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Technology Assessment and Refinement for Management of Late blight of Potato in District Shahjahanpur

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Abstract

Patato is a premier cash crop of India grown in Rabi season under various cropping systems. It is the 4th important food crop after rice, wheat and Maize in the world. It is often called the "Second Bread" of the world. Potato is attacked by various diseases. Among the fungal diseases, Late blight occurrance is most serious and major problem reducing its productivity. The technology developed by the scientists of ICAR, SAUs and ZRS for the management of the disease need to be assessed at farmer's fields to convince the farmers and be refined under farmer's participatory mode as the basic concept of technology transfer is "seeing and believing".For technology assessment and refinement for the management of Late blight of potato, an On Farm Testing was done during years 2011-12, 2012-13 and 2013-14 at farmer's fields. The technology was assessed in terms of economics of disease management. Seed treatment and chemical sprays were tested. The performance of trials suggested that first prophylactic spray of moncozeb 75 WP @2.5 kg/ha followed by spray of metalaxyl and Mancozeb (Ridomil MZB-72) @2.0 kg/ha is the best solution for management of disease. For refinement of technology, farmers were suggested to adopt seed selection, sanitation, high ridging of 15 cm and delayed harvesting to avoid field infection of tubers.

Key Words : On Farm Testing, Late blight, Mancozeb 75 WP, Ridomil MZ-72, percent disease incidence

Introduction

Technology assessment and refinement with farmer's participating can bring a drastic change in adoptability of the technology and its further dissemination. On farm testing of technology at farmer's field can prove to be a bridge between researchers and extension workers since the situation under which the scientific informations are developed differ from those operated by the farmers. The innovation have no value if they do not reach the actual clients. The fruits of research remain unutilized if not transferred to the field. For effective transfer of technology, farmers must realize the change of demonstrating technology over their own production technology.

Materials and Methods

On Farm Trials were conducted at farmer's field in three consecutive years i.e. in Rabi season of 2011-12, 2013-13 and 2013-14 in adopted village Benipur and Daudpur in Sindhauli and Bhawalkhera block of district Shahjahanpur. On farm trials were laid out at five locations of farmer's fields each year and the technology developed by ICAR, Zonal Research Centre and SAU's were demonstrated. Farmer's practice i.e. non-use of any kind of control measures was compared with the demonstrated technology in terms of yield, additional cost of cash input of demonstrated technology, additional gained yield, additional income and benefit cost ratio. The farmers were advised to split their half acre plot into three equal parts. One of these parts served as check (Farmer's Practice-T1) and the other two of these parts served as treatment T2 and T3 respectively. During 2011-12 T1 served as farmer's practice (FP) i.e. non-use of control measures. Under T2 the seed treatment with MEMC @0.25% was done before planting the tubers and 2 sprays of Moncozeb 75 WP @2.5 Kg/ha was tested. Under T3 plot, seed treatment before planting and single spray of Metalaxyl + Mancozeb (Ridomil MZ-72) @1.0 Kg/ha was tested.

In Rabi 2012-13, Farmer's practice was compared with seed treatment MEMC @0.25% along with two sprays of Moncozeb 75 WP @2.5 Kg/ha. In year 2013-14, farmer's practice was compared with first prophylactic spray of Mancozeb 75 WP @2.5 Kg/ha followed by second spray of Metalaxyl + Mancozeb (Ridomil MZ-72) @1.0 Kg/ha.

The percent incidence of disease was recorded in both the check (FP) and treated plots by rhandom samplying by the farmers and the data were tabulated, analyzed and correlated accordingly. The potato varieties under study were K.Bahar, GM-27 and S1.

