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Study of ITKs for Sustainable Agriculture in Tydasingh Village, Odisha

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Abstract

Indigenous technical knowledge (ITK) is localised traditional knowledge used by the local community to address specific problems while taking into account regional circumstances. It is passed down from generation to generation. Indigenous technological knowledge encourages sustainability with its attitude towards resource protection. Another essential necessity for sustainable agriculture is the preservation of agricultural resources for future generations. Chemical risks rob the majority of agricultural resources of their value. Indigenous technological knowledge primarily utilizes the use of ancient physics, chemistry, and biology to improve farming methods without chemical hazards. The overall socio-economic development of the communities can be greatly influenced by these traditional knowledge and technology. Indigenous Technical Knowledge (ITK) of many cultures, many of which are on the verge of extinction, has been identified to be in urgent need of documentation and protection. A suitable fusion of indigenous knowledge practices and modern understanding is lacking. The possibility for society to profit greatly from a proper integration of old and contemporary knowledge and technological systems. The agricultural sustainability, as well as the security of food and nutrition, may be maintained by these ITKs.

Key words: ITK, Sustainable Agriculture, Development.

Introduction:

Indigenous Technical Knowledge (ITK) is understood to be the knowledge gained over time and passed down orally from generation to generation. Local or indigenous knowledge refers to the complex and cumulative bodies of information that local communities-who have a long history of communicating with the environment-maintain and produce. Such information is held

collectively, has been adapted through many generations, and has become embedded in a community's way of life as a means of survival. Concerns about indigenous people and their knowledge have had a significant or far-reaching influence on development efforts[1]. A rising amount of data suggests that the traditional development techniques' tendency to overlook the indigenous

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knowledge systems is one of the key reasons why they have failed. The ITK finds its greatest relevance primarily in India, particularly in Odisha, where the majority of farmers are small and marginal, managing small farm operations and providing family food security with great challenges and ignoring profitability [2].

Role of ITKs in Sustainable Agriculture-

Deforestation, excessive grazing, desertification, excessive agricultural intensification, excessive fishing, and agriculture on marginal lands all contribute to the depletion of the natural resource base, which lowers agricultural production potential and lowers agriculture's carrying capacity. Improved management is needed to prevent the deterioration of this resource base and create agricultural production systems that improve our environment, natural resources (soil, water, nutrients) have limits[3]. Therefore, the main focus of all technical advancements regarding the use of land and water should be on sustainable agriculture, which involves maintaining our agricultural systems, to prevent long-term negative effects on the biological productivity of the resource base. Sustainable agriculture involves the long-term maintenance of resources, including livestock, agroforestry, annual and perennial cropland.

Methodology-

It included the collection and documentation of indigenous knowledge of Odisha particularly in Tydasingh and Munisingh village of Gumma block in Gajapati district. For collection and documentation, the methodology adopted has been given as under:

Identification and collection of

information: Oral history recording, agroecosystem analysis, manual discriminative analysis (asking farmers to distinguish practises and look for rationality), local resource person use, constant interaction during on-farm experiments, local taxonomy, crop histories, in-depth interviews with farmers, and survey method are some of the techniques used.

Documentation: Documenting a wide range of practises without scientific validation, prevailing practises and comparing them to traditional ones, practices/details of experimentation on a specific aspect and understanding the various linkages, and documentation of practises developed to mitigate particular issues with farming are just a few examples.

Methods of recording: Identification of indigenous experts, case studies, field observations, personal observations, interviews, group discussions, seasonal pattern

chart, cassette documentation, photo/ slide and participatory video.

Analysis: For analysis of collected and documented ITKs the parameters like IK based, extent of use, prevent losses, eco-friendly, easy to handle, severity of problem, innovativeness, availability of input, rationality, cost effectiveness was followed and accordingly practices were categorised for further analysis that is validation and standardization.

Results and Discussion

There were 10 ITKs observed for sustainable agriculture belonging to two groups, crop production and livestock production and each have observed 5 ITKs respectively. A list of ITKs for sustainable agriculture observed during the study are shown in Table 1.

Table 1: List of ITKs for sustainable agriculture observed in the locality

A. Crop production

1. Scarecrow: The scarecrow is a very popular traditional method practiced over India. The practise of preventing chemical techniques' deadly risks to biotic diversity is particularly beneficial for controlling vertebrate pests. Old men's clothing, straw, and painted clay pots are roped together to form scarecrows, which are then topped with a white plastic flag. The vertebrate pests such as birds, blue bulls, wild boars, and monkeys are scared when fabric and plastic flags flutter in the wind [4].

