Can post offices of rural India be the driver for agricultural technology dissemination? Experiences of action research

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Action research on validating the linkages with post offices in the dissemination of farm technology was done. Post offices and their personnel (50) at the district, block and villages levels in Sitapur district, Uttar Pradesh, were contacted. Organizational analysis of Indian Postal Department helped identify the scope for entering into linkages for the Indian Agricultural Research Institute. Seeds of improved varieties were disseminated and different possible dissemination modes were experimented. The trend analysis of post office works showed sharp decline (about 50%) in the mail and delivery of ordinary post. Similarly, the sale of postal stamp and revenue stamp had declined to the same extent. The collaborative activities through tie-ups with other agencies like SBI, ICICI, mutual fund agencies, Oriental Insurance, etc. had increased (15–20%), which provided the opportunity for establishing linkages. Up to summer/zaid 2013, more than 1900 farmers under 18 post offices in five states covering 181 villages have been reached through this innovative technology dissemination model. The major crops included in the programme are wheat, paddy, pigeon pea, bajra, mustard, bottle gourd, pumpkin and okra. The farmer-to-farmer diffusion of improved variety of wheat was found to be 32 times of the total area originally covered by seed quantity disseminated through post offices. The cost sharing and capacity building of farmers and post office personnel were the other innovative interventions to make the linkages more successful. Based on the experiences and lessons learnt, future action plans have been suggested.

Keywords: Collaborative activities, farm technology, post offices, variety dissemination.

PUBLIC research and extension played a major role in bringing about the globally recognized 'Green Revolution' that laid the cornerstone of India's agricultural achievement, transforming the country from food deficiency to self-sufficiency. In the post-Green Revolution era, agricultural research and extension, however, face numerous challenges in terms of relevance, accountability and sustainability. The empirical synthesis[1] revealed some of the changing nature of Indian agriculture in recent times, which includes shrinking resource base[2], changes in demand and consumption pattern[3,4], changing farming systems, declining public investments in agriculture and international developments[5]. Thus, revamping of extension system will certainly play a catalytic role for ushering in farmer-led and market-led extension with its anticipated discernible impact[6]. Recently, many developing countries have reaffirmed the essential role that agricultural extension can play in agricultural development[7].

Over a long period of time agricultural extension and advisory services were mainly concentrated upon top-down information and service flow. The farming community used to be thought of as mere 'receptors' of information and services, and their actual needs were seldom taken into consideration in the research and development process. The shifting priorities of Indian agriculture for diversification, commercialization, sustainability and efficacy have made it mandatory for the state Extension Departments to introspect their extension approaches. In some of the states, the Department of Agriculture (DoA) has started to change its approaches. Still, the basic issues regarding the type of technological backstopping required by the farmers and the changes in extension organization needed to provide have not been addressed.

With the gradual realization of the importance of understanding the varying social perspectives of technology adoption and diffusion, extension and advisory service delivery mechanism started adapting a participatory and

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more pluralistic approach. Albeit, for the farmers having small holdings located in remote villages of India, making timely availability of quality seeds of major crops is often a difficult task for any existing technology delivery system. The present article aims to analyse the evolution of major extension paradigms worldwide, trends in India's first-line extension education systems, innovative technology dissemination initiatives adopted nationwide, postal network systems and services in India, possibilities and experiences of utilizing post offices for agricultural technology delivery, and potential institutional and policy implications drawn from the above experiences.

Growth of agricultural extension education and delivery system

Extension service has a long history that dates back to 1800 BC, although the modern extension services started with the infamous 'potato famine' in 1845 in Ireland[8]. The fundamental concept of extension education was synonymous to adult education in England in the second half of the 19th century. Extension was included in the university mandate with the inception of 'university extension' in USA during 1860s. In developing countries, although commodity related technical advices used to be provided during the colonial times to farmers, the national agricultural advisory services were not formally established until 1950s and 1960s. The scope of extension expanded during 1950s when Asia and Africa started laying primary importance on agriculture for increasing food production and educating the farming community with improved farming practices[9].

