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Screening of Onion Genotypes against Purple Blotch

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ABSTRACT

Onion (Allium cepa L.) is one of the major bulb crop of India. Onion is most widely cultivated species of genus Allium and it belongs to family Alliaceae. It is having various uses such as vegetable, spice and as a medicine, so it is rightly called as "queen of kitchen". Screening of onion genotypes for purple blotch revealed that, the genotype Arka Kalyan was found moderately resistant while the genotypes viz., Arka Pragati, Arka kirthiman, Arka lalima and Arka Bindu were found moderately susceptible and Arka Niketan, Arka Bhima, Satara gaurva and Bhima Super were susceptible to purple blotch of onion.

Key words: *Screening, Allium Cepa, Per Cent Disease Index, Alliaceae and Purple Blotch*

INTRODUCTION

Onion (*Allium cepa,* L.) is one of the most important fresh vegetable crop cultivated across the world and is an important vegetable grown in most parts of India. Onion is regarded as a highly export oriented crop and earn valuable foreign exchange for the country. In India, Onion occupies an area of 1.20 million hacters with a production of 19.40 million tonnes and the productivity of 16.10 metric tonnes / ha, in the year 2013-14. The major onion growing states are Maharastra, Mandhya Pradesh, Karnataka, Gujarat, Bihar, Andra pradesh, Rajastan, Haryana, Tamilnadu, Odisha, Telangana , UP etc., Maharastra stands 1st in production of onion followed by MP and Karnataka. In Karnataka onion is cultivated in an area of 1.36 lakh hactares, with production of 2.06 million tones and productivity of 15.1 MT/ ha, contributing 11% to the total onion production of the country[1]. Purple blotch disease of onion is a serious menace in majority of the onion-producing countries of the world[3]. Purple blotch of onion caused by *Alternaria porri* (Ellis) Cif. is one among the serious fungal diseases that affect onion, causing heavy yield loss ranging from 2.5 to 87.8 per cent[4]. Purple blotch appears on leaves and seed stalk of onion and cause serious damage throughout the onion producing area of the country. Due to this, onion production is reduced drastically which adversely affecting the exports and also results in price hike within the country. In this regard experiments were carried out to screen different onion genotypes against purple blotch disease.

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MATERIALS AND METHODS

In order to identify the resistant/tolerant genotypes against purple blotch disease different onion genotypes were screened under field condition at college of agriculture shivamogga and observations on total number of healthy and infected plants was recorded at crop maturity stage and per cent disease index was calculated as per the disease scale given by Sharma[5].

Disease scale

Scale	Description
0	No disease symptom
1	A few spots towards tip covering 10 per cent leaf area.
2	Several purplish brown patches covering upto 20 per cent of leaf area.
3	Several patches with paler outer zone covering upto 40 per cent leaf area.
4	Leaf streaks covering up to 75 per cent leaf area or breaking of leaves from center.
5	Complete drying of the leaves or breaking of leaves from center.

Scale adopted to indicate degree of resistance against purple blotch of onion

Sl. No	Disease severity	Category	Reaction
1	<5	0	Immune
2	5-10	I	Resistant
3	11-20	II	Moderately resistant
4	21-40	III	Moderately susceptible
5	41-60	IV	Susceptible
6	>61	V	Highly susceptible

The percent disease index was calculated by using the formula (wheeler, 1969).

$$\textbf{Percent disease index} = \frac{\text{Sum of individual rating}}{\text{No of leaves examined} \times \text{maximum disease grade}} \times 100$$

RESULTS AND DISCUSSION

The results indicated that none of the varieties tested were showed immune or resistant reaction. However only one variety Arka Kalyan showed moderate resistant reaction with a disease score of 2 and PDI of 19.5 per cent and the varieties the *viz*., Arka Lalima, Arka Pragati, Arka Kirthiman, and Arka Bindhu showed moderately susceptible reaction and remaining varieties showed susceptible reaction with a disease score of 4 & the PDI was more than 40 per cent. The data is represented in (Table: 1 and 2) and graph represented in (Fig:1). These results were in conformity with the results obtained by Chetana *et al*.[2], who screened different onion genotypes against purple blotch and revealed that the genotype Arka Kalyan was found moderately resistant while genotypes *viz*., Rampur Rose, Agrifound Rose, Arka Pragati, Arka Niketan, Arka Pitamber and Arka Bindu was found moderately susceptible to the disease.

