

Original Research Article

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Evaluation of New Fungicides for Management of Turcicum Leaf Blight in Maize Caused by *Exserohilum turcicum* (Pass.) Leonard and Suggs

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ABSTRACT

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Evaluation of new different fungicides, using the susceptible maize genotype CM-202 for the management of turcicum leaf blight caused by *Exserohilum turcicum* revealed that the combi products Azoxystrobin 18.2% + Difenoconazole 11.4% SC @ 0.250 ml /liter was found more effective in reducing the severity of disease followed by Azoxystrobin 18.2% + Difenoconazole 11.4%) SC @ 0.125 ml /liter were found effective in reducing the disease severity and also contributed for higher grain yield and The treatment which received a foliar spray of systemic fungicide Tebuconazole 250 EC @ 1.4 ml /liter of water recorded significantly lowest disease score and highest grain yield compared to other treatments and untreated check.

Introduction

Maize (*Zea mays* L.) is known as “King of crops” and “Miracle crop or Queen of cereals” in view of its several uses. It is being grown both for seed and fodder purpose. The maize is grown in many parts of the world for its immense potentiality both for adoption and nutritive value but increase in area, production and productivity creates very

favorable condition for several foliar and stalks rot diseases (Payak and Sharma, 1980). The Northern leaf blight caused by *Exserohilum turcicum* (Pass.) affecting maize causes more than 50 per cent loss in grain yield was reported in USA (Robert, 1953; Raymundo and Hooker, 1981).

In India, the turcicum leaf blight is prevalent in almost all the maize growing areas. Severe

losses in grain yield due to epiphytotics have been reported in several parts of India and these losses vary from 25 to 90 per cent depending upon the severity of the disease (Chenulu and Hora, 1962; Jha, 1993). The turcicum leaf blight is an important fungal foliar disease affecting several cultivated hybrids and composites in karnataka.

The disease has attained economic status in the state. However, not much systematic research work being carried out on Evaluation of different fungicides on management of important disease of maize and sole application of single fungicides found resistant to the fungi. Hence different new fungicides along with different combination should be evaluated in order to develop effective chemical control measures to manage the disease successfully.

Materials and Methods

The experiment was conducted using the susceptible maize genotype CM-202. Thirteen treatments were allocated in a randomized complete block design and replicated thrice. The details of fungicides used in these experiments are described In Table 1 and each treatment was planted in four rows of four meter length. The fungicides were sprayed after 40th and 50th DAS.

The disease severity was recorded on individual plant basis at dough stage. Each treatment was harvested leaving two outer rows to record grain weight per hectare at 15% moisture. The data thus obtained is thus subjected to statistical analysis following RCBD. The data on turcicum leaf blight and grain yield kg/ha were recorded.

Results and Discussion

An experiment was conducted to test different new fungicides against turcicum leaf blight in

maize. Among systemic fungicides viz Trifloxystrobin, Tebuconazole, Propiconazole, Azoxystrobin, Difenconazole, mancozeb and combi products such as Azoxystrobin 18.2% + Difenconazole 11.4% SC, Trifloxystrobin 25% + Tebuconazole 50% - 75 WG were tested at different concentrations as foliar spray on maize genotype CM-202 which was highly susceptible to turcicum leaf blight The final observations recorded at dough stage on severity of the disease and grain yield are presented in table 2.

The results indicated significant differences between treatments with respect to disease severity and grain yield among systemic fungicides. The treatment which received a foliar spray of Tebuconazole 250 EC @ 1.4 ml /liter of water (T1) recorded significantly lowest disease score (23.7%) and highest grain yield of 3163.5 kg/ha compared to other treatments and untreated check. Among combi products which received a foliar spray of Azoxystrobin 18.2% + Difenconazole 11.4% SC @ 0.250 ml /liter (T10) recorded significantly lowest disease score (8%) and highest grain yield of 5913 kg/ha compared to others and significant over untreated check.

