Research Paper :

Effect of copper nutrition on disease incidence and quality of chilli in a vertisol of zone-8, Karnataka

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SUMMARY

A field experiment was carried out to study the effect of copper nutrition on disease incidence and quality of chilli. Results revealed that, treatment receiving soil application of $CuCl_2$ at 2.5 kg ha^{-1} + 0.25 per cent $CuCl_2$ foliar spray at 30 and 60 DAT registered highest ascorbic acid content in green chillies (170.72 mg 100^{-1}), highest oleoresin content (16.56%) and total extractable colour (239.09 ASTA units). Treatment receiving only RDF recorded lowest quality attributes and differed significantly from T_8 treatment Further, lowest discoloured fruits (5.52%), anthracnone affected fruits (4.36%) and murda disease complex (8.23%) were noticed in the treatment receiving soil application of $CuCl_2$ at 2.5 kg ha^{-1} + 0.25 per cent foliar spray (T_8) of $CuCl_2$. Highest disease affected plants were noticed in the treatment receiving only RDF.

Key words : Vertisol, Anthracnose, Murda, Colour value, Oleoresin, Chilli

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Chilli (*Capsicum annuum* L.) an important spice cum vegetable is cultivated extensively in India. The important quality attributes in dry chillies are colour value, pungency and oleoresin. India felt the taste of this pungent spice in 1498 by Vasco-de-Gama and today it's unimaginable to think of food without chilli as it imparts both pungency and colour to the dishes and has become a favourite ingredient in culinary items. Continuous use of major plant nutrients through chemical fertilizers has resulted in the depletion of micronutrients which play a vital role in growth and development of crops and they occupy a position of importance by virtue of their essential nature. Copper is one such important micronutrient required by the crop plants for the completion of normal life cycle. It is a constituent of certain oxido-reductase enzymes (tyrosinase and ascorbic acid oxidase). Copper is a constituent of plastocyanin which plays a key role in the transport of electrons in photosynthesis. It is also involved in respiration as it is a component of cytochrome oxidase. Copper is highly toxic to fungal pathogens which cause the diseases. Hence, copper salts can be exploited in controlling diseases and being an essential micronutrient, can also be utilized for improving yield/quality of crops. In the present study, an attempt has been made to study the effect of copper nutrition on disease incidence and quality of chilli.

MATERIALS AND METHODS

A field experiment was conducted at Main Agricultural Research Station UAS, Dharwad in Zone-8 of north Karnataka on a vertisol during *Kharif* 2008 to study the effect of copper nutrition on disease incidence and quality of chilli (cv. BYADGI DABBI). A composite soil sample was collected from the experimental site (0-20cm) and was analysed for physico-chemical properties before the experiment. The soil had a pH of 7.44, EC- 0.38 dSm^{-1} and organic carbon-5.72 g kg^{-1}. The available N, P and K were 299, 20 and 390 kg ha^{-1}, respectively. The available micronutrients were 3.00, 0.48, 0.64 and 9.30mg kg^{-1} of Fe, Zn Cu and Mn, respectively. The experiment was laid out in randomized block design (RBD) with eleven treatments and three replications. Recommended dose of N, P_2O_5 and K_2O for chilli is 100:50:50 kg ha^{-1}. All the treatments received farmyard manure @ 10 t ha^{-1} (spot application). Nitrogen was supplied partly through urea and partly through DAP while entire doses of phosphorus and potassium were supplied through DAP and muriate of potash, respectively. Copper was applied according to treatments in the form of $CuCl_2$. Foliar spray