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Research Article
Efficacy of fungicides sprayed against Rottening of Berseem

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Keywords

Fungicides;
Control;
berseem: rottening;
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Abstract

The study was planned to evaluate the efficacy of some fungicides i.e. Propineb @ 1250g/hectare, Metiram @ 625g/ha, Thiophenate-Methyl @ 500g/ha, Fostyl-Aluminium @ 500 g/ha sprayed against rottening of berseem at Adaptive Research Farm, Gujranwala during Rabi 2011-12; 2012-13 and 2013-14 with Randomized Complete Block Design. Maximum disease control was recorded by using Thiophenate-M (14.17%; 6.85% and 15.86%) followed by Propineb (12.91%; 6.10%; 13.86%); Fostyl-Al (11.01%; 6.07%; 12.08%) and Carbendazim (12.33%; 5.60%; 11.29%) during three Rabi seasons. The lowest control was recorded by using Metiram (9.18%; 4.13%; 10.03%) compared to control (0%). Although all the fungicides were involved for controlling disease, however spraying of Thiophenate-M was most effective and economical.

Introduction

Berseem (*Trifolium alexandrinum* L.) was used as multi-cut nutritious fodder widely cultivated in irrigated areas of Pakistan (Naeem *et al*., 2006). Its average forage yield potential being 100-150 tha^{-1} and factors which were responsible for this yield gap was rottening of berseem stem and root. The extent of damage was 20-25% with temperature ranges 20-25^{o}C prevailed for a short period of time after constant rainfall (Chaudary *et al*., 1992). Fodders were important for livestock production; compulsive need for gaining nutritional security, acting important and catalytic role in farming system of Pakistan. In recent issue one way to increase forage production upto 20% was by reducing the losses caused by diseases. Berseem rottening disease incidence was recorded 0-60% (Rathi *et al*., 2007). Diseases hindered crop establishment, destroy forage quality, reduced green fodder and seed yield. These caused indirect losses like nodule formation resulting reduction of nitrogen fixation capacity (Faruqui *et al*., 2002). Diseases and pest interactions in plant produced toxins that adversely affected to animal health and could be fatal. Berseem rottening a complex disease encouraged by three most important pathogens i.e. *Rhizoctonia solani, Fusarium moniliforme* and *Sclerotium bataticola* (Jobshy *et al.*, 1981). Initial symptom of spreading pathogen was wilting and affected tillers appeared under favorable environmental conditions in the form of patches (Rathi *et al*., 2010). Severe mortality was recorded during February-March in naturally infected fields of root rot complex (*Rhizoctonia solani*; *Fusarium semitactum* and *Tylenchorhynchus vulgaris*); Stem rot (*Sclerotinia trifoliorum*); Leaf spots (*Alternaria; Myrothecium* and *Epicoccum spp*.). *Rhizoctonia solani* produced plenty of white mass of hyphae which turned to dark grey with the passage of time. *Fusarium semitactum* soil saprophytes entered into the host through healthy roots; moved up through xylem after the growth of the mycelia and spores moved here and there to become a permanent source of infection however high humidity and dense crop canopy favored its infection. *Sclerotinia trifoliorum* infection visible during January-February at low temperature; however primary infection caused through sclerotia mixed with seed or soil. The germinated sclerotia producing fruiting structures called apothecia. The infected ascospores liberated from the apothecia through irrigation water or wind and reached the stem however ascospores and mycelium caused infection (Akhtar, 1980). Crop rotation against clover/berseem root rot was one of the most important cultural control for management of disease (Karavianskii, 1978) and (Latch, 1984). Therefore the study was planned to evaluate some

fungicides sprayed against rottening of berseem/clover rot in Agro-ecological conditions of Adaptive Research Farm, Gujranwala

Materials and Methods

The study was planned to evaluate the efficacy of some fungicides i.e. Propineb @ 1250g/ha, Metiram @ 625g/ha, Thiophenate-M @ 500g/ha, Fostyl-Al @ 500g/ha sprayed against rottening of berseem/clover at Adaptive Research Farm, Gujranwala during Rabi 2011-12; 2012-13 and 2013-14. The trial was laid out by Randomized Complete Block Design with three replications having net plot size of 5mx5m. Di-ammonium phosphate (125kg/ha) and Sulphate of Potash (125kg/ha) was broadcasted at sowing time after well prepared soil however untreated berseem seed was spread @ 20 kg/ha in the field in standing water. Urea fertilizer (125kg/ha) was broadcasted in the field after each cutting. Twelve irrigations were applied to the field during the crop season. The crop was sprayed after 3rd cutting at the appearance of disease with each fungicides using 250 liter of water. The disease control (%) was recorded after cutting of crop by counting the affected plants from randomly selected sampling points (Nagarajan, 1983). The data of rottening of berseem was recorded by taking three randomly selected points of $3m^2$ area from each plot compared to control (Iqbal *et al*., 2014).

Results and Discussion

Fig. 1 showing that maximum disease control was recorded by using Thiophenate-M (14.17%; 6.85% and 15.86%) followed by Propineb (12.91%; 6.10%; 13.86%); Fostyl-Al (11.01%; 6.07%; 12.08%) and Carbendazim (12.33%; 5.60%; 11.29%) during three successive Rabi seasons. The lowest disease control was recorded by using metiram (9.18%; 4.13%; 10.03%) compared to control (0%). These results were contradictory to (Chaudary *et al*., 1992) who reported that incidence of disease was recorded 67.19%; 48.31% most effective cultural control measure against berseem root rot disease. These results were also in accordance to (Bhaskar *et al*., 2003; Pande *et al*., 2008) who reported that carbendazim was useful treatment for controlling rottening of berseem.

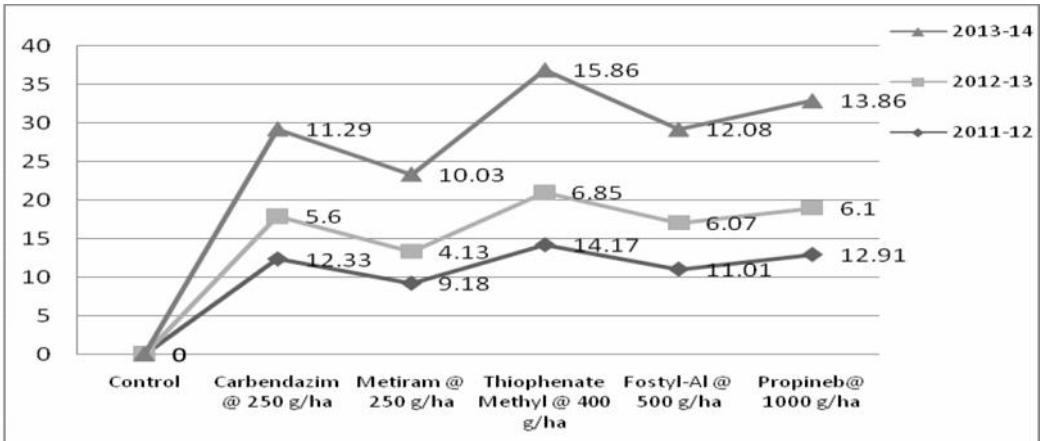

Fig.1 Control of berseem rottening by using fungicides

Conclusion

Although all the fungicides were involved for controlling disease however spraying of Thiophenate-M against rottening of berseem/clover was most effective and economical.

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