

Potential of Indigenous Technical Knowledge (ITK) through Agricultural Extension in Selected Districts of Tamil Nadu, India

V. Irai Anbu¹, M. Asokhan¹, M. Chinnadurai², R. Arunachalam¹ and M. Balarubini^{1*}

¹*Department of Agricultural Extension and Rural Sociology, Tamil Nadu Agricultural University (TNAU), Coimbatore, India.*

²*Directorate of CARDS, Tamil Nadu Agricultural University (TNAU), Coimbatore, India.*

Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2018/43489

Editor(s):

(1) Dr. Philippos I. Karipidis, Department of Agricultural Technology, Agricultural Economics of Alexander Technological Education Institute of Thessaloniki, Greece.

(2) Dr. Ian McFarlane, School of Agriculture Policy and Development, University of Reading, UK.

Reviewers:

(1) Olutosin A. Otekunrin, Federal University of Agriculture, Nigeria.

(2) Hussin Jose Hejase, Al Maaref University, Lebanon.

(3) Ighoro Alexander, Federal University of Technology, Nigeria.

Complete Peer review History: <http://www.sciencedomain.org/review-history/26465>

Original Research Article

Received 04 July 2018
Accepted 20 September 2018
Published 30 September 2018

ABSTRACT

Recapitulating the golden nuggets referring to agriculture in literature will rejuvenate the spirit of farming community and make them involved in their occupation with renewed zeal. The present study was conducted with major objectives to study the awareness of farmers on traditional agricultural practices, to assess popular agricultural references in Tamil literature and their perception of scope for agricultural development and also to elicit information on the awareness of farmers on Indigenous Technical Knowledge (ITK) practices in livestock rearing and their perception on adoption of Indigenous Technical Knowledge (ITK) Practices. The study indicates that majority takes pride in agriculture, but only 57.65 per cent want their wards to practice the profession. Less than 50 per cent feel that there is no future for agriculture. They cannot

*Corresponding author: E-mail: rubinibala@gmail.com;

unanimously vouch for the respect for agriculture in the future. When the farmers were asked to list for adoption of ITK practices all the farmers responded that the IT results in low cost in the livestock management. 95.56 per cent of the farmers opined that ITK) results in the increasing quality of milk, quality of egg and meat. 93.61 per cent of farmers felt that ITK practices are more suitable for organic farming especially for raising the fodder. When the farmers were asked to cite the demerits of the Indigenous Technical Knowledge (ITK) practices, all the farmers responded that the native breeds have a high mortality rate.

Keywords: ITK; agriculture; livestock; awareness; perception; adoption.

1. INTRODUCTION

Inclusive Agriculture was the most decisive step towards a better life, and it was a milestone in human history. Agricultural revolution propelled human civilisation and gave impetus to art, culture and scientific advancements. Hence, culture started with agriculture. The importance given by the society to agriculture has changed over a period. Globalization, liberalisation and privatisation have churned up the economy of India, and its impact is unprecedented. It changed the face of all sectors of the economy including the primary sector [1]. Opening up of various windows for white collar jobs resulted in the rural populace rushing to the urban and semi-urban areas seeking employment. There was an exodus of educated youth from villages to cities and agriculture was left to the older generation as 'Hobson's Choice'. Even the unemployed educated youth are not keen to pursue agriculture as a profession. Those who do not have an optional practice it as a part-time job. The youth fully engrossed in agriculture despite their educational qualification have fewer chances for a matching matrimony. Agriculture is losing its primordial position and the pride, which existed earlier, is vanishing fast. As a result, though the landowner is present, farming takes place like cultivation under an absentee landlord [2].

Agriculture is performed without the professional pride and has become a lackluster occupation. Structural changes are taking place at all levels of cultivation, and small landholders are finding it difficult to cope with them. Suicides of farmers have become a regular phenomenon reported frequently in the media. Heavy indebtedness, failure of crops, poor yield and reduced marketing facilities make many farmers go for forced selling. They are reduced from the pedestal of the landowner to the platform of the job seeker [3].

In this context, it is important to inculcate the lost pride among the farmers. It is also the time to exhort the youth to take up agriculture with a difference and invest all their knowledge in farming. They have to be reminded how agriculture was occupying the centre stage once upon a time and how literature glorified it even now, agriculture is the most important profession. No industry in the secondary or tertiary sector can prosper without the contribution from agriculture [4].

