



Agricultural Extension System in Bihar, India : An Overview

UJJWAL KUMAR¹, R K P SINGH², DHIRAJ K SINGH¹, ABHAY KUMAR^{1*}
AND SANJEEV KUMAR³



Received on : 30/09/2020
Accepted on : 29/11/2020
Published online : 10/12/2020



ABSTRACT

Agricultural extension system plays a crucial role in increasing agricultural productivity and farm income, strengthening food security, improving rural livelihoods, and promoting agriculture as an engine of rural economic growth. In India, a Central Department of Agriculture was established after the Orissa famine during 1866. Department of Agriculture in Bihar was established in 1912 after separation of Bihar from Bengal. After independence, several programmes like IADP, IAAP, HYVP etc were implemented in Bihar, which fetched good results. Later on, Training & Visit approach of extension was also implemented which was subsequently replaced by NATP. Currently, pluralistic extension services in Bihar is prevailing which includes central and state Government agencies, ICAR, KVKs, SAUs, NGOs and private sector organizations. Despite all the efforts, transfer of technology programmes are yet to achieve desired success. Duplication of extension services is being observed as many agencies work in same set of selected villages. Recently, using Agriculture Road Map of Bihar, Government has launched several agricultural development programmes for transfer of modern agricultural technology, which may likely to improve access of farmers to modern agricultural technology. To make extension more pragmatic, some of the activities including supply of quality inputs and market linkage of the produce should be the part of core extension programme.

KEYWORDS

Bihar, Extension system, ATMA, Krishi Vigyan Kendra

INTRODUCTION

Agricultural extension System plays a crucial role in increasing agricultural productivity and farm income, strengthening food security, improving rural livelihoods, and promoting agriculture as an engine of rural economic growth. The green revolution in India which made the country self sufficient in food grain production was triggered by quality seed and technology transfer programmes. It was not until 1867 that a first practical attempt was made in what was designated university extension. Initially, most of the lectures given were on literary and social topics, but by the 1890s, agricultural subjects were being covered by peripatetic lectures in rural areas (Jones, 1994). The growth and success of the work in Britain influenced the initiation of similar activity elsewhere, especially in the United States. There, in many states, out-of-college lectures were becoming established by the 1890s (True, 1928). During the first two decades of the twentieth century, the work of the land-grant colleges concerned with serving the needs of farm families expanded dramatically and became formally organized; but the use of the term extension continued and has persisted as the designation for the work.

Historical Perspective

The first agricultural extension service of a modern kind came into existence as the result of a crisis- the outbreak of potato blight in Europe in 1845. In Ireland, its effects were particularly severe because the peasant population relied on potatoes in their diet and the potato famine persisted until 1851. At the initiative of the new British Viceroy appointed to Ireland in 1847, the Earl of Clarendon, practical instructors in husbandry were appointed to travel around the most distressed districts and to inform and show small farmers, in simple terms, how to improve their cultivation and how to grow nutritious root crops other than potatoes. In India, a Central Department of Agriculture was established after the Orissa famine in 1866 and the Government of India soon after resolved to establish agriculture departments in each province. However, it was in 1905 that a Central Government directive ordered every province to appoint a full-time Director of Agriculture to organize agricultural research and demonstration farms with staff who could advise farmers (Mook, 1982).

In Bihar (together with Bengal and Orissa) though Department of Agriculture dates back to 1906, an independent Department of Agriculture for Bihar itself was established in 1912 when the separation of Bengal and Bihar took place. During those days, the experimental work of the Department and dissemination of results were entrusted to a number of officers- Deputy and Assistant Directors, Agricultural Chemist, Economic Botanist and Agricultural Engineer, with a subordinate cadre under them, appointed by the Director of Agriculture on a provisional basis and transferable by him from one post to another. For a few years, the Director's headquarters were shifted to Sabour but later back to Patna. Further organizational expansion took place linking all the hierarchical levels. With the launching of the Community Development Programme in the country during early 1950s and agricultural development acquired prominence. An Agricultural Graduate designated as Agricultural Extension Supervisor/Block Agricultural Officer was posted in each Block covering approximately 100 villages. Multi-purpose village level workers were posted roughly at the rate of 10 for each Block.

¹Division of Socio-Economics and Extension, ICAR Research Complex for Eastern Region, Patna, Bihar, India

²Retired Professor, RAU, Pusa, Samastipur, Bihar, India

³Division of Crop Research, ICAR Research Complex for Eastern Region, Patna, Bihar, India

*Corresponding author email : akumar1904@rediffmail.com

Growth of extension education as discipline has its root in Bihar as the first ever post-graduate programme in this subject was started at Bihar Agriculture College, Sabour, Bhagalpur in 1955 (Kumar and Hansra, 2000).