This was followed by a foliar spray of Azoxystrobin 0.125 ml/litre of water (T9) which recorded disease severity of 10 % and second highest grain yield of 5670 kg/ha and Trifloxystrobin 0.7gm/litre of water (T8) with lowest disease score (15.0%) and third highest grain yield of 5131kg/ha compared to others.

The severity of disease in both treatments of systemic fungicides and combi products varied from 8.0 to 77.0 % and the grain yield was between 1870 to 5913 kg/ha. All the treatments were significantly superior over the untreated check which recorded the highest disease severity of 94.3% and the lowest grain yield of 1448.6 kg/ha.

Table.1 Description of fungicides in studies on chemical control of TLB in maize

Sl no	Common name	Trade name
1	Trifloxystrobin 25% + Tebuconazole 50% - 75 WG	(Nativo-75 WG)
2	Trifloxystrobin 50 WG	Flint
3	Tebuconazole) 250 EC	Folicur
4	Propiconazole (Folicur) 250 EC	Folicur
5	Mancozeb 75 % WP	Indofil-M-45 75WP
6	Azoxystrobin 18.2 % + difenoconazole 11.4%	Amistar top
7	Azoxystrobin 23 SC	Amistar 25 SC
8	Difenoconazole 25 EC	Score 25 EC

Table.2 Effect of different fungicides on the severity of turcicum leaf blight and yield of CM-202

Treatment Number	Treatments ml or gram/litre	Mean	
		Turcicum Leaf Blight (%)	Grain yield (kgs/ha)
T1	Untreated check	94.3	1448.6
T2	Amistar Top 32.5 SC (Azoxystrobin 18.2% + Difenoconazole 11.4%) @ 0.10 ml /liter	13	4720
T3	Trifloxystrobin 25% + Tebuconazole 50% - 75 WG (Nativo-75 WG) @ 0.7 gm/liter	15.0	5131.1
T4	Amistar Top 32.5 SC (Azoxystrobin 18.2% + Difenoconazole 11.4%) @ 0.12 ml /liter	10	5670
T5	Amistar Top 32.5 SC (Azoxystrobin 18.2% + Difenoconazole 11.4%) @ 0.25 ml /liter	08	5913
T6	Trifloxystrobin 25% + Tebuconazole 50% - 75 WG (Nativo-75 WG) @ 0.6 gm/liter	19.3	4135.3
T7	Amistar Top 32.5 SC (Azoxystrobin 18.2% + Difenoconazole 11.4%) @ 0.075 ml /liter	16	3980
T8	Tebuconazole (Folicur) 250 EC @ 1.4 ml /liter	23.7	3163.5
T9	Trifloxystrobin (Flint) 50 WG @ 0.3 gm/liter	38.3	2280.7
T10	Propiconazole (Folicur) 250 EC @ 1.0 ml /liter	25.7	2980.5
T11	Azoxystrobin 23 SC(Amistar 25 SC) @ 0.1 ml /liter	57	2824
T12	Difenoconazole 25 EC (Score) @ 0.05 ml /liter	25	2300
T13	Mancozeb 75% WP @ 3.0 gm/liter	77	1870
	SEm±	1.35	85
	CD at 5%	4.05	255
	CV%	8.65	13.85

The results indicated significant differences between treatment with respect to disease severity and grain yield (Table 2). Among systemic fungicides alone, A foliar spray Tebuconazole 250 EC @ 1.4 ml /liter of water (T1) recorded significantly lowest disease severity (23.7%) and highest grain yield of 3163.5 kg/ha as compared to others. Among combi products, Azoxystrobin 18.2% + Difenoconazole 11.4% SC (T10) as foliar spray @0.250 ml/liter of water recorded significantly lowest disease score (8%) and highest grain yield of 5913 kg/ha compared to other treatments.

This was followed by Azoxystrobin 18.2% + Difenoconazole 11.4% SC (T9) as foliar spray @ 0.125 ml/litre of water recorded disease severity of 10 %. Trifloxystrobin 25% + Tebuconazole 50% - 75 WG (T8) which received a foliar sprays @ 0.7gm/litre of water recorded significantly lowest disease severity (15.0%) and third highest grain yield of 5131kg/ha as compared to other treatments

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