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## Indigenous Technological Knowledge (ITK) for management of field and horticultural pests

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## **INTRODUCTION**

Farmers are using bio-rationals like ITKs for insect pest management since time immemorial. This knowledge is based on many generations of insight gained through close within the natural and physical micro interaction environments (Rajasekaran et al., 1991 and Kolawole, 2001). ITKs are passed traditionally from one generation to the next generation without having authenticated written documents except a few. Many definitions have been proposed for ITK systems, but all of them are incomplete, because the concept is relatively new and still evolving. The ITKs are eco friendly and compatible to pest management practices (Deka et al., 2006). Mainly ITKs are based on cultural values of the community. Thus it consists of technologies developed by farmers over decades of adjusting farming systems to local agro climatic and social conditions. The methods of controlling pests were indigenous in nature since farming did not include the use of chemical pesticides or fertilizers. In this context, collection, compilation and scientific evaluation of ITKs are very important.

Some indigenous herbs are traditionally used by the tribes of LBVZ of Assam against various insect pests. But these herbs are not evaluated scientifically. The knowledge used to control insect pests passed from generation to generation without any records.

ROLE OF ITKS IN PEST AND DISEASE MANAGEMENT IN TRADITIONAL AGRICULTURE In agriculture, chemical pesticides are largely being used to control different pests and diseases of crops since 1800 with the introduction of arsenical insecticides and Bordeaux mixture fungicide. Now, there is overwhelming evidence that some of the pesticides do pose a potential risk to human and other life forms and unwanted side effects to the environment. No segment of the population is completely protected against exposure to pesticides. The world-wide deaths and chronic diseases due to pesticide poisoning is about 1 (one) million per year. These detrimental effects of chemical pesticides bring the urgent need of organic agriculture. Therefore, it is important to develop holistic methods of managing pests and diseases of agricultural crops to make it more eco-friendly, economically viable and socially acceptable for the farmers (Dutta et al., 2015).

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In recent years, the importance of organic agriculture has been recognized and emphasized in those areas especially which are rich in biodiversity such as north eastern region of India. North eastern region of India is heartland of indigenous groups of people and since hundreds of years many indigenous groups have been living in this part maintaining their originalities in every sphere of life. In Assam, tribal people survive on local knowledge base (Kalita et al., 2010).

Agricultural scientists believed that ITKs can play a significant role in solving issues related to modern agriculture and environment (Berkes et al., 2000). The scientific community accepted that the assessment of ITKs is an indispensable technology. It is recognized that the knowledge of farmers must be taken into account before any new technology is developed and disseminated. It is believed that these may help in pest control. But with times this practice has been lost in many regions of the state (Hazarika et al., 2009). Very few systematic works have been done in recent times in bringing the indigenous knowledge on important aspects of agriculture such as plant health management, soil health management etc. That is why here comes the importance of collection, Role of ITKs in pest management and disease in traditional agriculture.

Some of these are discussed below.

