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STUDY OF WORLD WIDE WEB FOR AGRICULTURE AND RELATED INFORMATION

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Abstract: Agriculture is the backbone of India and agriculture and related information is required for sustainable and modern agriculture. India is the agricultural country and the rural India is depends on the agriculture. India is the largest Internet users after China in 2015. More than 354 million Internet users are in India and increasing day by day. Rural India has 138 million users and urban India has 216 million users. Many organisations are working for research, education, extension and agribusiness in agriculture. For sustainable agriculture, timely information for farm management using World Wide Web or Internet is most important to the farmers. With the use of computer and Internet in agriculture sector, searching information and knowledge becomes easier. Many websites are available on internet and can be used to search the information. In this knowledge age, the use of World Wide Web is essential in agriculture. This research paper is the study of internet users and web sites & web pages related to agriculture & related fields on the internet and related information. Most popular search engines google and bing were used to find and study the agricultural information on web.

Keywords: World wide web, Internet, Agriculture, Information, web pages, web sites, google, bing

I. INTRODUCTION

India has the total geographical area of 328.73 million hectares and Indian Agriculture is dependent on total sown area of 141.58 million hectares (46.3% of total area). With limited available land resources Indian Agriculture have to feed 128.45 crores Indian population on 8/2/2016^[1]. Rural population and agricultural workers have been increased from 97.2 million in 1951 to 263 million in 2011 out of 1210.2 million population of India. Food grains production have been increased from 50.82 million ton in 1951 to 252.68 million ton in 2014-15. Agriculture is the backbone of India and agricultural informatics is required for sustainable and modern agriculture.

II. INFORMATICS

Informatics is the science of computer information systems. As an academic field, it involves the practice of information processing, and the engineering of information systems. The field considers the interaction humans and information alongside the construction of interfaces organization, technology and system. Informatics is the sciences concerned with collection, classification, manipulating, storage, retrieval, classifying recorded information and dissemination of recorded knowledge. Since the advent of computers, individuals and organizations increasingly process information digitally. This has led to the study of informatics with computational, mathematical, biological, cognitive and social aspects, including study of the social impact of information technologies. [Wikipedia, 13/10/2015]^[2]

III. AGRI-INFORMATICS

Farmers need information on agricultural resources, inputs, marketing and practices in planning and managing their agricultural production activities to increase productivity, profitability and to sustain their livelihood. Government and other stakeholders associated with agriculture equally needs the information for planning and improving delivery of their services to farmers. Agricultural Informatics on Internet provides agricultural sciences-based data products to improve agricultural-based decisions. Web based information and knowledge serves to farmers, growers, scientists, agricultural companies, governments, and non-governmental organizations in the India and the World. The main goal of Agril. Informatics is to help farmers and other users to improve their production. Internet and agricultural informatics provides the data or information on all aspects of agriculture. It is one of the best science and technology out come to make easy-to-use the information that help boost efficiency and yields. Many institutes and research centres have experts in agricultural sciences, agricultural engineering, soil sciences & agril. chemistry, agronomy, atmospheric science, dairy science & technology, crop science, seed technology, biotechnology, plant protections, social sciences, animal sciences, fishery sciences, horticulture, weather forecast, rainfall, information technology and computer science for

generating new technology, varieties and uploading it on their web sites for the use and dissimulation to the users.



