

Effect of soil amendments and biocontrol agents for management of stem and pod rot of groundnut

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SUMMARY

Three cakes, FYM and gypsum along with *Trichoderma harzianum* were tested in field condition for management of stem and pod rot of groundnut. Among them, castor cake @ 500 kg/ha with *T. harzianum* @ 1.5 kg/ha at the time of sowing was found most effective for reduction of stem rot in groundnut with highest pod yield of 2148 kg/ha. This was 114 per cent higher than control. Application of FYM @ 500 kg/ha with *T. harzianum* was also effective.

Key words :

Amendments, *Trichoderma harzianum*, Stem and pod rot, *Sclerotium rolfsii*

Stem and pod rot of groundnut caused by *Sclerotium rolfsii* Sacc. is an important disease causing significant yield loss in Gujarat, Maharashtra, Madhya Pradesh, Andhra Pradesh, Orissa and Tamil Nadu (Mehan *et al.*, 1995). Saurashtra region of Gujarat state is considered as oil bowl of the country, suffering huge loss due to stem and pod rot particularly in *Kharif* season due to monocropping and susceptible cultivars of groundnut under practice. *S. rolfsii* is a soil borne pathogen with wide host-range, and is difficult to manage with routine practices. Soil application of biocontrol agent, *Trichoderma harzianum* was tested with different amendments under field condition for two consecutive years.

MATERIALS AND METHODS

A field experiment was conducted in RBD design during *Kharif* 2007 and 2008 at Department of Plant Pathology, College of Agriculture, Junagadh Agricultural University, Junagadh. The groundnut cv. GG-20 was sown at 60 x 10 cm distance in 5.0 x 3.0 sized plots. The field experiments were conducted in five treatments with Randomized Block Design. Each treatment was replicated four times. At the time of sowing, *S. rolfsii* culture grown on Soil maize medium was added in the plot @ 450 g/plot. The furrow application of *T. harzianum* with five treatments' viz., castor

cake, neem cake, groundnut cake, FYM and gypsum was given at the time of sowing. The untreated control was maintained. The seed treatment of thiram @ 3g/kg seeds was common for all the treatments. All agronomic practices were followed as per recommendations. The observations on stem and pod rot incidence and pod yield were recorded.

RESULTS AND DISCUSSION

The results presented in Table 1 reveal that all the treatments significantly reduced the disease incidence as compared to control. Minimum disease incidence was recorded in the treatment of castor cake@500 kg/ha with *T. harzianum*@1.5kg/ha (20.96%) followed by FYM @500kg/ha with *T. harzianum* @1.5kg/ha (24.59%). They were statistically at par. While in other effective treatments, gypsum neem cake (34.81%) and groundnut cake the incidence was 30.45, 36.16 and 38.62 per cent, respectively. Among the five amendments tested, highest disease control was found in castor cake @500kg/ha with *T. harzianum*.

All treatments were also found significantly superior over control to improve the groundnut pod yield (Table 1). Maximum pod yield 2148 kg/ha was recorded in the treatment of castor cake @ 500kg/ha mixed with *T. harzianum* @ 1.5kg/ha significantly followed by FYM (2122 kg/ha). Both these

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Table 1 : Effect of soil application of different amendments with *T. harzianum* on stem and pod rot incidence in groundnut

Sr. No.	Amendment (@ 500 kg/ha) + <i>T. harzianum</i> (@ 1.5kg/ha)	Per cent disease incidence			Yield (kg/ha)#		
		2007	2008	Pooled mean	2007	2008	Pooled mean
1.	Castor cake	28.19 (22.32)*	26.31 (19.65)	27.25 (20.96)	2197	2100	2148
2.	Neem cake	35.86 (34.32)	36.47 (35.33)	36.16 (34.81)	1939	1733	1836
3.	Groundnut cake	39.61 (40.65)	37.22 (36.59)	38.42 (38.62)	1562	1557	1559
4.	FYM	29.28 (23.92)	30.17 (25.26)	29.73 (24.59)	2164	2080	2122
5.	Gypsum	33.00 (29.66)	33.98 (31.24)	33.49 (30.45)	1935	1830	1883
6.	Control	51.81 (61.77)	49.44 (57.72)	50.63 (59.76)	1000	1007	1003
	S.E. ±	2.42	2.66	1.80	122	123	86.75
	C.D. (P=0.05)	7.63	8.38	5.30	386	387	255.92
	C. V. %	11.55	12.94	12.25	11.79	12.39	12.08

*Data given in parenthesis are transformed values

Mean of four replications

treatments accounted 114 and 111 per cent higher pod yield as compared to control. While application of gypsum and neem cake @ 500kg/ha along with *T. harzianum* were next in yield performance with 1883 kg/ha and 1836 kg/ha, respectively. Similar result was obtained in furrow application of *T. harzianum* mixed FYM or castor cake which has been recommended for groundnut stem rot management in Gujarat (Anonymous, 2001). Applications of gypsum and neem cake are also reported effective against stem rot and charcoal rot of groundnut (Johnson *et al.*, 2003; Kolte and Patni, 2004).

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