LITERATURE REVIEW

1.   Manish Mahant, Abhishek Shukla, Sunil Dixit, Dileshwer Patel, (2012)
The application of Information and Communication Technology (ICT) in agriculture is increasingly important. E-Agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use information and communication technologies (ICT) in rural domain, with a primary focus on agriculture. Information and Communication Technology (ICT) can play a significant role in maintaining properties of information as it consists of three main technologies. These technologies are applied for processing, exchanging and managing data, information and knowledge.

2.   Ugwuishiwu C.H., Udanor C.N., Ugwuishiwu B.O., (2012)
This paper proposes an Agro-Information System that enables a farmer to have relevant information about a crop, such as the varieties and other requirements like soil type, temperature, type and quantity of fertilizer, time of planting, time of maturity, planting distance, diseases, pest, pest and Disease control measures, rainfall, sunshine, etc. of that crop. The level of application of this information determines the volume and efficiency of the crop yield. AIS software is designed and implemented which helps the farmer achieve the afore-mentioned objectives.

3.   **HavliCek, J. Vanek, V. Lohr, E. Cervenkova, (2010)**
The rapid advancement in Information and Communications Technologies (ICTs) has given rise to new applications that were impossible just few years ago. Agriculture is an important sector with the majority of the rural population in developing countries depending on it. The sector faces major challenges of enhancing production in a situation of dwindling natural resources necessary for production. ICT plays an important role in challenging and uplifting the livelihoods of the rural populace using an agro computer-based information system. This paper proposes an Agro-Information System that enables a farmer to have relevant information about a crop, such as the varieties and other requirements like soil type, temperature, type and quantity of fertilizer, time of planting, time of maturity, planting distance, diseases, pest, pest and Disease control measures, rainfall, sunshine, etc. of that crop. The level of application of this information determines the volume and efficiency of the crop yield. AIS software is designed and implemented which helps the farmer achieve the afore-mentioned objectives.

4.   Sanjeev S Sannakki, Vijay S Rajpurohit, V B Nargund, Arun Kumar R, Prema S Yallur, (2011)
Present paper introduces an innovative approach to automatically grade the disease on plant leaves. The system effectively inculcates Information and Communication Technology (ICT) in agriculture and hence contributes to Precision Agriculture. Presently, plant pathologists mainly rely on naked eye prediction and a disease scoring scale to grade the disease. This manual grading is not only time consuming but also not feasible. Hence the paper proposes an image processing based approach to automatically grade the disease spread on plant leaves by employing Fuzzy Logic. The results are proved to be accurate and satisfactory in contrast with manual grading.

5.   Robert Szilagyi, (2012)

The new ICT technologies are not only fast developed but, in addition, are giving birth to newer systems and tools. The Internet network have become essential communication tools in business processes recently. Using the Internet by means of mobile appliances increases the possibilities. The agriculture has some speciality in information technology. The ICT adoption in the agriculture and main drivers has been examined. For the successful application the key lessons have to understand. To get a draft overview of Hungarian position there is part about it. In this part there are data about household communication devices the individuals ICT usage by age. The region differences in information technologies can be seen also. The final part of the paper there are some technology and application examples. The new devices like tablets and new services like Cloud Computing have great potential in agriculture. Cloud Computing provides better resource management and effective cost control. However, the business assessment of these technologies must not be done only on the basis of the technology and taken out of its environment randomly since the whole area is very complex.

6.   Omotesho, K. F., Ogunlade, I. O., Muhammad Lawal, (2012)

The study examined the factors associated with the level of access of Agricultural Extension officers in Kwara State to Information and Communication Technology (ICT). It also identified the constraints to the usage of ICT for the purpose of sourcing agricultural information. Data for the study were collected from the Subject Matter Specialists (SMSs) and ExtensionAgents(EAs) of the Kwara State Agricultural Development Project (KWADP) through the use ofa structured questionnaire. The numbers of years on the job and the age of the respondents had negative but significant relationship with access.Apart from the general constraints to the use of ICT such as, high cost of personal computer, inadequate electricity supply and poor internet access, poor training and technological knowhow were also identified as specific constraints faced by the EAs. The study therefore recommended the need for easier access by all agricultural extension officers to ICT. Besides,training workshops should be organized for Extension officers in the area of ICT and computer appreciation.

