taken up by the scientist till date.

The ITK No.17, 18 were found irrational because they don't have any scientific base and these are only beliefs and traditions of the tribal farmers.

The ITK No.7 & 10 were judged rational and valid by the scientists because *nullaka* (gaddi) weed which can be made into ropes, utilize for taking water from open wells, used for preparation of the cots, and wild *amla* is used for preparation of pickles for consumption.

The ITK No.15 & 20 were judged rational and valid because during storage tribals mix neem leaves and ash with the seeds to avoid attack of pests and diseases because neem leaves has insecticidal properties and cow dung ash and *Yerra thega* repels the insects, when attacked.

The ITK No.25 was judged rational and valid because when paddy straw is kept at certain height on bamboo sticks, the animals, insects and termites attack may not occur.

The ITK No.26, 27 and 29 indicated the religious customs of tribal's performed in agricultural operations and all those ITKs were found irrational because they have no scientific evidence behind them.

They are only beliefs and tradition of tribal people, strictly followed in their living.

The ITK No. 3, 4, 12, 14 and 28 were related to predictions about rainfall by the tribals and all the ITKs were judged irrational and not valid by the scientists. It is only their belief.

The ITK No. 6 was found rational and valid because rainfall during Telugu months viz. in *uttara* and *hasta* are very important to raise the winter crops viz., Sorghum, Bengalgram and Cotton.

The ITK No.30, 31, 33, 34 and 35 were judged rational and valid by the scientists. The possible cause behind the rationality of these ITKs was due to the appropriate mixed crop combination followed by the farmers and they are economically feasible, even if one crop fails they can get income from another crop.

The ITK No.21, 22, 23 and 24 were found rational and valid ITKs. The powdered redgram leaf is used as animal feed and the sticks are used as fuel, bottle guard as border crop around groundnut field where they get additional income.

The farmers are well aware of the harvesting indices of cow pea which is found rational and valid.

The ITK No.36 indicated the incorporation of FYM in the soil for improving soil fertility, soil microorganism and soil structure and was judged rightly as rational and valid by the scientists.

The ITK No. 37 incorporation of ash in the soil for improving fertility and reclamation of soil was found rational but not valid.

Ash contains small quantities calcium and sulphur which can improve fertility but reclamation of soil was not validated.

The ITK No. 59 was judged rational because during storage of food grains tribals use big drums made up of clay and coated with paste of cow dung to avoid attack of pests and diseases because cow dung has insecticidal properties which repels the insect.

The ITK No 38 and 39 were judged as rational and valid because deep ploughing after every shower during the pre-sowing season is necessary for the crop to conserve enough moisture remove weeds and ensure good crops.

The ITK No 41 and 42 were judged rational and valid because deep ploughing is practiced during summer to improve water holding capacity and conserve enough soil moisture.

Laying stone bands across the slope in the field helps in preventing soil erosion.

Table.1 Rationality and validity of ITKs on general agriculture

(n=32)

