SHORT COMMUNICATION

Evaluation of fungicide pre-mixture, Kresoxim Methyl 15% + Chlorothalonil 56% WG on management of Late and Early blight of Potato

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Evaluation of fungicide pre-mixture, Kresoxim Methyl 15% + Chlorothalonil 56% WG on management of Late and Early blight of Potato

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A field trial was conducted to evaluate fungicide premixture Kresoxim Methyl 15% + Chlorothalonil 56% WG against late and early blight of potato .Based on results of two crop seasons it was found that the fungicide premixture @ 1000g/ha was highly effective in controlling both late and early blight disease of potato in terms of percent intensity of the disease and tuber yield as compared to stand alone products Kresoxim methyl 500 SC and Chlorothalonil 75% WP.

Key words: Fungicide pre-mixture, late and early blight, potato

Late and Early blight of potato caused by *Phytophthora infestans* (Mont.) de Bary and *Alternaria solani* respectively are most dreaded disease world over. In India both late and early blight appears in epiphytotic form every year in almost all the potato growing regions of West Bengal. These diseases are also a recurring feature in plains. Although, there are various methods (like cultural, chemical and biological) for management of these two diseases but still chemical means of disease control is considered to be the best for both of these two diseases. For chemical control there are lots of fungicides both contact and systemic are available in the market. But continuous use of same molecules may cause development of resistance among the pathogens .Therefore, it is always advisable to use newer molecules after few years to avoid development of resistance among the pathogens (Chakraborty and Banerjee, 2016), particularly the combination of both systemic and contact fungicides. Consisting all these views in mind the present experiment was carried out to evaluate the efficacy of the test fungicide against late and early blight of potato

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The experiment was conducted at Adisaptagram Block Seed Farm, Hooghly during 2009-10 and 2010-11 crop seasons. The planting was done during middle of November each year. The experiment was laid out in Randomized Block Design (RBD) with 8 treatments and 4 replications .The individual plot size was 5m×4m. The planting was done at a spacing of 60cm×20cm. The details of treatments are as follows :

T1= Kresoxim methyl 15% + Chlorothalonil 56% WG @ 750 g/ha
T2= Kresoxim methyl 15% + Chlorothalonil 56% WG @ 1000 g/ha
T3= Kresoxim methyl 500SC @ 225 ml/ha
T4= Kresoxim methyl 500SC @ 300 ml/ha
T5= Chlorothalonil 75% WP @ 560 g/ha
T6= Chlorothalonil 75% WP @ 747 g/ha
T7= Metalaxyl 8%+ Mancozeb 64% WP @ 1250 g/ha
T8= Control (without spraying)

The first spraying was given at the time of canopy closure i.e. 45-50 days after planting. Thereafter, the subsequent spraying was given at 7-10 days interval. The disease severity of both late and early blight disease was recorded before every spray-

ing following 0-9 scale for late blight and 0-5 scale for early blight.

In each plot 50 plants were selected randomly and in each plant 3 leaves viz. one from top, one from middle and one from lower portion of plant were selected for estimation of severity of the disease. The severity of late and early blight were recorded before every spray following 0-9 scale as developed by Malcolimson (1976) and 0-5 scale as developed by Sharma and Kolte(1994).

The percent disease index (PDI) was calculated following the formula :

$$\text{PDI (\%)} = \frac{\text{Sum of all numerical ratings}}{\text{Total No. of leaves observed x Max. Grade}} \times 100$$

Chlorothalonil 75% WP at 747 g/ha exhibited the PDI of 8.55; 7.34% and 9.36 and 8.75% in 2009-10 and 2010-11 crop seasons respectively which was more than the treatment T2 and T1 .The treatment T2 also exhibited best result in controlling early blight also (Table 2), where the PDI was 4.80 and 2.83 in 2009-10 and 2010-11 crop season respectively. This treatment also recorded highest tuber yield i.e. 22.35 and 23.95 t/ha in both the years respectively. In this disease the treatment T2 i.e. Kresoxim methyl 15% + Chlorothalonil 75% WG @ 1000/ha was superior to Kresoxim methyl 500SC @ 225ml/ha where per cent disease severity was 10.56 and 6.53% during 2009-10 and 2010-11 crop season respectively and 300 ml/ha where per cent disease severity was 6.34 and 5.58% during 2009-10 and 2010-11 crop season