A comprehensive programme on extension, the Training and Visit (T&V) was introduced in the country in 1974-75 through Pilot Projects in Rajasthan and Madhya Pradesh. Thereafter, it was adopted in 17 States including Bihar through a series of World Bank loans between 1977-88. The T&V approach was basically a multi-step approach to the transfer of technology-research scientists to Subject Matter Specialists (SMS) in regular monthly meetings, then to village level staff (Agri-Extension Officers and Village Level Workers. The village level workers carried the technical message to the farmers primarily through field visits to pre-selected contact farmers, also interacting with non-contact farmers who might be interested. A single line of command was established from the village-level staff to the State Director of Agriculture. The other important features of this programme were the regular training of extension staff and the importance placed on regular visits to the fields of contact farmers. An account of different programmes related to agricultural extension is given in Table 1.

The T&V systems, however, had a number of operational weaknesses like concentration on cereal crop production, preoccupation of Subject Matter Specialists (SMS) with administrative rather than technical work, failure of contact farmers to act as disseminators of new technologies and non-coverage of female farmers.

Recent Efforts

Despite all above efforts, farmers access to modern farm technology has been poor, hence the Government of India

through Indian Council of Agricultural Research (ICAR) has established a large network of Krishi Vigyan Kendras (KVKs) across the country with an aim to conduct technology assessment and refinement, knowledge dissemination and provide critical input support for the farmers with a multidisciplinary approach. The KVKs serve as agricultural technology testing, dissemination and training hubs. It aims at reducing time lag in technology generation and technology adoption by potential users and to increase production and productivity and income from agriculture and allied sectors on sustainable basis. The extension education approaches adopted in KVKs are unique and novel. Currently, there are 44 KVKs in the state, one located in each district.

Muzaffarpur, Gaya, East Champaran, West Champaran, Samastipur and Madhubani districts have two KVKs each. The first KVK in Bihar State was established in 1979, with two more added during the '80s, another 10 in the 1990s and the remainder after 2000. Almost all KVK are situated on land of erstwhile state government farms and equipped with needed training infrastructure, which include classroom, laboratories, farm, hostel and other common facilities. The staffing of the KVKs is based on a model of 16 positions along with 10 scientific and technical staff members and six administrative staff members. The formal KVK mandate is to collaborate with researchers of the agricultural universities, the Indian Council of Agricultural Research (ICAR) and extension personnel of agriculture and allied state departments for activities like; on-farm testing and refinement of new technologies; organize and conduct training of extension field staff members; organize and provide long-term farmer training programs, especially targeting youth and women; and organize on-farm trials and farmer demonstrations on new technologies and provide farmers' feedback to ICAR and Agricultural Universities' researchers (Kisan Ayog, 2008).

The KVKs also provide crop diagnostic services to farmers within the district. In addition, the KVKs use a significant portion of their lands to multiply seeds of improved varieties and propagate planting material to sell to farmers as a means of partially supporting their operations. However, a panel constituted by the Ministry of Agriculture and Farmers Welfare, Government of India found that "KVKs lack expertise in the area of processing and value addition; agrometeorology; agri-business; and diagnostic services" (Yadav, 2015).

Funding for the KVK system comes from the ICAR. ICAR also provides direct technical backstopping and staffing to one KVK; the remainder receive their support through subcontract agreements with Dr Rajendra Prasad Central Agricultural University, Bihar Animal Sciences University and Bihar Agricultural University which support 16, 01 and 21 KVKs, respectively. One KVK is organized by Sone Command Area Development Authority (An autonomous organization under Ministry of Water Resources, Government of Bihar) with an additional five KVKs receiving support from subcontracted NGOs (Table 2).