ITK No.	Indigenous Technical Knowledge (ITKs)	Mean score	Ratio-nality	Vali-dity
1.	During the season they incorporate FYM in the soil to improve soil fertility.	2.71	R	V
2.	During the month of April and May they plough the soil to expose to hot sun which kills soil borne seeds and weeds.	2.52	R	V
3.	Wind blowing from the north-west would cause rains.	1.09	IR	-
4.	Sorghum does not come up well if lightening occurs in this aridra, ponarvasu and phushya, rainfall.	1.14	IR	-
5.	If thunderbolt occurs on Aridra (June 21) it is good for most of the crops.	1.91	IR	-
6.	Rainfall in Uttara and Hasta are very important for winter crops viz., sorghum, bengalgram, cotton.	1.04	R	V
7.	Nulaka (gaddi) grown in the forest i.e. used for making ropes and sell in the local markets.	2.34	R	V
8.	Ippapuvu collected from the forest is used for extracting oil which is used for cooking purpose.	2.23	R	NV
9.	The boiled Ippapuvu is consumed by the tribal farmers for healthy purpose.	1.13	IR	-
10.	Wild Amla (<i>Emblica officinalis</i>) available from the forest is used for making pickles and direct consuming for healthy purpose.	2.13	R	V
11.	The liquid extracted from the Kodishaku is insecticidal when sprayed on infested paddy fields, the insects were killed.	0.84	IR	-
12.	Streaks of lightening in the East with rainbow in the west and high winds in the north would lead to rain.	0.78	IR	-
13.	As seen from the earth the moon and the Mirga star gaining together on the third day after full moon day would lead to sufficient rains.	0.98	IR	-
14.	Formation of a halo around the moon and the sun on frequent days does not cause wide spread rains	1.15	IR	-
15.	Sorghum seeds are stored in the gummis by mixing with ash and neem leaves sealed with cow dung to avoid insect attack.	1.49	R	V
16.	Kodishaku leaves are collected from the forest and incorporated in the field as green manure it also controls burrows and sucking pests.	2.52	R	NV
17.	The seeds chellaginjalulu and musti ginjallu available from the forest are crushed and the liquid extracted is used as an pesticide.	1.09	IR	-
18.	In drinking water they place chellaginjalulu which removes poison and cleans the water.	0.91	IR	-
19.	Musti ginjalulu powdered is incorporated in the soil, for improving soil fertility and removes alkalinity.	2.23	R	NV
20.	Yerra thega + cow dung ash + neem leaf mixed and used for storing green gram, black gram, cow pea and millets to avoid insect attack.	2.13	R	V
21.	The powdered Redgram leaf is used as feed for animals which is highly nutritious	2.65	R	V
22.	The sticks of Redgram is used as fuel as well as fencing	2.23	R	V
23.	Bottle gourd is cultivated as border crop around groundnut field to get additional income	2.18	R	V
24.	Pods of cow pea are sundried until they become brittle to make seed separation easily	2.13	R	V
25.	Paddy straw is stored at certain height on bamboos made platforms to avoid softening and animal feeding.	2.71	R	V
26.	In Amavasya they store the seeds in gummies with ash and neem leaves to avoid insect attack.	2.52	IR	NV
27.	Moktharam is a festival celebrated during the tholakari varsham for getting a good crop.	0.84	IR	-
28.	During the month of May and June early hours 3-4 am they observe the stars in the sky if they bend aside indicates the sign of rain.	1.09	IR	-
29.	The pulses, cereals and millets are kept in different bowls according to seasons with water. The seeds which immerse indicates the sign of rain at that season. If it does not immerse indicates it may not rain that season.	1.29	IR	-
30.	Jowar and black gram seeds are mixed and sown with help of bamboo behind the plough.	2.71	R	V
31.	The mixed seeds of jowar and blackgram intercropped with redgram 4:1 ratio which improves soil fertility and get additional income to the tribal farmers.	2.34	R	V

