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RESEARCH ARTICLE

DESIGNING OF DATABASE FOR INDIGENOUS TECHNICAL KNOWLEDGE IN AGRICULTURE

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ABSTRACT

In our Indian Agriculture, the traditional knowledge or local knowledge has very good prospective for novelty specifically at the grassroots level. Several knowledge of the traditional tools are on par with the recent knowledge and have been delivered by the native societies with comfort and self-support. Agriculture practices through indigenous are mostly organic in nature, do not cause loss to soil and water, air and also safe to human beings. These practices differed considerably from region to region depending on rainfall, soil type topography etc., and show frequently modifications by the local farmers. In current years, there has been a growing scientific knowledge in these indigenous practices as a source of comprehensive ideas that could lead to sustainable use and management of land resources. All ITKs published information is in scattered form and accessing this information is difficult due to its present form in hard copy. In view of the above it has been observed that there is an immediate requirement to documentation and preservation of the ITK of different agro climatic zones in a database format. This format should contain the description and basic set of information related to ITK resources are information of the communities, beliefs on spiritual faiths, implements used in agriculture, resources for house construction work, investigation in farming and health care, natural resources in plants and animals, human resources and proficiency in trained artists, teaching and learning and communication of information. Efficient use of ICT application to developed a portal was developed by ICAR-NAARM, using PHP and MYSQL, which provides information resources on ITK resources of pan India for crops viz., cereals, millets, pulses, fruits & vegetables, spices, medicinal & aromatic, plants etc. The portal developed by the academy is user friendly and it provides all the information about ITK resources of India. This will be a resource base for the multi-stakeholders viz. researcher, academicians, policymakers, farmers and NGOs etc.

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INTRODUCTION

Indian agriculture is challenged with a number of experiments including unpredictability of productivity and diminishing sustainability of natural resources. The initiation of the thought of sustainable agriculture in late of eighties in our farming situation has deliberate awareness about Indigenous Technical Knowledge (ITK) that has an element of use of natural produce to resolve the difficulties relating to agriculture and allied sectors. Our farmers have knowledgeable to grow food and to continue in problematic environments over a period, where the rich belief of ITK has been intertwined with the agricultural practices followed by the farmers. In our country has spread over 3287.26 thousand sq. km. and inhabited by about 1000 million people has been cultivation of a tradition of a rich civilization over a period of 5000 years old. Indigenous Knowledge refers to the traditional unique, native knowledge existing within and developed around the specific

environments of men and women indigenous to a particular geographic area (Grenier, 1998). Indigenous knowledge is basis for the native-level decision in agriculture, education, food preparation, health care, NRM, and to host of their activities in rural communities (Warren, 1991). ITK is the base material for a society, which helps communication and decision-making. Flavier et al. (1995) traditional information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with external systems. The term ITK is frequently imperceptible with the confidence that is related with upcoming activities and the novelties made by the farmers to solve explicit problems. Some of the related terms are ITK is the participants' information of their sequential and social space. ITK as such refers not only to knowledge of native peoples, but to that of any other defined community. ITK innovation in outside the field, however systematically established the development of practices using locally available resources to solve particular problems. Bisht and

Bhatt, (2001) illustrated differences between Traditional knowledge system and western scientific system as indicated. There are so many facets involved in the indigenous knowledge such as, information of the communities, modern tools used for agriculture, views on spiritual faiths materials are testing in farming and healthcare, natural resources in flora and fauna, human resources and expertise in skilled artisans, education and learning and communication of information. ITK is originating in the people activities and memories and is articulated in the form of proverbs, success stories, songs, dance myths, folklores, community laws, belief son social values, rituals, taxonomy and local language, agricultural practices, tools, materials, plant species and animal breeds (Basu et.al, 2009). The method of exchange of ITK involves essentially 6 steps are Recording and documentation validation, Transfer and dissemination, Storage Recognition and identification, documentation of ITK belongs to some community practices goes to a particular community world and is showed by beliefs, programs and values that are not essentially common by societies whose heritage it portrays (Ajayi 2014). Through documentation, one can be able to explore whether explanations given for a problem, which can apply to a different countries or time (Arantes, 2010).

CEFIKS, (2006) indicated that documentation makes it easy to share and is one way to preserve indigenous knowledge. On the basis of all the above it appears safe to accomplish that there is developing gratefulness for the ITK. Any one of the most important requirement for the complete process of disseminating, applying, and collecting, ITK information is the complete contribution of the indigenous community involved. Which can be succeeded only when the native peoples are able to contribute on an equal level of policy decision input (Anele 2012). Transfer of ITK information, the following toolkits are used such as Radio, Community Radio, Newspapers, Tape Recorders, mobile phones, Television, Computers, Cameras ICTs through Internet, e-mails, listservs and other facilities such as Kisan Call Centre, CD-ROM, Fax, Mobile phone, diskettes, printed materials and Social gatherings in communities. These tools can be used either singly or combined for a good effect are highlighted (Taiwo, 2008). The integration of systematic and traditional knowledge would help to develop tools, which are need based for better problem solving, locally available, easily acceptable, cost effective, considerable and credible to the rural trade. There is a very good potential for innovation, especially at the gross root level of indigenous knowledge. There is an urgent need to collect it before it is irretrievably lost. ITK is implicit knowledge and therefore, it is very difficult to organize, which is being surrounded in community practices, organizations, relationships and rituals. ITK would help the poor to build on resources in which they are rich in knowledge. The entrepreneurs, researchers, planners, and project investigators must have access to reliable the ITK information. As the ITK stands on an equal footing with manpower, energy resources and natural resources, there is a need for documentation. Documented ITK can be clubbed with scientific technologies for sustainable agricultural development.