The approaches followed in extension service delivery were not static, but varied highly with the changing clientele group, commodity, purpose, context and location. Axinn[10] studied the different extension approaches followed throughout the world. The general agricultural extension approach, which is a typical example of top-down extension planning and service delivery, has been extensively used both in developed and developing countries over several decades. It suffered mainly due to one-way flow of information and services, and lack of proper account of farmers' needs. The commodity specialized approach addressed a single commodity at a time. In this approach, all the functions for enhancing production – input supply, research, extension, marketing and prices are grouped under a single administration.

Dissemination mechanisms such as demonstrations, field visits, farmers' meetings, use of media, etc. have, by and large, played a major role of agricultural extension in developing countries. This process had the theoretical backstopping from the 'diffusion of innovation' model suggested by Rogers[11]. Past studies on diffusion of farm innovations have shown how agricultural extension workers communicated new technologies to farmers and accordingly, how to speed up the diffusion process was also suggested. The models of technology transfer suggested in the past were often viewed as linear models, as they assume a linear relationship between research, extension and farmer with organized public-funded science as the source of innovation. Such extension models were usually top-down in structures and the responsibilities often vested with the Ministry of Agriculture. One of the examples of this approach is the Training and Visit (T&V) system, which was promoted by the World Bank in 1970s. This system was initiated as the public sector extension service system, which later on emerged as a major model for providing knowledge and managing extension in the developing countries. The T&V system of technology transfer management process experienced apparent success in some countries. However, there are evidences revealing shortfalls in its implementation[12,13]. One of them was that the model essentially was a supply-centred and top-down system which promoted mainly those agricultural messages which were designed and developed by research scientists, with minimal input from the technology users, i.e. farmers. Besides, the assumption that a group of contact farmers will further expand the messages did not realize in many cases[14].

The farmer participation in technology development and client's participatory extension approaches have emerged as a response to such thinking. The notion of extension as part of a wider system has emerged, for example, the 'interdependence model'[15] and the 'innovation systems framework'[16] offer more inclusive ways of thinking about the actors and the institutional context in which the generation, diffusion and use of new knowledge take place.

Thus, the trends in evolution of extension model, approaches and methodologies have witnessed a highly dynamic scenario both at global and national level. The previously practised concept of 'technology transfer' has evolved to 'technology adaptation' in recent time. This gives the clue for continuous experimentation, adaptation, application, discontinuance and regenesis of the new model if the farming community and other stakeholders are to be served better. Based on the experiences and feedback from the farmers, ensuring the supply of adequate and quality seeds on time and that too at an affordable price is the prerequisite for productivity enhancement[17]. Therefore, the dissemination of seeds of high-yielding crop varieties using the effective means cannot be overruled.

Experimentation in frontline technology dissemination models

In the past, the Indian Council of Agricultural Research (ICAR) has made several attempts to pass on the technologies to the farmers to raise the production and productivity of different commodities and enterprises[18]. Some of the major initiatives include: (i) The National Demonstration (ND) on major food crops, which was launched in 1964 as a nationwide project with a uniform

design and pattern. The demonstrations were intended to show the genetic production potentiality of new technologies and to influence both farmers and extension agencies. (ii) The Operational Research Project (ORP) initiated in 1974–75, aimed at disseminating the proven technology in a subject matter/area among farmers on a watershed basis, covering the whole village or a cluster of villages, and concurrently studying constraints (technological, extension or administrative) as barriers to the rapid spread of improved technical know-how. (iii) Lab-to-Land programme launched in the country on 1 June 1979 as a part of ICAR golden jubilee celebration. Under this programme, 50,000 farming families comprising small and marginal farmers and landless agricultural labourers were adopted by ICAR, through its research institutes and agricultural universities, for their economic upliftment. Other frontline initiatives include (a) Institute Village Linkage Programme (IVLP) started in 1995 with special emphasis on generating appropriate technologies by refining and assessing innovations generated by scientists in different farm production systems. (b) National Agricultural Innovation Project (NAIP) started in 2006 with the overall objective to facilitate the accelerated and sustainable transformation of Indian agriculture in support of poverty alleviation and income generation through collaborative development and application of agricultural innovations by the public organizations in partnership with farmers groups, the private sector and other stakeholders. (c) Agricultural Technology and Information Centres (ATICs), which were established in some of the State Agricultural Universities (SAUs) and ICAR institutes mainly to serve as a single window offering the institute's technology, advice and products. However, the only frontline extension education currently in operation is the Krishi Vigyan Kendra (KVK). The first KVK, on a pilot basis, was established in 1974 at Puducherry under the administrative control of the Tamil Nadu Agricultural University, Coimbatore. Over the years since 1974, the KVKs have grown as the largest network in the country with a quantum jump in number reaching 636. The main mandate of KVKs is technology assessment, refinement and demonstration of technology/products. KVKs have evolved and undergone several changes in its mandate over the years, from being a vocational training institution to technology assessment and refinement and to work as a resource and knowledge centre of agricultural technology for supporting initiative of public, private and volunteer sector for improving the agricultural economy of the district[19]. The KVKs have to convert the bits and pieces of information/knowledge into technology at district level[20].

