

Impact of Versatile Multi-crop Planter on service providers' livelihood in some selected areas of Bangladesh

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Introduction

The cropping intensity of Bangladesh is increasing year after year because most small holders start growing three or more crops in a year. Over a 5-year cycle due to changing profitability of crops, farmers cultivate 4-6 crops with diverse seed sizes, seed rate, row spacing, fertilizer rates, and seed depth. Hence a planter for such diverse cropping systems needs to have multi-functional capabilities. Service providers also need to be able to hire out their planter for business all year round to justify the investment cost. There are a number of other criteria and challenges that would need to be satisfied by potential purchasers of a planter. The VMP (Versatile Multi-crop Planter) is such a unique machine for two-wheel tractor which can meet the above criteria and successfully establish a diverse range of crops since 2008 (Haque et al., 2011). It has designed with capability for seeding and fertilizing with fluted roller or vertical plate meters in lines for single-pass shallow-tillage, strip planting, zero tillage and bed planting. The service providers remove seeding unit from VMP and convert only for high speed rotary tiller (HSRT). Most of the grain seeds like wheat, paddy, maize, jute, pulses, oilseeds etc. can be sown in line using VMP. It owners are using this device for their own land cultivation and earning cash income through custom hiring to other farmers and could improve their livelihood through this machine. Therefore, an attempt was made to assess the profitability of VMP operations at farm level and the impacts of its operations on service providers' livelihood.

Methodology

The present study was conducted in Rajshahi, Thakurgaon, Mymensingh and Rajbari district. A total of 18 local service providers (LSP) of VMP who provided at least one year tillage service to the farmers were purposively selected and interviewed for this study. Data and information were gathered from selected service providers of VMP through conducting household survey using pre-tested interview schedules in the month of December, 2016. The collected data were scrutinized, edited, tabulated, and analyzed for fulfilling the objectives of the study. The impacts of VMP on the livelihoods of service providers were assessed through analyzing 'Before' and 'After' socio-economic standings of the service providers. Data regarding land holdings, livestock resources, yearly household income, farm equipment, household assets, liability status, and food intake were analyzed and compared for measuring the impacts of VMP service on its provider's livelihoods. The values of different household assets were collected based on present value.

Results and Discussion

The average age of the respondents was 34 years with minimum age of 22 years and the maximum of 58 years. More than 56% of them completed primary level of education, followed by 22% of higher secondary levels. The average length of experience of service providers in VMP operations was three years ranging from two to six years. All of the respondents bought VMP by own cash with subsidy from Australian government funded CA project in Bangladesh.

Many service providers owned a number of farms implement namely power tiller, power thresher, shallow tube well (STW), sprayer and hand weeder that were mostly used for renting out to others for earning cash income.

The study revealed that the custom hiring of VMP service was a profitable business to the local service providers in the study areas. Most LSPs provided VMP services during *Rabi* season. The average area under VMP tillage was 161 bigha (15.31 ha) per year. The net income received by local service providers was Tk. 37,634 (with subsidy on VMP) and Tk. 36,059 (without subsidy) per year (Table 1). Considering these present returns, the average payback periods will be 2.74 years and 3.69 years respectively. In the coming years, the adoption of VMP seems to be high and in that case the net income and payback period will be higher and lower than current estimations. The custom hiring of VMP created many positive impacts on the livelihoods of the service providers. The respondent service providers experienced a considerable increase in their land holdings (6.4%), annual income (33%), livestock resources (32%), farm equipment (31%), household assets position and dwelling houses (46%). The increased income of beneficiaries is mostly spent on farm machinery, nutritious food, cloths, health care, education, and making of houses that indicate higher standard of living to some extent, compared to pre VMP service period. Although renting out VMP service was profitable, it was constrained by some minor problems such as unable to use this machine in the wetland condition (58%), no seating arrangement on the machine during ploughing (58%), required higher time (42%), heavy weight (16%), and lack of trained driver (11%). Financial support and technical assistance regarding VMP should be made available by the government or by NGO for service providers and local manufacturers, redesign (if possible) this machine with seating arrangement and able to run in wetland condition will help for the higher adoption of VMP in Bangladesh.

Conclusions and Recommendations

The custom hiring business of VMP is opined to be a profitable business in the study areas. The increased income of LSP are mostly spent on farm machinery, nutritious food, cloths, health care, education expenses and making of houses that indicate higher standard of living of service providers. However, the custom hiring business has made a notable improvement in the livelihoods of its service providers. Due to higher adoption of VMP, financial support and technical assistance should be made available by the government of Bangladesh for service providers and local manufacturers. Training on repair and maintenance of VMP for operators is highly required. Furthermore, research work should be carried out to improve the machine with seating facilities during ploughing.

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References

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Table 1. Financial analysis of VMP operation at farm level

Particular	With subsidy	Without subsidy
A. Gross income (Tk/year)	71092	71092
Total area under tillage (bigha)	160.96	160.96
Average rental charge (Tk/bigha)	441.67	441.67
B. Variable cost (Tk/year)	27659	27659
Fuel and oil	16919	16919
Wage for driver	8113	8113
Repair and maintenance	933	933
Spare parts	1694	1694
C. Fixed cost (Tk/year)	5799	7374
Depreciation on machinery	2320	2995
Depreciation on machinery shed	386	386
Interest on investment	3093	3993
D. Total cost (Tk/year)	33458	35033
E. Net income (Tk/year)		
Over variable cost	43433	43433
Over total cost	37634	36059
F. Rate of return		
Over variable cost	2.57	2.57
Over total cost	2.12	2.03
G. Payback period (year)	2.74	3.69

Note: Average price of VMP (including PT) = Tk. 1,33,111 (without subsidy), and 1,03,111 (with subsidy);

Diesel cost (Tk/bigha) = Tk. 105.11; Interest rate = Tk.12/year for 3 months; Life of VMP &PT = 10 years;

Salvage value VMP = 10% of purchase price, Depreciation has been considered for 3 months.