



Screening of turmeric cultivars against leaf spot and leaf blotch diseases

Key words : Leaf blotch, Leaf spot, Turmeric cultivars.

Turmeric (*Curcuma domestica* L.) is one of the most important spice crops in India. It is grown for commercial and domestic requirement. The crop is affected by foliar diseases caused by *Colletotrichum capsici* Sydow (Reddy *et al.* 1963) and *Taphrina maculans* Butler (Rao, 1995). These diseases occur throughout the country (Philip & Nair, 1981; Singh, 1996; Singh 2007). Bordeaux mixture and Dithane Z-78 were found to be effective in the management of the disease (Srivastava & Gupta, 1997) but the residue problem is likely to be major hindrance in the export of produce. In view of the global trade it is necessary to export residue free quality produce. Screening of different cultivars/ varieties for disease resistance is a continuous programme in the IDM of turmeric crop.

The present studies were carried out during kharif 2005-06 and 2006-07. The entries were sown in plots of 3 x 1 m with a spacing of 30 x 10 cm with recommended dose of fertilizers 150:100: 120. Susceptible check was also raised. The reaction of 86 entries against *Taphrina* leaf spot & 83 entries against *Colletotrichum* leaf spot was recorded under natural conditions using 1-9 scale (Singh *et al.* 2002). The incidence of *Taphrina* and *Colletotrichum* was recorded one month before harvesting and Percent Disease Index (PDI) was calculated by following formula.

$$PDI = \frac{\text{Sum of numerical disease rating values} \times 100}{(\text{No. of plants observed} \times \text{Maximum disease rating})}$$

In the case of *Taphrina* leaf spot, numerous spots on both sides of leaf with 1-2 mm in diameter were found. The infected leaves changed to reddish brown colour (Rao, 1995). *Colletotrichum* leaf spot symptoms were mostly confined to leaf blades and some times extended to leaf sheath. Grayish white elliptic or oblong spots (2-3 cm in length & 1-2 cm in width) with brown margin and numerous black spots (acervuli) on both surfaces arranged in concentric manner (Rao & Rao, 1987) were found. Variation was found among the entries evaluated against leaf spot diseases of turmeric.

Similar observations were recorded by Aidurai (1996) and Singh *et al* (2002). No entry was found highly resistant or highly susceptible against *Taphrina* leaf blotch and *Colletotrichum* leaf spot. Percent Disease Intensity ranged from 1.11-23.33 in *Taphrina* leaf blotch and from 0.1 - 21.33 in *Colletotrichum* leaf spot respectively. Out of 83 entries 66 entries recorded resistant reaction while 17 entries were moderately resistant to *Colletotrichum* leaf spot. Among 86 entries 58 recorded Resistant reaction and 11 were moderately resistant to *Taphrina* leaf spot. Twenty entries viz., BDJR634, 15B, Ca shillong, Ca-17-1, Ca-69, Ca-92-2, CLI124/6, CLI136, CLI 315, CLI-322, CLI-362, CLI-390, Jorhat local, KTS-1, Nagaland local, Nanded local, PCT-2, PCT-13, PCT-14 and PTS-7, were found to be resistant to both *Colletotrichum* and *Taphrina* leaf spots. Hence these varieties may be utilized in breeding programme.

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Table 1. Reaction of turmeric cultivars against *Colletotrichum* leaf spot and *Taphrina* leaf blotch diseases.**a). Short duration varieties**

Reaction	<i>Colletotrichum</i> leaf spot	Per cent disease intensity	<i>Taphrina</i> leaf blotch	Per cent disease intensity
Highly resistant	Nil	Nil	Nil	Nil
Resistant	BDJR 1182, Ca Sompeta, CLI-38, CLI-195/5, CLI-225/, CLI-316, CLI-325, CLI-330, CLI-344, CLI-361, CLI-367, CLI-369, CLI-370, Daughi, IC, Jamaica, Kasturi Avidi, KTS-2, KTS-8, Pulbhani, PCT-3, PCT-5, PTS-16, PTS-19, Shillong, Waigon	1.1- 3.33	BDJR 1082, Boath pedda pasupu, BSRI, Ca Sompeta, CLI-225/, CLI-330, CLI-344, CLI-367, CLI-369, CLI-370, CLI-22, Daughi, IC, Jamaica, Kasturi, Kasturi Avidi, KTS-2 KTS-7, KTS-8, Pulbhani, PCT-3, PCT-5, PCT-10, PCT-11, PCT-12, PTS-16, PTS-19, Shillong,	1.11- 4.44
Moderately resistant	BDJR 1082, Boath pedda pasupu, Ca-70, Ca-90, CLI-14/4, CLI-22, G.L purum, , Kasturi, KTS-7	8.33-17.2	BDJR 1182, Ca-70, CLI-38, CLI-195/5, CLI-316, CLI-325, CLI-361,, G.L purum, PCT-18, PCT-19 Waigon	5.55- 11.875
Susceptible	-	-	-	-

b).Medium duration varieties

Reaction	<i>Colletotrichum</i> leaf spot	Per cent disease intensity	<i>Taphrina</i> leaf blotch	Per cent disease intensity
Highly resistant	Nil	Nil	Nil	Nil
Resistant	BDJR634, 15B, Ca shillong, Ca-17-1, Ca-69, Ca-92-2, CLI32/4, CLI124/6, NO-15, CLI136, CLI196/4, CLI315, CLI-322, CLI-362, CLI-390, Jorhat local, KTS-1, KTS-9, Meghalaya, Nagaland local, Nanded local, No.24, PCT-2, PCT-13, PCT-14, PTS-7	0.1- 4.259	Armoor, Avanigadda BDRJ634, 15B, Ca shillong, Ca-17-1, Ca-69, Ca-92-2, CLI124/6, CLI136, CLI315, CLI-322, CLI-362, CLI-390, Jorhat local, KTS-1, KTS-3, Nagaland local, Nanded local, PCT-2, PCT-13, PCT-14, PTS-7, PTS-10, ST-510	2.72- 4.44
Moderately resistant	Armoor, Avanigadda KTS-3, KTS-4, PTS-10, ST-510	13.33- 21.33	CLI32/4, CLI196/4, CLI-322, KTS-4 KTS-9, MEGHALAYA	6.665- 23.33
Susceptible	-	-	-	-

c). Long duration varieties

Reaction	<i>Colletotrichum</i> leaf spot	Per cent disease intensity	<i>Taphrina</i> leaf blotch	Per cent disease intensity
Highly resistant	Nil	Nil	Nil	Nil
Resistant	Allepy, CLI-317, CLS-9, CO-1, Manipur Local, Maredumilli collection, PCT-8, PCT-11, Ranga, Rasmi, Roma, ST-35, ST-365, TC-4	0.1- 4.44	CLI-317, CLS-9, Paaduru local, PCT-11,	1.11- 4.165
Moderately resistant	Black turmeric, Paaduru local,	8.88- 18.88	Allepy, CO-1, Manipur Local, Maredumilli collection, PCT-8, Ranga, Rasmi, Roma, ST-35, ST-365, TC-4	6.105- 18.99
Susceptible	-	-	-	-

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Regional Agricultural Research Station
Lam
Guntur - 34
Andhra Pradesh

**G Bindu Madhavi
S L Bhattiprolu
V Bali Reddy**

(Received on 19.05.2008 and revised on 16.12.2008)