Table 1: Important milestone programmes in the history of Indian Agricultural Extension System

Name of the Programme	Year of start
Community Development Programme (CDP)	1952
National Extension Service (NES)	1953
Panchayati Raj Institutions (PRIs)	1957
Intensive Agriculture District programme (IADP)	1960
Intensive Agriculture Area programme (IADP)	1964
National Demonstration Programme (NDP)	1964
High Yielding variety Programme (HYVP)	1966
Small Farmers development Agency (SFDA) and Marginal Farmers & Agril. Labours development Agency (MFALDA)	1971
Drought Prone Area programme (DPAP)	1973
Training and visit system (T&V system)	1974
Krishi vigyan Kendra (KVKs)	1974
Operational Research Projects	1974
Integrated Rural development Programme (IRDP)	1978
Lab to Land Programme (LLP)	1979
Training Rural youth for Self Employment	1979

Table 2: Distribution of KVKs under different Institutions in Bihar

Sl. No.	Type of organizations	Names of host organizations	Names of KVKs	No. of KVKs
1.	State Agricultural Universities	Bihar Agricultural University, Sabour, Bhagalpur	KVK, Arwal; KVK, Sheikhpura; KVK, Saharsa; KVK, Munger; KVK, Purnea; KVK, Katihar; KVK, Banka; KVK, Lakhisarai; KVK, Supoul; KVK, Kishanganj; KVK, Patna; KVK, Rohtas; KVK, Jehanabad; KVK, Nalanda; KVK, Aurangabad; KVK, Manpur and KVK, Amas *, Gaya; KVK, Khagaria; KVK, Munger, KVK, Araria and KVK, Madhepura	21
		Bihar Animal Sciences University, Patna	KVK, Jamui	1
2.	Central Agricultural University	Dr Rajendra Prasad Central Agricultural University, Pusa, Samastipur	KVK, Saran; KVK, Sheohar ; KVK, Piprakothi and KVK Parsauni *, East Champaran; KVK, Gopalganj; KVK Birauli and KVK Lada*, Samastipur ; KVK Madhopur and KVK, Narkatiaganj*, West Champaran ; KVK, Saraiya and KVK, Muraul*, Muzaffarpur; KVK, Darbhanga; KVK, Vaishali, KVK, Begusarai, KVK, Siwan, KVK, Sukhet *, Madhubani	16
3.	ICAR Institutes	ICAR Research Complex for Eastern Region, Patna	KVK, Lalganj, Buxar	1
4.	Non-Government Organizations (NGOs)	Vanvasi Seva Kendra	KVK, Kaimur	1
		S K Chaudhary Educational Trust	KVK, Madhubani	1
		Samta Seva Kendra	KVK, Si tamarhi	1
		Gram Nirman Mandal Ashram	KVK, Nawadah	1
		Chaarvak Socio -Eco Development Trust	KVK, Khagaria	
5.	Others	Sone Command Area Development Agency	KVK, Bhojur, Ara	1
Total				44

*additional KVK in the district

There are relatively few NGOs working in the sector, and the size of their agricultural programs is very modest. That is not to say that they are insignificant. The largest NGO programs in the state, those run by the Kaushalya Foundation, Aga Khan Rural Support Program (AKRSP), Pradan, Farm n Farm and CRS, all have close working relations with the DoA and are involved in assisting technology demonstrations and the roll-out of new agricultural development Programme. All of the key players of agricultural technology transfer significant staff shortages. The Agricultural Universities are also reportedly understaffed and are actively recruiting, but there is still shortage of scientific personnel for teaching, research and extension.

During the mid-1998 to 2005, World Bank implemented institutional reforms in extension system called Agricultural Technology Management Agency (ATMA) under the Innovations for Technology Dissemination (ITD) component National Agricultural Technology Project (NATP). ATMA model which was pilot- tested in the early phase in selected districts was extended to all the districts in India including Bihar and fully funded by the Government of India under

Support to State Extension Programmes for Extension Reforms. Decentralized structure including Governing Board at district level, Farmers Advisory Committee at Block level, need-based training and exposure visits and famer-led extension are now the cornerstones of ATMA model. State Agricultural Management and Extension Training Institute (SAMETI) was established in each state including Bihar (BAMETI) as an autonomous institution primarily responsible for providing need-based consultants services to ATMA in areas like project planning, appraisal, implementation and for organizing training programmes for middle-level and grass-roots level agricultural extension functionaries and farming community.

In Bihar State, the ATMA was established not as a separate agency but as a Department of Agriculture program administered by Bihar Agricultural Management and Extension Training Institute (BAMETI). Its job is to integrate extension programs across line departments, link research and extension activities within each district, and decentralize decision making through bottom-up planning procedures (Singh, 2006).

