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Research Note

Evaluation of Chilli genotypes for resistance to powdery mildew caused by *Leveillula taurica* (Lev.) Arn.

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Abstract
Nineteen genotypes were screened for reaction against powdery mildew disease. Among these, Arka Suphal and Orissa local genotypes were highly resistant. These genotypes may be used in hybridization programme to develop resistant variety.

Keywords
Chilli, powdery mildew, resistance

Hot pepper (*Capsicum annuum* L.) is an important tropical and subtropical spices and vegetable crop. It is an important constituent of foods, adding flavour, colour, vitamin C and pungency. It is also used as medicinal herb and ornamental plants in different parts of world. It is therefore indispensable to the world food and industries.India has 25 per cent share in the total quantity of hot pepper exported in the world. Major hot pepper growing states are Andhra Pradesh, Maharashtra, Karnataka, Orissa, Tamilnadu and Madhya Pradesh. These account for nearly 80 per cent of the total hectare and production. However; the species is highly susceptible to powdery mildew caused by *Leveillula taurica* (LEV.). Total losses due to powdery mildew disease reported in India are up to 24-80 per cent of the crop (Mathur *et al*, 1972, Sharmila *et al*. 2006).Control of disease by management practices has certain limitations. Perfect solution to keep disease away from the crop is to identify resistant variety. Identification of resistance source and incorporation of resistance in plants will help to save the expenditure to the tune of thousands of rupees per hectare, being incurred on application and cost of fungicides. Therefore, it is very important to breed varieties resistant to the disease coupled with high yields for cultivation by the farmers. Hence, the present study was conducted to identify resistant genotypes that can be used as resistance source.

Total 19 genotypes were screened including three hybrids, eight commercial varieties, seven local collections and a susceptible check Byadgi Kaddi (Table 2). All of these genotypes were screened in natural epiphytotic conditions at Department of Botany, Pratishthan Mahavidyalaya, Paithan, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, (M.S.). The field experiment was conducted during *Kharif* 2012 using Completely Randomized Block Design with two replications. The plot size was 6×1.2mwith spacing 60×60cm between and within rows. All the recommended package of practices were applied except protection for control of powdery mildew. The intensity of the disease was recorded by scoring randomly selected five individual plants in each treatment using 0-9 scale (Mayee and Datar, 1986). All of these genotypes screened were again grouped into six categories based on reaction type as given by Khare and Lakpale (1997) as given in Table 1.

None of the 19 genotypes screened for the disease was found to be Immune (I) in reaction to powdery mildew disease, but some encouraging results were obtained, as two of the genotypes *viz.*, Orissa Local and Arka Suphal were found to be Highly Resistant (HR) and two genotypes i.e. Phule Jyoti and Nandi were categorised as resistant (R). Four genotypes *viz.*, CH-1, Pant C-1, Pusa Sadabahar and Khurasani were grouped in to moderately resistant (MR) category. Among all other genotypes, six were found to be moderately susceptible (MS) and five genotypes including susceptible check Byadgi kaddi were in highly susceptible (HS) category. Similar work was carried out by several workers and reported the same results (Pawar *et al.*, 1985; Bidari *et al.*, 1985; Deshpande *et al*., 1987 and Sharmila *et al*., 2006). As in present experiment, Arka Suphal and Orissa Local genotypes were highly resistant to the disease; these genotypes may be exploited as one of the parent (resistant/donor) in hybridization programme for development of resistant variety.

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Table 1. Powdery mildew disease scale in Hot pepper

Disease Scale	Description of Disease reaction
0	IMMUNE (I)- No symptom of powdery mildew
1	HIGHLY RESISTANT(HR)- Small scattered powdery mildew specks covering 1% or less leaf area
3	RESISTANT(R)- Small powdery lesions covering 1-10% of leaf area
5	MODERATELY RESISTANT(MR)- Powdery lesions enlarged covering 11-25% of leaf area
7	MODERATELY SUSCEPTIBLE(MS)- Powdery lesions coalesce to form big patches covering 26-50% of leaf area
9	HIGHLY SUSCEPTIBLE(HS)- Big powdery patches covering 51% or more of leaf area and defoliation occur

Table 2. Reaction of chilli genotypes against *Leveillula taurica* under field conditions

S. no.	Entry	Hybrid/ Variety/ Local	Variety released by/ Location	Disease Score	Reaction
1	Nandi	Hybrid	Nunhems India Pvt. Ltd.	3	R
2	Sitara	Hybrid	Monsanto Vegetable Seeds.	7	MS
3	CH-1	Hybrid	PAU, Ludhiana, Punjab	5	MR
4	Phule jyoti	Variety	MPKV, Rahuri, Maharashtra	3	R
5	Jayanti	Variety	Dr PDKV, Akola	7	MS
6	Pant C-1	Variety	GBPA&T, Pantnagar, Uttarakhand	5	MR
7	PusaJwala	Variety	IARI, New Delhi	9	HS
8	Pusa Sadabahar	Variety	IARI, New Delhi	5	MR
9	Punjab Guchhedar	Variety	PAU, Ludhiyana, Punjab	7	MS
10	LCA 334	Variety	HRS, Lam, Guntur ,Telangana	9	HS
11	Rajasthan Local	Local collection	Jaipur, Rajasthan	9	HS
12	Orissa Local	Local collection	Srikakulam, AP	1	HR
13	Arka Suphal	Variety	IIHR, Bangalore, Karnataka	1	HR
14	9907-9611	Maintainer-Line	AVRDC, Taiwan	9	HS
15	Byadgi Kaddi (SC)	Local collection	Byadgi, Karnataka	9	HS
16	JapaniLongi	Local collection	IIVR, Varanasi, UP	7	MS
17	Gondal Patta	Local collection	Gondal, Gujrat	7	MS
18	Agra Achari	Local collection	Agra, UP	7	MS
19	Khurasani	Local collection	Sangrampur, Maharashtra	5	MR