Table 1: Screening of different genotypes of onion against purple blotch disease

Sl.no	Varieties	PDI (%)	Scale	Reaction
1	Arka Niketan	42.2	4	S
2	Arka Kalyan	19.50	2	MR
3	Arka Lalima	33.18	3	MS
4	Arka Pragati	32.28	3	MS
5	Arka Kirthiman	31.20	3	MS
6	Arka Bindhu	36.50	3	MS
7	Arka Bhima	40.50	4	S
8	Satara Local	52.50	4	S
9	Bhima Super	43.80	4	S

Table 2: Reaction of onion genotypes against purple blotch disease

Scale	Disease reaction	No of genotypes	Genotype name
<5	Immune	0	_
5- 10	Resistant	0	_
11- 20	Moderately Resistant	1	Arka Kalyan
21 -40	Moderately Susceptible	4	Arka Lalima, Arka Pragati, Arka Kirthiman &Arka Bindhu
41 -60	Susceptible	4	Arka Niketan, Arka Bhima, Satara Local & Bhima Super
>61	Highly Susceptible	0	_

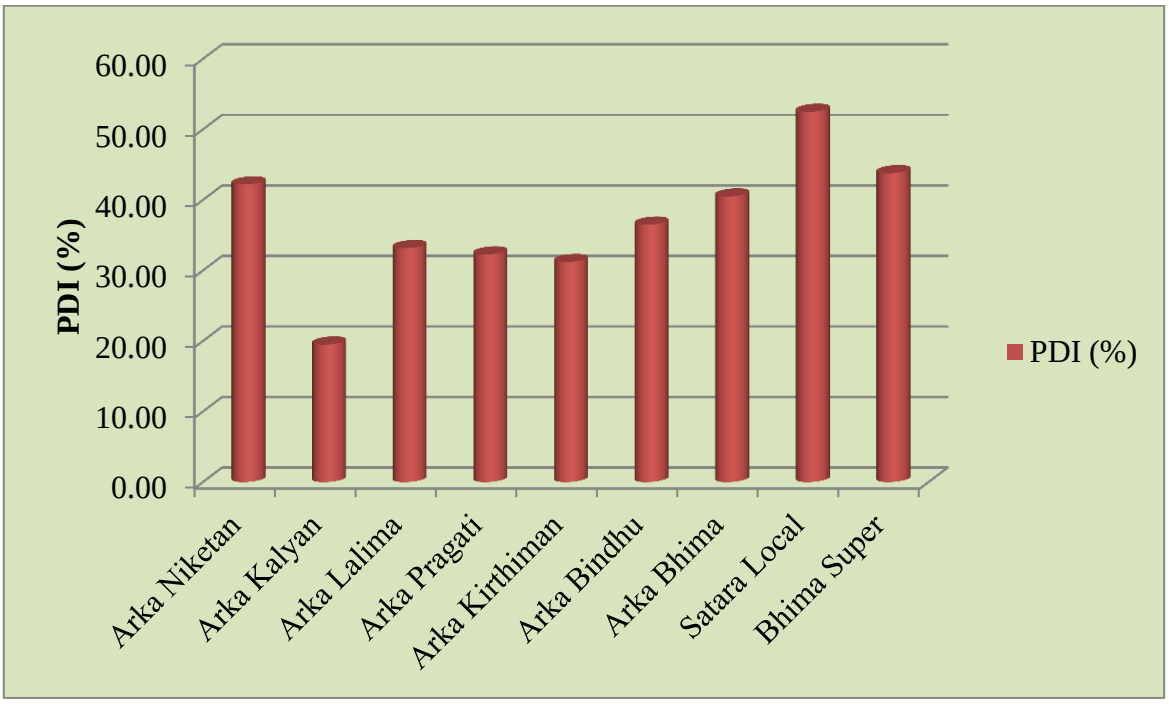

Fig. 1: Screening of different Genotypes of onion against purple blotch of onion

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