



ROLE OF MEDIA IN AGRICULTURAL DEVELOPMENT

Dr. B.P.Mahesh Chandra Guru **Ms.J.Shilpa ***Dr.K.Rajagopala and *Mr.M.Dileep Kumar**

* Professor, Department of Studies in Communication and Journalism, University of Mysore, Manasagangotri, Karnataka.

**Asst.Professor, Dept of Journalism School of Graduate Studies, Jain University, Bangalore.

***Guest Faculty, Department of Studies in Communication and Journalism, University of Mysore, Mysore, Karnataka.

**** RGNF Research Scholar, Dept. of Studies in Communication and Journalism, University of Mysore, Mysore, Karnataka, India.

Abstract

About 65% of the people in India primarily depend on agriculture which provides more than 20% of income to the national economy. Agriculture also provides more than 10% to the export sector in India. Several agricultural universities are created across the country in order to facilitate meaningful research and developmental activities. The 12th Five Year Plan also highlighted the significance of agricultural development. Agricultural communication has a social responsibility of eradicating poverty and unemployment in the country through transfer of agricultural information and facilitation of agricultural progress. In India All India Radio and Doordarshan broadcast special programmes on agricultural development on a priority basis. Doordarshan also played a notable role in the process of agricultural broadcasting in India. The growth and development of new media including Internet boosted agricultural progress through farmers' centered programmes. Agricultural communication received great fillip in India after the agricultural extension programmes organized by the Government of India. Internet played a crucial role in the transfer of advanced farm technologies of the world to the field of the farmers in developing nations. The training and visit system has also played a major role in the adoption of agricultural innovations across the country. The intervention of social media for agriculture and rural development is also felt. There is a need for field practitioners to take stock of the experience that has so far been accumulated. There is no dearth of role models and success stories in India and abroad in the field of agricultural progress. Adoption of agricultural innovations and practices should be encouraged at the grassroots level by the media institutions as a matter of corporate social responsibility in the new millennium.

Preamble

Agriculture is the backbone of economy in India and many developing nations of the world. A vast majority of people in the rural areas primarily depend upon agriculture and cottage industry for their survival and development. In India, considerable progress has been achieved in the field of agriculture in the post-independence era. There are limited opportunities for the expansion of irrigated area in India and people mainly depend on rain water. The agricultural universities and other technical institutions have explored new possibilities of making rain fed areas more productive through consistent research and development activities. The need to bridge the gap between the lab and land is realized by the scholars and scientists across the country. The media have also understood the importance of agricultural coverage in a developing country like India. The role of media in agricultural development is discussed in this paper which is based on qualitative research.

Agricultural Development in India

There is a well established relationship between development and human rights, states Adler (1966:01). The economic and social forum of UNO established a commission for the protection of the human rights in 1945. The UNO also adopted international human rights declaration in 1948. The agriculture sector contributed immensely towards national development in India. There is a well established bondage between agricultural development and national development in India. The policy makers had understood the importance of agriculture in India and consciously launched Five Year Plans in 1951. The process of globalization and conditions of WTO has adversely affected the millions of small and marginal farmers in India, laments eminent economist Swaminathan (2001:21).

Swaminathan Committee (2004:20) examined the agricultural policy and progress in the country and recommended that implementation of land reforms, social security for farmers, involvement of youth in agriculture, increase in agricultural productivity, adoption of ICT in agriculture and other progressive measures were essential for the sustainable development of agriculture in India. India also became a signatory to the Dunkel Proposal which had caused a death blow to the field of agriculture. Consequently, there was considerable reduction in agricultural subsidy, imbalance in the public distribution system, implementation of patent scheme, importing of food grains from abroad and other setbacks to Indian agriculture. The peasants, workers, women and weaker sections could not rise to the occasion in the age of globalization due to in built constraints and limitations, according to Bage (2005:03).



Food security should be achieved in India in order to prevent the death of poor people from starvation, malnutrition, ill health and other difficulties. The central and state governments launched several programmes for the development of agriculture sector. Despite these, India occupies 94th position in the list of 118 countries where people die out of hunger, reports IFPRI (2006:09). Studies have revealed that more deaths occur due to hunger since India has not achieved desirable progress in the field of agriculture.

