

Commercialization approach for Versatile Multi-Crop Planter: Lessons learnt

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Introduction

A Versatile Multi-crop Planter (VMP) was designed and built for seed and fertilizer application in lines when driven by 2-wheel tractors (2WT) for: single-pass shallow-tillage (SPST); strip planting (SP); zero tillage (ZT); bed planting (BP) and conventional tillage (CT). Land preparation cost by VMP was decreased by up to 75 % for single pass compared to CT (Haque et al., 2011). The VMP was capable of sowing many types of crop seeds from small jute seed up to maize seed. Demand for mechanized planters by smallholder farmers is growing rapidly due to the shortage of farm labour for operations such as planting or transplanting. Despite the promising seeder and planter developments, few of the present planters for 2WT are commercialized in Bangladesh. With the funding support from the Australian Centre for International Agricultural Research (ACIAR), the VMP commercialization activities commenced in 2012. Initially (2012 to 2014), the VMP commercialization activities were led by International Development Enterprises (IDE) and that approach was followed by a different approach implemented by the Project Implementation Office (PIO) of Murdoch University, Australia. In this paper, we will synthesis the VMP commercialization approaches and outcomes to identify key lessons learnt.

Materials and Method

The main role of IDE in LWR-2010-080 project was to provide business development services and value chain linkages to facilitate the VMP commercialization. As such, IDE signed Letters of Agreement with Alim Industries and ACI Motors in 2012 and 2013, respectively were targeting sales of 161 VMPs. During 2012 to 2014, the major thrust was given to supply side approaches through marketing for high sales volumes. Hence, in the same period demand creation in the target market and quality assurance of VMP was given lower priority. Once the project disengaged from IDE in 2015, the PIO contracted Hoque Corporation (HC), Dhaka to initiate a commercialization strategy by the sale of 54 units (18 and 36 units in 2015 and 2016, respectively) of VMP. In collaboration with PIO, HC fostered demand creation among farmers/local service providers (LSPs) through demonstrations, focus group discussion; quality assurance; service after sales; price support for LSP (50 and 25 % in 2015 and 2016, respectively); inclusion of financing institutions (e.g., National Bank Ltd.); establishment and involvement of the Conservation Agriculture Service Providers Association; inclusion of government extension agencies (e.g., Department of Agricultural Extension [DAE] and the Barind Multipurpose Development Authority [BMDA]).

Results and Discussion

During 2012 to 2014, IDE developed strategies for the commercialization of VMP through the involvement of Alim Industries Ltd., Sylhet and ACI Motors Ltd., Dhaka; and sold 8 and 12 units of VMP to projects in 2012 and 2013, respectively; a further 24 units of VMP were exported to Mexico (15 units), Zimbabwe (3 units), Ethiopia (3 units), Kenya (2 units), and 1 (unit) to India through HC. ACI Motors engaged Janata Engineering Workshop in 2014 to manufacture and sell the VMPs. However, due to low quality of materials used to manufacture the VMPs, most of them had repeated breakages during field operation. Six VMP were procured from Alam Engineering Workshop to replace the defective planters. Neither of the strategies were successful in attracting additional sales; indeed, the poor quality VMP hampered attempts to interest LSP. Furthermore, due to the unproven market demand for VMP, the bigger manufacturers were unwilling to invest in demand creation activities or further development and production of VMP. However, since 2015, the LWR-2010-080 project has implemented two models for VMP commercialization that are showing promising signs of success as follows:

Model 1: Since the rabi season of 2015, HC has sold 115 units (21 and 94 units in 2015 and 2016, respectively) of VMP, and one unit was exported to Myanmar in 2016. Hoque Corporation and the PIO worked together for demand creation in six target hubs and ensured quality production and delivery of VMP on time. In 2015 and 2016, both PIO and HC identified interested new 2WT service provider groups in nine districts (including six project working hubs), because - i) most of the service providers have 2WT which is essential to operate planters/implements and they had the financial means to buy VMP; ii) they are well known in their community for selling tillage services; iii) they are business-minded, risk takers who are open to try and adopt new ideas and technologies compared to traditional farmers; iv) they have mechanical skill and require minimal training on VMP operation and maintenance; v) they already are a trusted source of advice to farmers in their locality; vi) service providers have established linkages with extension agencies, local administration and farmers of their community.