While these innovations and initiatives boosted agricultural production and productivity in few states, Bihar's agriculture stagnated or even declined over a period of time. A state which boasted of above national level agricultural productivity during the 50s, saw its per hectare productivity trailing behind national average by 30-40% in most of the crops. Time-tested institutions to upgrade the skills of the field staff and train farmers- Extension Training Centres and Kisan Vidyapeeths, were allowed to decay. Devoid of any new initiative and enthusiasm, the extension system in the state reached its nadir. Although ATMA model has been successful in addressing many of the extension problems and has shown exceptional impacts during the NATP phase but it seems to be going the T&V way. It is therefore, imperative that in the country like India, which has a vast territory and extremely diverse socio-economic and agro-climatic situations, ATMA model should be introduced and implemented with utter cautious. Different ATMAs should be empowered with sufficient administrative, financial and implementation flexibilities to address the basic problems in their operational jurisdiction (Singh *et al.*, 2012).

However, launching of the *Road Map for Agriculture and Allied Sectors* at the beginning of 2008 for the four years of the XI Five Year Plan came in as a silver lining on the otherwise dreary and somber agricultural landscape. After getting experience of earlier two Road Maps, the third road map is prepared for 2017-22. The *Road Map* adopts a holistic approach and aims at putting agriculture, animal husbandry, dairy, fisheries and cooperatives back on the rails. The State Government further affirmed its priority to agriculture by declaring 2008 as the *Year of Agriculture*. A series of farmers' Panchayats and Assemblies attended by the Chief Minister and other high-level political and administrative dignitaries as well as technical personnel exposed the farmers to the new thinking and programmes and, at the same time, generated self-confidence among them and an urge to emulate or even excel the farmers of other agriculturally advanced states. The *Road Map* seeks to revive and redesign institutions and mechanisms for an effective technology transfer and suggest new mechanisms, wherever necessary. Direct control of Agriculture Department over Block Agriculture Officers, creation of posts of Panchayat Agriculture Officers (*Salahkar*) at local level, and *e-Kisan Bhawan* at Block Headquarters are some of the components of the new framework. Similar institutional reforms and strengthening are proposed in the fields of animal husbandry, dairy, fisheries and cooperatives -knowledge dissemination through organizing veterinary camps, seminars, workshops, training and refresher courses. Training and exposure visits of dairy and poultry farmers as well as of fishermen are planned to be intensified (Department of Agriculture, 2017).

Institution-building or revival are time-consuming processes. Recruitment procedures are lengthy, given the need to adhere to established rules and transparency. The Government has initiated crash programme to recruit some field personnel which might fill in the gaps on a short-term basis. The situation, however, calls for a well-considered and time-bound programme to fill up the vacant and newly created posts and to put in place an institutional

infrastructure for tackling the 'knowledge deficit' in agriculture as pointed out by the National Commission on Farmers.

Need for a Paradigm Shift

A review of extension systems, both at national and international levels, confirms that no single model is perfect or uniformly applicable. Technology transfer and extension system must respond to the needs of the farmers in specific locations, should follow a bottom-up approach and take into consideration the requirements of the disadvantaged groups of farmers that is; small and marginal farmers, women farmers, share-croppers, small-scale livestock, dairy and fishery farmers and agri-processors in rural areas. The capacity of poor farm households to take advantage of the new innovations or enterprises depends on many factors, including the educational level of men and women farmers; their household resources (e.g. land, labour and capital), local agro-ecological conditions that affect their farming systems, their access to markets, the availability of local producer organizations and the willingness of the entrepreneurial farmers to collaborate with these new producer groups (Swanson, 2008). Given the limited reach of governmental extension agencies, the role of NGOs and the private sector should be recognized and, wherever feasible, encouraged.

The first *Agriculture Road Map of Bihar* was carefully crafted document with a considerable potential to improve the agricultural extension from the current morass. However, there has not been any improvement in successive documents of Road Map. Successful implementation of the *Road Map* in a time-bound manner is, however, a daunting challenge. Macro-mode, National Horticulture Mission, Chief Minister's Horticultural Mission, National Food Security Mission and *Rashtriya Krishi Vikas Yojana* (RKVY), all have significant extension components and recognize the importance of enhanced knowledge of farmers in achieving their goals. It may be noted that proper monitoring of projects helps Successful implementation of the programmes for raising awareness of the farmers and broadening their mental horizon.

Putting the Farmer First: An Attitudinal Change is Urgently Called for

Bihar has to make up for the lost time and missed opportunities. The *Road Map* provides an opportunity. Administrative, technical and managerial streamlining, revival and rejuvenation of structures and institutions and establishing new mechanisms from the field to the headquarters are badly needed. In all these efforts, it is the need of the farmer which must guide the design and implementation of the programmes.