About 65% of the people in India primarily depend on agriculture which provides more than 20% of income to the national economy. Agriculture also provides more than 10% to the export sector in India. Agriculture provides employment opportunities, raw materials and economic support considerably in a developing country in India. A vast majority of agricultural land comes under rain fed cultivation and agriculture becomes the foremost sector under primary development in the country. Many peasants are born in debt, live in debt and die in debt in India. There are many peasants who are suffering from inadequate financial support, poor infrastructural facilities and low standard of living in India despite the so called 'green revolution'. The big farmers became the prominent beneficiaries of green revolution which has planted the seeds of red revolution across the country. The use of chemicals and fertilizers has brought about decreasing fertility of soil and increasing ill health of the farmers and consumers in the country.

The big landlords have impeded the strict implementation of land reforms in the country. The central and state governments have failed to redistribute the land and facilitate judicious access to land resources which benefit the marginalized sections of society. In the age of globalization, the creation of special economic zones has deprived the farmers from their right to land ownership and agricultural progress, reports Prajavani (2007:13). In India, the government has failed to ensure the expansion of irrigation and electricity facilities in the post-independence era. The small farmers and landless workers have become the worst victims of circumstances.

The banks and cooperatives have not played a crucial role in the development of agriculture in India. In particular, agricultural marketing system has not grown across the country in a proper way in tune with the growth of agriculture sector. The farmers are not able to protect their crops and sell them at the right price at the right time due to several practical constraints. The government has failed to facilitate preservation of agricultural produce in the country. The middle men have also caused in the deterioration of the living standard of farmers in the country. The Government of India has created the Marketing Research and Information Network in 2000 in order to diagnose the drawbacks and limitations of agricultural marketing and safeguard the interest of farmers in the country.

Several agricultural universities are created across the country in order to facilitate meaningful research and developmental activities. There are 47 central universities, 5 national councils, 31 national research centers, 38 state universities, 05 composite universities, 440 agricultural science centers, 120 regional agricultural research centers, 44 agricultural technological information centers and many grassroots level organizations which are actively involved in the agricultural teaching, training, research and extension activities across the country, according to Ghosh, (2006:08). Several studies have reported that grassroots level agricultural communication activities are not systematically organized across the country due to lack of political will and social commitment. Lab to land connectivity still remains unaccomplished task in the country.

The agro – based activities such as dairying, sericulture, horticulture, fisheries etc are also encouraged by the government organizations, banks and cooperatives. The introduction of crop insurance scheme has also benefited the farmers in the country. The national and provincial dairy development corporations have also facilitated considerable white revolution in the field of animal husbandry and dairy development. India has become a prominent country in the world in the field of dairy development due to the pivotal role played by several farm scientists and activists. India has also become a major player in the production of commercial crops in the globe. In the age of climate change, India has to rise to the occasion in increasing agricultural production and productivity in order to carve a niche for itself in the global economy, observes Singh (2007:18).

The international agencies such as World Bank, IMF and other market forces prevailed upon the national governments in India and elsewhere to adopt the policy of liberalization. In the age of globalization, defense, industry, urban development and other sectors of national development are receiving maximum financial support while there is decreasing budgetary allocation for agricultural development in the country is far below the expectation. There was decreasing public and private investment in the agricultural sector subsequently which resulted in reduction of food grains and increase of commercial crops. Several scholars and activists have condemned the step-motherly attitude of the government toward agriculture which has resulted in the noticeable decrease of agricultural growth.



The Government of India have formulated National Policy for Farmers in 2007 and called upon the states to work in close collaboration with the central government in order to empower the farmers through adoption of progressive measures. Prominent among the measures include – emphasis on agricultural development, development of land and water resources, supply of seeds, irrigation, electricity and technical facilities to the farmers at reasonable price, promotion of agro-based activities, adoption of just price policy for agricultural products, timely supply of chemicals and fertilizers, skill development of farmers, adoption of information and bio-technologies in agriculture, extension of agricultural training facilities, implementation of social security for farmers and so on.

The 11th Five Year Plan emphasized the need for sustainable agricultural development. Serious efforts were made for better methods of empowerment of peasants in the country, reports The Hindu (2007:22). The World Bank (2008:24) cautioned the developing countries including India to launch innovative programmes for the reduction of starvation and poverty through sustainable development of agriculture and attainment of food security. The 12th Five Year Plan also highlighted the significance of agricultural development. Adequate funds are provided in the plan outlay for the achievement of the goal of integrated agriculture development in India.