2. Straw mulching: The straw mulching is a traditional method practiced over India. Denying the harmful risks of pesticides is a very effective weed control strategy. By putting paddy straw next to the plants in vegetable fields, straw mulching is practised. It prevents the sunlight from reaching the weeds, which causes them to

Crop Production		Livestock production	
ITK	Application	ITK	Application
Scarecrow	Vertebrate pest management	Mustard oil	Body heat management
Straw mulching	Weed management	Bamboo leaves	Postpartum diet management
Ash broadcasting	Insect pest management	Turmeric mustard oil paste	Antiseptic ointment management
Bidahani	Weed & enhance tillering management	Neem leaves infusion	Wounds dressing management
Sanda	Water & Rainfed rice transplanting management	Jaggery ginger salt mixture	Indigestion & Appetite loss management

become weak and dead since they are unable to perform photosynthesis. Additionally, straw mulching preserves soil moisture to prevent crop frost damage[3].

- 3. Ash broadcasting:** Ash broadcasting is a conventional technique used throughout India. Denying the harmful risks of pesticides is a very successful management strategy for insect infestations. Ashes are dispersed in the morning to adhere to the moisture in the leaves and successfully stop pest insects from sucking, biting, and ingesting the plant. Also, ashes serve to feed crops with micronutrients [4].
- 4. Bidahani:** It is very effective practice for weed management. The young crops are cross-ploughed 5 to 6 weeks after planting with a light country plough in 8 to 10 cm of standing water once or twice depending on the density of the weeds and crop stand, and if there are too many weeds, planking is used instead.
- 5. Sanda:** It is an extremely efficient technique for transplanting rainfed rice cultivation to forgo expensive irrigation input. Sanda is practised by intensively transplanting seedlings that are 20–25 days old in the vicinity of the field. Seedlings that are 40 to 45 days old are transplanted into flooded areas at the start of the monsoon season.

B. Livestock production

- 1. Mustard oil:** India uses mustard oil as a form of traditional medicine. Inducing body heat in dairy animals has proven to be a very effective method for preventing the need for expensive treatments for cold stroke. Mustard oil is used by feeding it to cattle. To increase body heat, mustard oil stimulates the body. During the winter, feeding new-born calves 20 millilitres of milk and milking animals 50 millilitres of milk 2-3 times a day at intervals of 15 days helps prevent livestock from contracting cold stroke and helps calves stay healthy by acting as a mild laxative [5].
- 2. Bamboo leaves:** Denying expensive inputs on synthetic medications and their negative effects during postpartum treatment in dairy cows is a very beneficial practise. Tender bamboo leaves are fed to cows and buffaloes for 2-3 days after giving birth for a light diet and placenta evacuation. Bamboo leaves may occasionally be mixed with barley porridge.
- 3. Turmeric mustard oil paste:** India's traditional medical system includes the use of turmeric and mustard oil paste. Antiseptic ointment uses a very successful strategy to avoid spending money on synthetic pharmaceuticals and their negative side effects. The application of a paste made from a mixture of 50g of

turmeric powder and 100ml of mustard oil to the affected areas is known as "turmeric mustard oil paste therapy." It is used for 4-5 days, twice daily, to swiftly heal burns, wounds, and injuries in animals [6].

- 4. Neem leaves infusion:** Neem leaf infusion is a traditional remedy used all throughout India. Denying expensive inputs on synthetic medications and their side effects is a highly beneficial practise for wound dressing. Neem leaves infusion is used to treat wounds by decocting delicate neem leaves. Due to the insecticidal and acaricidal qualities of azadirachtin, it is also used as a body treatment to eradicate lice and ticks from animals.
- 5. Jaggery ginger salt mixture:** Refusing expensive synthetic medications and their adverse effects is a very effective practise for treating dyspepsia. Feeding cattle, a mixture of 500g of jaggery, 100g of dried ginger powder, and 50g of common salt for two to three days at a time would heal their indigestion and appetite loss [7].

Conclusion

The present study concluded that, there were 10 ITKs observed for sustainable agriculture belonging to two groups, crop production and livestock production and each have observed 5 ITKs respectively. The scarecrow and Bidahani for rice cultivation and neem leaves infusion for livestock

production confined very local and traditional knowledge. Although advancements in agricultural science, the great majority of farmers still employ ITK-based practises, particularly in areas with limited resources, without being aware of their scientific justification. To promote the sustainable growth of agriculture and related industries in our country, a fusion of traditional wisdom and cutting-edge scientific technology is now more important than ever. Clearly, the understanding of the rebirth of ITK for sustainable agriculture will be improved by this study.

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