Structural arrangements in main agricultural extension systems

Instead of trying to identify the 'best fit' extension model for a particular country, the reality is that a pluralism of models is being used in most countries in Asia and Africa[21–23]. Virtually India now has a mixture of public, NGO and private firms (e.g. seed and fertilizer dealers) delivering extension assistance to small holders. Besides, the various states are experimenting with different extension initiatives.

For example, Maharashtra adopted the single-window system from July 1998. Under this model, the Departments of Agriculture, Soil and Water Conservation and Horticulture were merged at the operational level. Kerala decentralized the functioning of the DoA way back in 1987 by creating offices of DoA (Krishi Bhavans) in all the panchayats. Punjab had been continuing with the SAU-Farmer Direct Contact method over the past two decades and has also upgraded all frontline extensionists to graduate level. Andhra Pradesh Agricultural University has also established District Agricultural Advisory Technology Centres in all the districts for technology refinement, diagnostic visits and for organizing field programmes in collaboration with DoA and allied departments.

These contexts give ample credence to include public-sector post offices as the possible option for dissemination of farm technology among resource-poor farmers living in remote parts of India.

History of Postal Services in India

The Indian Postal Services were established in the current format largely under the East India Company. The service was first established under the name 'Company Dawk'. In 1688, the first post office of the Company Post was established at Bombay and Madras. The system was reorganized and the service opened to the general public in 1774 by Warren Hastings, the first Governor General of Bengal with supervisory powers over Bombay and Madras. A Postmaster General was appointed and metal tickets or tokens were issued to pay for the postal charges. The presidencies of Bombay and Madras followed suit[24].

In 1835, a Committee was set up for unification of customs and postal system of all the presidencies. The result was the first Indian Post Office Act of 1837. It not only provided for uniform rates and routes, but for uniform designs and other specifications of the postmarks for each category of post office. A Commission was set up in 1850 which submitted its report in 1851 that resulted in the Post Office Act of 1854. Under the provisions of this Act, the monopoly of carrying mail in the entire area of British possessions in India was granted to the Indian Post Office, and Office of the Director General of Post Offices of India was established. H. P. A. B. Riddle, till then the Postmaster General of North West Presidency, was appointed the first Director General in May 1854.

The British East India Company established post offices in Mumbai (Bombay), Chennai (Madras) and Kolkata (Calcutta) from 1764 to 1766, each serving the Bombay, Madras and Calcutta presidencies. When

Warren Hestings was the Governer General, postal service was made available to the general public. A letter would cost 2 annas (one-eighth of a rupee) for distances up to 100 miles (160 km). In 1839, North West Province Circle was formed and since then, new Postal Circles were formed as needed. In December 1860 Punjab Circle, in 1861 Burma Circle, in 1866 Central Province Circle and in 1869 Sind Circle were formed. By 1880, circles had been formed in Oudh (1870), Rajputana (1871), Assam (1873), Bihar (1877), Eastern Bengal (1878) and Central India (1879). Afterwards, the creation of new circles was accompanied by the merging of some circles. By 1914, there were only seven Postal Circles – Bengal and Assam, Bihar and Orissa, Bombay (including Sind), Burma, Central Madras, Punjab and NWF and UP[25].

The Indian Postal Service, with 155,333 post offices, is the most widely distributed post office system in the world. The large numbers are a result of a long tradition of many disparate postal systems which were unified in the Indian Union post-Independence. Owing to this far-flung reach and its presence in remote areas, the Indian Postal Service is also involved in other services such as small savings banking and financial services.

