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## Indigenous Technical Knowledge (ITK) in paddy cultivation

Indigenous Technical Knowledge (ITK) is the actual knowledge of a given population that reflects the experiences based on tradition and includes more recent experiences with modern technologies. There is no systematic record to describe what they are, what they do and how they do what they do, how they can be changed, their operations, their boundaries and their applications. Hence, there is immense pressure on the people of India to collect, preserve, validate and adopt ITKs so as to reduce dependence on external inputs, to reduce the cost of cultivation and to propagate eco-friendly agriculture. Indigenous Technical Knowledge is the local knowledge – knowledge that is unique to a given culture or society.

### ITKs in paddy cultivation

Rice is an important crop in India occupying 43 million hectares of land representing various ecosystems. The crop is cultivated 2 meters below the sea level in Kuttanadu region of Kerala and 2500 meter above sea level in Jammu Kashmir. This type of geographical and wide climatic variation provided the farmers ideal situations to develop their own indigenous practices in rice cultivation. Since rice has many types of varieties, cultivation practices, soil types, the management practices differ from place to place. This has provided ample scope for the use of ITKs evolved over generations. Some of the indigenous technical knowledge followed by the rice farmers are listed below.

1. Ash is dusted on the germinated paddy nursery before the occurrence of heavy rain. This practice prevents toppling of seedlings and also accumulation of seedlings on one side.
2. For early sprouting of paddy seeds, the seeds are soaked for 24 hours and filled in copper vessel called Anda, whose mouth is covered with paddy straw and bamboo sticks kept in criss-cross manner. Then the vessel is kept upside down in a room corner for 24 hours. The next day all seeds are sprouted.
3. In Andhra Pradesh the transplanting is done along with wind direction and not against the wind direction.
4. To prevent lodging in rice crop at maturity in water logging conditions. The upper portion of the rice plants is cut with the help of sickle. After 2 months of transplanting Excess growth of rice plant is checked due to pruning. Lower part of the plant becomes strong.
5. Economically poor farmers first harvest early paddy by deheading only the panicles and leaving the plant. If there is good late rain they get second crop from the tillers, which had not flowered earlier.
6. Ash of rice husk and cow dung cake is used in seedbeds to raise seedlings of rice by the farmers in most of the states. Ash provides a thin cover over the sown seeds and thus protects them from attack on insect pests, damage caused by birds and ants.
7. Common salt is dissolved in water and sprayed in rice fields for controlling major weeds.
8. Clipping off the tip of rice seedlings before transplanting is practiced all over the state of Assam; to ease transplantation; to facilitate uniform growth and to remove insect egg masses and other major insect pests present on the leaf tips is an alternative for chemical pesticides application.
9. Chopped pieces of colocasia and sometimes chopped peels of Citrus grandis are spread in rice field to drive away the insect pests. In some places Calotrophis gigntea in grown on bunds of paddy fields to check the insect pests.
10. Fixing of dead crabs, frogs or even pieces of jackfruit (Artocarpus heterophyllas) to bamboo sticks in rice fields and Rope dipped in kerosene oil is drawn over the standing rice crop to check insect pest.
11. Leaves and seeds of custard apple contain chemicals having insecticidal properties. Insect/pests of paddy crop are controlled by broadcasting leaves or seeds of custard apple. The smell of leaves act as repellent, whereas, leaves are toxic in nature to plant parasites. Leaves are used raw, whereas

- seeds are processed and used as powder.
12. Ten kilograms of fresh cow dung is mixed with 1½ liters of kerosene and the mixture is made into small balls and allowed to dry upto 75% moisture content. Then the balls are kept near the burrows at 10 feet interval. The smell emitting from the balls acts as a repellent and drives away the rats from rice fields.
13. Roasted groundnut powder and mixed with little amount of jaggery and cement is used to kill the rats. This mixture is kept on the bunds of rice fields. Few hours after consuming it, the cement gets solidified like concrete and affects the digestive system of the rats which ultimately leads to their death.
14. Fumigating rat burrows with Milagu (Pepper Corns: Piper nigrum L) and Tip pili (Jawa Pepper Corn: Piper longum) will instantly kill the rats in rice fields.
15. A solution is made up of extract of 1 kg of garlic, 200 g tobacco leaves and 200 g of washing powder dissolved in 200 liters water is sprayed on the affected crop of paddy. One spray controls the insect pest by 80 percent.
16. Some farmers mix cinnamon leaves and wood ash with paddy and store the grain in bags.
17. Red pepper (Capsicum Sp) is placed in bags of rice to protect the grains from stored grain pests. Eucalyptus wood ash is added with paddy to protect seeds during storage.

### Conclusion:

The agricultural development process interacts with indigenous technical knowledge. To foster rapid transfer of technology related to rice cultivation, a sound understanding of indigenous technical knowledge is needed. ITK in rice farming is important for reducing the cost of cultivation, reducing the pollution and also safeguarding the natural resource base.