32.	Intercultural operations and timely weeding done with a bamboo stick consists of sharp bamboo teeth called Vakurupass (commonly called guntakas.)	2.13	R	V
33.	In mixed crop of Korra + Gamajonna Koma yields first followed by Gamajonna and finally redgram to get additional income.	2.03	R	V
34.	After harvesting of mixed crop maize + Sama Jonna they raise rice and korra in 4 : 1 was practiced, which acts as crop rotation and improves soil status.	2.41	R	V
35.	After harvesting of pedda jonna. Korra + greengram + blackgram were mixed and sown which serves for the family purpose and also improves nutrient status of the soil.	2.34	R	V
36.	Sheep penning and Cattle penning are practiced during summer for 2-3days in each field to improve soil fertility	2.31	R	V
37.	Tribals incorporate ash into the soil which belived to reclaim the soil gradually and improves fertility.	2.56	R	NV
38.	3-4 ploughings for cultivation of ragi and 2 ploughings of cultivation of Sama, Korra, ganti are sufficient.	2.71	R	V
39.	Ploughing after every shower during the pre sowing season to conserve enough moisture for the crop,remove weeds and ensure good crops.	2.75	R	V
40.	Application of sand from river beds during summer is practiced to increase the fertility of black soil.	2.95	R	V
41.	Deep ploughing is practiced during summer to improve water holding capacity of soil and conserve enough soil moisture.	2.21	R	V
42.	Laying stone bunds around the fields across the slope for preventing erosion and for conserving moisture is practiced.	2.47	R	V
43.	Application of hill soil (Konda mannu)is practiced to increase the water holding capacity of red soils.	2.71	IR	-
44.	Repeated ploughing is practiced to reduce weed population in dry lands.	2.13	R	-
45.	Profuse weed growth after rain is an indication for high soil fertility.	1.91	IR	-
46.	Ants change their eggs from one place to another which indicates initiation of rains.	1.74	IR	-
47.	It will rain if termite fly in large member in the air at10-20 fts height.	1.89	IR	-
48.	If the sky becomes dark near the horizone there will be instant rain.	1.96	IR	-
49.	Rain follows the frogs crocking	1.78	IR	-
50.	Even the seeds are of good quality, they must be sown in the right season only to get higher yields.	2.71	R	V
51.	Intercultural operations and timely weeding are essential for rainfed agriculture thus followed to possible extent	2.34	R	V
52.	Sesamum is grown as summer crop preceding to paddy which give additional income and returns.	2.13	R	V
53.	Collection and burning of insects is practiced by the farmers in initial stages of pest attack	2.03	R	V
54.	A man like effigy made up rice straw wearing a dress is used to keep at the centre of the field. The birds fly away because of human appearance in the field.	2.41	R	V
55.	Continuous drizzling encourages the spread of pest and disease.	2.34	R	V
56.	Farmers used to stay in the field during nights to ward of wild animals and farm women watches the field during day times	2.75	R	V
57.	<i>Neem</i> leaves are mixed with seeds and stored for long time which prevents pest attack.	2.56	R	V
58.	Farmers used to store paddy and pulses in earthen pots or gunny bags kept on planks suspended in the kitchen. They believe that the smoke emitted from <i>chulhas</i> during cooking prevents storage pest attack	2.45	R	V
59.	Storing food grains in big drums made up of clay and pasted with cow dung outside the drum.	2.41	R	V
60.	Harvested produce of millets in threshed by keeping the crop on the road and allowing the vehicles to pass on it to separate the grain is practiced.	1.14	IR	-
61.	Seed material stored in earthen post which is kept on the roof inside the house directly above the furnace in the kitchen. The smoke acts as repellent to the insects.	1.91	IR	NV
62.	Harvested turmeric is boiled in water and sun dried for 15-20 days and rubbed on soil to make it ready for sale.	2.73	R	V
63.	The graded turmeric is stored in gunny bags and kept on long benches to reduce storage pest attack.	2.52	R	V

The ITK No 51 was judged as rational and valid ITK because intercultural operations and timely weeding are essential for rainfed agriculture to conserve soil moisture, weed free plot, improved aeration and crop growth.

The ITK No 52 was judged rational and valid ITK, sesamum is grown as summer crop preceding to paddy to get additional income which is useful for the tribal farmers to invest on paddy crop and the scientists also recommending the same practice for profitable agriculture.

The ITK No 53 was judged as rational and valid i.e. collection and burning of insects by the farmers in initial stages to avoid the spread of attack.

The ITK No 54 and 56 were judged rational and valid ITKs because man like effigy made up of rice straw wearing a dress and farmers night stay in field helps to scare away birds and wild animals.

The ITK No 55 was judged as rational and valid ITK because continuous drizzling encourages the spread of pest and disease.

The ITK No 57 and 58 were judged rational and valid ITKs because neem leaves contain an alkaloid azadirachtin which act as insect

repellent. Hence mixing with seeds stored in earthen pots or gunny bags ensures prevention of pest attack.

The ITK No 62 and 63 were judged rational and valid because harvested turmeric is boiled for clean of mud as well as extraneous material and finally for curing. Turmeric is sundried for 15-20 days to make it ready for sale and stored in gunny bags and kept on long benches to reduce storage pest attack.

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