The entry of multi-national corporations into the agricultural sector and establishment of seed development corporations has impeded the organic farming in India. The Indian farmers were compelled to purchase the hybrid seeds and adopt western farming practices which did not fit into the Indian agricultural environment. These developments brought about the further marginalization of farmers in India, comment Vandana Shiva and Tom Crompton (1998:16). The industrialists and traders took the government and farmers for granted and adopted their own policies which impeded the progress of farmers in India. The World Trade Organization also subjected the Indian farmers to great inconvenience and exploitation economically and otherwise, states Malhan (2007:12).

Significance of Agricultural Communication

The field of agriculture is expanded all over the country in terms of infrastructure development, budgetary allocation, formulation of agricultural policy, implementation of special component plan, extension of communication facilities and adoption of innovations. In the age of globalization, agriculture has become a profit oriented enterprise. In India and other developing nations, agriculture sector has been commercialized. The need for bridging the communication gap between laboratory and land is felt by the authorities concerned. The farmers need constant information, education, training, consultation, guidance and allied facilities in order to upgrade their knowledge, experience and expertise in this age of competitiveness. Hence, agricultural communication assumes great significance in India.

Americans had achieved commendable progress in the field of agriculture in the beginning of 20th century. There were a good number of farm universities and channels of agricultural communication. There was a well organized American agricultural communication which facilitated adoption of agricultural technologies, promotion of agricultural sector and achievement of agricultural development according to Demaree (1941:06).

The farmers specifically need information on cultivation of crops, preparation of grounds, utilization of seeds, adoption of technologies, methods of improving productivity, prevention of diseases, preservation of agricultural products, sale of agricultural produce, trends in agricultural marketing, opportunities of agricultural progress and other aspects of agricultural development. The agricultural universities and departments have a social responsibility of reaching out to the farmers and enlisting their active participation in the process of agricultural transformation in the country. The farmers need specific training and orientation at the community and field in order to improve their production and productivity. Farmers need constant orientation about enhancement of fertility of land, preservation of water resources and adoption of farm technologies on day to day basis by the media, universities, NGOs and other sources. Farmers also need meaningful consultation services on the promotion of various agro based activities in the rural areas. Agricultural development demands basically transfer of knowledge and skill from the university to society.

India also witnessed meaningful changes and developments in the field of agricultural communication. Indian Agricultural Research Institution (IARI) was established in the beginning of 20th century. It brought out The Agricultural Journal of India in 1906. Other prominent agricultural journals namely The Indian Journal of Agricultural Sciences, The Indian Journal of Veterinary Sciences and Animal Husbandry, The Indian Journal of Animal Sciences, The Indian Journal of Agricultural Sciences, Indian Horticulture, Indian Journal of Agriculture and Veterinary Education and Indian Potato Journal, Agricultural Research, Indian Livestock and Pashupalan, etc were brought out in the first half of 20th century. These journals published series of articles and writings which brought about awareness among the farmers.



Agricultural communication has a social responsibility of eradicating poverty and unemployment in the country through transfer of agricultural information and facilitation of agricultural progress. The communications media have the responsibility of taking the agricultural development policies and programmes of the government to the door steps of the people in India. These media are required to collect the feedback and submit feedback to the policy makers and implementers in order to bring about suitable changes and modifications in their approaches and initiatives. In particular, the green revolution and farmers' movement in India paved the way for the organized growth and development of agricultural communication in India, states Reddy (1987:14). Indian agricultural universities also established extension agencies and promoted grassroots level agricultural communication activities. Multi-media campaigns were also launched across the country in order to popularize the beneficial effects of agricultural research and development programmes of central and state governments. Several professional agricultural communicators were created by various universities and institutions across the country through formal and informal opportunities.

Several progressive farmers also emerged as seasoned agricultural communicators at the grassroots level. The farmers' associations also produced good number of spokespersons who enhanced the knowledge level of farmers in the country. The print and electronic media disseminated several case studies and success stories in the field of agriculture. Special columns and programmes were published on various aspects of agricultural development; write Frick and Elliot (1995:07).

In India All India Radio and Doordarshan broadcast special programmes on agricultural development on a priority basis. All India Radio broadcast agricultural programmes for the benefit of farmers on regular basis. It established community radio stations all over the country in order to broadcast area-specific, target group-specific and programme-specific programmes. The Government of India distributed community radio sets all over the country and provided the benefit of access to agriculture and rural development programmes. The Radio Rural Forums Project was established in order to enlist the active participation of farmers and other sections of rural society in the process of learning. The community radio concept worked very well in India since it became an effective interactive broadcasting forum.

