



## Research Note

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# Evaluation of onion genotypes against purple blotch (*Alternaria porri*)

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**ABSTRACT :** Purple blotch caused by *Alternaria porri* is one of the most important prevalent disease of onion and causes severe economic losses to farmers. Forty four genotypes of onion were evaluated and screened against purple blotch disease. Based on the results obtained all the genotypes were grouped into five grades. Out of 44 genotypes none of them was found resistance or immune, while 5 genotypes viz., OG-4, OG-7, OG-14, OG-34 and OG-44 were found to be moderately resistant (Grade 2) and per cent of leaf area infection ranged from 11.00 to 20.00 per cent. Under moderately susceptible (Grade 3) 31 genotypes were grouped with 21.00-40.00% leaf area infection, five were susceptible (Grade 4) with leaf area infection from 41.00% - 60.00% and the remaining two genotypes were highly susceptible with grade 5 and leaf area infection was more than 60%.

**KEY WORDS :** Onion, *Allium cepa* L. Purple blotch, *Alternaria porri*

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Onion (*Allium cepa* L.) ranks in third highest in production in the world among seven major vegetables namely onion, garlic, cauliflower, green peas, cabbage, tomato and green beans. Onion is grown Worldwide over in an area of 36.46 lakh hectares with production 732.32 lakh tons and having an average productivity of 20.08 t/ha (Anonymous, 2010). China (210 lakh tons) and India (148.24 lakh tons) are the major onion producers followed by USA (34.01 lakh tons). During *Kharif* season cloudy weather and constant drizzling of rain favours bulb rotting disease leading to low productivity. Similarly in *Rabi* season problem of purple blotch (*Alternaria porri*) and Stemphylium blight (*Stemphylium vesicarium*), which again pulls down the productivity. The yield loss could vary from 25 to 50% (Quadri *et al.*, 1982). The best ways to manage the disease is to grow disease resistant varieties. Hence, the present study was undertaken to evaluate the available genotypes against purple blotch disease.

The experiment was laid out in a Randomized Block Design with three replications at the Horticulture Research Station Haveri (Devihosur) during *Rabi*, 2012-13 with 44 onion genotypes including local cultivars, pre breeding lines and some released varieties were evaluated. Seeds were sown in trays to raise seedlings for transplanting in the field. Seven

week old healthy seedlings were transplanted in the plots with a spacing of 15 cm between and 10 cm within rows. One row of two meters length formed a plot accommodating 20 plants of each genotype. The genotypes were randomised within each replication. The crop was not sprayed by any chemicals so as to facilitate the incidence of disease. The disease scoring was done after 90 days after transplanting. The development of the symptoms and the severity of the disease was recorded by observing all the plants in each genotypes separately, using 0-5 scale as given by Bhangale and Joi (1985).

Grade	Reaction	Per cent leaf area covered
0	Immune	No disease
1	Resistant	Up to 10%
2	Moderately resistant	11-20%
3	Moderately susceptible	21-40%
4	Susceptible	41-60%
5	Highly susceptible	>61%

For purple blotch disease resistance screening efforts have been made to locate the source of resistance in onion by evaluating 44 genotypes under field condition, none of the genotypes was found to be either resistant or immune to the disease (Table 1). All were found moderately resistant to highly

susceptible. However, five genotypes viz., OG-4, OG-7, OG-14, OG-34 and OG-44 were moderately resistant to the disease (Table 1). This might be due to genotypes which are rich in pyruvic acid, which is responsible for pungency in onion and

**Table 1 : Screening of onion genotypes against purple blotch disease (*Alternaria porri*)**

Sr. No.	Genotypes	PDI	Disease grade	Category of resistance
1.	OG-1	26	3	MS
2.	OG-2	31	3	MS
3.	OG-3	32	3	MS
4.	OG-4	13	2	MR
5.	OG-5	22	3	MS
6.	OG-6	27	3	MS
7.	OG-7	19	2	MR
8.	OG-8	26	3	MS
9.	OG-9	25	3	MS
10.	OG-10	34	3	MS
11.	OG-11	63	5	HS
12.	OG-12	51	4	S
13.	OG-13	34	3	MS
14.	OG-14	18	2	MR
15.	OG-15	31	3	MS
16.	OG-16	58	4	S
17.	OG-17	23	3	MS
18.	OG-18	68	5	HS
19.	OG-19	37	3	MS
20.	OG-20	32	3	MS
21.	OG-21	45	4	S
22.	OG-22	24	3	MS
23.	OG-23	37	3	MS
24.	OG-24	34	3	MS
25.	OG-25	32	3	MS
26.	OG-26	56	4	S
27.	OG-27	35	3	MS
28.	OG-28	34	3	MS
29.	OG-29	52	4	S
30.	OG-30	41	4	S
31.	OG-31	37	3	MS
32.	OG-32	35	3	MS
33.	OG-33	24	3	MS
34.	OG-34	20	2	MR
35.	OG-35	34	3	MS
36.	OG-36	30	3	MS
37.	OG-37	22	3	MS
38.	OG-38	33	3	MS
39.	OG-39	26	3	MS
40.	OG-40	29	3	MS
41.	OG-41	24	3	MS
42.	OG-42	28	3	MS
43.	OG-43	25	3	MS
44.	OG-44	20	2	MR

PDI – Per cent disease index  
MS - Moderately susceptible  
S - Susceptible

HS - Highly susceptible  
MR- Moderately resistant

also high vitamin C contents. These two factors which may hinder the infection and development of pathogen as vitamin C acts as an antioxidant. Whereas, 31 genotypes were moderately susceptible, five were susceptible and 2 were found highly susceptible to disease. On the previous occasions, Banagale and Joi (1985), Dhiman *et al.* (1986) and Pathak *et al.* (1986) evaluated 36 lines and only one genotype IHR-56 was recorded resistant to purple blotch disease under field screening trials.

Kamlesh and Sharma (2004) reported the results of three *Rabi* season trials which indicated that, out of 30 land races evaluated only 15 were resistant. Kamlesh *et al.* (2006) reported that RO-59 variety was resistant to purple blotch. Sachin and Sharma (2007) evaluated 8 genotypes and out of which only one genotypes-409 exhibited minimum disease severity. Shilpakumari *et al.* (2012) reported among 310 onion genotypes screened against purple blotch disease none of them was found resistant or immune, while four genotypes viz., Arka Kalyan (AK)-171, AK-172, AK-173 and MSPBR-120 were found moderately resistant with grade scale of 2, the per cent of leaf area infection ranged from 11 to 20 per cent.

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