Indigenous Technical Knowledge (ITK) has immense potential for innovation, especially at the grassroots level. India is a country populated by some indigenous communities, most of which have their own set of unique traditional knowledge and technology base. Many of this knowledge and technologies are at par with the modern knowledge and technology system and have been provided with the indigenous communities with comfort and self-sufficiency. These traditional knowledge and technologies have played a significant role in the overall socio-economic development of the communities. The problems that surface today could be addressed effectively and they need not be the reasons for foregoing a great profession [5].

Now a growing recognition that indigenous technical knowledge could somehow respond to the greatest threat of climate change. ITK is the cumulative body of knowledge and practices maintained and developed by people with expanded histories of interaction with the natural environment. Indigenous Technical Knowledge (ITK), traditional ecological knowledge or indigenous or local knowledge - unique to a particular culture or society. Therefore, recapitulating the golden nuggets referring to agriculture in literature will rejuvenate the spirit of farming community and make them involved in their occupation with renewed zeal [6].

2. METHODOLOGY

The sample size consisted of 170 farmers who were selected purposively for the study. Thus, Villupuram, Namakkal, Tiruppur, Tiruchirapalli, Thiruvannamalai, Erode, Salem, Virudhunagar and Coimbatore (see Fig. 1) were chosen for the study. A structured schedule for data collection was developed by the investigator to assess

the traditional, and Indigenous Technical Knowledge (ITK) practices in livestock rearing and their responses were analysed. The last part elicited their opinion on the merits in the adoption of Indigenous Technical Knowledge (ITK) and the demerits as they perceive in adopting them. The data were analysed using statistical techniques such as percentage analysis.