The major services offered by the Indian Postal Department include: (i) Speed Post, which is very high speed express service for letters and documents. Speed Post links more than 1200 towns in India, with 290 Speed Post Centres in the national network and around 1000 Speed Post Centres in the state network. (ii) e-Payment is the most convenient way to pay bills under one roof. With its tremendous reach and expertise, India Post specializes in acceptance of payments across the counter and their consolidation. e-Payment is a 'Many to One' service through which bills (telephone, electricity, etc.) paid by customers in post offices are electronically consolidated. (iii) Logistics Post is the brand new service from India Post for sending parcels and large consignments across the nation and around the world. Logistics Post manages the entire distribution side of the logistics infrastructure from collection to distribution, from storage to carriage, from order preparation to order fulfillment. (iv) e-Post which sends documents and greetings online, and delivers by mail. (v) Business Post gives pre-mailing solutions, including collection/printing, inserting and addressing. (vi) Media Post designs advertisements sent by media companies on post cards, letters, walls of post offices, letter boxes, stationary, etc. and received by millions of people. Besides, post offices are also involved in Direct Post, Postal Life Insurance, Instant Money Order Service (iMO), International Money Transfer and other non-postal services like Public Provident Fund, National Savings Certificate, Kisan Vikas Patra, Savings Bank Account, Monthly Income Scheme, Recurring Deposit Account, National Savings Scheme 1992 (discontinued from November 2002), Post Office Time Deposit and Post boxes for mail receipt.

From the experiences of Republic of Korea, postal services were found successfully utilized for e-commerce and farming, particularly fish farming, for marketing of the produce using ICT-enabled technologies[26].

Action research on institute–post office linkages

An action research project was initiated under the aegis of the Indian Agricultural Research Institute (IARI), New Delhi, to validate the possibilities of farm technology dissemination through the network of rural branches of post offices. On pilot basis, the project was implemented in the Sitapur district, Uttar Pradesh, as the district was located at the reasonable distance (550 km) from IARI, where such hypotheses could be tested. In order to explore the linkages with post offices for agricultural technology dissemination, the post offices and their personnel (50) chosen from district, block and village levels in Sitapur district were contacted.

Possibility of institutional linkages with the postal department

The trend analysis of post office works showed that during the last 10 years (with popularization of mobile phones), there was a sharp decline (about 50%) in the mail and delivery of ordinary post. Similarly, the sale of postal stamp and revenue stamp had declined to the same extent. However, the number of savings account (10%) and recurring deposit holders (50%) showed an increasing trend. As a result, the collaborative activities through tie-ups with financial agencies like SBI, ICICI, mutual funds agencies, Oriental Insurance, etc. had increased (15–20%) considerably (Table 1).

The analysis of organizational structure, staffing, work load and profile of the post office workers was done to study the possibility of such linkages. The detailed organogram of the Indian Postal Department is shown in Figure 1. In the study area, it was found that there were 370 branch post offices (BPOs) at the village level manned by 700 Grameen Dak Sevaks (GDS); which should have been 1121, as each BPO is expected to have one each of Branch Postmaster (BPM–GDS), Postman and Runner. The general profile of GDS/BPM is shown in Table 2, which indicates that they are mainly the rural people living in the same village and discharging the role of GDS/BPM as part-time public sector workers and availing partial benefit from the Department. This indicates the possibility of their inclusion in the additional work of farm technology dissemination in the nearby villages of their operation. The work load of these GDS showed that each of them in the project district had to cover on an average of 6–10 villages, 1200 households around the periphery of 8–10 sq. km (Table 3). It was also found that the average distance travelled by each

Table 1. Collaboration and tie-up between institutions and post offices

Firm/company	Purpose(s)
ICICI/HDFC/other mutual fund agencies	Public persuasion and sale of forms related to pension plan and other schemes; collection of money
SBI	Opening of saving accounts through post office and selling of forms of SBI schemes
Oriental Insurance	Working on behalf of the company
Mobile companies (Hutch, Vodafone, etc.)	Sale of SIM/recharge voucher through post office
Sale and collection of recruitment form	Recruitment in State Police Service, B Ed, passport, etc.
Railway reservation	In process

Table 2. Profile of Grameen Dak Sevak (GDS)/Branch Postmaster (BPM)

