JOURNAL OF PURE AND APPLIED MICROBIOLOGY, Sept. 2016. Vol. **10**(3), p. 2397-2399

Evaluation of Bio-Efficacy and Phytotoxicity of Pyraclostrobin 20% WG against Anthracnose Disease Chilli

M. Abdul Kareem, M.H. Tatagar, Krishna D. Kurubetta, Raghavendra Mesta, Dileepkumar Masuthi and M.A. Waseem

Horticulture Research and Extension Station, Devihosur, Haveri - 581 110, Karnataka, India.

(Received: 24 December 2015; accepted: 06 February 2016)

A field study has been conducted at Horticulture Research and Extension Station, Devihosur on the management of anthracnose of chilli caused by *Colletotrichum capsici* using 7 treatments in 3 replications following Randomized Block Design. Pyraclostrobin (0.1%) recorded significantly least PDI than all other treatments and it was found significantly superior over Chlorothalonil (0.16%), Carbendazim (0.1%) and Mancozeb (0.3%). Yield was found maximum in Pyraclostrobin @ 0.1% (7.23 q/ha) than all the treatments and was on par with Pyraclostrobin @ 0.75% (7.05 q/ha). The fungicides *Viz.,* Carbendazim (7.10 q/ha), Chlorothalonil (7.05 q/ha) and Mancozeb (6.81 q/ha) were also recorded on par yield. No phytotoxicity symptoms were observed at all stages of crop growth by the application of Pyraclostrobin.

Keywords: Chilli, anthracnose, die back, fruit rot, pyraclostrobin, field evaluation.

Chilli (*Capsicum annuum*) is an important crop grown worldwide for its use as spices and vegetables. It is an indispensable spice used as basic ingredient in a great variety of cuisines all over the world. Chilli belongs to *Capsicum* (2n=24) a new world genus belonging to *Solanaceae* family. It is an excellent source of vitamin C, A, B-complex and E. It contains seven times more vitamin C than orange.

India is the largest producer of chilli crop, grown over an area of 0.794 million hectares with an annual production of 0.13 million tonnes with the productivity of 1.5 tonnes/ha (Anonymous, 2014). The important states growing chilli are Andhra Pradesh, Karnataka, Orissa, Maharashtra, West Bengal, Rajasthan and Tamil Nadu. Karnataka ranks second in area with 100.73 ('000 ha) and production 107.00 ('000 MT) of dry chilli after Andhra Pradesh (Anonymous, 2014). In Karnataka, northern Karnataka is an important chilli growing area and it is highly concentrated in the districts like Dharwad, Haveri, Koppal, Ballari, Raichur, Kalaburagi and Belagavi.

* To whom all correspondence should be addressed.
E-mail: makuasd@gmail.com

MATERIALS AND METHODS

An experiment was conducted at Horticulture Research and Extension Station, Devihosur, Haveri to study the efficacy and phytotoxicity of pyraclostrobin 20% WG (Headline) against anthracnose of chilli caused by *Colletotrichum capsici*. It was conducted in randomized block design with three replications under field conditions during kharif 2013-14. Seedlings of chilli cv. Byadgi Dabbi were planted in the plot (4.8 m x 3.6 m) with a spacing of 0.6 m x 0.6 m. First spray was given immediately after first symptoms of disease is observed. Remaining two sprays were given at 15 days interval. Control was

maintained with no fungicidal spray. The severity of the disease was measured using 0-9 disease rating scale given by Mayee and Datar (1986).

Grade	Per cent Infection
0	0%
1	1-10%
3	11-25%
5	26-50%
7	51-75%
9	>75%

RESULTS AND DISCUSSION

The effect of Pyraclostrobin 20% WG on anthracnose (Die back and Fruit rot) and yield of chilli are presented in Table 1 and Table 2 respectively.