Table 1 : Effect of fungicide pre-mixture Kresoxim methyl 15% + Chlorothalonil 56% WG against Late blight of Potato

Treatments	Dose	No. of Spray	Percent disease intensity at 35 days after first appearance of symptoms		Total tuber yield (t/ha)	
			2009-10	2010-11	2009-10	2010-11
T_1	750 g/ha	3	7.95(16.57)*	7.17(15.53)	19.86	21.25
T_2	1000 g/ha	3	4.65(12.44)	4.16(11.76)	22.35	23.95
T_3	225 ml/ha	3	10.35(18.76)	8.17(16.61)	16.48	19.75
T_4	300 ml/ha	3	8.55(16.99)	7.34(15.72)	19.30	19.77
T_5	560 g/ha	3	12.58(20.77)	11.05(19.42)	15.98	15.81
T_6	747 g/ha	3	9.36(17.80)	8.75(17.21)	17.63	16.89
T_7	1250 g/ha	3	12.62(20.80)	10.24(18.67)	17.19	16.55
T_8			43.18(41.08)	38.89(39.50)	12.24	14.40
CD (5%)			1.33	1.01	1.07	2.32
SEm(±)			0.44	0.33	0.35	0.78

*Figures in the parenthesis are transformed angular values

The findings of the experiments are presented in Table 1 and 2. Table 1 revealed that the treatment T2 i.e. Kresoxim methyl 15% + Chlorothalonil 56% WG @ 1000g/ha exhibited the best results in controlling late blight of potato in terms of percent disease intensity and total tuber yield which was 4.65 and 4.16% and 22.35 and 23.95 t/ha in 2009-10 and 2010-11 crop season respectively. This was followed by its lower dose i.e. 750g/ha. All these results were superior to control treatment, where percent disease intensity was 43.18 and 38.89% during 2009-10 and 2010-11 crop season respectively. Kresoxim methyl 500 SC at 300 ml/ha and respectively. The same trend was also observed in Chlorothalonil 75% WG where at 560g/ha concentration the per cent disease severity was 10.85 and 7.87 % and at 747g/ha concentration the percent disease severity was 8.63 and 7.08% during 2009-10 and 2010-11 crop season respectively .

Baider and Cohen (2003) also reported that combination of Mancozeb and Beta Amino Butyric acid (BABA) had synergistic effect against *P.infestans* in potato and tomato than either of them alone .Chakraborty and Mazumder (2012) also observed that late blight can effectively be

Table 2 : Effect of fungicide premixture Kresoxim methyl 15% + Chlorothalonil 56% WG against Early blight of Potato

Treatments	Dose	No. of Spray	Percent disease intensity at 35 days after first appearance of symptoms		Total tuber yield (t/ha)	
			2009-10	2010-11	2009-10	2010-11
T_1	750 g/ha	3	6.73(15.03)*	4.56(12.32)	19.86	21.25
T_2	1000 g/ha	3	4.80(12.64)	2.83(9.70)	22.35	23.95
T_3	225 ml/ha	3	10.56(18.96)	6.53(14.81)	16.48	19.75
T_4	300 ml/ha	3	6.34(14.57)	5.58(13.66)	19.30	19.77
T_5	560 g/ha	3	10.85(19.23)	7.87(16.29)	15.98	15.81
T_6	747 g/ha	3	8.63(17.08)	7.08(15.43)	17.63	16.89
T_7	1250 g/ha	3	12.85(21.00)	7.51(15.91)	17.19	16.55
T_8			15.90(23.50)	9.43(17.88)	12.24	14.40
CD (5%)			1.29	0.51	1.07	2.32
SEM(±)			0.43	0.17	0.35	0.78

*Figures in the parenthesis are transformed angular values

controlled by applying prophylactic spray with Mancozeb @ 0.25% followed by Cymoxanil + Mancozeb @ 0.3% at the onset of the disease followed by Mancozeb 0.25% seven days after application of systemic fungicide.

Therefore,it may be concluded that the fungicide pre-mixture Kresoxim methyl 15% + Chlorothalonil 56% WG @ 1000g/ha can be used for controlling both the late and early blight of potato.

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