7.   Koen C. Mertens, Jürgen Vangeyte, Stephanie Van Weyenberg, Christiane Von Haselberg, Martin Holpp, Renate L. Doerfler, Iver Thysen, (2012)

Ample research is conducted on ICT, automation and robotics in agriculture and related environmental issues. ICT and Robotics innovations are rapidly emerging and have the ability to revolutionize future farming through their major impacts on productivity and profitability. Unfortunately human and financial resources and efforts are fragmented and limited. This led to the creation of the ICT-AGRI ERA-NET that provides a central structured framework. Its main objective is to strengthen and coordinate European research regarding ICT and robotics in agriculture. Besides the creation of the Meta Knowledge Base (MKB), a common European research agenda will be developed and common research calls are launched. The Meta Knowledge Base (http://db-ictagri.eu) is attempting to map all

relevant research and development within the selected research area. To organize the postings, a three-dimensional task-technology oriented framework was designed. The results indicated that the three axes: task, technology and scope seemed insufficient to describe the whole research area. Therefore, an improved framework was developed. By extending the task-technology oriented framework with a process-control–information system, a useful framework was designed.

8. SHANMUGAPRIYA M, DR.TAMILARASI A, (2013)

Mobile Devices are pervasive in nature and supports ubiquitous learning environment. In this article the designing and developing a mobile courseware for ICT students using problem-based learning approach is discussed. The courseware is designed to evaluate the feasibility of adopting the problem-based learning pedagogies in a mobile learning environment for ICT students. A case study is built for Java Programming and the courseware is implemented on the M-learning framework designed. The m-learning framework is developed using service-oriented architecture. The design and delivery of learning objects for the mobile learning is being depicted in the PBL environment.

9. Fladys Kibera, (2013)

Acknowledging people who will directly or indirectly benefit from a project is significant for its success. Projects whether small or large must place more weight on participation of stakeholders to build awareness, set realistic expectations, raise support, minimize resistance and ensure successful implementation and user adoption. J the change and a completely new way of operations of software systems like Customer Relationship Management (CRM), has been an uphill task because of factors like failure to involve the stakeholders and improper change management. The study categorized stakeholders into three; managers, administrators and technical staff. It adopted quantitative and qualitative research approach. We found out that managers are the key decision makers who facilitate the procurement of systems; administrators are the end users while the technical team provides support and maintenance of the systems. We propose that right from problem identification, to system specification all the way to installation of software (implementation) stakeholders must be brought on board.

10. Monica. N. Agu, (2013)

Agriculture is the mainstay of most third world economies and occupies a pivotal position in the development of these countries. Despite the importance of agriculture, improvements in this sector have been uneven and, on the whole, disappointing. In any farming system, it is important to recognize the various roles of women. Many women experience a life that is a complex web of multi roles and multi-tasks which requires the average woman to conduct different things in a bid to fulfill her family needs. Women in rural communities are extensively involved in arduous farm operations and

agricultural activities, from planting to harvesting and other post harvesting operations. So the Nigerian women are in an important position to contribute to food supply. This sector faces major challenges for enhancing production in a situation of dwindling natural resources necessary for production. ICT plays an important role in addressing these challenges. The paper analyzes the problems facing women in the agricultural sector-and suggests ways to solve these problems. Further more the paper surveys the information needs of rural women and how ICT can be used to meet their information needs.

