

RESEARCH NOTE

An approach for management of late blight in potato

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ABSTRACT

Among the several factors attributed to low productivity of potato, damage of crop due to late blight is substantially important. Prevailing farmers practices, control/check *i.e.* no spray along with recommended practice *i.e.* (Mancozeb @ 0.25% followed by application of Metalaxyl + Mancozeb @ 0.25%) were treated for comparison to control the blight disease. The results of the On Farm Trial brought out that the recommended practice of using Mancozeb @ 0.25% followed by application of Metalaxyl + Mancozeb @ 0.25% to manage late blight of potato was feasible and economically viable over farmers practice. Yield performance of recommended practice was 220q/ha which was almost 46.7% over control/check and 26.7% higher than farmers practice *i.e.* Mancozeb @ 0.25% which was 190q/ha. Cost benefit ratio of recommended practice (2.52) was higher over farmer's practice (2.36) and control/check (1.98). Participatory approach involving extension works and farmers in demonstration of research emanated proven technology may go a long way to curtail losses due to pest /disease incidences.

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Potato (*Solanum tuberosum* L.) has been introduced in India by the British missionaries in the late seventeenth century (Hawkes, 1978). Potato is one of the basic vegetable crops in India and abroad and 4th important food crops after rice, wheat and maize. India ranks 4th in area and it is the 3rd largest country in world in production of potato after China and Russian Federation. Potato is produced in an area of 18.28 lakh ha with a production of 343.91 lakh tonnes and productivity of 18.80 ton per ha. There has been increase in area under potato crop in the country from 11.35 lakh ha in 1991-92 to 18.28 lakh hectares in 2008-09 with increase in production from 181.95 to 343.91 lakh tonnes as per (Indian Horticulture Database, 2009). There is substantial scope to improve the average yield of potato in Jammu and Kashmir, which is much lower than the national average yield *i.e.*, 179.2 q/ha (Singh, 2008). The low productivity can be attributed to several factors *i.e.* quality seed, growing methods and/or adoption of appropriate plant protection measures.

Potato is input intensive crop and prone to many

diseases, particularly early and late blight. By conducting survey, farmer's interaction and field diagnostics, it was observed that one of the important factors for low productivity of potato was attributed to infestation by the fungal disease, late blight. The losses caused by late blight are reported (Singh *et al.*, 2003) to range between 25 to 85 per cent in terms of yield. The use of Mancozeb @ 0.25% to manage the menace is in vogue with the farmers. However, the application of fungicides *i.e.* Mancozeb @ 0.25% followed by application of Metalaxyl + Mancozeb @ 0.25% has been recommended. In, the present investigations, to establish and demonstrate the efficacy of fungicides for controlling late blight disease of potato have been assessed under real farm conditions, an On Farm Trials were conducted.

On Farm Trials on fungicidal spray applications for controlling late blight of potato were carried out at adjoining villages namely of Kahua district during Rabi 2010-11 by Krishi Vigyan Kendra, Kathua. Four innovative and receptive farmers from both the villages were selected for conducting

Table 1 : Response of efficacy of fungicides in management of late blight of potato in terms of yield performance and C: B ratio

Treatments	Yield		Cost of cultivation (Rs./ha)	Gross returns (Rs./ha)	Net returns (Rs./ha)	Cost benefit ratio
	(q/ha)	% increase over control				
Control/Check (No spray)	150	–	45,360	90,000	44,640	1.98
Mancozeb @ 0.25% (Farmers practice)	190	26.7	48,200	1,14,000	65,800	2.36
Mancozeb @ 0.25% followed by application of Metalaxyl+Mancozeb @0.25% (Recommended practice)	220	46.7	52,400	1,32,200	79,800	2.52

the trial to ensure their active participation. The four considerations for the conduct of the above trials included farmer's perspective, farmer's participation, farmer's management status and suitability of site as suggested by Singh (1999). The application of fungicides *i.e.* Mancozeb @ 0.25% followed by application of Metalaxyl + Mancozeb @ 0.25% was used as a test to manage the late blight of potato while the existing farmers practice *i.e.* spray of Mancozeb @ 0.25% and control/check *i.e.* no spray were also included for comparison. The yield data were collected from both the recommended and control plots (farmers practice) and their feasibility and economic viability were accessed. The trail was also envisaged with four fundamental assumptions as suggested by (Pillai, 2003) *viz.*, when the technology is not acceptable for the farmers in its recommended form and need minor modification, refinement or change, it needs the integration of related indigenous knowledge of the farmers with the scientific recommendations in the processes of refinement or modification, moreover the refinement or modification is a continuous process in the lack of available technological option specific to each microenvironment, the collaboration of farmers who have been experimenting on their own to evolve solutions to the constraints, in their farms and of the extension system which is vital in the process of technology development and the technology or practices generated through On Farm Trials will become farmers' recommendation comprising a basket of alternatives and are the most appropriate to solve problem. Keeping above in view, the On Farm Trials were executed.

The yield performance and cost benefit ratio of On Farm Trial due to recommended technology, farmers practice and control were analyzed and are presented in Table 1. Of the three treatments, recommended practice *i.e.* application of fungicides (Mancozeb @0.25% followed by application of Metalaxyl + Mancozeb @ 0.25%) was found to be most effective in managing late blight of potato over farmers practice and control/check. The yield performance of recommended practice was 220q/ha which was almost 46.7% over control/check and 26.7% higher than farmers practice *i.e.* Mancozeb @0.25% which was 190q/ha. The data presented in Table 1 also revealed that cost benefit ratio of

recommended practice (2.52) was higher over farmers practice (2.36) and control/check (1.98). Outcome of the on Farm Trial clearly brought out the finding that the adoption of recommended practice (Mancozeb @ 0.25% followed by application of Metalaxyl + Mancozeb @ 0.25%) could be a feasible and an economically viable technology for managing late blight of potato. The demonstration could satisfy most of the farmers of the area to use recommended technology on account of its effective management of late blight of potato. These innovative practices can prove helpful in solving the farmer's problem, decision-making and ability to modify their farming practices for their economic and overall up-liftmen.

Conclusion :

On the basis of result obtained from On Farm Trials, it can be concluded that recommended practice was found more feasible and economically viable and superior over farmers practice and control/check. It is suggested that such participatory approach involving extension works and farmers in demonstration of research emanated proven technology may go a long way to curtail losses due to pest /disease incidences.

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