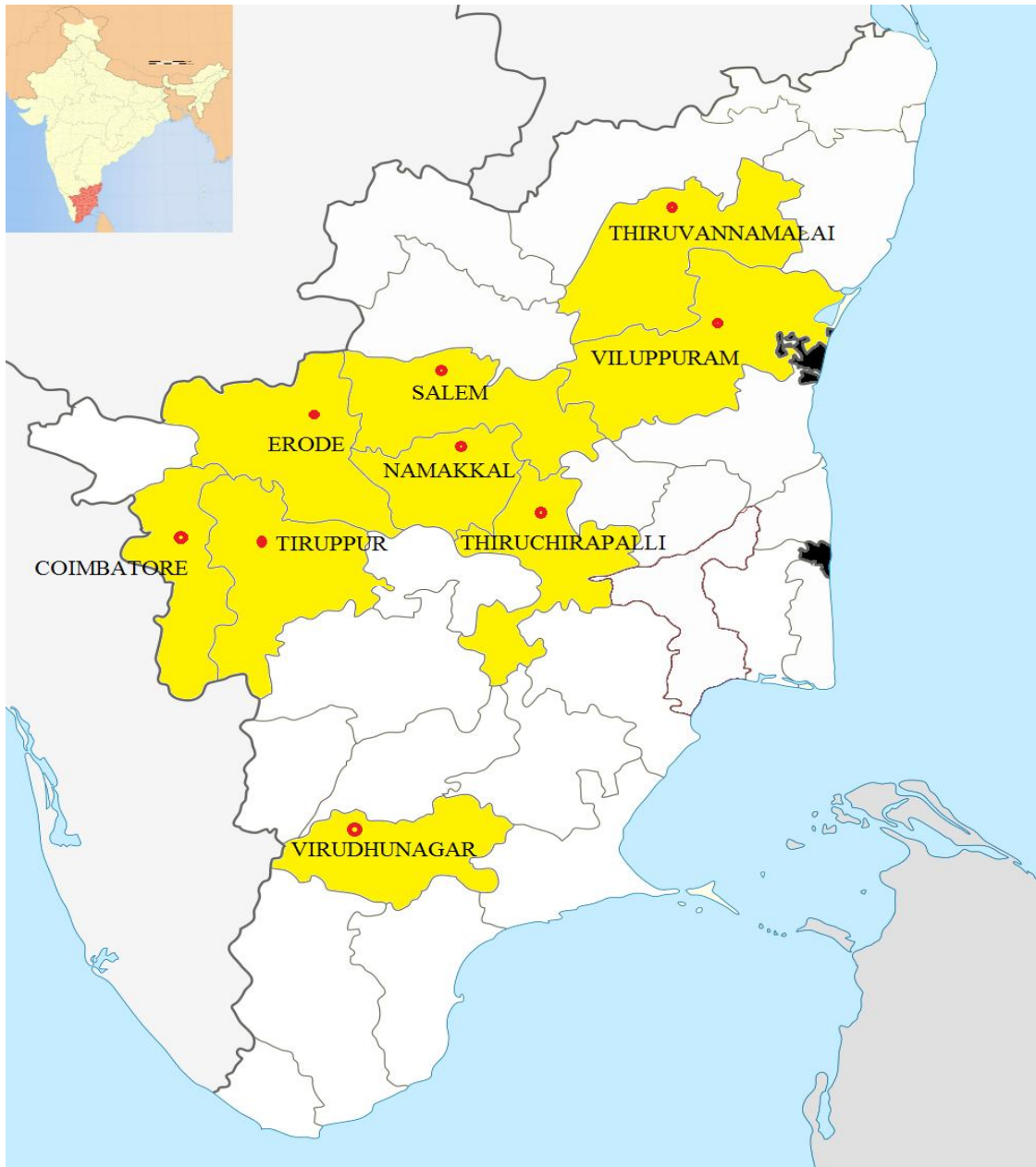


Fig. 1. Map showing the study districts of Indigenous Technical Knowledge (ITK)

3. FINDINGS AND DISCUSSION

3.1 Farmers' Knowledge on the Current Status of Agriculture

Agriculture plays the most vital role in Indian economy [7]. The knowledge of the respondents about the current status of agriculture is given in Table 1.

The study indicates that 86.47% of the respondents take pride in agriculture, but only 57.65% want their wards to practice the profession. 46.47% feel that there is no future for agriculture. They cannot unanimously vouch for the respect for agriculture in future.

3.2 Farmers' Perception and Ranking on the Merits in the Adoption of the INDIGENOUS Technical Knowledge (ITK)

Further, the respondents were requested to rank the Indigenous Technical Knowledge (ITK) based

on their merit they experienced through adoption. The findings are given in Table 2.

When the farmers were asked to list for adoption of Indigenous Technical Knowledge (ITK) practices, all the farmers responded that the Indigenous Technical Knowledge (ITK) results in low cost in the livestock management. 95.56% of the farmers opined that Indigenous Technical Knowledge (ITK) results in the increasing quality of milk, quality of egg and meat. 93.61% of farmers felt that IT practices are more suitable for organic farming especially for raising the fodder. The other advantageous cited by the farmers are higher selling price, increase in quantity of milk, increase in the lifespan of animals, availability of organic manure, improvement in the soil fertility and less toxicity in ITK products. 33.89%, 21.11%, and 48.89% of the farmers felt that ITK results are helpful in increasing the income, increase in the security of country animals and controlling the spreading of diseases, respectively.

Table 1. Knowledge of the farmers about current status in agriculture (n = 170)

Characteristics	Frequency	Percentage
Pride in agriculture	147	86.47
Heirs in agriculture	98	57.65
Future of agriculture	79	46.47
Sale of land	75	44.12
Government attention	43	25.29
Respect for farmers in future	89	52.35
Bright future for agriculture	109	64.12
Participation in agriculture	155	91.18
Agriculture to help others	153	90.00
Happy to feed population	144	84.71

Table 2. Ranking the ITKs based on their merits in adoption

Sl. no.	Particulars	Percentage	Rank
1	ITK is low-cost technology compared to modern methods	100.00	I
2	Increasing the quality of milk in ITK	95.56	II
3	Increasing the quality of Egg and meat in ITK	95.56	II
4	ITK is more suitable for organic farming	93.61	III
5	Increasing the cost of Egg and meat in ITK	91.11	IV
6	Increasing the quantity of milk in ITK	87.22	V
7	Increasing the lifespan	84.44	VI
8	Availability of organic manure in ITK	82.78	VII
9	Improving the soil fertility in ITK	80.00	VIII
10	Reduce the toxicity in ITK products	76.67	IX
11	Controlling the spreading of disease in ITK	48.89	X
12	Increasing the Income of ITK farmer	33.89	XI
13	Increasing the security/protection of country animals	21.11	XII

3.3 Farmers' Perception and Ranking on the Demerit of the ITKs

The respondents also expressed their opinion on the demerits of the Indigenous Technical Knowledge (ITK) and also ranked them, which is given in Table 3.