Particulars	Description
Qualification of GDS	Matriculate
Pre-requisite	Cycling compulsory
Housing	Must have his own house in the village for use as village post office (rent free, only maintenance charge @ Rs 100/month)
Job status	GDS is not 'fully departmental staff'
Designation	Designated as GDSBPM-III (Grameen Dak Sevak Branch Post Master-III)
Departmental benefits	Partial benefits of Department (no pension)
Salary	Time-related contributory allowances + DA + maintenance charges + stationery charges (gross salary = Rs 4710 + 1272 + 100 + 25 = Rs 6107 per month)
Duty hours	Duty hours are split (3–5.30 h): 11:00 AM to 13:00 PM
Time and duty profile	10:00–11:00 AM: collection and sorting of mail 11:20–13:00 PM: mail distribution 13:00–14:00 PM: next day's arrangements

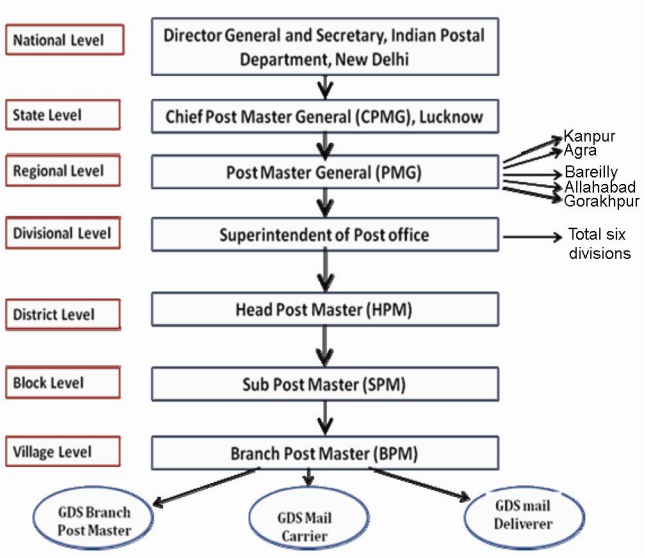

Figure 1. Organogram of Indian Postal Department

GDS was 10–12 km/day with maximum of 12 km and minimum distance of 1 km/day. The exploratory analysis of postal systems showed the possibilities of farm technology dissemination through post offices mainly on the ground of decreasing conventional roles of post offices and increased inter-departmental partnership activities. As a result, the following subsequent activities were carried out.

Dissemination of crop varieties

Agro-ecosystem analysis: An experiment on pilot basis for establishing the linkage between IARI and Postal Department, sensitization of GDS and higher-level postal officials was done through personal contact, group meeting and capacity building programme. The IARI technologies, mainly crop varieties were disseminated initially. In order to identify the suitable crop and its appropriate varieties for the region, prevailing agro-climatic condition in the project area was analysed. Out of seven selected village post offices in the district, the cluster of villages under Manwa and Ambarpur post offices were found to have lesser resource-endowed situation like sandy loam soil with partial irrigation facility through tube wells. Participatory discussion with farmers also helped to identify the priority crops for *kharif* (bajra and long-duration pigeon pea), *rabi* (mustard) and summer (vegetables in some patches). Similarly, the catchment area under five post offices, namely Gandhauli, Neelgaon, Behma, Rehua and Chaudia Manpara villages had fully irrigated system (through canal as well as tube wells) with productive loam soil. Hence, the major intervention crops in these areas identified were paddy and bajra in *kharif*; wheat and mustared in *rabi*, and vegetables, viz. bottle gourd, okra, pumpkin and brinjal in summer seasons.

Actions and experimentation: Through IARI–post office–farmer linkage, a total of 1921 farmers from 181

Table 3. Work load indicators of post offices at the district and village level

Indicators	Value
Number of villages actually covered per post office	4 (6–10)
Number of villages under jurisdiction/post office	8 (10–15)
Number of households per post office	1700 (1200)
Total population covered per post office	5.2 thousand (6–7 thousand)
Total geographical area to be covered per post office	8–10 sq. km (6–8 sq. km)
Average distance covered per day	10–12 km
Nearest village to cover	1.00 km
Farthest village to cover	12–15 km

Figures in parentheses indicate data based on village-level postmaster's response.

