



Research Article

DOCUMENTATION AND RATIONALIZATION OF INDIGENOUS TECHNICAL KNOWLEDGE (ITK) PRACTICES IN VARAGU (*Paspalum scrobiculatum*)

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Abstract: ITK is systematic body of knowledge possessed by the local people through experiments, gathering of many experiences and ultimate understanding of environment in a given culture. Most of the ITKs, have scientific base. We are in a serious need of blending ITKs with modern technologies to maintain sustainable agriculture. This study focused on documenting ITKs in varagu and examining the rationality. A total of 11 ITKs were documented from 40 age old and experienced farmers. Documentation was done through personal interview and Focus Group Discussion with farmers. Rationality was analyzed through secondary sources and confirmed with scientists of specialized area.

Keywords: Indigenous Technical Knowledge, Documentation, Rationalization, Varugu, Madurai District

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Introduction

Agriculture is an important sector in India. More than 50 per cent of the India's population depend on agriculture for their livelihood. Agriculture contributes about 18 per cent to India's Gross Domestic Product. It is evident that adoption of technological practices has been increased. Though there are many technological development in increasing the production and productivity there are certain problems regarding agrochemicals and its toxicity. After the green revolution, the use of chemical fertilizers has been drastically increased. Though there was improvement in yield, it resulted in deposition of toxic chemical residues. It in turn resulted in the reduction of soil fertility. This insisted in looking back for organic agriculture. Evidences depict that one of the main reason for failure of conventional technologies was the exclusion of Indigenous Technical Knowledge. The improvement in life of farmers would be difficult without including the ITKs [1] there are so many literatures depicting the importance of ITKs. ITKs are local knowledge that is unique to a given culture or society. ITKs were developed through "trial and error method". These ITKs were transmitted from generation to generation through word of mouth which is closely connected with people's culture and values. ITKs are old but need not be outdated [2]. Since, it is transmitted orally there is no organized compilation of these valuable ITKs. The ITKs besides being cost effective, utilizes the locally available resources. It does not involve any chemical inputs. The ITKs are still in use among the farmers. In order to maintain sustainable agriculture we are in an urge to blend ITKs with modern technologies. So, it is inevitable to document the prevailing ITKs among the farmers. Most of the ITKs have scientific base. Steps have to be taken to organize the ITKs and identify the rationality. So, the rational ITKs can be transferred and popularized to other places having same agro climatic conditions. With these backdrops, the present paper focuses on documentation and identifying the rationality of ITKs in varagu.

Materials and Methods

Madurai district was purposively selected for the study because millet is the 3rd major crop. Among 13 blocks of Madurai district, Sedapatti and T. Kallupattiblocks

were purposively selected because these blocks were having highest area, production and productivity under millets. Two villages were selected from each block viz., Athipatti and Vitalpatti from Sedapatti block whereas Silaimalaipatti and Sandhaiyur from T. Kallupatti block. For documentation of ITKs 10 age old and experienced farmers were selected at random from each village. The documentation was done through personal interview and Focus Group Discussion with farmers. In the present study, rationality refers to the degree to which Indigenous Technical Knowledge practices can be explained or supported with the scientific reasons or established based on long time experience. Similarly, irrationality refers to the degree to which Indigenous Technical Knowledge practices cannot be established based on long time experience. For analyzing the rationality, the scientific reason behind each ITK practice was collected from secondary sources like newspapers, magazines, journals, internet etc. This was checked for conformity with scientists of various departments like seed technology, agronomy, plant breeding entomology and pathology.

Findings and Discussion

From the Table 1, it is inferred that ITK-1 was rational. It was preferred to use "Peruvavaru," which is a local variety because it resists drought. ITK- 2 a local variety "Chinavavaru" was preferred. This practice was also considered as rational. This variety was preferred among the farmers of the study area due to its taste which fetched good prize in market. Preferring a local variety "Karuvaragu" (ITK-3) was also found to be rational. In spite of being a long duration crop it was preferred because it was more adaptable to agro-climatic conditions of the study area. This was the reason for preferring this variety. ITK-4 was also considered to be rational. The possible reason behind sowing in Aadi/Avani is that the critical stage of water requirement coincides with North East monsoon. So, number of irrigations can be reduced. Another reason is that at maturity stage there will be no rain which avoids pest attack thereby reducing post-harvest losses. Adopting higher seed rate when sown in late Aadi or before monsoon which is ITK number 5 was considered irrational.