The live demonstration/hands-on training on VMP operation and on-farm demonstration of crop performances to service providers for establishing wheat, onion, garlic, lentil, chickpea, mungbean, jute, etc. were organized at Union level by PIO and HC to create demand for VMP. The interested LSPs were asked to register with a deposit of Tk. 10,000 as a down-payment by 15 October. The PIO arranged VMP operation, repair and maintenance training programmes in mid-October to early-November of each year prior to handover of the VMP to LSP. During the training program, the LSP deposited 50% of the VMP price with HC. During mid-November to early-December, HC handed over the VMP to the LSP. Service providers paid the remaining 50 % of the cost during takeover of the VMP. For initial demand creation from new LSP, the LWR-2010-080 project provided 50 % and 25 % price support for 18 and 33 units of VMP in 2015 and 2016, respectively. Additionally, the project provided free training to LSP on repair and maintenance of VMP, follow-up meetings with LSP, and with HC organized farmers' field days for demand creation at farmers' level. These activities created confidence by farmers, LSP, and involved stakeholders (e.g., DAE, BMDA, National Bank Ltd.) in VMP adoption and commercialization.

Model 2: As the use of VMP could save irrigation water up to 34% (Hossain et al., 2010) and reduce the cost of crop cultivation, the BMDA sought assistance from PIO and HC to promote VMP in Naogaon district in 2016. In collaboration with BMDA and National Bank Ltd., the PIO

and HC identified 62 new LSP in Naogaon district, where, the National Bank Ltd. provided a 3-year loan package of Taka 170,000 to each LSP (after registration, Tk. 50,000 to buy a VMP and Tk. 120,000 for a 2WT) without any property mortgage. Each LSP provided a down payment of Tk. 10,000 to HC to confirm registration. The project organized the VMP training program as in Model 1. The BMDA engaged Chittagong Builders to deliver 62 units of 2WT in Naogaon. On behalf of the LSPs, the National Bank Ltd. has settled the payment with HC and Chittagong Builders after successful handover of the VMP and 2WT.

Since 2010, a total of 198 units of different models of VMP have been manufactured and sold (98, 63, 23, 12, and 2 units by Hoque Corporation, Alam Engineering, Alim Industries, Janata Engineering, and Tongi Engineering, respectively) locally and 40 units exported to 9 countries (Mexico - 15, India - 11, Ethiopia - 6, Vietnam 2, Zimbabwe 2, Kenya 1, Myanmar 1, Tanzania 1, and Uganda 1). During 2012 to 2015, 2016, and 2017; a total of 6, 18, 50 VMPs were monitored closely to collect performance data. The adoption of VMP by farmers to grow various crops has been increasing over the period. On an average, each VMP covered 6.5 ha during 2012-2013; average planting area increased to 11.7, 12.5, 13.7, and 18.9 ha and served 31, 87, 93, 56, and 75 farmers per VMP during 2012-13, 2013-14, 2014-15, 2015-16, and 2016-17, respectively.

Working with multi-stakeholders is critically important for commercialization of new agricultural technology. The LSPs and farmers are cautious to invest money for new farm implements as many of them had been cheated or had bitter experience to get proper services from private companies after purchasing implements. Involvement of universities (e.g., Bangladesh Agricultural University, Murdoch University), research institutions (e.g., Bangladesh Agricultural Research Institute and Bangladesh Rice Research Institute) extension agencies (e.g., Department of Agricultural Extension and BMDA) and strong coordination through PIO has built the trust among the LSPs and farmers to buy and adopt the VMP.

Based on farmers' and service providers' demand, ongoing modification of the VMP during 2015 and 2016 has significantly reduced the market price, and its weight, and improved weight balancing, while maintaining assurance of high quality production. Seven vertical meters with different seed apertures have developed and supplied with the VMP to regulate the seed rate without further calibration. Also, further improvement was done on the shank of furrow openers to increase the strength, while the seed-boot and fertilizer-orifice of the furrow opener were modified to minimize seed and fertilizer contact. This improvement has strengthened confidence by LSP and farmers in the use and performance of the VMP.

In conclusion, both the commercialization models implemented by PIO are showing signs of success, although, the scenarios, mode of operation and strategies of both models were different. Continuation of these two models of expansion of VMP use for another two to three years is likely to lead to commercialization by the private sector.

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Reference

- Haque, M.E., Bell, R.W., Islam, A.K.M.S., Sayre, K., Hossain, M.M., 2011. Versatile multi-crop planter for two-wheel tractors: an innovative option for smallholders. In: 5th World Congress of Conservation Agriculture. 26–29 September 2011, Brisbane, Australia, pp. 102-103.
- Hossain, M.I., Islam, M.S., Hossain, I., Meisner, C.A., Rahman, M.S., 2010. Seeding performance of two-wheel tractor operated bed planter for cereal crop establishment. *International Journal of Energy Machinery* 3: 63-69.