Results and Discussion

Table 1 reveals the demonstrated technology and percent change in yield with respect to percent incidence of the disease. It is clear from the table-1 that the technology tested significantly decreased the percent incidence of the disease as compared to technology used i.e. seed treatment MEMC @0.25% and 02 sprays of Mancozeb 75 WP @2.5 Kg/ha at 15 days interval. But in year 2011-12 and 2013-14 when seed treatment was done along with spray of Ridomil MZ-72 the percent incidence of disease was only 2.0

Table 1: Demonstrated technology for management of Late blight of potato (On Form Testing)

Season/ Variety	Technology Demonstrated	No. of Trials	Area (ha)	Av. Yield (q/ha)	%incidence of disease
Rabi 2011-12					
K.Bahar	FP/T1: Non use of PP chemicals	05	1.00	186	14.5
GM-27	T2 : seed treatment MEMC @0.25%+ Spray Mancozeb @2.5 Kg/ha			206	5.0
S_1	T3: seed treatment MEMC @0.25%+ Ridomil MZ-72@1.0 kg/ha			236	2.0
Rabi2012-13					
K.Bahar	FP/T1: Non use of pp chemicals	05	1.00	196	15.5
GM-27	T2: seed treat MEMC @0.25%+ 2 sprays of Mancozeb @2.5 kg/ha			242.6	6.5
Rabi2013-14					
K.Bahar	FP/T1: Non use of PP chemicals	05	1.00	208.2	17.5
	T2: First spray of Mancozeb @2.5 Kg/ha + second spray Ridomil/MZ-72 @1.0 kg/ha			270.0	3.4

· Average of 05 locations yield.
· Ridomil/MZ-72 (8% Metalaxyl+72%Mancozeb)

Table 2: Economics of Demonstrated Technology for management of Late blight of potato

Season/ Variety	Technology Demonstrated	%increase in yield q/ha	Additional cost Rs/ha	Additional yield q/ha	Additional income Rs/ha	B.C ratio
Rabi 2011-12						
K.Bahar	FP/T1: Non use of PP chemicals	-	-	-	-	-
GM-27	T2 : seed treatment MEMC @0.25%+ Spray Mancozeb @2.5 Kg/ha	10.75	700	20.00	8000	11.43
S_1	T3: seed treatment MEMC @0.25%+ Ridomil MZ-72@1.0 kg/ha	26.88	1270	50.00	20000	15.74
Rabi2012-13						
K.Bahar	FP/T1: Non use of pp chemicals	-	-	-	-	-
GM-27	T2: seed treat MEMC @0.25%+ 2 sprays of Mancozeb @2.5 kg/ha	23.77	2125	46.60	23300	10.96
Rabi2013-14						
K.Bahar	FP/T1: Non use of PP chemicals	-	-	-	-	-
	T2: First spray of Mancozeb @2.5 Kg/ha + second spray Ridomil/MZ-72 @1.0 kg/ha	29.68	4100	61.80	37080	9.04

farmer's practice of non-use of control measures. The average yield shown in each treatment is the average of 05 location's yield in each year. The percent incidence of disease was 14.5 to 17.5% under FP and 5.0 and 6.5 in year 2011-12 and 2012-13 under similar and 3.4 percent respectively, suggesting the efficiency of selective compound-metalaxyl in the chemical Ridomil.

The above yield and disease data can also be compared with the cost of technology used and the

additional yield and additional income of the farmer Table 2. It is very clear from the data of Table-2, that in year 2011-12 an additional cost of Rs.700/- per hectare gave 20 q/ha additional yield and the farmer got an additional income of Rs.8000/- per hectare. The technology showed that an additional cost of Rs.1270/ ha brings about additional income of Rs.20000/- per hectare. In year 2013-14 demonstrated technology gave an additional income of Rs.37080/- per hectare against additional cost of Rs.4000/- hectare.

From above discussion, it is inference that the technology used in Rabi 2013-14 is most efficient in reducing the percent incidence of Late blight by 3.4% as compared to farmer's practice i.e. 17.5% incidence.

From this study of technology assessment, it is inference that Late blight of potato can be best managed by seed treatment along with first prophylactic spray of protect ant chemical i.e. Manacozeb 75 WP @2.5 Kg/ha and after the onset of disease spray of Ridomil is most effective in reducing the percent disease incidence.

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