



KrishiKosh (कृषिकोश)

(/) An Institutional Repository of Indian National Agricultural Research System



(/)

[Advanced Search \(/advanced-search\)](/advanced-search)

[Krishikosh \(/\)](#) / [Birsa Agricultural University, Ranchi \(/handle/1/93542\)](#) / [Thesis \(/handle/1/93550\)](#)

Please use this identifier to cite or link to this item: <http://krishikosh.egranth.ac.in/handle/1/5810039211>

Authors: [Chakravarty, Twisha \(/browse?type=author&value=Chakravarty%2C+Twisha\)](/browse?type=author&value=Chakravarty%2C+Twisha)

Advisor: [Haider, Z. A. \(/browse?type=author&value=Haider%2C+Z.+A.\)](/browse?type=author&value=Haider%2C+Z.+A.)

Title: [Effect of Trichoderma on Fusarium wilt of Tomato \(Solanum lycopersicum L.\) under in vitro conditions](#)

Publisher: [Birsa Agricultural University, Ranchi, Jharkhand-6](#)

Language: [en_US](#)

Type: [Thesis](#)

Pages: [53](#)

Agrotags: [null](#)

Keywords: [Effect of Trichoderma on Fusarium wilt of Tomato \(Solanum lycopersicum L.\) under in vitro conditions](#)

Abstract: Tomato (*Solanum lycopersicum* L.) is a widely grown vegetable crop acquiring the status of world's most popular vegetable due to its importance for nutritive value, processing and export potential. Tomato is affected by many diseases among which wilt caused by *Fusarium oxysporum* f.sp. *lycopersici* is one of the important disease, resulting in 10-50 per cent yield loss around the world. *Fusarium oxysporum* f.sp. *lycopersici* is a serious soil-borne pathogen and persists for longer periods in the soil. The antagonistic activity of *Trichoderma* against *Fusarium oxysporum* were examined on potato dextrose agar plates by dual culture method. The results revealed that, all the antagonists showed inhibitory effect on growth of the test fungus and were effective in controlling the growth of pathogen. There were two species of *Trichoderma*, *Trichoderma harzianum* (5 different strains viz. 1, 2, 3, 4, and 6) and *Trichoderma viride*, as there was no specific strains of *Trichoderma viride* present so for comparison one strain of *Trichoderma harzianum* and *Trichoderma viride* was selected for the analysis. Among the strains of *Trichoderma harzianum*, TH6 was found to be most effective in inhibiting the growth of *Fusarium oxysporum* of about 43.61 and 73.22 per cent growth of test fungus on 5th and 9th day respectively, whereas *Trichoderma viride* inhibited 20.21 and 51.89 per cent on 5th and 9th day respectively. Other strains of *Trichoderma harzianum*, TH2 which inhibited 28.01 and 57.34 per cent, TH3 which inhibited 24.11 and 57.34 per cent, TH4 which inhibited 15.60 and 54.26 per cent and TH1 which inhibited 4.25 and 46.68 per cent growth of test fungus which was less effective than above species. The results revealed that, both *Trichoderma* species were found effective against *Fusarium oxysporum* and thus *Trichoderma harzianum*6 and *Trichoderma viride* were selected for infecting the tomato seedlings. Plants treated with *Trichoderma* have altered metabolic activities as they undergo a stress condition. Thus any changes in the metabolites production was analysed by performing some biochemical assays. Among them the most effected stress related parameters were anthocyanin content, proline content, total soluble sugar content and chlorophyll content. Anthocyanin content was found to be increased significantly in the treated seedlings as compared to control. Similarly results also reflect increased accumulation of proline in *T. harzianum* TH6 and *Trichoderma viride* inoculated tomato plants as compared to control plants. Also in case of total soluble sugar estimation we found that TH6 had a highly significant effect on the content of soluble sugar in tomato seedlings. *T. harzianum* was observed to promote chlorophyll synthesis whereas there was a slight decrease in the chlorophyll content in *T. viride*. Therefore, compared to the control, the values of chlorophyll a, b, and total chlorophyll contents were increased significantly with the application of TH6. Molecular estimation of total protein content was also performed. The quantified protein so obtained shows a decrease in concentration of protein in treated plants as compared to control. The quantified samples were then diluted as per requirement and processed to one-dimension SDS-PAGE. The bands so obtained were not that prominent to draw any significant conclusion. Our search for some new protein expression was not possible in one dimensional SDS-PAGE as bands that are of same molecular weight cannot be distinguished clearly.

Description: Effect of *Trichoderma* on *Fusarium* wilt of Tomato (*Solanum lycopersicum* L.) under in vitro conditions

Subject: Biotechnology

Theme: Effect of *Trichoderma* on *Fusarium* wilt of Tomato (*Solanum lycopersicum* L.) under in vitro conditions

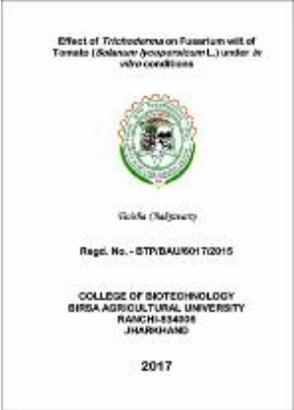
These Type: M.Sc

Issue Date: 2017

Appears in Collections: Thesis (/handle/1/93550)

Files in This Item:

File	Description	Size	Format
1633 Twisha Chakravarty.pdf		3.84 MB	Adobe PDF



[View/Open \(/displaybitstream?handle=1/5810039211\)](/displaybitstream?handle=1/5810039211)

[Show full item record \(/handle/1/5810039211?mode=full\)](/handle/1/5810039211?mode=full)

 [\(/handle/1/5810039211/statistics\)](/handle/1/5810039211/statistics)

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.