**ABSTRACT**

Keywords: *B. bassiana*, Bio-efficacy, compatibility, onion, *T. tabaci*

The present investigation was framed with an aim to evaluate the bio-efficacy of *Beauveria bassiana* against onion thrips, *T. tabaci* included effective dose of *B. bassiana* against *T. tabaci*, compatibility of *B. bassiana* with different insecticides and bio-efficacy of *B. bassiana* alone and in combination with different insecticides against *T. tabaci* in laboratory and field conditions. Field experiment was carried out at Agronomy farm, while laboratory experiment was done in the Biocontrol Research Laboratory, Department of Entomology, College of Agriculture, Junagadh Agricultural University, Junagadh during rabi, 2015-2016.

During the evaluation study of effective dose, *B. bassiana* 1.15% WP @ 5 g/litre of water proved to be the most effective dose, among five doses tested against *T. tabaci*, which was followed by *B. bassiana* 1.15% WP @ 4 g/lit.

Compatibility of *B. bassiana* was studied in the laboratory condition with five commonly used insecticides with their three doses by poison food technique. The results showed that the dinotefuran 20 SG 0.005%, diafenthiuron 50 WP 0.025%, spiromesifen 22.9 SC 0.11%, spinosad 45 SC 0.007% and dimethoate 30 EC 0.015% at lower dose and dinotefuran 20 SG 0.011%, diafenthiuron 50 WP 0.050%, spinosad 45 SC 0.015% and dimethoate 30 EC 0.030% at recommended dose were rated as relatively harmless (Grade 1) and it was compatible with *B. bassiana*, while dinotefuran 20 SG 0.016%, diafenthiuron 50 WP 0.075%, spiromesifen 22.9 SC 0.34%, spinosad 45 SC 0.022% and dimethoate 30 EC 0.045% at higher dose and spiromesifen 22.9 SC 0.23% at recommended dose were “slightly harmful” (Grade 2) to *B. bassiana*.

The different treatments evaluated for their laboratory efficacy against *T. tabaci* showed that the treatment of dimethoate 30 EC @ 1 ml/litre alone and in combination with half dose (2.5 g/litre) of *B. bassiana* 1.15% WP recorded the highest (95.00%) mortality after 5th day of its application. Whereas, spinosad 45 SC @ 0.30 ml/litre alone
and in combination with half dose (2.5 g/litre) of \textit{B. bassiana} 1.15\% WP and alone application of \textit{B. bassiana} 1.15\% WP @ 5 g/litre were found next better treatments with 86.67 to 92.50\% nymphal mortality.

Among the different insecticides tested against \textit{T. tabaci} in onion, spinosad 45 SC 0.013\% and \textit{B. bassiana} 1.15\% WP 0.003\% + spinosad 45 SC 0.006\% found to be the most effective in reducing the population of \textit{T. tabaci}, and it was statistically at par with dimethoate 30 EC 0.03\%, \textit{B. bassiana} 1.15\% WP 0.003\% + dimethoate 30 EC 0.015\% and \textit{B. bassiana} 1.15\% WP 0.006\%. Spiromesifen 22.9 SC 0.23\% was found least effective against onion thrips. The field result thus, confirmed the results of laboratory efficacy of \textit{B. bassiana}.

Looking to the yield, \textit{B. bassiana} 1.15\% WP 0.003\% + spinosad 45 SC 0.006\% gave maximum yield of 5922 kg/ha, which statistically at par with spinosad 45 SC 0.013\% (58025 kg/ha), dimethoate 30 EC 0.03\% (55605 kg/ha), \textit{B. bassiana} 1.15\% WP 0.003\% + dimethoate 30 EC 0.015\% (55506 kg/ha), \textit{B. bassiana} 1.15\% WP 0.006\% (55333 kg/ha) and \textit{B. bassiana} 1.15\% WP 0.003\% + spiromesifen 22.9 SC 0.11\% (52741 kg/ha). It was followed by diafenthiuron 50 WP 0.05\% (52358 kg/ha), dinotefuran 20 SG 0.01\% (48815 kg/ha), \textit{B. bassiana} 1.15\% WP 0.003\% + diafenthiuron 50 WP 0.025\% (47877 kg/ha), spiromesifen 22.9 SC 0.23\% (47593 kg/ha) and \textit{B. bassiana} 1.15\% WP 0.003\% + dinotefuran 20 SG 0.005\% (46914 kg/ha). Whereas, significantly lowest (36802 kg/ha) yield was recorded in control plot.

Highest bulb diameter was recorded in the treatment of spinosad 45 SC 0.013\% (61.26 mm), which was found statistically at par with \textit{B. bassiana} 1.15\% WP 0.003\% + spinosad 45 SC 0.006\% (61.00 mm), dimethoate 30 EC 0.03\% (59.86 mm), \textit{B. bassiana} 1.15\% WP 0.003\% + dimethoate 30 EC 0.015\% (59.54 mm), \textit{B. bassiana} 1.15\% WP 0.006\% (59.19 mm) and \textit{B. bassiana} 1.15\% WP 0.003\% + dinotefuran 20 SG 0.005\% (57.56 mm).

Considering the effectiveness and economics of different treatments, dimethoate 30 EC 0.03\% obtained the highest ICBR (1:60.21), followed by \textit{B. bassiana} 1.15\% WP 0.003\% + dimethoate 30 EC 0.015\% (1:51.00), \textit{B. bassiana} 1.15\% WP 0.006\% (1:43.96), \textit{B. bassiana} 1.15\% WP 0.003\% + spinosad 45 SC 0.006\% (1:19.20), diafenthiuron 50 WP 0.05\% (1:17.36), \textit{B. bassiana} 1.15\% WP 0.003\% + diafenthiuron 50 WP 0.025\% (1:16.59), \textit{B. bassiana} 1.15\% WP 0.003\% + spiromesifen 22.9 SC 0.11\% (1:14.69), spinosad 45 SC 0.013\% (1:10.74), \textit{B. bassiana} 1.15\% WP 0.003\% + dinotefuran 20 SG 0.005\% (1:9.41) and the lowest ICBR (1:6.85) was obtained in dinotefuran 20 SG 0.01\%.

The maximum net realization of 1,06,552 \text{\`{r}}/ha was obtained from the treatment of \textit{B. bassiana} 1.15\% WP 0.003\% + spinosad 45 SC 0.006\% followed by spinosad 45 SC 0.013\% (97,079 \text{\`{r}}/ha), dimethoate 30 EC 0.03\% (92,479 \text{\`{r}}/ha), \textit{B. bassiana} 1.15\% WP 0.003\% + dimethoate 30 EC 0.015\% (91,721 \text{\`{r}}/ha) and \textit{B. bassiana} 1.15\% WP 0.006\% (90,594 \text{\`{r}}/ha).

From the overall results of the present investigation, it can be concluded that \textit{B. bassiana} 1.15\% WP 0.006\% alone and \textit{B. bassiana} 1.15\% WP 0.003\% with half dose of dimethoate 30 EC 0.015\% and spinosad 45 SC 0.006\% can be recommended for the management of \textit{T. tabaci} in onion.