Table-1 Rationality of documented Indigenous Technical Knowledge (ITK) Practices

SN	Documented Indigenous Technical Knowledge (ITK) Practices	Rationality
I.	Seeds	
1.	A local variety named Peruvaragu which is a six month local variety crop with large size coarse grain is preferred. The Panicle of this variety looks like that of ragi.	R
2.	The local variety named Chinavaragu which is also a six month crop with small / fine type. The foliage is reddish in colour. This is also preferred.	R
3.	Another local variety viz., Karuvaragu which is a six months crop whose grain is black coloured is also preferred	R
II.	Sowing	
4.	Sown during Aadi/ Avani (aug/ sep). When rainfall is received late sowing will be done during purattasi month (late september).	R
5.	Farmers adopt higher seed rate if it is sown in late Adi or well before monsoon	IR
III.	Intercropping	
6.	Varagu is intercropped with red gram.	R
IV.	Harvesting	
7.	Harvesting is done when the grain turns black	IR
V.	Post-harvest	
8.	For Dehusking "thirugai" is used. In thirugai a process called "pattupoduthal" is done. Stones are pisted with mud after covering old gunny bag (or) cotton cloth and dried. During milling ash will be added over the pattu. After "thirugu" it will be hand pounded. This process is called "kolithal"	R
VI.	Storage for consumption (Grains)	
9.	Mixing varagu seeds with ash.	R
10.	Pungam leaves/ dried red chilli/ vasambu leaves/ neem leaves/ neem seeds/ turmeric will be used as per availability	R
11.	Placing curry leaves in grain storage structures	R

The reason stated by the farmers was that if the monsoon is received late, due to lack of moisture in the soil the seeds will be exposed outside which would be taken away by ants. So, higher seed rate is adopted. Since, it does not have scientific base it was considered to be irrational. ITK-6 which is intercropping varagu with red gram was established to be rational. The reason is that sowing pulses fixes soil nitrogen. It also reduces the weed growth as there is less space for the weeds to grow. Since, there was no scientific base for harvesting the grains when it turns black which is ITK number 7 was considered irrational. A structure made of stones called "thirugai" is used (ITK-8). This ITK was also considered rational. A process called "pattupoduthal" is carried out during dehusking. Pattupoduthal will give friction and unpolished whole grains will not come out from stones. Hand pounding is done in order to remove any husk left out and also for removing bran if any. ITK – 9 was also reasonable to mix varagu seeds with ash. Several insects suffered losses during storage e.g. rice weevil (*Sitophilus oryzae*), rodents (*Tater aindica*) and mite (*Oligonychus indicus*). Farmers strongly believed that ash application controlled these losses considerably up to an extent of 80%. Farmers using this technology stored the sorghum grains for six months without any storage pest problems.[3] While storing the grains in gunny bags, using pungam leaves/ dried red chilli/ vasambu leaves/ neem leaves/ neem seeds/ turmeric as per availability which is ITK – 10 was also found to be rational. This is because due to pungent odour the storage pest attack can be avoided. As mentioned above, curry leaves also have strong pungent odour which deters many insect pests. So, ITK-11 was also considered as rational.

Conclusion

Many of the ITKs are cost effective, locally available and has less side effects. But it is not used all over the country. Lack of documentation is one of the major constraints in adopting ITKs. Also, most of the ITKs have scientific base. ITKs are very good supplement to modern technologies. Hence, steps have to be taken to document, rationalize and refine the ITKs. The present documentation would be greatly useful for future projects.

Application of research: Indigenous Technical Knowledge (ITK) documentation, rationality analysis of Indigenous Technical Knowledge (ITK) of varagu in Madurai district.

Research Category: Indigenous Technical Knowledge (ITK)

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Sample Collection: Sedapatti and T. Kallupatti blocks of Madurai district.

Cultivar / Variety name: Varagu (*Paspalum scrobiculatum*)

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

Ethical Committee Approval Number: Nil

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