

Effect Of Seed Treatment With Newer Insecticides On Germination, Survival Of Seedlings Of Tomato And In The Management Of Whitefly

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ABSTRACT

A novel attempt in tomato nursery using two neonicotinoid insecticides viz., imidacloprid @ 5, 7.5 and 10 g/kg seed, thiamethoxam @ 3, 4 and 5 g/kg seed and phorate applied in soil @ 50, 75 and 100 g/m² for the control whitefly and their impact on seed germination and survival of seedlings were studied at the Experimental Farm of Department of Entomology, Dr. PDKV, Akola during *Kharif* 2002-03. The data on seed germination indicated that untreated control recorded highest germination (85.33%) than any other treatment and it did not differ significantly from treated plots. The insecticides either seed treatment or soil application with higher doses recorded lower germination percentage than their respective reduced doses clearly evidencing higher concentration had deleterious effect on seed germination, but contrary to this, maximum survival of seedlings was increased with increase in concentration of all insecticides. Among them, phorate @ 100 g/m² and imidacloprid @ 10 g/kg seed topped the list with 90.91 and 88.67 per cent, respectively at 10 days after germination (DAG) and all tested insecticides produced better seedling stand upto 35 DAG due to their superiority in keeping down the sucking pests especially whitefly. The lowest population of whitefly recorded in imidacloprid @ 10 g/kg seed followed by thiamethoxam @ 5 g/kg seed at all observation i.e. 10, 25, 30 and 35 DAG, whereas, relatively higher whitefly incidence was noticed in lower doses of phorate 50 g/m² and imidacloprid 5 g/kg seed.

Key words : Tomato, nursery, whitefly , thiamethoxam, imidacloprid, phorate, seed germination, survival of seedlings.

INTRODUCTION

Tomato (*Lycopersicon esculentum* Mill.) is one of the most popular and remunerative vegetable crops grown round the year in several parts of the world for its delicious fruits. Its wide adaptability and profitability gains great importance and occupy the prime position among vegetables. For the production of higher yield and good quality fruits, the use of healthy and disease free viable seedlings are indispensable for transplanting in main field. This crop is vulnerable to pest attacks from the time plants first emerge to harvest. These are main impediment to successful nursery production. Amongst, the whitefly, *Bemisia tabaci* Gen. (Homoptera: Aleyrodidae) is a devastating pest of tomato in nursery and act as a vector for leafcurl virus. They damage the crop by sucking the cell sap thereby arresting the crop growth leads to severe loss in seedling survival and ultimately cause severe yield reduction. Though, information on the management of whitefly in nursery is available on other crops, yet to be studied in tomato crop. Hence, this attempt, first of its kind has been made to evaluate the impact of two neonicotinoid insecticides viz., imidacloprid and

thiamethoxam as seed dresser and soil application of phorate on seed germination, survival of seedlings and their efficacy against whitefly.

MATERIALS AND METHODS

The nursery experiment was conducted at the Experimental Farm of Department of Entomology, Dr. PDKV, Akola during *Kharif* season of 2002-03. Ten treatment (Table-1) including an untreated control was laid out in Randomized Block Design (RBD) and replicated thrice.

The healthy Pusa Ruby seeds of 1000 in number were used for each treatment. Seed treatment with imidacloprid 70 WS @ 5, 7.5 and 10 g/kg seed and thiamethoxam 70 WS @ 3, 4 and 5 g / kg seed has been done before sowing, similarly 10G @ 50, 75 and 100 g / m² has been applied in seed bed before seeds were sown.

The seeds were sown in each raised seed bed of 1 m² at first week of June by dibbling the seeds uniformly in line marked at 10 rows (10 cm apart from each line) and in each row 100 seeds were sown maintaining one cm in between seeds. The seeds were dibbled at a depth of two cm and covered with thin layer of fine soil. The seed bed

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