11.   Slava Kalyuga, (2009)

The history of technological innovations in education has many examples of failed high expectations. To avoid becoming another one, current multimedia ICT tools need to be designed in accordance with how the human mind works. There are well established characteristics of its architecture that should be taken into account when evaluating, selecting, and using educational technology. This paper starts with a review of the most important features of human cognitive architecture and their implications for ICT-based learning. Expertise reversal effect relates to the interactions between levels of learner prior knowledge and effectiveness of different instructional techniques and procedures. Designs and techniques that are effective with low-knowledge learners can lose their effectiveness and even have negative consequences for more proficient learners. The paper describes recent empirical findings associated with the expertise reversal effect in multimedia and hypermedia learning environments, their interpretation within a cognitive load framework, and implications for the design of learner-tailored multimedia.

12.   Maria Koukouli, Alexander B. Sideridis, Eleni Antonopoulou, (2013)

Information and Communication Technologies (ICT) evolution is well advancing Moore‟s Law prediction of geometric progression of computer performance indexes. Indeed, these technologies are not only fast developed but, in addition, are giving birth tonewer ones nicely branching existing "old fashion" ICT systems and tools. These innovations of ICT are not only regenerating traditional sciences, like Agriculture, and practices, like farming, but also, awake well neglected human sensitiveness andindifference for poverty, environmental protection, climatic deterioration issues and the future of our planet as a whole. Parallel Computing brings exponentially increased core processing to low-end computers facilitating the use of huge computer power by small agricultural research units. Never the less agricultural and farming communities, in their majority, do not adopt new ICT tools and systems to the degree required for substantial agricultural development. In this paper, experience gained over the years is used to evaluate and reason poor performance in the area of applicability of ICT innovations and tools by the vast majority of farmers throughout the world.

13.   P. Benda, Z. HavlíCek, V. Lohr, M. Havranek, (2011)

As a result of technological progress ICT (Information and Communication Technologies) has created the so-called „digital divide". Some people are unable to individually respond to this progress, but the proper use of ICT can help them overcome this handicap. One of the possibilities is to create accessible and usable applications depending on the character and level of disability. In accordance with the European CertiAgri project, e-learning tools are used for integrating people with disabilities into the horticultural area. The paper specifically describes examples of simple teaching aids from the practical „green care" course, which focus on the skills of people with mental disabilities.

14.   Davorin Turkalj, (2012)

By means of quantitative and qualitative research the doctoral dissertation has attained methodical insights into competences and usage levels of new technologies for marketing purposes in agri-businesses in the Republic of Croatia. This is, of course, the average result intended to generate information on the profile of an ICT-competent family farm business, which does not exclude good examples outside this average profile. The hypothesis proposed in the dissertation was that the agricultural sector has a great potential, with ample room for improvement achievable through benefits brought about by information and communication technologies. This hypothesis was confirmed by the analysis of secondary data and the results of primary research. Substantiating the stated hypothesis can be highlighted as the original scientific contribution of the doctoral dissertation.

15.   G. Adamides, A. Stylianou, (2013)

The aim of this paper is to reveal the current situation regarding the use of mobile phones as a mean of information sharing by Cypriot farmers. In particular, a project at the Agricultural Research Institute is underway, to survey methods currently used for agricultural information and knowledge sharing, to determine the level of satisfaction of the farmers of the available sources of information, and to suggest how ICT tools can be applied to help in transferring agricultural knowledge to farmers who live and work in rural and remote areas. The results showed that nearly 98% of the farmers in Cyprus use the mobile phone as a source of agriculture information. Furthermore it was found that there are no differences between educational groups and between crop farmers and their livestock counterparts concerning mobile phone usage. Future research is needed to examine the factors that affect mobile phone usage, its usefulness and the possible benefits for the Cypriot farmers.

