Research Article

Efficacy of fungicides sprayed against Rottening of Berseem

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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 rottenning 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 rottenning of berseem stem and root. The extent of damage was 20-25% with temperature ranges 20-25°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 rottenning 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 rottenning 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 3m² 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.

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.

References