When the farmers were asked to cite the demerits of the Indigenous Technical Knowledge (ITK) practices, all the farmers responded that the native breeds have a high mortality rate. The important demerits cited are the inability of ITK to cure some diseases, non-availability of animal feed, delay in curing diseases, and reduction in milk production. 43.33% of the farmers believed that due to Indigenous Technical Knowledge (ITK) practices the diseases spread from animals to humans easily, and in rainy seasons it is difficult to maintain animals.

3.4 Steps to Strengthen ITK and Restore Pride via Extension

A business coach and writer, has identified four stages of learning. The first one is the stage of unconscious incompetence; the second one is conscious incompetence; the third one is conscious competence, and the fourth one is unconscious competence [8]. Extension education passes through the four stages. Any activity, however significant it may be, requires proper extension methods to reach the common man. Learning process becomes effective when moving from the known to the unknown. Quotations, sayings and adages are helpful in reinforcing a point, and they improve the gullibility of a particular practice. Therefore, quoting apt literary reference will repose confidence in the farmers and make them motivated. It is the time for reconstructing the lost

pride of the farmers, and certainly literature can play a vital role. Two studies conducted in the field (viz) practice of ITK in agriculture and ITK in bovine health management throw light on the various aspects that require sufficient strengthening in extension education for popularising native breeds, indigenous varieties and scientifically sound traditional practices [9].

Ethno agricultural practices should be properly documented by a committee constituted for doing research on literature that deals with agriculture and should be brought out as publications to be distributed to farmers' clubs and Panchayat libraries. Agricultural quizzes on literature, indigenous practices, proverbs, folk songs, etc. should be conducted at the district level to popularise the traditional wisdom and indigenous knowledge. Special debates should be organised on the eve of Pongal with topics related to agriculture in various literary works. The protection of tigers which were on the verge of extinction, projects on native breeds of cows, buffalos, sheep, goat and dogs should be initiated, and they should be preserved [10]. Folklore that was sung during transplantation, water lifting and harvesting, etc. should be documented. They should be set to music by eminent musicians. Such songs should be compulsorily played before government functions. Similar to *Tamil Thai Vazhthu*, *Velan Vazhthu* should be sung on all important occasions. This could be composed of *Thirukkural* or *Yer Yezhupathu*, and eminent musicians can give a catchy tone. Sooner or later, it will be on the lips of every teenager. This will become a great motivating factor for the farmers. Reviving the *kudimaramathu* system which was in existence right from the ancient days should be done by organising a seminar on such practices and their references in literature.

Table 3. Demerits as perceived and ranked by the respondents in the adoption of the ITKs

Sl. no.	Particulars	Percentage	Rank
1	Increase in the animal mortality rate	100.00	I
2	Some diseases are not curable in ITK	98.89	II
3	Lack of availability of feed	92.78	III
4	Delay in recuperation in ITK	84.44	IV
5	Decrease the milk production	82.78	V
6	Create pollution	67.50	VI
7	Increase in the labour cost	55.00	VII
8	Maintaining the livestock in a large scale is difficult	48.89	VIII
9	Diseases spread to humans from animals easily	43.33	IX
10	In rainy season difficult to maintain the animals	34.17	X

Quoting the classical literature how able-bodied young men guarded the water bodies during heavy rains will help in motivating the youth in the rural areas and make them feel the ownership of the water bodies in the village. It will assist in renovating the lakes and ponds apart from preventing encroachments. Extension education should aim at the preservation of all water bodies as they constitute the lifeline of agriculture [11].