16.   Miklós Herdon, Róbert Szilagyi, Laszló Varallyai, (2011)

The development of the European Qualifications Framework for Lifelong Learning (EQF) commenced in 2004 in response to requests from Member States, the social partners and other stakeholders for a common reference tool to increase the transparency of qualifications. Although Qualifications within the Agricultural sector in Europe share a common base, each country represents

significant geographical differences that result in variable Learning Outcomes. The ImpAQ project (Implement Agriculture Qualification) recognizes the importance of researching different national qualifications in order to contribute to the comparative analysis at national and European level. The ImpAQ aims to compare the Qualifications related to the Agricultural sector, by identifying and analyzing the main issues to be addressed with the purpose of connecting them to the EQF and focusing on the best resolving approaches following the "best fit" criterion. Within the ImpAQ project the consortium developed and applied ICT tools for collecting information from countries of consortium members to build Inventory Database of Agricultural Qualifications and Agricultural Matrix. The matrix cells contain that which qualification entitle for job in the product/process. The Inventory Database and the Agricultural Matrix is used for comparison qualifications. In our article we describe the concept and ICT tools which was used in the project for filling the matrix and uploading information of Hungarian qualifications into the database.

17. J. Vanek, P. Šimek, T. Vogeltanzova, E. Cervenkova, J. Jarolímek, (2010)

The present paper brings an outline of the methodology and chosen results of an extensive ICT development survey in agricultural enterprises that was carried out in the second quarter of 2010 in the whole Czech Republic. The survey was aimed primarily at the analysis of internet connectivity development in rural areas (i.e. areas where the majority of enterprises operates), at the technical and program equipment and last but not least at the present state and current trends in ICT use. This follow-up survey prosecutes the studies that were administered within the last two years (2009 in particular). In comparison with previous years, it comprises two brand new domains (e.g. social networks and their use, program equipment used in different segments of animal production, crop production and economy). The research was prepared, carried out and administred by the Department of Information Technologies in cooperation with the Information and Consulting Center of the Faculty of Economics and Management of the Czech University of Life Sciences.

18. Zachary Gitonga, Georgina Wambui Njiraini, Oliver Kirui, Julius Juma Okello, (2012)

Smallholder farmers' access to markets has traditionally been constrained by lack of market information. The desire to strengthen farmer access to market has seen the emergence of a number of projects that employ ICT tools in the provision of market information. This study assesses the conditioners of the use of ICT tools in general and mobile phones in particular by smallholder farmers for agricultural transactions. The study finds that several farmer, farm and capital endowment factors affect the use of ICT tools and mobile phones. Specifically, age, occupation, nearness to output market, number of crop enterprises, farming experience literacy and crop income explain the use of tools while gender, nearness to output market, household size, owning a phone, level of literacy, crop income and value of assets explain the intensity of use of the mobile for agricultural transaction purposes. It discusses the implications of these findings for policy.

19.   **K. Johnston, S. Parker, K.D. Tu, F. Mosoval, (2009)**

ICT covers a broad range of fields in business and therefore makes ICT value difficult to simply define. The main factors that influence the use of ICT are therefore important to look at, as they give a good understanding of the how much influence the organisation has, on achieving value in its given context. Implications of the research are that management practices are an important factor that influences the value from ICT, and that the more management practices organisations implement, the greater the business value from ICT. Further findings of this study deduced that organisations that are more ICT aware, gain greater business value from ICT, with value achievement from ICT largely within the organisation's control. This paper concludes with recommendations for future research.

20.   **Shabnam Sikandar Mahat, Dr.Pallavi P. Jamsandekar,, Dr. K.M. Nalavade, (2013)**

In many countries, information and communication technology (ICT) has a clear impact on the development of educational curricula. The absence of a formal and established ICT curriculum leads to an ambiguous situation, because there is nevertheless an observable policy towards the adoption of ICT in education. This policy fosters the integration of ICT in teaching and learning processes, but builds on the professional attitude and willingness of the individuals. However, it has never been examined whether teachers are using ICT in accordance with the competencies proposed by the UGC and AICTE. Results show that teachers mainly focus on the development of technical ICT skills, whereas the ICT curriculum centres on the integrated use of ICT within the learning and teaching process. This indicates the existence of a gap between the proposed and the implemented curriculum for ICT. The present study investigates how and to what extent colleges implement the new expectations arising from the national authorities. In particular, it examines which ICT competencies teachers actually adopt (actual use) and which competencies they intend to adopt in the future (preferred use).