Fig.1: Women farmers working in field

Source: www.youthkiawaaz.com



Fig.2: Men farmers working in field

Source: designpublic.in

Web Portals of Department of Agriculture, Ministry of Agriculture, Government of Maharashtra is <http://www.mahaagri.gov.in>. This portal has many facilities for researcher, educators, extension worker and farmers. It contains the link for Agriculture Inputs, Agri. Facilities, Marketing and Export, Agriculture Technology, Soil and Water Conservation, Schemes, Projects and Plans, Agri. Statistics and Crop Weather: Basic Information, Agriculture Advisory Service, Agrometeorological Forecast, Contingency Planning, Satellite Image, Rainfall, Technologies, Dryland Agriculture Mission, Kisan (farmer) SMS Services. Maharashtra State Agriculture Marketing Board <http://www.msamb.com/> displays two or three days market prices of agricultural produce in 300 APMCs in Maharashtra and other leading agriculture markets in India. Maharashtra State Agriculture Department with its offices at District and Block level provides wide range of pre-harvest and post-harvest services to farmers in the areas of Agriculture, Horticulture, Animal Husbandry, Fisheries and other allied sectors. Soil Health Card based Balance and Integrated use of Nutrients, Integrated Pest Management, Quality Control and Distribution of Inputs, Registration of Dealers/Service Providers and Issue of License, Risk Management, Artificial Insemination Centres, Infrastructure and Resource development, and subsidies are some of the important services. It is used to facilitate "Information Access" for efficient and effective planning and decision making by the stakeholders.

IV. ICT TOOL FOR AGRICULTURAL KNOWLEDGE DISSEMINATION

Information communication technology (ICT) helps farmers with value based information to improve their productivity and provide timely information to farmers and traders. ICT is disseminating knowledge through broadcasting and multimedia services at doorsteps in rural areas and relevant news at one's door-step. ICT is one of the important driving forces behind globalization. ICT is powerful tools for handling and spreading information and knowledge to the needy person in India. It has impact on all aspects of life by reducing time, distance and the information gap. ICT is increasing day by day for greater and faster interaction within different groups of people from different societies especially among farmers. However, ICT is an influential and a powerful tool for growing productivity, generating economic growth and facilitating trade, transport and financial issues, similarly creating jobs and improving the quality of life of different society's people in developing countries. ICT could play an important role to reach people living in far flung and remote areas. It could say that ICTs can bring awareness and adoption of ICTs technology and different kind of information on modern agricultural system in rural communities. It can also enhance agricultural production, processing and marketing which will increase farm income, improved nutritional status as well as diversified consumption, processing and marketing of agro-based products in developing countries. ICT tools such as mobile phones have provided new approach to farmers to make tentative decisions much more easily than before. Use of mobile phone leads to greater social cohesion and improved social relationships. However, short message service SMS and voice record have given improvements in social relations. Mobile phone based social-networking in the developing countries goes to show the growing importance of this aspect.

V. INTERNET USERS IN RURAL AND URBAN INDIA

India is the second largest internet users in the world after China. Table 1, shows the mobile internet users in rural and urban areas in India from June, 2012 to June, 2015 for 3 years.

Table 1: Mobile Internet Users in India (in millions)

Sr. No.	Period	Rural user (millions)	Percent Increase of rural users over a period of 1 year	Urban user (millions)	Percent Increase of urban users over a period of 1 year	Total users (millions)	Percent Increase over a period
1	Jun-2012	4	-	44	-	48	-
2	Jun-2013	21	525	70	159.09	91	189.58
3	Jun-2014	36	171.43	101	144.29	137	150.55
4	Jun-2015	53	147.22	160	158.42	213	155.47

Source: Internet and Mobile Association of India and IMRB

From the above table is shows that mobile internet users in India have been increased from 48 million in Jun-2012 to 213 million users (443.75% increase) in Jun-2015 within 3 years of time period. Urban mobile internet users have been increased form 44 millions in Jun, 2012 to 160 millions (363.63% increase) in Jun, 2015. Rural mobile internet users in Jun, 2013 have been increased to 21 million (525% increase) from 4 million users in Jun-2012 just in 1 year period. Similarly, mobile internet users increased from 4 millions to 53 millions (**1325%** increase) in just 3 years of time. It shows that rural mobile internet users are rapidly increasing for information and knowledge discovery on the Internet.