 Table 1. Indigenous technological knowledge (ITK) for pest management

Sr. No	ITKs	Purpose	Remarks
1	Application of bamboo perches in rice field	To control rice pests	Bird perch on the branches and act
			as predators of insects
2	Application of Germany bon( <i>Eupatorium audoratum</i> ) in rice field	To control rice pests	It acts as a repellent
3	Application of wood ash in vegetables	To control major pests of	It acts as a repellent
4	Hanging dead frog/ crabs in rice field	To control rice Gundhi bug	It acts as a an attractant
5	Night firing in rice field	To control rice pests	The fire acts as an attractant for
5		To control nee pests	Gundhi bugs
6	Application of pumelo peel in rice field	To control rice pests	Pumelo acts as a repellent for stem
-	during vegetative stage		borer
7	Application of goat excreta in rice field	To control rice pests	The goat excreta act as a repellent for insect pests
8	Use of mustard oil cake in potato field	To control red ant and mole	It acts as a repellent for red ant and
		cricket	mole cricket
9	Application of salt in coconut	To control trunk borer	Salt acts as a repellent
10	Application of neem leaf extract in rice field	To control rice field	Neem act as antifeedant
11	Use of fish water in citrus	To control trunk borer	The fish water attracts predatory red tree ants
12	Application of row cow dung in rice field	To control rice pests	Cow dung contents nitrogen which helps to revive insect pests damage
13	Smoking in cucurbits	To control fruit fly	It acts as a repellent for fruit flies
14	Application of milk in coconut	To control trunk borer	Milk attracts predatory red tree ants
15	Application of cow urine in citrus	To control citrus pests	It acts as repellent
16	Application of cut pieces of black colocasia in rice field	To control rice pests	It acts as repellent
17	Use of dry neem leaves in godown	To control stored grain pests	It acts as an antifeedant
18	Biting empty drum in field	To control bird pests	Due to sound produced, birds are frightened and driven away from the field
19	. Kerosene oil dipped rope running over standing crop in rice field	To control rice case worm	Kerosene acts as toxicant
20	Injection of kerosene/ diesel in citrus stem	To control trunk borer	It acts as toxicant
21	Application of tobacco leaf extract	To control rice pests	Alkaline nature of tobacco acts as antifeedant/repellent to pests
22	Mixing detergent solution with tobacco powder and spraying the mixture in vegetables	To control vegetables pests	It acts as antifeedant/repellent to pests
23	Straw is wrapped around the tree trunks	To prevent insects from crawling upwards	The straw acts as a barrier for crawling up the insects upwards
24	Keeping rotten lemon in rice field	To control rice pests	Act as attractant for pests
25	Wrapping gourd with a polythene	To control fruit flies	Polythene act as a barrier of fruit flies for laying egg

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## CONCLUSION

The present day context, where everybody is concerned with affects of chemicals towards health and environment, documentation and scientific validation of the ITKs can play a vital role in development of Agricultural Science. The major constraints on wider adaptability of ITKs are, lack of knowledge of farmers and farm women regarding processing of herbs and other locally available natural resources for preparation of indigenous pesticides, appropriate method of preparation and dose of application, lack of documentation and validation of ITKs etc. Adoption of ITK based crop protection measures as an alternative to pesticides might help in restoring the biodiversity of natural enemies. Hence, this type of documentation will surely serve as a ready reference for the agricultural scientists for further study on validation, effectiveness and dissemination of indigenous technologies and can lead to development of effective modules, more particularly the integrated pest and disease management modules for major agricultural crops. It is the need of the time to integrate the scientifically validated ITKs with the recommended package and practices of agricultural system for wider acceptability.

## REFERENCES

Berkes, F., Colding, J., and Folke, C. 2000. Rediscovery of traditional ecological knowledge as adaptive management, Ecol. Application. 10(5): 1251-1262.

- Deka, M.K., Bhuyan, M. and Hazarika, L.K. 2006. Traditional pest management practices of Assam. Indian J. Tradition. Knowledge. 5 (1): 75-78.
- Dutta, P., Kaman, P., Kaushik, H., and Boruah, S. 2015. Biotechnological and anotechnological approaches for better plant health management. Trends in Biosci. 8(22): 6051-6065
- Hazarika, LK., Kalita, S., Nath, RK., Malakar,
  D., Bora, LC., and Bora, BC. 2009.
  Traditional rice pest management practices in Assam. In: Indigenous knowledge systems and common people's right (Ed. D. Das Gupta).
  pp.119-140.
- Kalita, B., Dutta, A., Bhagwati, SK., and Sharma, A. 2010. Indigenous technical knowledge for fish harvesting in Karbi – Anglong district of Assam. Indian J. Tradiiton. Knowledge. 9(2): 252-255.
- Kolawole, O.D. 2001. Local knowledge utilization and sustainable rural development in the 21st century. Indigenous Knowledge Develop. Monitor. 9(3): 13-15.
- Rajasekaran, B.D., Warren, D.M. and Babu, S.C.
  1991. Indigenous natural resource management systems for sustainable agriculture development A global perspective. J. Inter. Develop. 3(4): 387-401.