Table 4. Status of seed disseminated through post offices in Sitapur district, Uttar Pradesh during 2009–2013

Season	Crop	Varieties	No. of blocks covered	No. of farmers covered
Rabi 2009–10	Wheat	HD 2824, HD 2733	7	78
Summer 2010	Bottle gourd	Pusa Naveen	3	50
Kharif 2010	Paddy	PRH 10, P 1121, PB1460	2	128
	Pigeon pea	P992, P2001		
	Bajra	Pusa 383, Pusa 443		
Rabi 2010–11	Wheat, mustard	HD 2987, HD 2985, Pusa Jaikishan	2	133
Summer 2011	Okra	A4	2	150
	Bottle gourd	Pusa Naveen		
	Pumpkin	Pusa Viswas		
Kharif 2011	Paddy, bajra	P44, PRH 10, PS 5, P 383	2	175
Kharif 2012	Paddy	Pusa 2511, Pusa 44, JD 13, PNR 519, PNR 381	9	55
Rabi 2012–13	Wheat	HD 2967, HD 2985, HD 2733	19	423
	Mustard	Pusa Bold, NPJ 113	13	200
Summer 2013	Bottle gourd	Pusa Naveen	18	180
	Pumpkin	Pusa Viswas	7	35

Through IARI – post office–farmer linkage, a total of 1921 farmers from 181 villages under 18 post offices were covered.

villages under 18 post offices in five states were covered by the end of zaid 2013. Besides seeds, the information packages were also sent to the farmers by post. Details of seeds of different crop varieties disseminated through the post office are given in Table 4. Further, different approaches using post offices for varietal dissemination were tested in various cropping seasons. Experiences indicated that cost-sharing approach, wherein farmers were to pay the seed price (initially 25% of the total seed cost and raised up to 50% of the cost) was found most effective on various parameters, as indicated in Table 5. This helped to infer the economic viability and future continuance of this approach. The varieties disseminated though the post office were assessed under different biophysical situations prevailing at the farmers' level. Based on the suitability, farmers are being encouraged and facilitated to form seed production associations for farmer-to-farmer diffusion of the preferred crop varieties. In the next phase, the other technologies like bio-culture, bioformulations, etc. will be taken up for dissemination through post offices.

Farmer-to-farmer varietal diffusion: The improved and high-yielding crop varieties disseminated through post offices were also encouraged for farmer-to-farmer diffusion in an informal manner. With the particular case of wheat seed, analysis of such diffusion was done. It was interesting to note that during the period of four years, i.e. 2009–2012, a total of 93 quintals of quality seeds of wheat was disseminated in the project area, which was sufficient for covering 93 ha area. With its subsequent on-farm multiplication, household use of the produce and market sale, a considerable quantity of seeds was diffused in the social systems during this period. By the 2012–13 *rabi* season, a total of 1956 ha area was covered under IARI wheat variety, which was 32 times more than the area to be covered by the actual quantity of the seed sent from IARI (Table 6). This confirmed the socio-technical viability of the intervention.

Capacity building of the stakeholders

Village-level post office staff and farmers are the main stakeholders in this entire process. It has been planned to strengthen their capacity with respect to IARI technologies and their correct use at the farm level. During *rabi* 2010, a training programme was conducted for 120 farmers and post office personnel in collaboration with the

Table 5. Relative impact of various approaches tested for seed dissemination through post offices according to farmers and post office staff

Approach tested	PMINLV	FINLV	PUS	CMC	DOF	AS (rank)
Only seed sent through village pradhan (n = 50) (*rabi* 2009–10)	3.2	2.5	3.7	2.9	1.8	2.82 (V)
Only seed sent to the farmers on their address (n = 35) (summer and *kharif* 2010)	3.6	3.1	4.0	3.8	2.3	3.36 (IV)
Seed and supporting literature with pre-sowing training (n = 70) (*rabi* 2010–11)	4.0	4.3	4.6	4.6	3.7	4.24 (III)
Seed dissemination a/c to demand creation by the village post office (n = 65) (summer 2011)	4.6	4.5	4.7	4.7	4.0	4.50 (II)
Cost-sharing approach (n = 45; *kharif* 2011)	4.8	4.7	4.9	4.9	4.2	4.70 (I)
Average score	4.04 (III)	3.82 (IV)	4.38 (II)	5.22 (I)	3.2 (V)	

PMINLV, Postmaster's involvement; FIVLV, Farmer's involvement; PUS, Proper use of seed; CMC, Care and management of crops; DOF, Diffusion to other farmers; AS, Average score out of 5.