# Nursery raising and management for quality seedling production

**V**egetables play a vital role in the human nutrition as it is rich source of vitamins, carbohydrates, proteins and minerals. Income from vegetables per unit area an time is much higher than any other crop. Being short duration, they fit in the cropping system very well and availability of many of them is round the year. Therefore, there is a great need to increase the area, production and productivity of vegetables. Healthy seedlings are utmost important for raising good crops for higher production. The seedlings must be healthy and disease free. Healthy and disease free seedlings of different vegetables can be raised by adopting proper nursery raising techniques. Using transplant reduces the amount of time the plant is in the field and may increase uniformity of the crop and harvest as compared to fields that were established by direct seeding. Under normal weather condition, it is possible to raise vegetable seedlings in open with ordinary care. But in some crops in certain season, the nursery is exposed to adverse

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weather which results in heavy mortality of seedlings. In Nagaland there heavy rain commencing from March- April and continuing upto October-November, raising the seedlings under open condition becomes very arduous task. Therefore, raising seedlings under under rain proof shade such as low-cost poly house, poly tunnel is very much essential. General recommendation of nursery area for vegetables is 3m length, 1m wide, and 15cm raised above the ground level.

**Requirements for a healthy nursery:**

1. Plough the nursery bed thoroughly
2. The beds should be covered with a layer of farm yard manure and sand mixed in equal proportion. Farmyard manure should be used @ of 4kg/m<sup>2</sup>.
3. Treat the seeds with *Trichoderma viridae* @ 4 g/kg of seed or 1g/kg of seed of *Pseudomonas fluorescens* culture to protect from root rot/damping off.
4. Solarisation is done by covering the bed with plastic or polythene sheet and sealing the sides so that the heat kills the microbes.
5. After a gap of 5-6 days, seeds are sown thinly in rows 10cm apart and 0.5cm deep.
6. After sowing, the beds should be irrigated and covered with paddy straw.
7. After seed germination remove the dry grass or straw. Spray 4 % neem seed kernel extract (NSKE) for insect pest infestation.
8. Stop watering the nursery beds 3-4 days before the date of transplanting so that the plants harden.
9. Select only healthy transplants for plating. Planting should be done in the afternoon to evening. Prior transplanting, the uprooted seedlings should be dipped in solution of mancozeb(0.25%) and Bavistin(0.05%)
10. Plant the seedlings properly in the bed and water them daily till they established well.

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Members of Krishi Vigyan Kendra, Phek planting tree saplings on World Earth Day.

Krishi Vigyan Kendra Porba Phek, on April 22nd celebrated Earth Day at Upper Khomi village in support for environmental protection.

A tree plantation programme was organized to commemorate this very important day. The dwindling forest cover and consequent

climate change will have far-reaching impact on human, animal and plant life in the future earth. Villagers were motivated to plant trees to

the keep the earth green. Sapling of Khaboo (Ficus hookeri) and Khasi Man-darin were planted on the occasion.

The programme was supported by Rainforestmaker- a voluntary organization with a mission to grow back the Earth's rainforests. Organic Cotton T-Shirts were distributed to the volunteers.

The programme was led by KVK officials Dr Deboiyoti Borkotoky Subject Matter Specialist (Animal Sc.) and Mrs Hannah K. Asangla, Subject Matter Specialist (Agronomy). The day long programme ended with a thankful note from Pastor Husapa for volunteering for this noble endeavour and pledged to keep the village green through replanting trees and awareness. He also acknowledged and express gratitude to Programme Coordinator KVK-Phek and Director NRCM for celebrating the event in the Village.

## Farmer's programme held at Zhavame village



Vermicomposting demonstration at the farmer's training programme held by ATMA-Phek at Zhavame village on April 11.

**DIMAPUR, APRIL 16 (MExN):** ATMA under Phek district organized a one-day farmer's programme on April 11 at Zhavame village under Pfu-tero block. A press note by the DHO & PD, ATMA-Phek informed that the programme included demonstrations, field day and a 'farmer-scientist interaction' covering 'agri and allied subjects.'

The programme also included the formation of SHGs and the inauguration of a cabbage farm school by Dr Moa Walling, DHO & PD, ATMA-Phek. The note stated that Zhavame village nestled in the hills of Phek district holds the title of "vegetable village" as it is a major producer and supplier of cabbage and potato in the state. Demonstrations were also conducted

on vermicomposting, cultivation practices of cabbage and potato, while a field day on SRI (System of Rice Intensification) and maize was conducted side by side.

During the interaction session between the farmers and the scientists, short films on cultivation practices of cool season crops as well as livestock farming and fish farming were projected to introduce the farmers to innovative techniques of farming. This was followed by an interaction and discussion. The resource persons for the programme included Dr Moa Walling, DHO & PD, ATMA-Phek; Esther, SMS-KVK; Rinku, SMS-KVK; Lisa, SMS-KVK; Hannah, SMS-KVK and Dr Debojyoti, SMS-KVK. There was also active participation of over 80 farmers throughout the programme.