21.   **Mladen CUDANOV, Ondrej JASKO, Gheorghe SAVOIU, (2010)**

This paper aims to describe interrelationships between size of the organization and adoption of information and communication technologies (ICT). We hypothesize that size of the organization is interrelated with ICT usage. By analyzing the data from 68 organizations we have classified to micro, small, medium-sized and large enterprises and calculated composite index of ICT adoption in each organization. Our conclusion is that ICT has the potential to diminish size of the company, but that still in average large and medium companies are leaders of ICT use in spite of extreme examples of good practice in small companies.

22.   **Sanjay Tejasvee, (2010)**

Intermediate organizations are one of the areas where governments of developing countries can invest since intermediate organizations (IOs) play a vital role in economic growth. The application of ICT and e-governance has massive potential for intermediate organizations (IOs) in developing countries. Based on the degree of the use of ICT among intermediate organizations, this paper attempts to explore the potential and problems ICT and e-governance pose for IOs in India. Information and communication technology (ICT) is seen as a driving force in shaping universal economy in the 21st century. ICT plays a critical role in the global economy, which cannot be ignored. While ICT is seen as posing great potential for development in developing countries, it has also been substantiated that developing countries need to harness ICT in order to promote development.

23. **Awuor, F. ; Kimeli, K. ; Rabah, K. ; Rambim, D., (2013)**

Agriculture is an important sector with the majority of the rural population in developing countries depending on it. The agricultural sector is confronted with the major challenge of increasing agriculture production to feed a growing and increasingly prosperous population in a situation of decreasing availability of natural resources. Information and communication technologies (ICTs) in agriculture have the potential to increase the efficiency, productivity and sustainability agriculture by providing information and knowledge sharing. In this paper, we seek to illustrate the contribution of ICT to food security and sustainability agriculture in developing countries. We argue that developing solution architecture (e-agriculture framework) to expose farmers to the much needed agricultural information (i.e., preharvest and post harvest information, pricing, weather conditions etc) can boost agricultural productivity. We show that such a framework must accommodate the dynamic trends in ICT tools, applications, adoption and usage. Further, we illustrate the development of such a framework to address these aforementioned properties to improve agricultural productivity.

24. **Saha, A. ; Sakib, S.R. ; Saquib, N. ; Hussain, M. ,(2010)**

Knowledge gap among the rural poor farmers is one of the key constraints to the growth of the overall agricultural sector of Bangladesh. To overcome the above key constraint, Information and Communication Technology (ICT) can be synthesized with the Agricultural Technology directly through establishing the modern "Agro Call Center". But herein Bangladesh no such professional Call Center is available or existing that has got comprehensive understanding of the processes and neither has the expertise to run/manage this sort of operation. As such we have decided to design and deploy the total IT infrastructure and provide technical supports for developing such a Call Center on our own initiative and through it develop linkages with the agricultural scientists, research institutes and professionals. This paper focuses on the required IT infrastructure, technical design, and total admin assessment to establish an "Agro Call Center".

25. **Salehi, A. ; Pathan, M. ; Palmer, D. ; Compton, M. (2010)**

Perceiving the environment, a sensor network collects huge volume of data to be used in different application domains. The gathered data is often used and analyzed by e-research scientists other than the original investigator. Therefore, the sensed data needs to be captured, processed and stored in a form that will allow someone to use the data with confidence long after the original investigators have left the scene. To address this need, in this paper we present

SensorFeed, which integrates metadata repositories and sensor data management systems. Using SensorFeed, scientists can annotate sensor readings automatically as they are streamed, through direct use of statistical modeling frameworks. These annotations enrich sensor readings, thus making datasets generated from sensor network deployments usable by external scientists. A real-world use case of SensorFeed for agriculture engineering is presented to show the applicability of our approach to an e-research application.