Bioefficacy of Pyraclostrobin 20% WG against Die back of chilli

The severity of die back differed significantly with respect to all the treatments at all stages of observation. The per cent disease index recorded on die back of chilli revealed that Pyraclostrobin 20% WG @ 500 g/ha recorded significantly least per cent disease index of 6.6 and it was on par with Pyraclostrobin 20% WG 375 g/ha. Pyraclostrobin 20% WG @ 500 g/ha and Pyraclostrobin 20% WG 375 g/ha were found significantly superior over Chlorothalonil 75% WP @ 800 g/ha, Carbendazim 50% WP @ 500 g/ha and Mancozeb 75% WP @ 1500 g/ha. The untreated

Table 1. Bioefficacy of Pyraclostrobin 20% WG on anthracnose of Chilli

Sl. No.	Treatments	Dosage (per ha) a. i. (g)	Formulation (g)	Die Back (PDI)	Fruit rot (PDI)
1.	Pyraclostrobin 20% WG	50	250	12.58 (20.77)*	50.32 (45.18)*
2.	Pyraclostrobin 20% WG	75	375	7.40 (15.79)*	38.48 (38.34)*
3.	Pyraclostrobin 20% WG	100	500	6.66 (14.96)*	32.56 (34.79)*
4.	Chlorothalonil 75% WP	600	800	11.84 (20.13)*	51.80 (46.03)*
5.	Mancozeb 75% WP	1125	1500	13.32 (21.41)*	52.54 (46.46)*
6.	Carbendazim 50% WP	250	500	12.58 (20.77)*	52.54 (46.46)*
7.	Control	-	-	30.34 (33.42)*	81.40 (64.45)*
	SE.m ±			0.75	3.73
	CD at 5 %			2.31	11.49
	CV (%)			9.58	12.57

* Figures in parenthesis are angular transformed values

Table 2. Effect of Pyraclostrobin 20% WG on yield of dry chilli.

Sl. No.	Treatments	Dosage (per ha) a. i. (g)	Formulation (g)	Dry chilli yield (q/ha) 1st Picking	2nd Picking	Total	Percent increase in yield over control(%)
1.	Pyraclostrobin 20% WG	50	250	2.80	3.43	6.23	67.02
2.	Pyraclostrobin 20% WG	75	375	3.13	3.92	7.05	89.00
3.	Pyraclostrobin 20% WG	100	500	3.21	4.02	7.23	93.83
4.	Chlorothalonil 75% WP	600	800	3.45	3.60	7.05	89.00
5.	Mancozeb 75% WP	1125	1500	3.09	3.72	6.81	82.57
6.	Carbendazim 50% WP	250	500	3.20	3.90	7.10	90.34
7.	Control	-	-	1.43	2.30	3.73	-
	SE.m ±				0.55		
	CD at 5 %				1.70		
	CV (%)				11.27		

check recorded significantly highest per cent disease index of 30.34.

Bioefficacy of Pyraclostrobin 20% WG against Fruit rot of chilli

The severity of fruit rot differed significantly with respect to all the treatments at all stages of observation. The per cent disease index recorded on fruit rot of chilli revealed that Pyraclostrobin 20% WG @ 500 g/ha recorded significantly least per cent disease index of 32.56 and it was on par with Pyraclostrobin 20% WG 375 g/ha. Pyraclostrobin 20% WG @ 500 g/ha and Pyraclostrobin 20% WG 375 g/ha were found significantly superior over Chlorothalonil 75% WP @ 800 g/ha, Carbendazim 50% WP @ 500 g/ha and Mancozeb 75% WP @ 1500 g/ha. The untreated check recorded significantly highest per cent disease index of 81.40. Santoshreddy *et al.*, 2014 reported that among three systemic fungicides evaluated at 0.2% concentration, pyraclostrobin 20WG shown least infection (11.63 %) with highest vigour index (861.17).

Yield

The treatments differed significantly with respect to yield of dry chilli. Pyraclostrobin 20% WG @ 500 g/ha (7.23 q/ha) recorded significantly highest yield than all the treatments and was on par with Pyraclostrobin 20% WG 375 g/ha (7.05 q/ha). The fungicides *Viz,* Chlorothalonil (7.05 q/ha), Mancozeb (6.81 q/ha) and Carbendazim (7.10 q/ha) were also recorded on par yield with Pyraclostrobin 20% WG. The untreated check (3.73 q/ha) recorded significantly least yield.

Phytotoxicity

No phytotoxicity symptoms were observed at all stages of crop growth by the application of the test chemical pyraclostrobin 20% WG of any concentration at 1, 3, 5, 7 and 10 days after first application.

REFERENCES

1. Anonymous., 2014, Directorate of economics and statistics, New Delhi.
2. Mayee, C. D. and Datar V. V., 1986, Phytopathometry Technical Bulletin-l (Special Bulletin-3). Marathwada Agricultural University, Parbhani.
3. Santoshreddy Machenahalli, Nargund, V. B. and Hegde, R. V., Management of fruit rot causing seed borne fungal pathogens in chilli. *The Bioscan*, 2014; **9**(1): 403-406.