SHORT COMMUNICATION

Management of rhizome rot of ginger at farmers' field in Jammu region

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ABSTRACT: Ginger is an important spice crop and rhizome rot of ginger caused by *Pythium aphanidermatum* (Edson) Fitz is a major constraint in the production of healthy rhizome. The disease incidence recorded during *Kharif* 2015 was very high (55.25%) and it was only 7.5% in *Kharif* 2014, when rhizomes dip treatment was given with Mancozeb + Carbendazim along with drenching with Metalaxyl 40% WS @ 0.3%. The mean disease incidence was recorded 9.0% in case of T3 (recommended practice i.e. T2 + drenching with Metalaxyl 40% WS @ 0.3%) and maximum mean diseases incidence was recorded 45.37% in case of T1 (farmers' practice) - check. The mean maximum yield 132.5 q/ha was recorded in case of T3 and minimum mean yield 82.5 q/ha was recorded in case of T1 - Check.

Keywords: Ginger, *Pythium aphanidermatum*, rhizome rot of ginger, Jammu region

Rhizome rot of ginger caused by *Pythium aphanidermatum* (Edson) Fitz is a major constraint in the production of healthy rhizome and sometimes causing total failure of crop (Ahmad and Narain, 2007; Ahmad, 2009; Ahmad *et al.*, 2011; Ahmad, 2012; Ahmad, 2013). It is a major disease in Reasi and Udhampur district of Jammu region. It is a rhizome as well as soil borne disease and the symptoms can be seen from the month of July. Yellowing of leaves appear first on the lower leaves and proceeds to upper leaves. Roots arising from the affected rhizome become rotten and show brown discoloration of the rhizome tissue (Ahmad and Narain, 2007; Bhai *et al.*, 2013). Sometimes the pseudostem comes off easily with a gentle pull. The rotten parts attract other fungi, bacteria and insects. During the rainy season, this disease spreads very fast from infected field to healthy field. During the wet weather conditions, the disease causes severe leaf blight and results in significant reduction in the number and size of rhizomes thereby resulting yield losses up to 66% (Bhai *et al.*, 2013). In view of the changing farming system and adoption of improved ginger cultivars, present investigation was undertaken with an objective to manage the disease with fungicides.

The present research was carried out at Krishi Vigyan Kendra (KVK), Reasi on farmers' fields, during *Kharif* 2014 and 2015. The local ginger rhizomes J&K selection were planted in field at 25 x 15 cm spacing with three replications in randomized block design. Treatments comprised as T1-Farmers' practice (without

rhizome treatment), T2 - recommended practice SKUAST-Jammu (rhizome treatment with Carbendazim + Thiram (1:1 ratio), T3 - T2 + drenching with Metalaxyl MZ 0.3%, T4 - drenching with Carbendazim 0.1%, T5 - drenching with Metalaxyl MZ @ 0.3% and T6 - drenching with Mancozeb @ 0.2%. Recommended agronomic practices were followed to raise the crop. The observations on per cent plant dried disease incidence were recorded. Efficacy of the treatments was assessed by comparing percent plant dried and disease incidence. The cost benefit ratio was also calculated for different treatments.

The differential disease reaction was observed and conclusion was drawn from the two years pooled mean data (Table 1). The results showed that maximum disease incidence (55.25%) was recorded during *Kharif* 2015 in T1 without rhizomes dip treatment (farmers practices in Jammu province) while lowest disease incidence of 7.5% was recorded during *Kharif* 2014 in T3 where rhizomes dip treatment was given with Mancozeb + Carbendazim (1:1 ratio) along with drenching with Metalaxyl @ 0.3%. The mean disease incidence and highest yield recorded in case of treatment (T3). Maximum mean disease incidence and minimum yield was recorded in case of treatment (T1) - check (without rhizome dip treatment). The cost benefit ratio was highest (1:3.8) for T1 treatment.

Affected plants showed foliar yellowing from bottom to top and disintegration of soft rhizome tissues appeared after about 40 days after sowing. The initial symptoms were noticed on plants 40-45 days after sowing. The

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Table 1. Percent disease incidence and yield of ginger in *Kharif-2014* and *Kharif-2015*

Treatments	Disease incidence (%)			Yield (q/ha)			C:B ratio
	2014	2015	Pooled	2014	2015	Pooled	
T1 - Check without seed treatment (farmers' practice)	35.5	55.25	45.37	90	75.0	82.5	1:2.6
T2- Seed treatment with mancozeb + carbendazim (1:1 ratio)	10.0	25.5	17.50	125	100.0	112.5	1: 3.5
T3- T2 + Drenching with Metalaxyl MZ @ 0.3%	7.5	10.5	9.00	140	125.0	132.5	1: 3.8
T4- Drenching with Carbendazim 0.1%	26.8	28.9	27.85	112	105	108.5	1:2.5
T5- Drenching with Metalaxyl MZ @ 0.3%	12.5	18.2	15.35	120	95	107.5	1: 3.1
T6- Drenching with Mancozeb @ 0.2%	18.5	17.5	18.0	118	110	114	1: 3.6
CD at 0.05%	11.7	12.2					

plants wilted and subsequently death of the plants was observed. Similar observation has been made by Bhai *et al.* (2013). They also found the association of *Pythium aphanidermatum* and *P. myriotylum* with rhizome rot of ginger. Use of fungicides significantly decreased rhizome rot of ginger.

REFERENCES

- Ahamad S and Narain Udit (2007). Eco-friendly Management of Plant Diseases. Daya Publishing House New Delhi, pp. 412.
- Ahamad S (2009). Plant Disease Management for Sustainable Agriculture. Daya Publishing House New Delhi, pp. 373.
- Ahamad S, Anwar A and Sharma PK (2011). Plant Disease Management on Horticultural Crops. Daya Publishing House New Delhi, pp. 405.
- Ahamad S (2012). Recent Trends in Plant Diseases Management in India. Kalyani Publisher, Ludhiana, India, pp. 478.
- Ahamad S (2013). Hill Agriculture. Astral Publishing House, New Delhi, pp. 550.
- Ahamad S, Sharma JP, Sharma SK, Singh SK and Kher D (2017). Prevalence of ginger on farmers' field in Jammu region. *Ann. Pl. Protec. Sci.* 25: 227-228.
- Bhai RS, Sasikumar B and Kumar A (2013). Evaluation of ginger germplasm for resistance to soft rot caused by *Pythium myriotylum*. *Indian Phytopath.* 66: 93-95.