



E-ISSN: 2320-7078

P-ISSN: 2349-6800

www.entomoljournal.com

JEZS 2021; 9(2): 600-602

© 2021 JEZS

Received: 13-01-2021

Accepted: 15-02-2021

Abhilasa Kousik Borthakur

Krishi Vigyan Kendra, Darrang,
Assam Agricultural University,
Darrang, Assam, India

Vidyut Kumar Saikia

Regional Rainfed Lowland Rice
Research Station, Hajo, Assam,
India

Banasmita Barman

Krishi Vigyan Kendra, Darrang,
Assam Agricultural University,
Darrang, Assam, India

Ridip Ranjan Saharia

Krishi Vigyan Kendra, Darrang,
Assam Agricultural University,
Darrang, Assam, India

Abdul Hafiz

Krishi Vigyan Kendra, Darrang,
Assam Agricultural University,
Darrang, Assam, India

Corresponding Author:

Abhilasa Kousik Borthakur

Krishi Vigyan Kendra, Darrang,
Assam Agricultural University,
Darrang, Assam, India

Indigenous technical knowledge practiced by the bodo farmers of Darrang district of Assam

Abhilasa Kousik Borthakur, Vidyut Kumar Saikia, Banasmita Barman, Ridip Ranjan Saharia and Abdul Hafiz

Abstract

Indigenous Technical Knowledge (ITK) is a part and parcel of communities across the world. From time immemorial people have learnt to cope up with their trials and tribulations through the ITKs which are readily available and sustainable. The Bodo tribe of Assam has their own set of traditional knowledge which is in vogue till the present date. The present investigation was conducted to document the ITKs practiced by the Bodo people of two villages of Darrang district of Assam. Altogether 30 ITKs were identified by using PRA, group discussion and interview method. These ITKs may serve as a base for blending with modern technologies thereby keeping intact the ethnic authenticity of the tribal people who are otherwise reluctant to modern technologies.

Keywords: bodo, indigenous technical knowledge, antifeedant, predators

Introduction

It is said that necessity is the mother of invention. Since time immemorial farmers have developed sustainable technical knowledge to cope up with situations and adversities. These indigenous knowledge so developed by various ethnic groups are based on necessities, experimentation, curiosity and observation to mitigate the hurdles. This knowledge plays imperative role in many grassroots innovations and embedded in a community's way of life as means of survival [1]. Such knowledge are collectively owned, adapted and are disseminated in a non formal means from one generation to the next. A significant component of the indigenous knowledge base is Indigenous Technical Knowledge or ITK. Location and culture specific, cost effective locally manageable and sustainable, judicious application of plant and animals products either in raw or simple processed forms are important components of indigenous knowledge system [3]. According to the UNESCO, local or indigenous knowledge refers to the cumulative and complex bodies of knowledge, know-how practices and representations that are maintained and developed by local communities, who have long histories of interaction with the natural environment. 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 [9]. Assam is a state comprising of different tribes and communities sharing a rich cultural heritage. The Bodo tribe is one of the important indigenous tribe of Assam and also the largest ethno linguistic group of the state. They are considered to be the prehistoric settlers in the state. Bodos are basically an agrarian community, and their economy rely basically on the land and agricultural products [2]. The tribe has its own set of unique traditional knowledge and technology base. Keeping this in view an effort was made to understand their traditional knowledge so that the ITK's relevant to agriculture and allied activities could be documented.

Materials and Methods

The study was conducted in two villages of Darrang district viz. Bamunjar and Akalibari, having majority of Bodo population. From each village 70 numbers of Bodo farmers in the age groups of 25-60 years were selected randomly forming a sample size of 140 respondents. Relevant data for the study were collected by using participatory rural appraisal (PRA), group discussion and interview which included a semi structured schedule with the farmer's group of the selected villages. The Indigenous technical knowledge borne by the farmers were identified from their traditional practices.

The relevant data were documented and all the information collected through PRA were analyzed.