VI. SEARCHING AGRICULTURE RELATED WEBSITES USING SEARCH ENGINES

The following table 2 shows the number of websites and web pages available on internet for agriculture and related key words using the most popular search engines google and bing on 14/10/2015 and 15/10/015.

Table 2. List of websites and web pages found on the internet in search engines for specific keywords

Sr. No.	Keywords used for searching the websites	Result of Google search engine	Result of Bing search engine	Average number of websites & webpages	Difference d = (3) – (4)	Difference percentage = (6)/(3)*100
1	2	3	4	5	6	
1	“Agriculture”	518000000	17000000	267500000	501000000	96.72
2	Agriculture	535000000	17000000	276000000	518000000	96.82
3	Informatics	46500000	12700000	29600000	33800000	72.68
4	“Informatics”	46500000	12700000	29600000	33800000	72.68
5	Agricultural	286000000	16000000	151000000	270000000	94.40
6	“Agricultural”	286000000	16000000	151000000	270000000	94.40
7	“Agricultural informatics”	16600	6230	11415	10370	62.46
8	Agricultural informatics	5600000	2700000	4215000	3030000	52.88
9	Advances in agricultural informatics	506000	10100000	5303000	-9594000	-1896.04
10	“Advances in agricultural informatics”	1720	1040000	520860	-1038280	-60365.11
11	“Advances in horticultural informatics”	981000	3760	492380	977240	99.61
12	Advances in horticultural informatics	984000	61900	522950	922100	93.70
13	“Agriculture in India”	358000	13200000	6779000	-12842000	-3587.15
14	Agriculture in India	260000000	13200000	134100000	241800000	94.82
15	Dairy	195000000	14300000	104650000	180700000	92.66666667
16	Poultry	78100000	1300000	39700000	76800000	98.33546735
17	Farmer	189000000	14900000	101950000	174100000	92.11640212

The above table shows that millions of websites and web pages are available on internet and can be accessed by the farmers and stakeholders for finding the information and knowledge for their agricultural practices for sustainable and modern agriculture. Web of information contains the sites of government organisations, research

institutes, universities, KVK's, private companies, NGO, etc. which are dealing in agriculture and allied fields. Searching all these sites for specific information is time consuming and complex job. Even after large search, getting the required information is difficult. Therefore, for specific words, advanced search facility can be used for filtering the required web pages on key words.

