



Field efficacy of new fungicide, Taqat 75 WP against foliar fungal diseases of Blackgram.

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ABSTRACT

A field experiment was conducted to evaluate the efficacy of Taqat 75 WP, a combination product of captan 70 % (contact) and hexaconazole 5 % (systemic) against foliar fungal diseases in blackgram. The experiment was carried out i.e. during Rabi 2007-2008 and 2008-2009 seasons at Regional Agricultural Research Station, Lam, Guntur, Andhra Pradesh. The results showed that Taqat 75 WP at both the concentrations of 500 g and 750 g/ha as well as karathane 48 EC at 500 mL/ha were highly effective in controlling the incidence of foliar fungal diseases, such as rust and powdery mildew in blackgram

Keywords: Foliar diseases, Powdery mildew, Rust, Taqat, Urdbean

INTRODUCTION

India is an important pulse growing country contributing 28 per cent to the global pulse basket from an area of about 37 percent (Masood Ali and Shivkumar, 2000). Urdbean, commonly known as blackgram, *Vigna mungo* (L.) Hepper, is an important short duration pulse crop grown throughout the year in Andhra Pradesh under different agroclimatic conditions, such as *kharif* (rainy), *rabi* (winter) and summer crop both in uplands as well as in rice fallows. In Andhra Pradesh, the total production of blackgram is 13.74 lakh tonnes from an area of 32.99 lakh ha with a productivity of 417 kg/ha. Though, grown in large area, the productivity was low due to various biotic and abiotic stresses. Among the biotic stresses, diseases are responsible for an estimated yield loss of 20 to 30 percent (Singh, 1995). Among the foliar fungal diseases, powdery mildew, *Cercospora* leaf spot and rust are the more prevalent diseases on urdbean in Andhra Pradesh. The yield losses caused by foliar disease are proportional to the disease severity depending on the stage of infection, genotypes and environmental conditions. Hence, the use of fungicides have become inevitable in controlling the foliar diseases in the absence of suitable resistant cultivars.

Taqat 75 WP is a new combination product of captan 70 % (contact) and hexaconazole 5 % (systemic) which can control the foliar fungal diseases in different field crops. Hence, in the present study, Taqat 75 WP was evaluated at two different concentrations in comparison with Karathane 48 EC (dinocap) which is commonly used fungicide against foliar diseases in blackgram.

METHODOLOGY

A field experiment was conducted during Rabi 2007-08 and 2008-09 at Regional Agricultural Research Station, Lam, Guntur to evaluate the bioefficacy of Taqat 75 WP against rust and powdery mildew diseases in blackgram. The trial was laid out in Randomized Block Design with four treatments including untreated control each replicated five times with a plot size of 20 sq.m during both the years. The blackgram variety, LBG 645 which is susceptible to powdery mildew and rust was selected for the study and sowing was done during second fortnight of December every year at a spacing of 30 cm and 10 cm between rows and plants respectively. The crop was grown under rainfed conditions by adopting all the agronomic practices as per recommendations of ANGRAU, Hyderabad. The crop was protected from the infestation both sucking pests as well as pod borers through blanket sprays of selective insecticides in all the experimental plots uniformly to avoid the yield losses due to insect pests.

The first spray was taken up after initial appearance of the diseases in the crop and further sprays were given at 15 days interval with knap-sack sprayer at the rate of 500 L of spray fluid per hectare for thorough coverage of foliage with spray fluid. The severity of rust and powdery mildew were recorded one day before the first spray and finally after three sprays using standard disease rating scales during both the seasons. Percent disease index (PDI) was calculated using Wheeler's formula (1969) for both rust and powdery mildew.

The yield was recorded from each net plot excluding border rows and computed to yield in quintal/ha. The data were subjected to statistical analysis using M Stat C programme

after using suitable transformations such as arc sine transformations for percent disease incidence.

RESULTS AND DISCUSSION

During the experimental period, the incidence of *Cercospora* leaf spot was negligible, hence the data regarding the incidence of powdery mildew and rust was presented hereunder. However, the incidence of both rust and powdery mildew was slightly higher during Rabi 2008-2009 when compared to Rabi 2007-08 in all the experimental plots.

