

Co-developed content through Agropedia - Experience so far



While India witnessed rapid improvements in its ICT infrastructure, it continues to face serious challenges with respect to provision of relevant content. Initiatives such as “agropedia” evolved mainly to address this challenge in the field of agriculture. Though agropedia offers several options for knowledge management in agriculture, much more needs to be done to fully utilize its potential, argues Kiran Yadav and N T Yaduraju.

Why Agropedia?

Lack of access to right information at the right time has been noted as the major impediment in lifting the peasants out of poverty, deprivation and hunger. Lack of proper linkages for information sharing and non-availability of content in local languages constrain farmers as well knowledge intermediaries such as extension staff in using information effectively. Potentially useful knowledge and information generated by the researchers more often do not reach those who need it the most due to these weaknesses in knowledge management. Though improved connectivity and enhanced access to computers and mobile phones (Box 1) offer new opportunities to manage knowledge better, lack of quality digital content and information management architecture has been constraining sharing of locally relevant knowledge.

Box 1: Enhancing connectivity and capability

Governments in developing countries have been investing heavily on improving IT infrastructure in a big way. In India, the initiatives include: setting up of over 126,574 Common Service Centers (CSC)- covering 6.5 lakh villages across India (as of March 31st, 2013); connecting over 1500 institutes of higher learning through National Knowledge Network (www.nkn.in); and providing broadband connectivity to over 100,000 *Gram Panchayats*. India has about 200 million internet users by September 2012 and this is expected to increase to 300 million by 2014. Added to this is the massive penetration of mobile phones in the rural hinterland. As of January 2013, there are 862.62 million wireless subscribers in India (TRAI- 2013) and their number are increasing every day.

However, improved ICT infrastructure and access to new gadgets can contribute to agricultural development only if relevant content useful for farmers is made available through these. This is possible only by aggregating content from diversified sources and organizes it in a way that is amenable for easy and quick access and sharing by all stakeholders.

With this premise the Indian Council of Agricultural Research (ICAR) through the National Agricultural Innovation Project (NAIP), facilitated the formation of a consortium of institutions to implement a knowledge management project from 2008 to 2014. This project developed a comprehensive and integrated platform for agricultural content management (organization, storing and sharing) called “agropedia” to support and promote knowledge flows and exchanges between different stakeholders.

AGROPEDIA

Agropedia (Figure 1.) platform (<http://agropedia.iitk.ac.in/>) consists of a knowledge repository, a social networking platform and content distribution services.

Serving the Indian Agriculture

agropedia

http://www.agropedia.net

Social_semantic_web_application_for_agriculture

Traditional_wisdom_with_modern_knowledge

Indian_Council_of_Agricultural_Research

Crop_calenders

Extension_material

Package_of_practices

Knowledge_medias

Research_publication

Collection_of_all_agricultural_knowledge

Agrabiog_Agropedia_Agroforum_Agrowiki

hasCollaborationTools

is a

hasPartners

hasWebsite

isSponsoredby

Visual representation of important concepts of crops

Semantically assigned for indexing browsing the content

Project Partners
IIT - Kanpur
ICRISAT - Hyderabad
IIM - Calcutta
UAS - Raichur
ZPD-IV - Kanpur

http://www.agropedia.net

Be a witness of agriculture knowledge revolution - Join Agropedia

It is the first Indian agricultural knowledge repository developed with knowledge-models for localized content for a variety of users with appropriate interfaces built in collaborative mode to support information access. It is also the first and unique site having multi-lingual capabilities to deliver agro-advisory in a country like India where you have to deal with many languages