Experts in IKT who have done significant work in the field should be recognised by the government. Awards like Krishi Ratna, Krishi Vibushan, etc. should be given like Padma Awards to instill pride in the farmers. Painting exhibitions with the theme Agriculture in Literature should be conducted. Competitions should be conducted for school children on this theme. Any competition involving the students will sensitise the parents, and it will have a tremendous impact on the society. Agriculture department of the government should bring a monthly journal on 'Native Agriculture' (*Thayaga Velanmai*). The journal should have publications related to native literature, IKT, successful organic farmers, articles on native breeds and information on the availability of breeds and seeds. Separate markets for selling organic products both inputs and outputs should be organised by the government and middlemen should be completely eliminated. This will be advantageous to both the consumers and producers. It can become a venue for encouraging local varieties of vegetables, minor millets, oil extracted from expellers and other indigenous products. All the farmers unanimously vouch for the advantage for the traditional practices. They have problems regarding uncertainties associated with the practices Extension department can play a crucial role by removing scepticism and make those practices user-friendly [12]. Special awards should be instituted for honouring the companies which fulfil social responsibilities especially in the field of agriculture and they should be honoured on *Pongal* festival or *Tamizhar Thirunal* by the government.

4. CONCLUSION

Indigenous Technical Knowledge plays an essential role in sustainable grassroots innovations. Tamil Nadu is experiencing the revival of traditional and indigenous practices in agriculture and allied activities. Native breeds are getting, and age-old practices are again

surfacing due to socially active groups that strongly advocate local varieties, natural farming, organic manure, country oil expellers, etc. Hence, it is the right time to strongly disseminate good agricultural practices and livestock rearing methodologies that are rich in ancient wisdom [13]. Tracing our rich agricultural heritage from literature, the extension can focus on improving the moral of the farmers by which more youth could be attracted to the agricultural arena and their vast knowledge in modern communication tools can make the profession more productive and remunerative [14]. An appropriate coalition between the traditional and modern knowledge and technology systems has immense potential to benefit the society.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Kekane Maruti Arjun. Indian agriculture—status, importance and role in Indian economy. *International Journal of Agriculture and Food Science Technology*. 2013;4(4):343-346.
2. Balarubini M, Karthikeyan C, Suganthi N. Are rural youth really aspiring for agriculture as their avocation? *Current Advances in Agricultural Sciences*. 2017;9: 104-106.
3. The World Bank, Privatization of Extension System, Agriculture and Rural Development Discussion on Extension Reforms for Rural Development, Washington, DC; 2004. (Available:www.worldbank.org)
4. Ponnusamy Kuppasamy, Gupta Jancy, Nagarajan R. Indigenous Technical Knowledge (ITK) in dairy enterprise in coastal Tamil Nadu. *Indian Journal of Traditional Knowledge*. 2009;8:206-211.
5. Pardeep Singh. Indigenous Technical Knowledge (ITK) and their role in sustainable grassroots innovations: An illustration in Indian context. *International Conference on Innovation & Research in Technology for Sustainable Development (ICIRT)*, India; 2013.
6. Afifa S. Kamili. Indigenous knowledge- A viable option for climate-smart agriculture, indigenous technical knowledge-concept, scope and relevance in integrated agricultural production. Summer School,

- Summer School Capacity Building Programme, Division of Agricultural Education, ICAR, New Delhi; 2017.
7. Vijay Paul Sharma. India's agricultural development under the new economic regime: Policy perspective and strategy for the 12th five year plan. Indian Journal of Agricultural Economics. 2012; 67(1).
 8. Available:<https://scottieffrey.com/four-stages-of-learning/>
 9. Somasundaram S. Indigenous knowledge in farming systems. Ph.D. Thesis Submitted to Tamil Nadu Agricultural University, Coimbatore; 1995.
 10. Available:<https://projecttiger.nic.in/>
 11. Report Prepared by Planisami K, and Venkatram R. District Agriculture Plan Thanjavur District CARDS, TNAU, Coimbatore; 2008.
Available:http://agritech.tnau.ac.in/pdf/govt_schemes_nadp_dap_Thanjavur.pdf
 12. Madukwe MC. Delivery of agricultural extension services to farmers in developing countries. A Discussion Paper for Basic Agricultural Services (BAS); 2006.
 13. Birthal Pratap S, Anjani Kumar, Lakshmi Tiwari. Livestocks in different farming systems in India. Agricultural Economics Research Association (India), New Delhi; 2002.
 14. Chandrasekaran V, Annadurai K, Somasundaram E. A text book of agronomy. New Age International Publishers, New Delhi. 2010;9.

© 2018 Anbu et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sciencedomain.org/review-history/26465>