Effective synergies need to be established with the ongoing agricultural interventions in the form of national missions for both sustainability and leveraging the limited resources available for extension. This will improve both allocative and operational efficiency of the extension system. Finally, the financial dependence of the states on central government needs to be gradually reduced to enable the states, and ultimately the farmers, to

take ownership of their reformed extension systems. (Babu *et al.*, 2013)

Current Public Sector Extension System

The Government extension delivery system in Bihar is the largest and most comprehensive advisory system within the state (Fig. 1). State Department of Agriculture is the backbone of this system supported by Central Govt schemes along with ICAR Institutes, agricultural universities (Bihar Agricultural University, Bihar Animal Sciences University and Dr Rajendra Prasad Central Agricultural University) and KVKs. At state level, there is a Directorate of Agriculture headed by Director of Agriculture and supported by Additional Director (Agronomy). Joint Director, Extension is mainly responsible for implementing extension activities at state level supported by Deputy Director, Extension. Bihar Agricultural Management and Extension Training Institute (BAMETI) is the nodal agency at state level for implementing ATMA programmes. At district level, District Agricultural Officer is responsible for implementing extension activities. There is at least one KVK and ATMA in each district which supports extension activities of state department of agriculture. There is a Sub Divisional Agri. Officer at Sub Division level and Block Agri. Officer at Block level to implement Govt. Schemes. At present, there are 3,125 Agricultural Coordinators and 6,753 *Kisan salahkar* working at Grass root level for effective implementation of agricultural extension programmes. Under ATMA, which organizes many extension activities for farmers of each district, Governing Board and Management committee are at district level supported by District Farmers Advisory Committee (DFAC) as well as District training centres and Zonal research stations. Similarly, at Block level, ATMA is supported by Block Farmers Advisory Committee (BFAC) and Block technology Team led by Block Technology Manager (BTM). At panchayat and village level, Assistant Technology Managers and Farmer Friends are linked to Block

ATMA cell. Organizing farmer school and developing agricultural entrepreneurs are one of the major activities of ATMA. ATMA programme was originally designed and tested for bottom up planning process with farmers input getting more importance. However, most of the field staff under dept. of agriculture felt that there is no bottom up planning process and still top down approach is being followed in ATMA (Simpson *et al.*, 2013). In the current extension, many posts of extension functionaries at block and village level are lying vacant which need to be filled in order to provide efficient extension delivery system to farmers.

CONCLUSION

Despite all sincere efforts, transfer of technology programmes in Bihar is yet to achieve desired success. It has been observed that many of the extension activities implemented by different institutions are operating in same set of villages. A large number of training and capacity building programmes are being organized for the farmers. However, the organization of training and capacity building programmes for extension functionaries is relatively inadequate. There is utmost need to organize training programmes more frequently for extension functionary to update their knowledge and skill. KVKs and ATMA are the backbone of extension activities for a district and hence there should be strong convergence between ATMA and KVKs at each stage of planning and implementation of extension activities. To enhance ATMA-KVK convergence, it may be ensured that the agricultural technology updates is communicated by KVKs to the ATMA well in advance before the onset of Kharif and Rabi cropping season.

Vacant Posts of agriculture and allied departments should be filled up without any delay. Moreover, conveyance facility should be provided to field staff for improving implementation and monitoring of agricultural schemes,