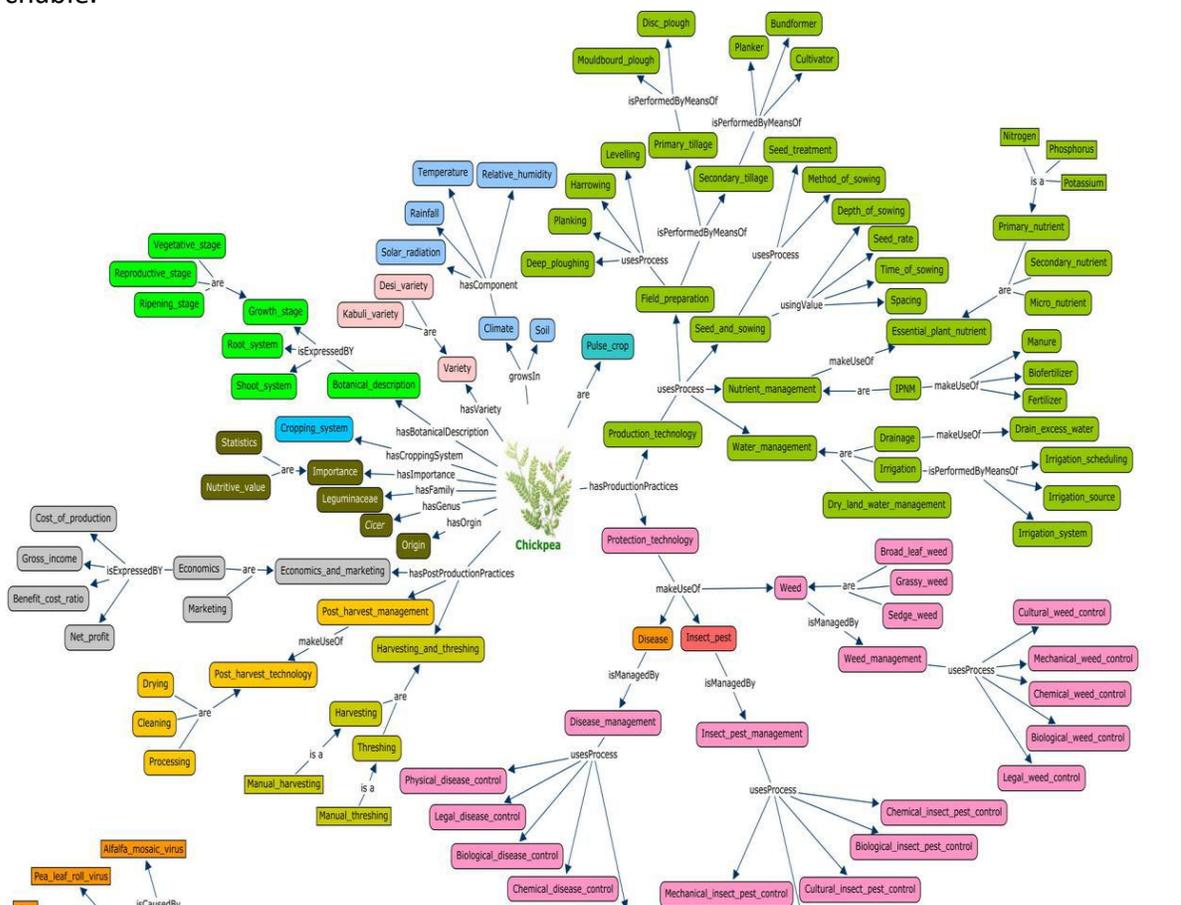
Box 1: Agropedia

Agropedia aspires to organize and manage the widespread knowledge relevant to different agricultural practices of different regions by building up an agricultural e-community and strengthening the networks of that community. It aims to harness the information using social networking and knowledge models based on web 2.0 concepts. This is a platform where everyone, ranging from scientists, researchers, teachers, students, extension workers, farmers, traders and businessmen, can interact with each other. The agropedia is essentially a read-write web interface which has been developed using semantic web technologies that help the system relate concepts in a meaningful way.

Within a period of four years of its inception, agropedia has the distinction of being visited by people from over 140 countries with over 400,000 page views till date. Google analytics reports that the agropedia site gets on an average of over 1150 hits a day. Today it boasts of having over 8500 registered users, with over a thirty thousand documents from voluntary users. The combination of getting authentic agricultural knowledge and information with the option of sharing them with stakeholders can hardly be found in any other agricultural portal. In this sense the process of gathering the wide spread agricultural knowledge and dissemination of this knowledge through e-network is unique

Knowledge Models

Knowledge models (KM), developed by professionals who are acknowledged experts in their specific agricultural domain, link different concepts in agriculture through robust relationships. These models enable agropedia to produce a better multi-lingual agricultural information search and display results. Crop knowledge models of 24 major crops have been developed using IHMC tools and are made available on agropedia. FAO's AGROVOC, a global thesaurus of agricultural terms, served as an input for concept mapping to develop Crop Knowledge models. These Knowledge Models enabled agropedia to produce a robust multi-lingual search facility for retrieving agricultural information stored in different digital formats like word documents, images and videos which comes with appropriate live tags attached making them easily visible and searchable.



Content organized using Concept Mapping Technique can be accessed via search or through visual browsing of the crop knowledge models. Having incorporated AGROVOC standards, Team agropedia is in the process of universalizing these crop knowledge models in different National/International languages.