The results showed that the test fungicide, Taqat 75 WP at both the concentrations i.e 500 and 750 g/ha was found effective against rust, since the incidence of rust was nil in both the treatments compared with untreated control. However, it was found statistically on par with Karathane 48 EC (PDI–0.80) in reducing the incidence of rust in blackgram. Severe incidence of rust was observed in untreated control plots during both the seasons. Hence, it was evident that Taqat 75 WP at both the concentrations used were highly effective in controlling the incidence of rust in blackgram.

Similarly, powdery mildew was also proscribed very effectively with the test fungicide during both the seasons. Taqat 75 WP at both the concentrations 500 g and 750 g/ha was found highly effective in suppressing the disease incidence of powdery mildew in blackgram compared with untreated control. During 2007-2008 season, karathan 48 EC was found effective and statistically different than taqat, while in 2008-2009, taqat was the most effective in reducing the disease. the efficiency of both taqat and karathan were proved highly effective which significantly reduced the disease incidence of powdery mildew in treated plots when compared to untreated control (50 PDI) during both the seasons.

The results obtained in the present study revealed that all the treatments significantly increased the seed yield over the untreated control. The grain yield was the highest from the experimental plots treated with Taqat 75 WP at 750 g/ha during both the seasons. But, it was found statistically at a par with its lower dose as well as Karathane 48 EC with respect to yield. The fungicidal treatments not only increased the yield, but grain quality was also superior when compared to control plots.

The results obtained from the present study were in conformity with the earlier reports. Chattannavar *et al.* (2010) reported that Taqat at 750 g/ha and 500 g/ha were effective and found on par with propiconazole 0.1 % against *Alternaria* blight and grey mildew in cotton. While, Bhattiprolu (2010) reported that Taqat at 750 g/ha was effective in controlling the leaf spots caused by *Alternaria*, *Helminthosporium* and *Cercospora* in cotton.

The test compound, Taqat 75 WP was proved effective against both rust and powdery mildew diseases which might be due to its triazole component, hexaconazole. Since, the efficacy of triazoles against foliar fungal diseases in different crops was well documented. Dadke (1996) reported that hexaconazole (0.05%) was effective in controlling the rust in soybean among various fungicides. Similarly, Patil and Anahosur (1998) reported that hexaconazole at 0.1 percent sprayed at 15 days interval starting from the onset of disease was found effective in reducing severity of soybean rust with significant increase in seed yield. Nagaraja and Naik (1998) reported the efficacy of triazoles such as propiconazole, penconazole and difenconazole against powdery mildew of pea. Similarly, Khunti *et al.* (2002) observed that penconazole and hexaconazole effectively minimized the disease intensity of

Table1. Evaluation of Taqat 75 WP against rust and powdery mildew disease of urdbean compared with karathan 48 EC during rabi 2007-08 and Rabi 2008-09:

Treatment	concentrations (ml or g/ha)	Mean PDI after 3 sprays				Yield Kg/ha	
		Rust		Powdery mildew		2007-08	2008-09
		2007-08	2008-09	2007-08	2008-09		
T1- Taqat 75 WP	500 g	0.00	1.60	0.80	6.18	1508	1424
T2-Taqat 75 WP	750 g	0.00	0.00	0.96	1.04	1648	1488
T3-Karathane 48 EC	500 ml	0.80	2.10	0.00	3.16	1532	1432
T4-Untreated control	---	72.64	63.04	58.56	51.84	1136	1052
SEM ±		2.17	1.32	1.66	1.66	7.80	42.38
CD		6.41	3.89	4.80	4.91	200	125.01
CV%		43.10	28.0	34.50	31.6	10.30	6.7

* Figures in () are arcsine transformed values

SEM ± Standard Error of Mean; CD- Critical Difference; CV – Coefficient of Variation (%)

powdery mildew and increased the yield to considerable extent in greengram.

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