



Effect on maize cultivars (*Zea mays* cv. TZEI1, TZEI17, 5057, BMB23)

The interaction between nematode and drought under combined stress at plant interface

Crop: Maize (*Zea mays* cv. TZEI1, TZEI17, 5057, BMB23)
 Stress 1: Drought
 Stress 2: *Pratylenchus zae* (5000 nematodes),
Meloidogyne incognita (5000 juveniles)
 Stage of plant : 2 weeks after planting

The table shows the effect of nematode and drought alone and in combination on the nematode density and reproduction factor in maize cultivars.

		Treatment	Response to combined stress**	
			Type B parameters*	
			Nematode density	Nematode reproduction factor
<i>Pratylenchus zae</i>	TZEI1	<i>Pratylenchus zae</i> (5000 nematodes) + Drought (6 weeks later) Sequential stress	1868.00	374.00
		<i>Pratylenchus zae</i> (5000 nematodes)	96.00	19.20
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles) Drought (6 weeks later) Sequential stress	386.00	154.00
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles)	737.00	295.00
	TZEI17	<i>Pratylenchus zae</i> (5000 nematodes) + Drought (6 weeks later) Sequential stress	1791.00	358.0
		<i>Pratylenchus zae</i> (5000 nematodes)	84.00	16.8
<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles) Drought (6 weeks later) Sequential stress		141.00	56.3	

		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles)	19.00	7.6
	5057	<i>Pratylenchus zae</i> (5000 nematodes) + Drought (6 weeks later) Sequential stress	431.00	86.2
		<i>Pratylenchus zae</i> (5000 nematodes)	44.00	8.7
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles) Drought (6 weeks later) Sequential stress	396.00	158.0
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles)	84.00	33.5
		<i>Pratylenchus zae</i> (5000 nematodes) + Drought (6 weeks later) Sequential stress	552.00	110.0
	BMB23	<i>Pratylenchus zae</i> (5000 nematodes)	45.00	9.0
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles) Drought (6 weeks later) Sequential stress	754.00	302.0
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles)	78.00	31.0
<i>Meloidogyne incognita</i>	TZEI1	<i>Pratylenchus zae</i> (5000 nematodes) + Drought (6 weeks later) Sequential stress	28.00	5.50
		<i>Pratylenchus zae</i> (5000 nematodes)	15.00	3.00
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles) Drought (6 weeks later) Sequential stress	18.00	7.20

		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles)	1.80	0.70
TZEI17		<i>Pratylenchus zae</i> (5000 nematodes) + Drought (6 weeks later) Sequential stress	1.00	0.3
		<i>Pratylenchus zae</i> (5000 nematodes)	0.00	0.0
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles) Drought (6 weeks later) Sequential stress	0.01	0.0
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles)	0.00	0.0
		<i>Pratylenchus zae</i> (5000 nematodes) + Drought (6 weeks later) Sequential stress	47.00	9.3
5057		<i>Pratylenchus zae</i> (5000 nematodes)	31.00	6.1
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles) Drought (6 weeks later) Sequential stress	1.20	0.5
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles)	17.00	6.7
		<i>Pratylenchus zae</i> (5000 nematodes) + Drought (6 weeks later) Sequential stress	21.00	4.2
BMB23		<i>Pratylenchus zae</i> (5000 nematodes)	29.00	5.7
		<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles) Drought (6 weeks later) Sequential stress	1.60	0.7

	<i>Pratylenchus zae</i> (2500 nematodes) + <i>Meloidogyne incognita</i> (2500 juveniles)	24.00	9.4
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Reference - Kagoda F, Hearne S, Adewuyi O, Coyne DL (2015) Response of drought tolerant maize inbreds to water stress under nematode infested conditions. *Euphytica* 206: 77–87.

Note:

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

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

Inference from the study: Kagoda et.al. 2015 studied the interaction of nematode and drought in four maize cultivars; TZEI1, TZEI17, 5057, BMB23. Plants were subjected to single and sequential nematode and drought stress treatment. Two nematode species were used for infection; *Pratylenchus zae* and *Meloidogyne incognita*. Nematode density and nematode reproduction factor was more under sequential infection with drought conditions for both nematode species. When co-infection with both nematodes was given nematode density of *Pratylenchus zae* was more compared to *Meloidogyne incognita*. Cultivars TZEI1 and TZEI17 showed more nematode populations compared to 5057 and BMB23. **Thus, this stress combination is detrimental to maize plants.**