Table 6. Diffusion effect (in area) of IARI variety disseminated through post office: a case of wheat variety

		Seed multiplication and diffusion over the years			
Year	Seed supplied (q)	2009–10	2010–11	2011–12	2012–13
2009–10	7.8 q (7.8 ha)	304 q (@ 39 q/ha)	91 ha (@30% of produce used as seed) 4550 q (@ 50 q/ha)	682 ha (@15% of produce used as seed)	Discontinued
2010–11	13.3 q (13.3 ha)	–	665 q (@50 q/ha)	199 ha (@ 30% of produce used as seed) 9950 q (@50 q/ha)	1492 ha (@15% of produce used as seed)
2011–12	30 q (30 ha)	–	–	1500 q (@50 q/ha)	450 ha (@ 30% of produce used as seed)
2012–13	14 q (14 ha)	–	–	–	14 ha
Total	93.1 q (93 ha)	7.8 ha	91 + 13.3 = 104.3 ha	682 + 199 + 30 = 911 ha	1492 + 450 + 14 = 1956 ha

Extent of coverage of improved seeds sent through post office in the district = 2979.1/93.1, i.e. 32 times.

nearby KVK at Ambarpur, Sitapur. Here, farmers were exposed to the crop management technologies, integrating nutrient management, integrated disease and pest management and post-harvest handling of the related crops. Both classroom theory as well as practical hands-on sessions were included in the training. Further, a workshop on 'IARI–post office linkage model: experience sharing and mechanism for expansion' was organized on 12 April 2013, with the main aim to institutionalize the model in wider areas. The model is to be expanded further in 53 districts covering 12 states in partnership with the KVKs. In this workshop consensus was reached on the expected role of KVKs, IARI scientists and branch postmasters.

Lessons learnt

Experiences of the experimentation confirmed that post offices may be the effective and successful means for making the improved agricultural technologies available in the remote rural areas in relatively lesser time and cost. However, the capacity building of BPMs in this process as well as the technology was found essential, which in turn would benefit the farmers of the area. Hence, seed variety dissemination through post offices has emerged as an alternate extension mechanism (BPMs as community-based extension agents). This was a successful outreach of institutions to farmers living in remote areas and was found as an effective means for assessment and developing location-specific farm technologies.

Future roadmap

The success of cost sharing approach has provided a clue to out scale this practice of sending seed to the farmers on cost basis in newly added districts of Jammu, Sheopur, Sirohi and Buxar in Jammu & Kashmir, Madhya Pradesh, Rajasthan and Bihar respectively. For sustaining the cost sharing model of IARI–post office linkage model, seed-growers association for seed production on a large scale is to be promoted in Sitapur district. System of retail post at sub/branch post office level is to be initiated for developing the rural post office as the 'community extension centre'. The role of IARI and KVKs in facilitating the process and providing technology backstopping is further emphasized. KVKs are to sensitize the identified BPMs

and farmers about the rationale and operational mechanism of the linkage. More training programmes are required in the new districts at each KVK for capacity building of farmers and BPMs on improved crop production technologies. The process could be made more effective by identification of only those BPMs who are engaged in farming. Interaction meet needs to be organized at each site for analysing micro-farming situation for identifying suitable technological interventions, crops and varieties. The process of technology diffusion through this model can be made more effective by assessment of selected varieties at KVK farm and at the fields of identified BPMs and farmers. Besides, the multiplied seeds of improved IARI varieties need to be sent on time to the remotely located farmers in the district by KVKs through the post office.

Conclusions

The findings of the present study indicated the scope for developing post offices as the means of agricultural technology transfer in India. The major implication of the study affirms the potential of such experimentation for strengthening public–public linkage for farm technology dissemination, which can later be institutionalized as the effective model of frontline transfer of technology by the large number of research institutions. Also, the strong manpower of village-level postmasters will complement the existing cadre of public sector extension personnel which, in turn, would reduce the extension worker : farmer ratio in the country.

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