



Effect on cotton genotypes (*Gossypium hirsutum* L. var. BI(75)4, S2(75)5, Auburn56)

1. The net impact of individual and combined stress on plant growth

Crop: Cotton (*Gossypium hirsutum* L. var. BI(75)4, S2(75)5, Auburn56)
 Stress 1: *Meloidogyne incognita*
 Stress 2: *Fusarium oxysporum* f.sp. *vasinfectum*
 Stage of plant: Seedling

The table shows the impact of nematode and fungus alone and in combination on plant height on cotton genotypes.

	Treatment	Plant response to stress (reduction over control %) Type A parameters*	Response to combined stress**		Response to combined stress** Type B parameters*
			Type C parameters*		
			Terpenoid aldehyde(µg/g)		
	Plant Height		Stems	Roots	% effective xylem vessels
BI(75)4	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml)	26.2↓	415↓	15.7↓	33.3↓
	<i>Meloidogyne incognita</i> (1000 juveniles/plant)	25.1↓	358.5↓	3↓	89.7↓
	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml) + <i>Meloidogyne incognita</i> (1000 juveniles/plant) simultaneous stress	25.7↓	383.5↓	20.2↓	59.7↓
S2(75)5	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml)	3.6↓	383.5↓	13↓	37.3↓
	<i>Meloidogyne incognita</i> (1000 juveniles/plant)	0.7↓	323.5↓	3.4↓	92↓

	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml) + <i>Meloidogyne incognita</i> (1000 juveniles/plant) simultaneous stress	9.3↓	374↓	19↓	58↓
Auburn 56	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml)	5.0↓	348.5↓	13.5↓	50.3↓
	<i>Meloidogyne incognita</i> (1000 juveniles/plant)	-10.7↑	338.5↓	4.5↓	90.3↓
	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml) + <i>Meloidogyne incognita</i> (1000 juveniles/plant) simultaneous stress	2.6↓	393.5↓	13.8↓	61↓

Note: Values presented in the table were calculated using the formula described below.

$$\text{Reduction over control (\%)} = \frac{(\text{Value Control} - \text{Value Stress})}{\text{Value Control}} \times 100$$

1) '↓'- indicates plant parameters affected by stress that lead to high susceptibility (higher the value more the damage).

2) '↑'- indicates plant parameters less/not affected by stress leading to improved resistance (higher the value lesser the damage).

'*' - For more information on parameters classification, please refer to 'methodology' tab.

'**' - Values are presented as it is from the source article without subjecting to the calculation.

2. The interaction between nematode and fungal pathogen under combined stress at plant interface

The table shows the effect of fungal pathogen on nematode induced root-knot score and effect of nematode on fusarium propagules per gram tissue under combined stress treatment

		Response to combined stress**
		Type B parameters*

	Treatment	Root-knot score	Fusarium propagules/g stele tissue (X100)
BI(75)4	<i>Control</i>	0	0
	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml)	0	10.88
	<i>Meloidogyne incognita</i> (1000 juveniles/plant)	5.7	0
	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml) + <i>Meloidogyne incognita</i> (1000 juveniles/plant) simultaneous stress	6.2	43.7
S2(75)5	<i>Control</i>	0	0
	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml)	0	9.9
	<i>Meloidogyne incognita</i> (1000 juveniles/plant)	6.3	0
	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml) + <i>Meloidogyne incognita</i> (1000 juveniles/plant) simultaneous stress	6.4	23.96
Auburn 56	<i>Control</i>	0	0
	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml)	0	11.16
	<i>Meloidogyne incognita</i> (1000 juveniles/plant)	6.2	0
	<i>Fusarium oxysporum</i> (4 X 10 ⁶ conidia/ml) + <i>Meloidogyne incognita</i> (1000 juveniles/plant)	6.2	16.68

	<i>simultaneous stress</i>		
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For raw data – [Click here](#) (.xlsx file)

Reference- Hillocks RJ (1985) The effect of root-knot nematode on vascular resistance to *Fusarium oxysporum f. sp. vasinfectum* in the stems of cotton plants. Ann. appl. Biol. 107:213-218

Note:

‘**’ - Values are presented as it is from the source article without subjecting to the calculation.

‘*’ - For more information on parameters classification, please refer to ‘methodology’ tab.

Inference From the study: Hillocks RJ (1985) studied the effect of root-knot nematode on vascular resistance to *Fusarium oxysporum f. sp. vasinfectum* in the stems on three cotton cultivars BI(75)4, Auburn 56 and S2(75)5. Upon simultaneous inoculation of pathogens plant height did not reduce additively except in S2(75)5. In contrast, terpenoid content in root and shoot and root knot score was high under combined stress in all three cultivars compared to single pathogen inoculation. **Thus, this combination has an additive effect on physiology of cotton, altering the terpenoid content.**