



## Short communication

## Management of soil borne diseases of groundnut through seed dressing fungicides

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## ABSTRACT

Soil borne diseases viz., stem rot, collar rot and aflaroot are potential threat to groundnut cultivation. Although some plant diseases may be managed through resistant varieties and alteration of cultural practices, some diseases are only managed effectively with the application of suitable fungicides. About 150 chemicals belonging to different classes are used as fungicides in various countries. In this context, we evaluated ten systemic seed dressing fungicides and their combinations for management of major soil borne diseases of groundnut during *kharif* 2009 and 2010 at Directorate of Groundnut Research (DGR), Junagadh Experimental Farm. The fungicides viz., hexaconazole, tebuconazole, propiconazole, difencconazole, vitavax, carbendazim along with captan and mancozeb and various combinations were applied as seed treatment at recommended doses. The results indicated that tebuconazole 2 DS @ 1.5 g kg<sup>-1</sup> seed, mancozeb 75% WP @ 3 g kg<sup>-1</sup> seed, carbendazim 12% + mancozeb 63% WP @ 3 g kg<sup>-1</sup> seed, were very effective in the management of soil borne diseases when used separately, with apparent yield advantage over untreated plots.

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## 1. Introduction

Groundnut (*Arachis hypogaea* (L.)) is an important oilseeds and ancillary food crop in India with 4.7 million tonnes production from 4.7 million ha area (2012–13), and also has good export potential with about 0.56 million tonnes in 2012–13. India is the largest grower of groundnut and second largest producer after China with a national average productivity about 821 kg ha<sup>-1</sup> in *kharif* and 3000 kg ha<sup>-1</sup> during *rabi*-summer (2012–13) [Kharif and rabi season in India is cropping seasons. Kharif crops are the crops which sown in the month of May to June and harvested in the month of September and October mainly it is rain fed season. Rabi is particularly for the crops, sown in the month of October to November and harvested in the month of March to April]. Major groundnut growing states in India are Gujarat, Andhra Pradesh, Tamil Nadu, Karnataka, Rajasthan and Maharashtra. The rest of the area are mainly scattered in the states of Odisha, Punjab, Uttar Pradesh and Madhya Pradesh (Anonymous, 2013). The productivity of groundnut in India is low in comparison to world average i.e. 1646 kg ha<sup>-1</sup> and much lower than major groundnut growing

countries like USA (4699 kg ha<sup>-1</sup>), China (3572 kg ha<sup>-1</sup>), Myanmar (1559 kg ha<sup>-1</sup>), and Indonesia (2236 kg ha<sup>-1</sup>) (FAO, 2012). Low productivity may be attributed to the rain-fed cultivation of the crop coupled with damage caused by diseases and insect pests. About 80% of groundnut crop is cultivated in rain-fed areas where productivity fluctuates between 500 and 1500 kg ha<sup>-1</sup>. Diseases cause considerable yield losses in groundnut. Fungal, virus and bacterial pathogens attack the crop at various stages of growth and cause severe yield losses, and in some cases impairing quality. The major soil borne diseases of groundnut caused by fungi are collar rot/crown rot/seedling blight (*Aspergillus niger*), stem rot/Sclerotium wilt (*Sclerotium rolfsii* Sacc.), aflaroot (*Aspergillus flavus*) and dry root rot/dry wilt (*Macrophomina phaseolina*). Among all diseases, stem rot is reported to cause losses in yield up to 25% (Mayee and Datar, 1988) and collar rot up to 40% in India (Chohan and Singh, 1973). The losses may amount to 40–50% in terms of mortality of crop (Aulakh and Sandhu, 1970) particularly in *kharif* groundnut when the climatic conditions are more favourable for pathogen. Mehan and Chohan (1974), was first to report aflaroot of groundnut. Besides causing disease, *A. flavus* is known to produce aflatoxins. Both the toxigenic and non-toxicogenic strains have been reported (Subramanyam and Rao, 1977; Gangawane and Jadhav, 1982). Among various methods, fungicides serve as important

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