Doordarshan also played a notable role in the process of agricultural broadcasting in India. It started 'Krishi Darshan' in 1967 in Haryana and Uttar Pradesh states. Later on the programme was extended to other parts of the country. The low power television stations concentrated specifically on rural farmers and broadcast programmes which benefitted the farmers practically. Doordarshan Kendras also broadcast series of agricultural programmes and created new awareness among the farmers. The Satellite Instructional Television Experiment was carried out in 1970s in about 2400 villages and created remarkable awareness among the farmers across the country. The agricultural and rural development programmes were found to be effective among the rural audiences, notes Srinivasan (1997:19).

Several satellite television channels were established in the regional languages in the decade of 1990s. These channels were accessible to the large majority of people in the rural areas as prominent means of agricultural communication. Doordarshan also began a new innings of 'narrowcasting' in 2000 and provided specific agricultural broadcasting services in the country side. A new era of connectivity between farm universities and farmers and vice versa was brought about in the country mainly because of the revolutionary changes in the field of communication science of technology, observes Sharma (2003:15).

The government also started 'Kisan Channel' in 2004 with a view to provide local, regional and national programmes on agriculture and agro-based developmental programmes. This programme received countrywide appreciation since it actively involved the farmers in the process of agricultural transformation according to All India Radio (2007:02). The Government of India implemented the Mass Media Support to Agriculture Extension under 10th plan in order to provide multi-media campaigns on various aspects of agricultural development in Hindi and other regional languages all over the country.

All India Radio and Doordarshan broadcast specific programmes in the local languages on improving the production and productivity in the field of agriculture. This project practically enabled the farmers to adopt the agricultural innovations and improve their bargaining power. Scholars strongly advocated that agricultural extension programmes should be organized all over the country to increase the number of progressive farmers and maximize agricultural progress.

The growth and development of new media including Internet boosted agricultural progress through farmers' centered programmes. The need for public-private partnership in the field of agriculture was felt across the country. Corporate houses also realized the importance of corporate social responsibility and actively encouraged agriculture and rural development programmes in order to win over the patronage of farmers' community. Mobile technology has been actively



used in the country in order to provide need based information to the farmers through call centers free of cost since 2004. Recently the National Agricultural Commission has recommended that governments should develop rural knowledge centers in order to actively utilize information and communication technologies for the advancement of agriculture and agro based activities in the country.

Singh (2000:17) comments: “Agricultural communication received great fillip in India after the agricultural extension programmes organized by the Government of India which established the Directorate of Extension at the national level. This agency expanded the extension programmes all over the country and involved farm scientists, extension communicators, progressive farmers and beneficiaries of agricultural developmental activities. It also transferred agricultural innovations through radio, television, publications, exhibitions, demonstration, teleconference, Internet and other media of communication”. Internet played a crucial role in the transfer of advanced farm technologies of the world to the field of the farmers in developing nations, comment Kumar et.al. (2002:11).

An era of e-development began in India through telecommunication, satellite communication and computer communication technologies. The conventional system has been superseded by the new digital system which includes mobile, computer, Internet, e-mail, cable television, digital broadcasting and so on. A new virtual environment has been created in India in order to reach out to the farmers on round the clock basis and provide the benefit of interactive communication between the source and users. The training and visit system has also played a major role in the adoption of agricultural innovations across the country, observes Cecchini (2002:04).

In India a new branch of agricultural communication emerged in the universities and colleges. The Centre of Advanced Studies in Agricultural Communication was established jointly by UNDP, FAO and agricultural universities in India. Several agricultural universities have started graduate and post-graduate courses in agricultural extension across the country. Development communication centers are also established in different agricultural universities. Series of workshops and training programmes are organized for the benefit of agricultural communicators who work in different media. The traditional universities are also imparting education on agricultural communication and development communication subjects across the country. The media are also providing exclusive writings and programmes on various aspects of agricultural development in the country. Regular interface is also taking place among the farm scientists, researchers, faculties, activists and farmers. All these programmes have widened the scope of agricultural communication in India.

New Media Revolution

Agricultural development communication is an interactive process in which information, knowledge and skills, relevant for development are exchanged between farmers, extension/ advisory services, information providers and research either personally or through media such as radio, print and more recently the new media of communication. In all agricultural development support communication approaches, the farmers and rural people are at the centre of any given development initiative and view planners, development workers, local authorities, farmers and rural people as ‘communication equals’, committed to mutual understanding and concerted action. The intervention of social media for agriculture and rural development is also felt. There is a need for field practitioners to take stock of the experience that has so far been accumulated.