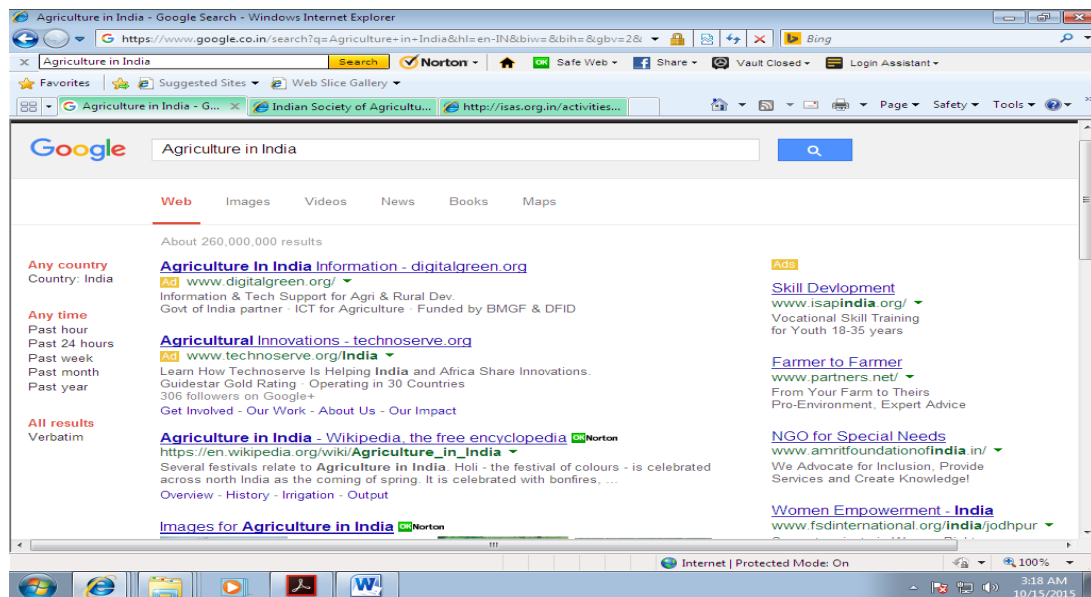


Fig.3: Searching the agricultural information in google search engine

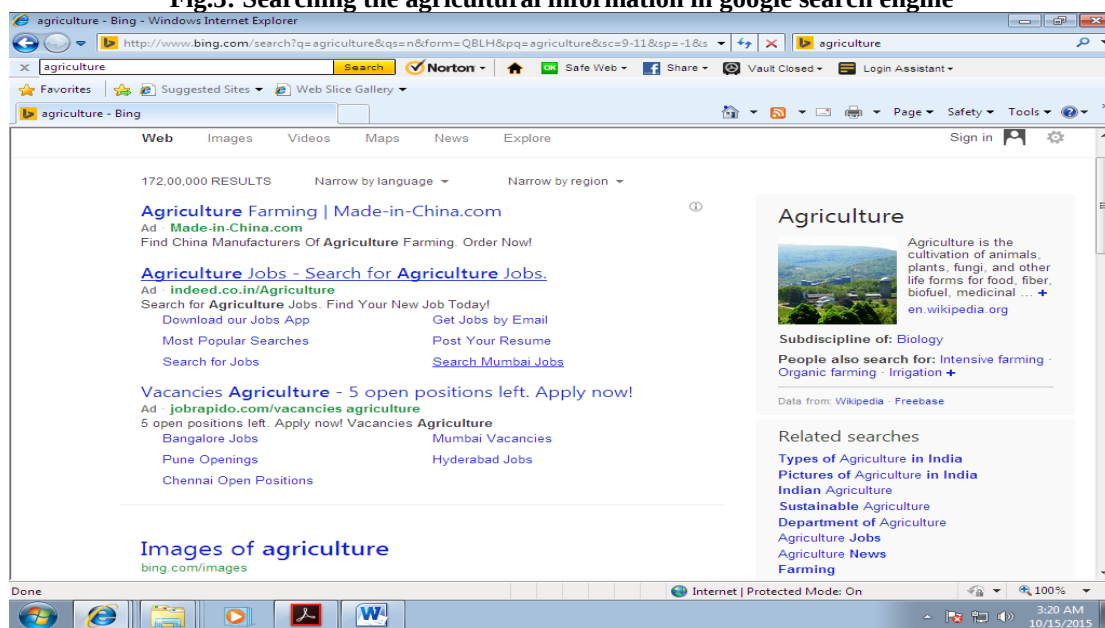


Fig.4: Searching the agricultural information in bing search engine

VII. CONCLUSIONS

Internet and ICT using mobile phones are gaining momentum in rural and urban India. It is increasing very fast and will see the drastic change over a period of time. Rural mobile internet users are mostly working in agriculture and allied fields, they use it for agricultural information for improving their profit. In Indian Economy, agriculture retains its primary importance in terms of its value and employment generation. There are millions of web sites available on internet for accessing agricultural information by farmers. With the help of most popular and effective google and bing search engines, farmers can search the required information on their internet ready mobile phones for their required information using specific words and advanced search facility. Web based information and knowledge serves to farmers, growers, scientists, agricultural companies, governments, and non-governmental organizations in India and the World. Strategic intervention of Information and Communications Technologies (ICT) in agricultural input, production and output systems,

integrate and facilitate trade, technology and food security, through effective value-chain and supply-chain models are essential for agriculture and allied field for productivity increase and prosperity, through informatics for agricultural development.

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