26.   Maurya, B. ; Beg, M.R. ; Mukherjee, S., (2013)

Expert System technology can play a very important role in farming sector. This paper is written to present different aspects related to agricultural expert systems. I will suggest a structural view of an agricultural expert system which will be very help full for farmers to increase production, conserve nature and produce less pesticide infected food. Most of the Indian farmer is illiterate so I will also provide a solution for them to use agriculture expert system in very easy way. The overall area of my research are (1) Selection of crop on the basis of soil test report and market demand. (2) Live weather updates through internet (3) selection of pesticides and their amount according to the symptoms and climatic conditions (4) Visual and audio feedback for semi literate users (5) Artificial intelligence to compare historical data for intelligent decision making.

27.   Monyatsiwa, C. ; Ferguson, D. ; Phumaphi, N. , (2013)

Botswana is a cattle farming country, with cattle out numbering humans, last cattle census put cattle at 3 000 000 while people are at 2 044 904(Botswana Census 2011). The challenge was the unavailability of network connectivity in the rural areas in of low population density, such as to farms, ranches, cattle posts and small villages. In areas where the population density is high, it is easier for a service provider to recover equipment costs, but each rural customer may require expensive equipment to get connected, this was the case in Botswana farming communities with no access to network connectivity in 2000. The RFID microchip, which enables linking of a unique identifier to information on cattle and ownership, ensured data is collected, transferred and stored in a central computerized database. Office computerization alone could not be of much use, as veterinary staff would have access to technology in offices, but could not access livestock data in cattle posts and farms. A solution had to be sought, therefore, the introduction of a mobile extension officer personal computer known as an EOPC with a supporting data synchronisation architecture.

28.   Doerflinger, J. ; Gross, T. (2012)

For long-term sustainability, information and communication technologies for development (ICTD) must focus on reusability and scalability from the ground up. The Sustainable Bottom Billion Architecture is a technical ICTD architecture with successful sustainable replications in two ICTD projects in Africa's cashew and shea-nut farming value chains.

29.   Singhal, M. ; Verma, K. ; Shukla, A. , (2011)

Information and Communication Technology (ICT) in agriculture is an emerging field focusing on the enhancement of agricultural and rural development in India. It involves innovative applications using ICT in the rural domain. The advancement of ICT can be utilized for providing accurate and timely relevant information and services to the farmers, thereby facilitating an environment for remunerative agriculture. This paper describes a mobile based

application for farmers which would help them in their farming activities. We propose an android based mobile application - Krishi Ville which would take care of the updates of the different agricultural commodities, weather forecast updates, agricultural news updates. The application has been designed taking indian farming in consideration.

30. **Jhunjhunwala, Ashok ; Umadikar, Jayalakshmi ; Prashant, Suma, (2013)**

This paper presents a new approach to building an Agricultural Advisory System aimed at bridging the information gaps that exist between farmers and extension workers and agricultural scientists in a country like India. It demonstrates the power of two-way mobile phones today, which when combined with innovative methods could provide services to farmers that could not even be envisaged till yesterday. With fragmented landholdings, the number of independent farmers has risen to 88 million with near-stagnant productivity. Growth-acceleration is possible only with customized advisory. India currently has a 900 million strong mobile phone subscriber base largely operating over voice oriented 2G GSM (Global System for Mobile Communications) and GPRS (General Packet Radio Service) networks. With ever increasing rural mobile penetration, personalized agricultural advisory is a distinct possibility. The paper presents an innovative technology development effort, analyses the technological challenges faced as well as discusses the feedback obtained from early field implementation and focuses on what needs to be done in future to scale such systems. Index Terms, Mobile telephony applications, Agriculture Advisory System, Call Centre, Dashboard for farmers, Interactive Voice Response System

31. **Ludena R, D.A. ; Ahrary, A. ; Horibe, N. , (2013)**
Big Data is becoming a common term among researchers, who are looking for a tool to broaden their research and to improve their results because the "probable" relation between different scientific areas. But, although the term Big Data is not new, its recent application and methodologies are changing some well establish paradigms in the research area as well in the several industry applications where Big Data methodologies are used. Because of their rapid development, Big Data is also raising specific issues related to some of its core concepts. It is the aim of this paper to address these issues and to create a common background to be applied in the new NEDO project in which Sojo University is an active research member.

