J. Mycopathol, Res, ***50(1)*** *: 117-119 (2012)*

Prevalence of diseases of potato in Indo-Gangetic Plains of West Bengal

A. CHAKRABORTY
AICRP on Potato, Directorate of Research, Bidhan Chandra Krishi Viswavidyalaya, Kalyani 741235, Nadia, West Bengal

Received : 12. 08 2011 Accepted : 28. 12. 2011 Published : 30.04.2012

A field survey was conducted during 2006-07, 2007-08 and 2008-09 crop season to find out the occurrence of disease of potato in Indo-Gangetic plains of West Bengal. Varieties like Kufri Chandramukhi, Kufri Pukhraj, Kufri Jyoti, Kufri Chipsona-1 and Kufri Jawhar were considered for observations. Among the leaf diseases late blight appeared in all the varieties tested except Kufri Chipsona-1 which showed on late blight symptoms.Early blight appeared in all the varieties except Kufri Chipsona-1 and Kufri Jawahar. Phoma leaf spot was observed in varieties Kufri and Jyoti and Chipsona-1 only. Among the viral diseases mosaic and leaf roll appeared in the varieties. But Kufri Jawahar showed resistance against leaf roll disease.Among soil and tuber borne diseases common scab was of common occurrence in all the varieties tested. But this disease was observed only between 75 and 85 days of maturity. Bacterial wilt was observed only in varieties Kufri Jyoti and Kufri Jawahar. Another disease like soft rof was of common occurrence in the varieties observed.

Key words : Prevalence, potato disease, West Bengal

INTRODUCTION

Potato is the most popular crop in West Bengal next to the cereals. Among all the potato producing states in the country West Bengal ranks second in terms of potato production next to U.P. Presently West Bengal occupies 24% of the total potato area but contributes about 30% of the total production in India. Potato plants are susceptible to infection by several pathogens, that attack leaves, stems, roots and stolons of the growing plants as they are suitable substrate for the growth and development of microorganisms. (Basu and De, 2003). The herbaceous nature of potato plant provides favourable environment for the establishment of the pathogen. Average annual yield loss due to diseases is approximately 75% of the total production depending upon the nature of the disease, weather conditions and type of cultivars (Paharia, 1961). In West Bengal it has been observed critically that the incidence of several fungal, bacterial and viral diseases affect the crop almost each and every year. Some of these diseases are of minor importance at present but if ignored, may become serious under congenial crop and weather conditions. (Khanna and Sharma, 1993). Therefore, continuous monitoring of diseases is necessary. Keeping these in view the present investigation has been carried out.

MATERIALS AND METHODS

Five varieties *viz* Kufri Chandramukhi, Kufri Pukhraj, Kufri Jyoti, Kufri Chipsona-1 and Kufri Jawahar were planted during 3rd Week of November at Adisaptagram Block Seed Farm,Hooghly, during 2006-07, 2007-08 and 2008-09 crop season.The plot size and spacing for each variety was 8.4 m x 2.4 m and 60 cm x 20 cm respectively. Fertilizers were applied as per recommended doses.

The appearance of the diseases were recorded when they were first observed and gradual development of each disease was recorded at 10 days interval.

RESULTS AND DISCUSSION

Leaf diseases

The results are presented in Table 1. It was observed that Late blight was of common occrrence

Table 1 : Per cent incidence of leaf diseases of potato during 2006-07, 2007-08 and 2008-09 crop season.

VARIETY	45 DAP						55 DAP						65 DAP					
	*LB	EB	PH	MM	SM	LR	LB	EB	PH	MM	SM	LR	LB	EB	PH	MM	SM	LR
K. Chandramukhi	29.8	0.0	0.0	1.7	0.0	0.0	51.6	2.1	0.0	2.0	0.0	1.5	88.6	3.6	0.0	0.0	3.8	4.1
K. Pukhraj	20.4	0.0	0.0	1.5	1.5	3.5	28.7	0.0	0.0	2.0	1.9	4.8	56.9	3.0	2.7	2.7	4.2	6.8
K. Jyoti	0.0	0.0	0.0	1.9	0.0	3.0	32.0	4.2	2.9	3.0	0.0	3.9	47.9	5.0	4.0	4.0	3.2	7.0
K. Chipsona-1	0.0	0.0	0.0	1.1	1.0	0.0	0.0	0.0	0.0	3.8	2.9	4.5	0.0	0.0	3.4	3.4	4.5	6.4
K. Jahawar	0.0	0.0	0.0	0.8	1.6	0.0	25.4	0.0	0.0	3.2	2.4	0.0	50.5	0.0	0.0	0.0	4.0	0.0

75 DAP						85 DAP					
LB	EB	PH	MM	SM	LR	LB	EB	PH	MM	SM	LR
100.0	4.6	0.0	4.2	0.0	6.0	100.0	7.0	0.0	5.8	0.0	6.9
80.5	4.9	0.0	5.5	3.3	8.2	100.0	6.9	0.0	6.5	3.7	10.0
60.1	5.9	5.7	3.9	0.0	7.6	90.0	6.8	6.5	4.3	0.0	9.0
0.0	0.0	4.2	4.4	3.9	7.3	0.0	0.0	5.3	5.3	4.5	8.6
70.4	0.0	0.0	4.4	3.5	0.0	87.5	0.0	0.0	5.0	3.6	0.0

* LB= Late blight, EB= Early blight, PH = Phoma, MM= Mild mosaic, SM= Severe mosaic & LR= Leaf roll

Table 2 : Per cent incidence of soil and tuber borne diseases of potato during 2006-07, 2007-08 and 2008-09 crop season.