Karnik, Nazareth and Dasgupta (1995:10) made an excellent proposal for creation of agricultural information and communication system for rural and agricultural sector in India. The scholars provided a tentative outline of activities that should be carried out to create the information system. They also provided a rationale for setting up of such an information system that would meet the emerging needs of rural people including the farmers in India. This is needed not only to assess the effectiveness of the social media interventions for agricultural development but also to establish replicable working models and to steer the whole process.

Effective monitoring of agricultural development projects also allows for the efficient allocation of resources to meet new challenges of agricultural development in India. The evaluation of agricultural projects is usually an ex-post activity dependent on the quality of the data and information collected by the monitoring process. Judgment can then be made on the efficiency of communication resource utilization for agricultural development.

UNDP (2001:23) emphasizes the role of new media in the process of agricultural and rural development thus: “Technology transfer has been a longstanding issue in rural development. The key concerns relate to efficiency and effectiveness, how to translate the technology developed in one context into usable solutions in another. The process of technology transfer



falters not at the micro-level pilot study or test plot but at the point when the technology is expected to be adopted and used both efficiently and effectively on a larger scale in the field of agriculture which is the backbone of national economy especially in the developing nations. Many of the current ICT examples are just the beginning in agricultural sector. Tapping the potential of these new technologies will depend on adaptations to the conditions in developing countries, especially for farmers and artisans who are actively involved in agricultural sector. Much will depend on innovations (technological, institutional and entrepreneurial) to create low-cost, easy to use devices and to set up access through public or market centers with affordable agricultural products and services”.

Chapman and Slaymaker (2002:05) state: “Rural areas are often characterized as information-poor and information provision has always been a central component of rural development initiatives. The farmers, artisans and other rural poor sections of society typically lack access to information vital to their lives and livelihoods. The rural poor depend primarily on agriculture and related activities for their livelihood. Agriculture provides the bulk of their income and their main source of nutrition. Improved systems for the management and communication of agricultural information can help poor farmers make informed choices about the opportunities and constraints associated with rural development strategies. In addition to basic technical knowledge, the rural poor need to be able to operate in increasingly sophisticated input and output markets.

The potential of ICTs to support the improvement of currently inadequate extension and education services, and ensure farmers have access to reliable information about agricultural technologies and markets, is the subject of considerable interest. Improved systems of information and communication have a dual function; to supply the information required by the poor in order to pursue sustainable livelihood strategies, and to supply information required by institutions responsible for making decisions that affect those strategic livelihood options. The social media have the capacity to overcome many of the obstacles to ICT adoption in the field of agriculture and can empower the farmers educationally and economically. Scholars have also suggested that the digital divide is an important issue that needs to be addressed from agriculture and rural development points of view.

Yamamichi (2011:25) emphasizes the role of social media in agricultural development thus: “The social media can enhance farmer’s access to agricultural information, change flows of agricultural information and communications, and provide the traditionally disadvantaged groups of farmers and artisans with alternative communication channels for better participation in the process of agricultural development. In the context of agricultural development, their poverty can be alleviated by faster and easier information delivery, information exchange and network creation, efficiency and transparency, transformation of people’s lives and decentralization and empowerment programmes.

The social media have been dramatically speeding up the execution of various agricultural developmental activities in the rural areas. They have increased communication between the implementers and beneficiaries of agricultural and rural development projects over a period of time. They have also enabled the various stakeholders of agricultural development to express themselves through blogs, websites, pictures, and other user-generated media. Empirical studies have also identified the great development such as the ‘death of distance’ between the agricultural development project authorities and beneficiaries of agricultural and rural development projects in the countryside.

Social media have also allowed numerous views and practices pertaining to agricultural development to be more widespread and gain more public attention in the rural areas. Interactivity has become a term for number of new media use options evolving from the rapid dissemination of Internet access point, the digitalization of the media, and media convergence. The social media with technology convergence shifts the model of mass communication, and radically shapes the ways the people interact and communicate with one another. The development of social media networks and technologies has enabled the policy makers and administrators to share their views, responsibilities and works and interact with the big world consisting of various stakeholders of agricultural and rural development in a vast subcontinent like India.