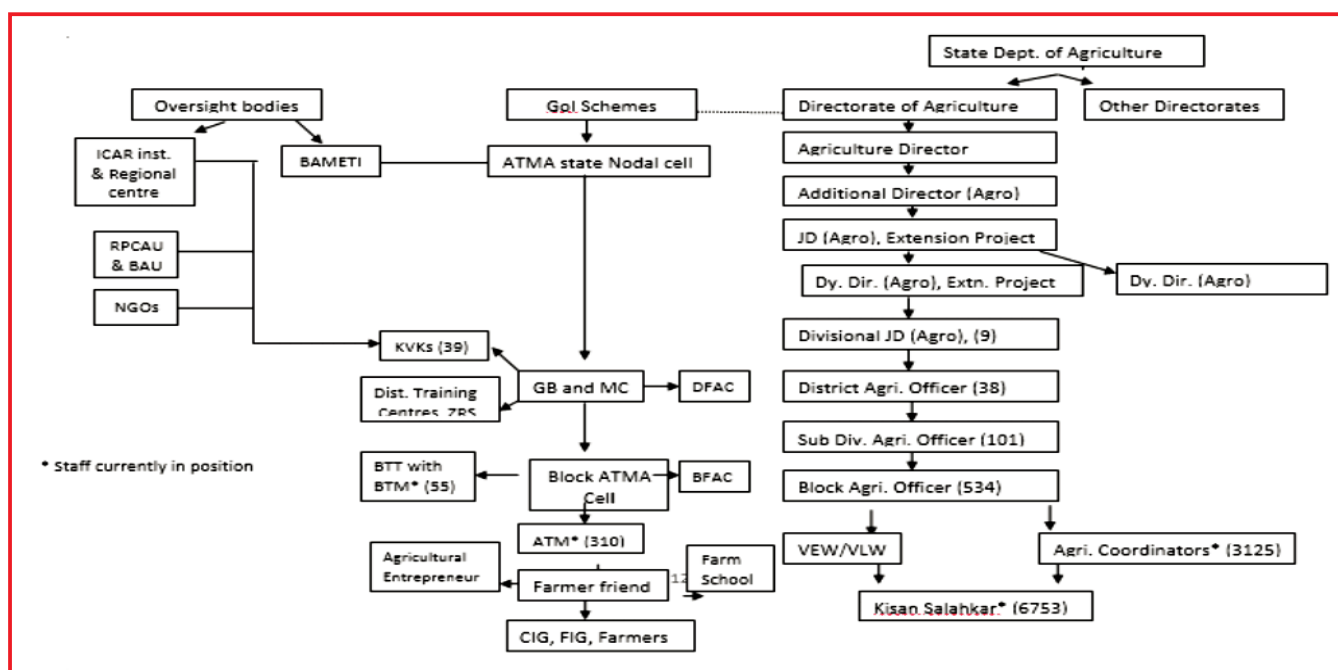


Fig.1: Current Agricultural Extension System in Bihar

especially in remote area. Some of the focal activities, like timely availability of quality seed and planting material, balanced use of chemical fertilizers and benefits of micro-nutrients, farming system approach, climate resilient technologies, use of ICT tools and market-linked extension

should be the part of core extension activities. These suggested measures if implemented in a proper manner at grass root level by extension organizations in Bihar; it will definitely improve the quality of extension services for the farmers.

REFERENCES

- Babu SC, Joshi PK, Glendenning CJ, Kwadwo AO and Sulaiman RV. 2013. The State of Agricultural Extension Reforms in India: Strategic Priorities and Policy Options. *Agricultural Economics Research Review* **26** (2): 159-172.
- Department of Agriculture, Govt. of Bihar 2017. Agriculture Road map 2017-22 (English version) available at http://krishi.bih.nic.in/Road-Map/Road_Map_2017-22_English.pdf.
- Jones GE. 1994. Agricultural advisory work in England and Wales: The beginnings. *Agricultural Progress* **69**: 55-69
- Kisan Ayog 2008. Transfer of Agricultural Technology and Extension System in Bihar, State Farmers Commission, Patna, Bihar.
- Kumar B and Hansra BS. 2000. Extension Education for Human Resource Development, Concept Publishing Company, New Delhi, Pp-200. ISBN 81-7022-841-7-(PB).
- Mook BT. 1982. The world of the Indian field administrator. Vikas Publishing House. New Delhi, India.
- Simpson BM, Singh KM, Singh A and Sinha M. 2013. Strengthening the pluralistic agricultural extension system in Bihar state, India, Report on the MEAS Rapid Scoping mission submitted to USAID/BFS, 35p. DOI: 10.13140/2.1.2658.2725.
- Singh KM, Swanson BE, Jha AK and Meena MS. 2012. Extension Reforms and Innovations in Technology Dissemination – The ATMA Model in India. Available at: <http://dx.doi.org/10.2139/ssrn.2168642>.
- Singh KM. 2006. Impact of ATMA Model in Agricultural Extension System in Bihar- A Case Study of Pilot Project Districts, World Bank, India Office, New Delhi. Pp.78.
- Swanson BE 2008. Global Review of good agricultural extension and advisory services practices, Research and Extension Division, Natural Resources Management and Environment Department and Policy Assistance and Resources Mobilization Division, Technical Cooperation Department, FAO, Rome.
- True AC. 1928. A history of agricultural extension work in the United States, USDA, Miscellaneous Publication No. 15. Washington, DC: U.S. Government Printing Office, pp 1785-1923.
- Yadav SL. 2015. Follow Norms, Says Krishi Kendra Panel, The Indian Express, March 23, 2015.

Citation:

Kumar U, Singh RKP, Singh DK, Kumar A and Kumar S. 2020. Agricultural extension system in Bihar, India: An overview. *Journal of AgriSearch* **7**(4):192-197