VARIETY	45 DAP				55 DAP				65 DAP			
	*C.S.	B.S.	BW/ BR	S.R.	C.S.	B.S.	BW/ BR	S.R.	C.S.	B.S.	BW/ BR	S.R.
K. Chandramukhi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
K. Pukhraj	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
K. Jyoti	0.00	0.00	2.43	0.00	0.00	0.00	4.00	0.00	0.00	0.00	5.71	0.00
K. Chipsona-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
K. Jahawar	0.00	0.00	5.00	0.00	0.00	0.00	6.74	0.00	0.00	0.00	8.40	0.00

75 DAP				85 DAP			
C.S.	B.S.	BW/ BR	S.R.	C.S.	B.S.	BW/ BR	S.R.
0.00	0.00	0.00	0.00	7.90	0.00	0.00	2.04
0.00	0.00	0.00	0.00	7.85	0.00	0.00	2.95
0.00	0.00	7.71	0.00	10.52	0.00	9.30	3.53
0.00	0.00	0.00	0.00	4.90	0.00	0.00	2.75
0.00	0.00	9.31	0.00	2.81	0.00	9.74	3.16

* CS=Common scab, BS=Black scurf, Bw/BR= Bacterial wilt/ brown rot & SR=Soft rot

in all the varieties except Kufri Chipsona-1 where no symptoms of Late blight was observed even in the year of Late blight epidemic in West Bengal in 2006-07. Among other varieties Kufri Chandramukhi and Kufri Pukhraj showed maximum per cent incidence of the disease i.e. up to 100%. But considering the rapidity of the spread of the disease Kufri Chandramukhi was considered as most susceptible variety against Late blight.In kufri Jyoti and Kufri Jawahar the maximum per cent incidence of the disease (i.e 90.4% and 87.5% respectively) was observed 85 days after planting. Early blight was observed in varieties Kufri Chandramukhi, Kufri Pukhraj and Kufri Jyoti with varying incidence per cent i.e 7.0, 6.9 and 6.8% respectively. No Early blight was observed in varieties Kufri Chipsona-1 Kufri Jawahar.Phoma leaf spot was observed in varieties Kufri Chipsona-1 and Kufri Jyoti and the per cent incidence started increasing gradully and reached highest at 85 days after planting i.e 6.5%

and 5.3% respectively. Early blight and Phoma were not observed before mid January.

Among the viral diseases mosaic i.e mild and severe mosaic and leaf roll are most important in West Bengal.Mild mosaic was observed in all the varieties tested and maximum per cent incidence was observed in Kufri Pukhraj (6.5%) followed by Kufri Chandramukhi (5.8%) and Kufri Chipsona-1 (5.3%) at 85 days after planting. Severe mosaic was observed in varieties Kufri Pukharaj (3.7%). Leaf roll was observed in all the varieties except Kufri Jawahar. Maximum per cent was observed in variety Kufri Pukhraj (10.0%) followed by Kufri Jyoti (9.0%) and Kufri Chipsona-1 (8.6%) at 85 days after planting.

Soil and tuber borne diseases

The results are present in Table 2. It is observed that bacterial wilt and brown rot was observed only in varieties Kufri Jyoti and Kufri Jawahar. The disease first appeared at 45 days after planting with per cent incidence 2.43% and 5.00% respectively. Thereafter, per cent incidence of the disease started increasing and maximum per cent incidence of the disease *i.e* 9.30% and 9.74% respectively was observed at 85 days after planting. Common scab was observed in all the varieties tested and maximum per cent incidence was observed in variety Kufri Jyoti (10.52%) followed by Kufri Chandramukhi (7.90%) and Kufri Pukhraj (7.85%). Incidence of soft rot was observed in all the varieties tested. Maximum per cent incidence of the disease was observed in the variety Kufri Jyoti (3.53%) followed by Kufri Jwahar (3.16%), Kufri Pukhraj (2.95%) and Kufri Chipsona-1 (2.75%). No black scurf symptom was observed in any variety tested during this investigation.

From the present investigation it can be concluded that Kufri Chandramukhi was the most susceptible and Kufri Chipsona-1 was highly resistant against Late blight of potato. Similarly Kufri Chipsona-1 and Kufri Jawahar were resistant against Early blight.No Phoma leaf spot symptom was observed in Kufri Chandramukhi, Kufri Pukhraj and Kufri Jawahar. Moderate incidence of mild mosaic was observed in all the varieties tested but severe mosaic was observed only in varieties Kufri Pukhraj, Kufri Chipsona-1 and Kufri Jawahar. Similarly Leaf roll was observed in all the varieties except Kufri Jawahar. Bacterial wilt was observed only in varieties Kufri Jyoti and Kufri Jawahar, other varieties remained free from this disease. Common scab and soft rot was observed in all the varieties tested.

ACKNOWLEDGEMENT

The author is thankful to AICRP on Potato for providing necessary facilities for carrying out this experiment.

REFERENCES

Basu, A and De, B. K. 2003. Diseases of potato in West Bengal. Combined potato research and development in West Bengal (Etd S. K. T. Nassar, A. Basu, M. Chettri, A. Konar and A.B. Mandal) pp. 51-82.

Khanna, R.N. and Sharma, Jyotsana. 1993. Soil and tuber bone diseases. Advances in Horticulture, Vol. 7. Potato Eds. K. L. Chadda and J. S. Grewal. Malhotra Publishing House, New Delhi, pp. 463-490.

Paharia, K. D. 1961. Late blight of potato and its control. *Indian Potato J.* **3:** 61-71.