Agro-advisory delivery networks

vkVK: Voice Krishi Vigyan Kendra (www.vkVK.iitk.ac.in)

Agropedia has several mechanisms for delivering the content to various stakeholders. It has an e-mail based delivery mechanism where advisories can be sent to farmers over email. A Simple Messaging System-based platform allows these advisories to be sent to the farmers' cell phone using SMS. Finally a

phone based delivery system allows an agriculture expert to transmit a voice based alert/advisory to be transmitted to farmers using a mobile phone. A recorded message can be transmitted to all farmers under the guidance of an expert. This will overcome the problem related to text messages, which are normally sent in English, as many handsets do not support local fonts. For this reason, agropedia's voice messaging system to deliver agro advisories was introduced in local language to farmers irrespective of which service providers they are subscribing to.

In order to overcome problems related to connectivity at KVKs and the erratic power supply to operate computers, mobile-mobile service has been launched, wherein a registered expert can record messages on their mobile phones and push the messages across to farmers. This is very helpful in issuing alerts. For instance, an expert visiting a field having some pest outbreak can alert other farmers in the constituency about the impending risk and its management. As of now the service is being successfully pilot tested in 125 KVKs of 12 states covering over 30,000 farmers. ICAR is planning to upscale the service to cover all 631 KVKs during the 12th five year plan.

OpenAgri (<http://www.agropedia.net/openaccess>)

OpenAgri is a content management system based platform for hosting agriculture documents such as journal articles, conference papers, books, book chapters, proceedings, preprints, multimedia content etc. As of now it has over 500 publications.

Challenges

Although agropedia is a robust and efficient ICT platform for Agri-knowledge dissemination, its full potential is yet to be realized due to the following challenges: Despite being around for over four years, the agropedia has not been adopted extensively by the NARS (National Agricultural Research System) community. Sensitizing and training several hundreds of scientists has had little impact. Ownership of the portal and above all ownership of the content are major issues. Envisioned to cater to the entire agricultural community comprising of crops, commodities, animals etc, it has become a nobody's baby. May be creating agropedia for individual organization could be a possible solution. IIT Kanpur has developed a protocol, where agropedia could be rolled out as a software as a service (SaaS) and agropedia could be created for any organization, crop, sector, individuals etc.

Except a few, most of the NARS organizations have posted very little content on their websites which is often not updated regularly. There is lot of reluctance to share knowledge. The mindset is that knowledge is power and so hold on to it. This is ironical considering the fact that Open Access movement is sweeping the world. The institutions must be mandated to develop institutional repositories and embrace "Open Access policy" in creating and sharing knowledge. Individuals and institutions should be encouraged to create digital content and share with peers and public. Change of mind set, work culture and policy guidelines are required urgently to promote content creation and knowledge sharing using ICT.

ICT projects in agriculture are multiplying fast but there has been very little interest in evaluation of these initiatives. Agropedia is not an exception. Though IIM-Calcutta and G B Pant University of Agriculture and Technology (GBPUAT) did an impact assessment of agropedia, more efforts are needed to monitor progress and track its impact pathway. There are also other issues related to access to computers, internet connectivity, limited bandwidth, erratic power supply, etc which also needs greater attention.

Ways Forward

Agropedia is the first agriculture related repository in the country capable of sharing information among different agriculture-stakeholders. However some of the following measures are required to take this great initiative forward:

- As there is a challenge to own the content and the queries for the specific content, the Agropedia should be institutionalized (Agropedia 2.0). Thus research centers and scientists working on specific agricultural domain have to be made responsible for hosting the multilingual content of their mandated crops/area and answering questions in their specific areas.
- ICRISAT-Agropedia has been developed as model institutional repositories for other to follow it. It contains the scientific content of all the mandated crops of ICRISAT in HTML/image/audio/video formats. Others could follow this model. Among other agropedias, UAS-Raichur-agropedia, horti-agropedia, ICAR-Agropedia and 8 more have already been started. Indian Institute of Spices Research-Calicut has taken Spicepedia as their institute's project for three years. Likewise if the other research centers also take Agropedia forward, this initiative will become sustainable.
- The offline apps for Package of Practices (PoPs) in text and audio format for all the agricultural crops of Uttar Pradesh and Karnataka have been developed with the help of State Agricultural Universities. Similar apps for all the states are in pipeline. This will be useful for the field investigators who work directly with the grass root farmers and even for the illiterate farmers. Soon these voice PoPs will be used for Interactive Voice Response services (IVR) through vKVK platform.

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