32. **Sangbuapuan, N., (2013)**
This paper presents the ICT policy framework to enhance the farmers' knowledge, which leads to the better cropping yield and strengthen the rice production yield through Community Rice Centers. This also leads to the development of research methodological framework and design to support the topic, as a useful guide and helpful contribution in accomplishing the ICT management processes. This framework includes details about the required ICT & human infrastructure and human capital problems solving, as well as the best practices model. Finally, we are attempting to develop the ICT policies framework in order to address these issues.

33. **Chandra, D.G. ; Malaya, D.B. , (2011)**
e-Agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use information and communication technologies (ICTs) in the rural domain, with a primary focus on agriculture. People around the Globe from few years from now will be carrying a handheld computer connected to the Web to get the information about the

World at their fingertips. e-Agriculture is an emerging field focused on the enhancement of agricultural and rural development through improved information and communication processes. We have 28 States and 7 Union Territories 626 District 6, 38,596 villages and 70% of the Indian population lives in rural areas as per the Census of India 2001. In this paper, we have discussed the problems & prospects of e-Agriculture in Rural Development in Indian context.

34.   Ludena, R.D.A. ; Ahrary, A. , (2013)
Big Data is becoming a common term among researchers, who are looking for a tool to broaden their research and to improve their results because the "probable" relation between different scientific areas. But, although the term Big Data is not new, its recent application and methodologies are changing some well establish paradigms in the research area as well in the several industry applications where Big Data methodologies are used. Because of their rapid development, Big Data is also raising specific issues related to some of its core concepts. It is the aim of this paper to address the impact of these issues in the novel nutrition-based vegetable production and distribution system project in which Sojo University is an active member.

35.   Ramamritham, K. ; Sahni, S. ; Baru, M. ; Bahuman, C. ; Chandran, A. ; Joshi, M. ; Bahuman, A. , (2008)
As in many regions of the world, people in rural India often lack access to knowledge that's more readily available to people in urban areas. Although rural telecenters are becoming more common, developing content that's presented in local languages, relevant to users, and delivered in an immediately usable form is a challenge here and in rural areas across the globe. To address this, an agricultural portal for rural farmers in India uses innovative database systems and information retrieval techniques. In so doing, it both improves service and addresses connection costs and constraints.

36.   Joseph, M.K. ; Andrew, T.N. , (2008)
This paper makes a strong case for the use of participatory approaches involving farming community for development and adoption of ICT in the agricultural sector. This paper discusses how digital ICT developed by means of participatory learning and action research can spur development and eradicate poverty by providing services to farmers in rural areas. Although no single ICT will be satisfactory for farmers, the use of a wide range of ICTs in agriculture can improve the livelihood of the farmers in rural areas and help in their socio-economic growth. The paper focuses on various participatory approaches such as participatory communication and participatory learning for effective use of ICTs in agricultural domain. It highlights how participatory approaches can assist in dasiaparticipatory information and communication technology development sila for rural farming community.