Results and Discussion

From the present investigation, it has been found that the knowledge on traditional agricultural practices are known to a majority of the farmers belonging to the age group of 45-50 years. The rationale behind the use of ITKs gathered during investigation was purely based on the respondent's opinion and no attempt has been made to manipulate it with scientific view points of the researcher. While most of the ITKs are being practiced by farmers a few of these has lost their existence due to mechanization and easy access to inputs. Altogether 30 nos. of ITK were identified and have been mentioned in table 1. It has been found that 25 ITKs belong to pest management, 2 ITK for animal husbandry, 1 ITK is related to soil fertility and 2 ITK is related to crop production. In order to figure out the science behind the ITK, a remark has been presented for each of the ITKs in table 1. The remarks are based on literature and provide an insight on the

scientific cause behind the ITK. Deka *et al.* (2017) ^[5] mentioned that removing the leaf tips of the rice seedlings destroys the egg masses of stem borer. The findings are in conformity to Majumder (2013) ^[6], Talukder *et al.* (2012) ^[8]. Deka *et al.* (2006) ^[4] mentioned that red tree ant being a predator it helps to reduce citrus pests. The insect repellent properties of Pumello peels are also similar to the findings of Deka *et al.* (2006) ^[4] and Majumder (2003) ^[6]. Neem is an important component of the ITKs related to pest management. Azadirachtin present in neem act as an antifeedant and helps to reduce insect infestation^[4]. Predatory birds rest on the banana pseudostem planted at the middle of the rice field and helps to reduce the infestation of gundhi bug and rice hispa^[8]. Mustard Oil Cake is used in potato cultivation and applied to the soil by the Bodo farmers as a pest management strategy in the present study. It acts as a repellent for red ants and mole cricket in potato fields ^[7]. However no relevant literature is available about "amaw"- a mixture of rice powder, jackfruit leaves and sugarcane juice used to make local wine and fed to dairy cattle to treat diarrhea.

Table 1: Indigenous Technical Knowledge practiced by the Bodo farmers of Darrang district

| Sl.no | ITK | Rationale | Remarks |
|-------|--|--|---|
| 1. | Dead frogs and crabs are tied with bamboo sticks and placed randomly in the field to attract <i>Gundhi</i> bug in rice field. | Used to attract insect pest in rice cultivation | Insects are attracted with the smell of crabs and frogs, thereby rice is protected from the gundhi bug infestation |
| 2 | Skin of pumello fruits (<i>Citrus grandis</i>) are cut into small pieces and are fixed on bamboo sticks, which are inserted in paddy field | To control insects | Pumello skin acts as insect repellent ^[4, 6] |
| 3 | A paste made from tulsi, turmeric and neem is made and applied to dairy animals | To treat skin diseases | Turmeric, neem and tulsi has antibacterial properties |
| 4 | Application of bamboo perches in rice field | To control rice pests | Birds act as predators of insects during the early stages of growth ^[5] |
| 5 | Application of Germany bon(<i>Eupatorium audoratum</i>) and Posotia leaves in rice field | To control rice pests | It acts as a insect repellent |
| 6 | Application of rice husk ash in vegetable cultivation | To control major pests of vegetables | It acts as a physical barrier |
| 7 | Use of mustard oil cake in potato field | To control red ant and mole cricket | It acts as a repellent for red ant and mole Cricket ^[7] |
| 8 | Application of neem leaf extract in rice field | To control insect pest of rice field | Azadirachtin in Neem act as antifeedant ^[4] |
| 9 | Use of fish water in citrus | To control trunk borer | The fish water attracts predatory red tree Ants thereby helps to control trunk borer |
| 10 | Application of raw cow dung in rice field | To control rice pests and diseases | Cow dung contains nitrogen which helps to revive insect pests damage |
| 11. | Application of long hair strands of women in young coconut plant crown | To evade the infestation of Rhinoceros beetle | Tangled hair strands hinders the movement of beetle |
| 12 | Stripping of the main stem of Cucurbitaceous plants | To induce flowering | Stripping hampers the uptake of nitrogen from the soil, thereby increasing the amount of carbohydrate to induce flowering |
| 13 | Clipping of tips of rice seedlings | Usually done for tall seedlings | Rice stem borer lays eggs on the tips of rice seedlings, clipping them off reduces their population ^[5, 6, 8] |
| 14 | Lighting of lamps during 'Kati bihu' | Offered in the form of prayers | Insects of rice field are attracted by light and gets trapped |
| 15 | Wrapping coconut stem with a wreath made with rice straw called "magh bandha" | To restrict the movement of insect and squirrels | Acts as barrier |
| 16 | A slurry made by mixing neem leaves with mud and cowdung is used to plaster the walls of storage bin 'Duli' | To reduce insect infestation | Neem acts as antifeedant and reduces insect infestation ^[4] |
| 17 | Treating potato tubers with cow urine for storage and shade dried | To reduce insect infestation during storage | Cow urine acts a repellent |
| 18 | Smoking below the mango plants at the time of flowering | To control insect pest of Mango | Smoke acts as a repellent to stone weevil of Mango |
| 19 | Placing red tree ant nest on citrus plant | Control insect pest of rice | Red tree ant is a pest of citrus plant ^[4] |
| 20 | Application of cut pieces of black colocasia in rice field | To control rice pests | It acts as repellent |

