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Ecofriendly Disease Management Early Blight of Tomato caused by Alterneria Solani

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Abstract: The early Blight of Tomato caused by *Alternaria Solani f.sp lyeopersici.* Foliar symptom generally occure on the oldest leves and start as small brownish or block lesion. These leaf spot enlarge upto ½ inch (1.3cm) in diameter in characteristically concentric fashion the area around the spot may become yellow as may entire several affected leaves.

The tomato (*Lycopersion esculentum) is* one fo the most popular crops grow in India. The Alternario blight of tomato caused *by Alternaria solar f.sp. lycopersici* is more severe and common disease in .The importance of cultural practices is known from ancient time. Suitable adjustment in cultural practice can modify the environmental in such a manner that become unfavorable for the pathogen and disease development. Disease intensity was reducing when shifting in date of transplanting was made for the disease indifferent crop varieties. The tomato crop transplanted in 2nd week of July showed disease intensity (15.5 and 12.80%) and in 4 week to September showed maximum (35.0 and 38.5%) both the years (2014-15 & 2015-16). Using seven different soil amendments under field conditions the minimum disease intensity (12.57 and 12.0%) was observed in application of Neem cake followed by Pyrite id wheat straw was least effective in controlling the disease in both the years of experimentation.

Kew words- *Cultural management, tomato, Alternaria Slani. f.sp. Lycopersci., lesion., manifestation*

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I. Introduction

Alternaria solani survives between crop in plant debris and on seed. It can nont survive or volunteer tomato plant (warm climate) an on other cultivated and wild solanaceris. Plant (photo, egg plant, horse nettle and black nightshade) Infection by the fungus is most rapid under warmer 82-86^{0}F (28-30^{0}C) wet condition Early blight symptoms (leaf spot and defoliation) are most pronounced in the lower canplay disease severity and prevalence are highest when loaded with fruit.

Tomato (*Lycopersicon esculentum)* is one of the most popular crop grown in India, which suffers from several diseases. Alternaria blight incited by *Alternaria solans sp. Lycoperici* causes several yield losses under congenial conditions. Considering the importance of the crop and the disease severity, the study as under take to evaluate the cultural practices for management of Alternaria blight of tomato.

II. Materials and Methods

Study was conducted on the role of different transplanting dates in the developments of disease. The experiment were conducted in the crop season 2013-2014 and 2014-2015 heaving plot size 3×2m. different dates of transplanting were done on the dates starting from every 2 and 4 week of July, August to September. The disease intensity was recorded after 60 days from the date of transplanting and data are analyzed statically. Each treatment was replicated four times and irrigated as and when required.

The average disease intensity was calculated for both the years. The soil amendments experiments were also conducted in the field during. 2013-2014 and 2014-2015. Plots of 3×2 m were taken for each treatment and replicated four time following R.B.D.. different types of amendments like karanj oil seed cacke neem cake, mustard cake, paddy straw, wheat straw and water hyacinth were hyacinth were taken @ 30.Oton/ha and Pyrites and Gypum @ 2.0ton/ha more used. Disease intensity and yield were recorded at the maturity of crop.

III. Results and Observation

The result obtained from table 1 revealed that the average minimum disease intensity (14.15%) in both crop seasons was observed in the crop transplanted on 2nd week of July as compared to those with other transplanting dates. The average maximum disease intensity (36.75) was observed in late transplanted plots. The tomato transplanting in the first week of August showed less disease intensity (15.50 and 12.80%) in both years. However, late shown crop in the first week of September showed maximum (35.00 and 38.50%) in both the years. Similar result was also reported by (Abdul et at., 1995). The disease could be managed by the use of different type of soil amendments. Average disease intensity was recorded in both year 2014-2015 and 2015-16 and results are summarized table 1.

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Table-1 : Effect of alternation in date of transplanting on the disease intensity

S.No.	Date of transplanting	2014-2015		2015-2016	
		Av. Disease intensity	yield Q/ha.	Av. Disease intensity	Yield Q/ha.
1.	1 week of Aug	15.50 (23.18)	210	12.80 (20.20)	212
2.	3 week of Aug	18.30 (25.32)	200	16.50 (23.96)	202
3.	1 week of Sep	22.50 (28.31)	190	20.00 (26.56)	195
4.	3 week of Sep	28.00 (31.95)	175	25.80 (30.52)	185
5.	1 week of Oct	32.85 (34.97)	170	30.00 (33.21)	180
6.	3 week of Oct	35.00 (36.27)	165	38.50 (38.35)	166
C.D.	At 5%	S.E.=0.43 S.E.=7.04		S.E.=0.81 S.E.=4.20	
		C.D.=(0.90) C.D.=14.69		C.D.=(1.70) C.D.=8.77	

The amendments were applied in the field 15 days prior to the transplanting of tomato crop and allowed to decompose. The disease was minimized in varying degree by the use of different soil amendments. Neem cake observed to be most affecting followed by pyrite and mustard cake in both the years. Minimum disease intensity (12.50 and 12.00%) was observed with the application of neem cake in both the years. Soil amendment with wheat straw was least effective in controlling the disease in both years. Similar findings have also been reported by Lovang and Wildt (2000) and Nandagopal and Ghewande (2014).

Discussion –

Alternaria solani is fungal pathogen that produce disease in tomato plant called early blight of tomato. As the disease mature, it spread outward on the leaf surface causing it turn to yellow wither and dice. Early blight overwinter on infected plant tissue and is spread by splashing rain irrigation, insect and garden tool. The disease in also carried on tomato seed and potato tubers, high temperature (80-85^{0}F) and wet humid condition promote its rapid spread. In many case, poorly nourished or stress plant are attacked. The best control measured for tomato blight is prevention remove and destroy infected leaf. Once blight is present and progresses it become more resistance to biofungicide and fungicide. Treat as soon as possible. This disease could be managed by the use of different type of soil amendment which was applied about 15 days prior to transplanting to tomato crop.

Table-2. Effect of different soil amendments on disease intensity

S.No.	Soil amendments	Av. Disease Intensity		Yield q/ha.	
		2014-15	2014-15	2015-16	2015-16
1-	Neem cake	12.57(20.70)	12.00(20.26)	240.0	235.0
2-	Karanj oil seed cake	16.87(24.25)	15.90(23.49)	235.0	230.0
3-	Mustered	18.50(25.47)	17.30(24.57)	215.0	220.0
4-	Paddy straw	20.30(27.13)	21.50(27.62)	210.0	200.0
5-	Mahuva cake	22.50(28.31)	21.90(27.90)	195.0	148.0
6-	Caster cake	24.89(29.92)	23.97(29.31)	185.0	187.0
7-	Wheat straw	29.30(32.77)	28.97(32.56)	170.0	165.0
8-	Control	35.45(36.45)	33.50(35.36)	160.0	165.0
C.D. at 5%		S.E.=0.30	S.E.=0.36	S.E.=4.56	S.E.=3.38
		C.D.=0.64	C.D.=0.75	C.D.=9.52	C.D.=7.06

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