37.   Aoki, E. ; Kudo, K. ; Fukuda, A. ; Nakanishi, T. ; Tagashira, S. ; Okayasu, T. ; Tsuruda, N. ; Yamasaki, S. ; Imura, Y. , (2012)
In the region of Japan, broadband network and informatization have spread. However the field of agriculture has not come willingly. The infrastructure that has not been enough in mountainous areas, but various initiatives of computerization are being started using production and distribution as the subjects. Since this began in reality, there are still insufficient matters that have been resolved in regards to the technical validations and cost effectiveness. Therefore necessitates pouring in a tremendous amount of expertise, possibility is ICT and its related

technologies of sensors. In our research and developments, we create demo hardware for the experiment using in the farm collected data. On the other hand, making study group with farmers for accumulation of data and experience. That visualized information configure to the platform of knowledge management.

38.   Armstrong, L.J. ; Diepeveen, D.A. ; Gandhi, N. , (2011)
This paper examines the grains value chain in agriculture, and identifies the importance in developing strategies which could better secure food production. The study highlights examples of successful integration of ICTs in agricultural supply and value chains. The development of strategies to integrate these ICTs into the supply chain will be proposed. An assessment of the study found that the results from the grain-industry dataset support the similar supply chain grouping reported for other research studies. These groupings reflect the more-developed food-industry supply chains and may not capture all the interactions in less-developed supply chains. For example, when several of the food production processes are carried out by one food-producer, the activities will be more difficult to identify.

39.   Saha, A. ; Sakib, S.R. ; Saquib, N. ; Hussain, M. , (2010)
Knowledge gap among the rural poor farmers is one of the key constraints to the growth of the overall agricultural sector of Bangladesh. To overcome the above key constraint, Information and Communication Technology (ICT) can be synthesized with the Agricultural Technology directly through establishing the modern "Agro Call Center". But herein Bangladesh no such professional Call Center is available or existing that has got comprehensive understanding of the processes and neither has the expertise to run/manage this sort of operation. As such we have decided to design and deploy the total IT infrastructure and provide technical supports for developing such a Call Center on our own initiative and through it develop linkages with the agricultural scientists, research institutes and professionals. This paper focuses on the required IT infrastructure, technical design, and total admin assessment to establish an "Agro Call Center".

40.   Author : Armstrong, L.J. ; Gandhi, N. ; Lanjekar, K. , (2012)
This paper discusses the impact of information and communication technology (ICT) on the access for rural farmers from the Ratnagiri district to agricultural information. A study was undertaken in which more than one hundred randomly selected farmers completed a structured questionnaire to gather information at household level of the use of ICT. Interviews were also conducted with key stakeholders, service providers and government officials. Findings from the study indicated that farmers were most interested in obtaining market price information. Examination of the relationship between use of ICT tools and co factors such as age, qualifications and income indicated that only income was a determining factor of using ICT tools.

41.   Animas, M.I. ; Gerardo, B.D. ; Yung-Cheol Byun ; Concepcion, M.B., (2013)
Currently climate change is one of the major problems encountered due to the climatic controls interacting in various intensities and in different combinations. The proposed system includes mechanism that accepts/processes gathered data from Agricultural Research Center. The system uses Time Series Analysis; the collection of observations of well-defined data items

obtained through repeated measurements over time which utilizes algorithm that is capable of formulating the trend. Upon prediction, the system displays table and graphs along with the recommended crops. The system had successfully determined the trend of rainfall and evaporation using prediction algorithm together with the recommended crops. It was able to display the result of prediction in graphical form and crop classification in tabular form.

42.   Sohoo, S. , (2008)

South Asia is the home of nearly 1.42 billion people-one-fourth of the world population, living on 2 percent of the worldpsilas income. Nearly 50 percent of its people live below poverty level-at less than a dollar a day. Most farmers operate on small farms. The developments in information communication technologies (ICTs) and the Internet in particular have revolutionized the entire agriculture field, generating new market, changing the structure of the Agriculture distribution channels and re-engineering all processes. This paper tries to highlight some of the areas where the SAARC member countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) should concentrate so that all the members can become beneficiary of agricultural information through ICT based information system. The paper discusses different technology usage from the perspective of agricultural research, extension, product processing and marketing. The findings reveal potential growth of the agriculture sector in SAARC countries through the use of ICT.