MATERIALS AND METHODS

The extensive survey and development of portal was conducted during April 2016 March 2018 in India. The main purpose of indigenous knowledge information was collected from various reports such as, records, literatures, online resources and documentation which are available in different formats, and through deliberate disclosure by the users of ITK

through organizers. Primary and Secondary data collected from Farmers, Department of Agriculture, ICAR Publication on ITK, ICAR Institute report, AICRP Reports and FET Reports other published data. The information collected was cross checked and authenticated with the primary and secondary data in this survey of all the information along with the description of the communities, spiritual faiths, machineries are using in agriculture, resources in house construction, farming and healthcare investigation of natural resources of flora & fauna to agricultural ITKs. The Portal was developed using PHP and MYSQL.

RESULTS AND DISCUSSION

The Portal development aimed at developing the website - ITKPA – Indigenous Technical Knowledge Portal for Agriculture. The portal will prove to be a databank of Indigenous Technical Knowledge resources of India and it will contain information like Crop wise, operation wise and post-harvest, such information along with the description of the communities, spiritual faiths, machineries are using in agriculture, resources in house construction, farming and healthcare investigation of natural resources of flora & fauna. Collection of data on crops through cereals, millets, pulses, fruits & vegetables, spices, medicinal & aromatic plants and animals etc., The ITKPA is very rich in information. Portal will provide the administrator user to create users with permissions to access and upload and retrieve the data of their respective area of work. The data flow diagram of the ITKPA is shown in Figure 1.

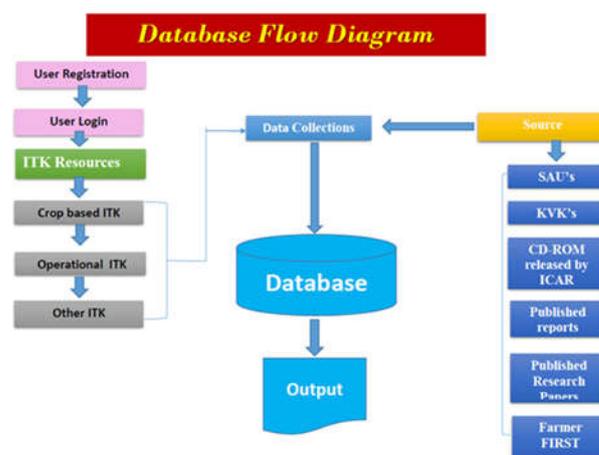


Fig.1 Data flow diagram of ITKPA



Fig 2. Registration and login for the ITK Portal

The Portal is designed in PHP and My-SQL at the backend and the interface is created using PHP in HTML format. The webpage interface is interactive and is designed keeping public in mind for easy access of their desired data. The database is very rich and up-to-date with information from latest state wise cereals, pulses, millets, vegetables and fruits, spices, medicinal & aromatic plants. The details of the information contain in the portal is shown in the following figures (2-8).



Fig. 3. Home page for the ITKPA

Fig 5b. Data Entry sheet for upload the Crop ITK information through online



Fig. 4. Menu Options for the ITKPA

Fig 6. Search the ITK details crop and location wise

State	District	Block	Tehsil	Village
ANDHRA PRADESH	Karnool	Adoni	Bolicher	Seerani

Practices Stone roller for threshing of sorghum

Rationale It is used with one pair of bullocks and one person by hitching the roller to the yoke by means of beam and then draws over a heap of sheaves of sorghum spread in the threshing yard. It is eight times more effective in threshing the sorghum sheaves compared to the indigenous method of threshing under feet of bullocks. The weight of the implement is about 400 kgs.

Benefits The weight of the implement is about 22-40 lbs.

Fig 7. Select the crop and retrieve the ITK resources from the databases

Fig. 5a. Data Entry sheet for upload the Crop ITK information through online

It is needless to state that Indigenous Technical Knowledge resources play an essential role in agricultural economy of our nation. Priya, R.M and Rabindra, K.M. (2010) documentation of the ITK resources have a vital place in the list of essential commodities in the day-to-day life of a common person or farmers.



Fig 8. Photo gallery of the ITK resources

We need to tap this potential resource of ITK to our benefit. This Portal can contribute and document all information of ITK resources and help prosperity. The portal was developed by ICAR-NAARM, using PHP and MYSQL, which provides information resources on ITK resources of pan India for crops viz., cereals, millets, pulses, fruits & vegetables, spices, medicinal & aromatic, plants etc. has been developed with an aim of providing technical information to the researchers. This portal would facilitate effective utilization of ITK in Indian Agriculture.

Conclusion

Documentation of ITK Information database is the efficient use of ICT application used to develop the database, which provides a common platform for the ITK entire information and user-friendly database. The portal developed by the academy is user friendly and integrated ITK Resources in single platform and it provides all the information about ITK resources of India. This will be a resource base for the multi-stakeholders viz. researcher, academician, policymakers, farmers, NGOs etc. Anybody can upload the ITK information easily without any difficulty. For uploading the information, they have to register their username in the portal.

This portal is being updated on a regular basis, so that it could provide status about the ITK resources, which could be useful to scientists, research scholars, researcher, academician and policymaker.

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