Conclusion

The policy makers are required to expand agricultural development and communication services and facilities all over the country. Agricultural communication activities should be decentralized, democratized and localized in order to enlist the active participation of farmers in the process of agricultural development. There is no dearth of role models and success stories in India and abroad in the field of agricultural progress. The rural youth and women should be actively educated, organized and motivated to become the active beneficiaries of various agricultural and rural development programmes. This would prevent the problem of migration from rural to urban areas in search of livelihood. The government, media and non-government agencies are required to put forth integrated efforts in order to facilitate the rejuvenation of agricultural



sector in the age of globalization and prevent victimization of women and weaker sections. Adoption of agricultural innovations and practices should be encouraged at the grassroots level by the media institutions as a matter of corporate social responsibility in the new millennium.

References

1. Adler, John H (1966) What have we learned about development?, *The Fund and Bank Review, Finance and Development* Washington D.C, 3(3):39-48.
2. All India Radio (2007) Feedback Survey Report on Kisanvani Program, Audience Research Unit, AIR, New Delhi, January 21, www.allindiaradio.gov.in
3. Bage, Lennart (2005) Observation on MDG Report, January 18, www.ifad.org
4. Cecchini, Simon (2002) Can Information and Communication Technology Application Contribute to Poverty Reduction? Lessons from Rural India, www.nijenrodo.nl
5. Chapman, Robert and Tom Slaymaker (2002) ICTs and Rural Development: Review of the Literature, Current Interventions and Opportunities for Action, Working Paper 192, Overseas Development Institute, London, UK.
6. Demaree, Albert Lowther (1941) *The American Agricultural Press*, New York: Columbia University Press.
7. Frick, M.J and Elliot, J (1995) Food and Agricultural Awareness of Land Grant University Education Faculty, Proceedings of the National Agricultural Education Research Meeting, Denver, CO, 22:379-387.
8. Ghosh, Avik (2006) *Communication Technology and Human Development: Recent Experiences in the Indian Social Sector*, Sage Publications, New Delhi, India, p-41.
9. IFPRI (2006) Global Hunger Index, October 16, www.ifpri.org
10. Karnik, Kiran, Jagdish Nazareth, Arup, Dasgupta (1995) Proposal for Agricultural Informatics and Communications under the National Agricultural Technology Project). New Delhi: A World Bank NATP-AIC Report.
11. Kumar, Shantanu, Uma Shah and Ajay Kumar Shah (2002) Electronic Media for Agricultural and Rural Development, *Kurukshetra*, 50(9):38-42.
12. Malhan, I.V (2007) Impact of Globalization and Emerging Information and Communication Technologies on Agricultural Knowledge Transfer to Small Farmers in India, 73rd Conference of World Library and Information Congress, Jammu, India, August 19-23, www.ifla.org
13. Prajavani (2007) Editorial, October 30.
14. Reddy, Eswara, D.B (1987) Recent Developments in the Transfer of Agricultural Information in India, *Information Systems for Agricultural Sciences and Technology*, New Delhi: 111-119.
15. Sharma, V.P (2003) Cyber Extension: Connecting Farmers in India – Some Experiences, www.gisdevelopment.net
16. Shiva, Vandana and Tom Crompton (1998) Monopoly and Monoculture Trends in Indian Seed Industry, *Economic and Political Weekly*, September 26.
17. Singh, G.B (2000) Green Revolution in India: Gains and Pains, paper presented in the 21st Indian Geography Congress, Nagpur, India, January 2-4.
18. Singh, Ganga Sagar (2007) Communication for Agricultural and Social Development: Discourse and Practices, *Indian Farming*, 57(3):11-14.
19. Srinivasan, Raman (1997) No Free Launch: Designing the Indian National Satellite, www.nasa.gov
20. Swaminathan committee (2004) Report of National Agricultural Commission, October 15, New Delhi, India.
21. Swaminathan, M.S (2001) For a Livelihood Box, *Frontline*, 18(3):Feb.03, Chennai.
22. The Hindu (2007) Potential to Improve Lives of Ryots, Survey of Indian Agriculture, Chennai, India.
23. UNDP (2001) Human Development Report 2001. Making Technologies Work for Human Development. Washington, D.C.
24. World Bank (2008) Agriculture for Development, Washington DC, www.worldbank.org.
25. Yamamichi, Masatake (2011) Mobile-Enabled Social Media in Social Development, *Technologies Information and Communication*, www.worldbank.org .