| | | | |
|----|---|--|---|
| 21 | Feeding "amaw"- a mixture of rice powder, jackfruit leaves and sugarcane juice used to make local wine is fed to dairy cattle | To treat cattle suffering from diarrhea | - |
| 22 | Empty drum or utensils are beaten in the field after sowing seeds | To chase away birds from eating the seeds | Birds are driven away from the field |
| 23 | Wrapping banana with a perforated bag | To control the infestation of fruit scaring beetle | The bag acts as a barrier for the insect |
| 24 | Bagging gourds with a polythene | To control fruit flies | Polythene act as a barrier of fruit flies for laying egg |
| 25 | Manure prepared by using rice husk with poultry manure and cowdung in ginger ,turmeric and vegetable crops | Maintenance of fertility status of soil | The manure is rich in soil nutrient content |
| 26 | Application of salt and turmeric mixture in coconut crown | Control of Rhinoceros beetle and termite in coconut | Turmeic acts as repellent and antifeedant |
| 27 | Dhatura leaves and tobacco leaves soaked in water and used in pest management of vegetable crops | To repel insect pest of vegetables and | The mixture acts as antifeedant against insects |
| 28 | Application of lime on coconut and other plantation trees | To prevent termites infestation | Lime reduces the insect infestation |
| 29 | Tin sheets are wrapped to the coconut trunk. | To prevent the squirrels from reaching the crown by climbing the palm from ground surface. | Tin sheets are slippery and prevents the movement of squirrels. |
| 30 | Offerings to deity on the day of transplanting paddy (<i>Gusi ruwa</i>). Also a banana tree is planted at the middle of the field | For better crop production and harvest | Banana tree acts as bird perch ^[8] |

Conclusions

India is a country with ethno cultural diversity, each of them having unique traditional knowledge. Many of these knowledge and technologies are backed by scientific reasons and have provided the indigenous communities with comfort and self-sufficiency. The ITK can form a knowledge base for researchers and development professionals in planning their research strategy and experimental procedure in order to generate more eco-friendly, viable and socially acceptable technologies for the farmers blending them with modern technologies. At a time when the agrarian community is taking a step towards organic agriculture, it becomes very essential to preserve and validate these ITK's as most of these are eco friendly and sustainable.

References

- Borthakur A, Singh P. Indigenous technical knowledge (ITK) and their role in sustainable grassroots innovations: An illustration in Indian context. In Proceedings of International Conference on Innovation & Research in Technology for Sustainable Development (ICIRT 2012) 2012, 38.
- Brahma, Sekhar. Religion of the Boros and their Socio-Cultural Transition, A Historical Perspective, DVS Publishers, Guwahati-781001 2006.
- Chhetry GKN, Belbahri L. Indigenous pest and disease management practices in traditional farming systems in north east India-A review. Journal of Plant Breeding Crop Science 2009;1(3):28-38
- Deka MK, Bhuyan M, Hazarika LK. Traditional pest management practices of Assam. Indian Journal of Traditional Knowledge. 2006;5(1):75-78.
- Deka S, Nath RK, Sehgal M, Ahuja DB, Kakoti RK, Barbora AC. Indigenous Technological Knowledge (ITK) and Practices in Pest Management of Assam. Annual Plant Protection. Science 2017;25(1):119-125.
- Majumder D, Deka SN, Pujari D, Das P.K. Traditional Knowledge adopted by the farmers for management of rice pests in North bank plain zone of Assam. Indian Journal of Traditional Knowledge 2013;12(4):725-729.
- Nath RK, Ahmed P, Sarmah AC. Indigenous Technological Knowledge (ITK) for pest management in Tinsukia district of Assam. Indian J. Traditional Knowledge 2017;12(1):1-3.
- Talukdar RK, Barman S, Hussain A. Documentation and perceived rationale of Indigenous Technical Knowledge (ITK) utilized in Boro rice cultivation by farmers of Kamrup District of Assam. J. Acad. Indus. Res 2012;1(7):412-418.
- Venkata Ramaiah P, Rama Raju KV. Blending of Indigenous Technologies with judicious use of external inputs for sustainable agriculture paper Peoples Wisdom. Gosh, S.N(ed.). National Council of Development Communication, Sundarpur, Varanasi 2004, 249-253.