

**International Conference on
Vegetable Oils 2023 (ICVO 2023)
Research, Trade, Value Chain and Policy
January 17-21, 2023
Hyderabad-500 030, Telangana, India**

Technical Information

Guidelines for preparation of Extended Summaries

The extended summary (up to two typed pages) should include: Title, Authors and Affiliation details, Abstract (<100 words), Introduction, Materials and Methods and Results and Discussion along with 2-3 most relevant references (entire article including abstract put to 500 words). If necessary, one figure/table may be included in the results section. The reference should follow the Journal of Oilseeds Research format. All extended summaries must be 1.5 line spaced, 12 font size in Times New Roman text with margin of 1.2 inches. The papers to be presented in the oral/poster session will be reprinted as a special issue of Journal of Oilseeds Research ([Sample Extended Summary is enclosed](#)). Extended summaries submitted will be reviewed and selected for oral/poster presentation.

Extended Summaries should be sent to:
Organizing Secretary (ICVO 2023)
on or before 30.12.2022 by E-mail to:
icvo2023@gmail.com

Oral Presentation

ONLY 5 minute time will be given (that shall be strictly adhered to) for making an effective presentation summarising the work. As a general guideline, you may please avoid introduction to the crop, area and production details, trends in these crops, the utility of the crops, etc. that is known to all the people in the audience and so it unnecessarily eats into the time. You just introduce the work carried out and then highlight the results obtained with a clear take-home message. Awards will be conferred to 15 best oral presentations.

Poster Preparation

The area allotted for each poster would be approximately 90 cm height x 75 cm width (Portrait). Single sheet depicting information for the poster be prepared for presentation. The text part should include the following befitting the size of the poster:

- Title
- Authors and affiliation
- Abstract
- Objectives
- Methodology in brief
- Results and discussion preferable in bullet form (including tables and figures if any)
- Conclusion
- References (1-2 most relevant references)

Note: The poster must be concise, legible and readable even from 1m distance. In such case, make sure that the message is clear and simple. It is better than you make provision for a sign up pad to record the names and address of individuals seeking more information. Awards will be conferred to 15 best poster presentations.

***Trichoderma* mediated induced systemic resistance in castor against seedling blight**

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ABSTRACT

Colonization of castor roots by *Trichoderma* induced resistance to seedling blight disease. When compared with untreated seedlings, *Phytophthora* disease severity was reduced by 93% in *Trichoderma* (Th4d strain) – treated ones. Induced systemic resistance (ISR) by *Trichoderma* was confirmed by the expression profiling of a few signature genes known to be up-regulated during ISR.

Keywords: Castor, Induced systemic resistance, *Trichoderma*, Seedling blight

INTRODUCTION

Seedling blight disease, caused by *Phytophthora parasitica*, is a major disease of castor (*Ricinus communis* L.) that results in yield reduction up to 30 to 77%. *Trichoderma*, a bio-control agent that can colonize root system of host plants is known to impart resistance against diseases through ISR as well as exert direct action against phyto-pathogens (Romera, 2019; Bisen *et al.*, 2019). Our studies examined the ISR in castor against seedling blight induced by different *Trichoderma* strains.

MATERIALS AND METHODS

Seeds of DCS-107, a susceptible genotype for seedling blight were treated with three strains of *T. asperellum* viz., TaDOR-N13, -TV5, -7316 and one strain, Th4D of *T. harzianum*. After the appearance of cotyledonary leaves (days after sowing), 10 day old discs of *Phytophthora parasitica* were placed on the abaxial side, of one of the two leaves. Leaf wetness, temperature (25°C) and humidity (about 70%) were maintained. Necrosis caused by the pathogen was measured at 48, 72 and 96 hours post infection (hpi) in three replicates each. In a modified experiment, a booster dose of *Trichoderma* suspension was given to the seedlings. To validate *Trichoderma*- mediated ISR within 24 hpi, total RNA isolated from the cotyledonary leaves (un-inoculated) of 12 day old castor seedlings treated with Th4d strain for 0, 1, 2, 3, 4, 6, 12, 16 and 24 h were subjected to RT-PCR and semi-quantitative RT-PCR using primers specific to *PR1*, *PR2*, *PDF1.2a*, *OPR3* and *Actin* genes.

RESULTS AND DISCUSSION

When compared with untreated seedlings, disease severity was reduced to 85.7% in Th4d treated seedlings. *Trichoderma* strains TaDOR7316 and N13 showed 50% and 42.9% of disease reduction over check (data not shown). In the ‘booster’ dose experiments, Leaf blight size was considerably reduced when seedlings were given *Trichoderma* boost (Table 1). Th4d seed treated + ‘booster’ displayed better control of leaf blight (0.39cm), and N13 seed treated + ‘booster’ displayed infection diameter of 0.48cm when compared with control (1.53 cm). RT-PCR analysis indicated up-regulation of the signature genes within two hpi, which continued until 24 hpi and by 48 hpi the expression levels started attenuating. These results indicated that ISR is initiated very early after interaction of *Trichoderma* with the castor roots. RT-PCR analysis with samples from the booster dose experiments, indicated increased expression after ‘booster’ dose of the *Trichoderma* on the roots of castor seedlings pre-treated with *Trichoderma* (seed treatment). The expression of the signature genes reached the maximum level within 6 hpi and maintained at that level even after 48 hpi indicating the prolonged ISR.

Table 1 Disease severity in different *Trichoderma* treatments

Sl.No	Treatments	Disease severity (%)	Reduction over check (%)
1	N13 seed treatment (ST)	47	41.2
2	N13 ST+ re-inoculation	14	82.5
3	Th4d ST	14	82.5
4	Th4d ST+ re-inoculation	5	93.7
5	TV5 ST	35	56.2
6	TV5 st+TV5 re-inoculation	60	25.0
7	7316 ST	40	50.0
8	7316 ST+ re-inoculation	40	50.0
9	No ST+Th4d re-inoculation	40	50.0
10	Check	80	0.0

REFERENCES

- Romera F J 2019. Induced systemic resistance (ISR) and Fe deficiency responses in dicot plants. *Frontiers in Plant Science*, 10: 287. doi: 10.3389/fpls.2019.00287.
- Bisen K, Ray S and Singh S P 2019. Consortium of compatible *Trichoderma* isolates mediated elicitation of immune response in *Solanum melongena* after challenge with *Sclerotium rolfsii*. *Archives of Phytopathology and Plant Protection*, 52(7): 733-756.