Effect on wheat cultivars (*Triticum aestivum* L.)

Interaction between the fungal pathogens under the combined stress treatment at plant interface

Stress 1: *Gaeumannomyces graminis*
Stress 2: *Septoria nodorum*
Stage of plant: 7-10 weeks old plant

The table shows the effect of fungus *G. graminis* on *S. nodorum*, causing lesion area and number of lesions on the leaves of winter wheat cultivars Maris Huntsman, Champlein, Flinor and spring wheat cv. Sappo

Effect of the predisposition of *G. graminis* on lesion size and pycnidial production				
Cultivars	**Treatment**	**Response under combined stress (Type B parameters)**		
		Lesion area (mm^2)	**Number of lesions/segments**	**Numbers of pycnidia/unit area of the lesion**
Flinor	*G. graminis* + *S. nodorum* (10^5 conidia/mL) (Sequential stress)	26.7	N/A	N/A
	G. graminis + *S. nodorum* (10^4 conidia/mL) (Sequential stress)	18.8	N/A	N/A
	G. graminis + *S. nodorum* (10^3 conidia/mL) (Sequential stress)	9.5	N/A	N/A
	S. nodorum (10^5 conidia/mL)	11.8	N/A	N/A
	S. nodorum (10^4 conidia/mL)	9.9	N/A	N/A
	S. nodorum (10^3 conidia/mL)	0.2	N/A	N/A
	G. graminis + *S. nodorum* (Sequential stress)	N/A	18	N/A
	S. nodorum	N/A	4.4	N/A
Maris Ranger	*G. graminis* + *S. nodorum* (10^5 conidia/mL) (Sequential stress)	17.4	N/A	N/A
	G. graminis + *S. nodorum* (10^4	11.2	N/A	N/A

	conidia/mL) (Sequential stress)			
	G. graminis + *S. nodorum* (10^3 conidia/mL) (Sequential stress)	2.7	N/A	N/A
	S. nodorum (10^5 conidia/mL)	6.1	N/A	N/A
	S. nodorum (10^4 conidia/mL)	2.7	N/A	N/A
	S. nodorum (10^3 conidia/mL)	6.1	N/A	N/A
	G. graminis + *S. nodorum* (Sequential stress)	2.7	23.4	N/A
	S. nodorum	0.9	8	N/A
Champlein	*G. graminis* + *S. nodorum* (10^5 conidia/mL) (Sequential stress)	14.6	N/A	1.7
	G. graminis + *S. nodorum* (10^4 conidia/mL) (Sequential stress)	8.3	N/A	0.6
	S. nodorum (10^5 conidia/mL)	4.1	N/A	0.3
	S. nodorum (10^4 conidia/mL)	4.1	N/A	0.2

Effect of the predisposition of *G. graminis* on lesion area of leaf segment inoculated with 5µl droplet of *S. nodorum*

Cultivars	**Treatment**	**Lesion area (mm^2)**		
		Days after sowing plants		
		28	**44**	**63**
Sappo	*G. graminis* + *S. nodorum* (10^5 conidia/mL) (Sequential stress)	5.8	20.5	26.3
	G. graminis + *S. nodorum* (10^4 conidia/mL) (Sequential stress)	3.3	13.7	16.3
	S. nodorum (10^5 conidia/mL)	6.7	10.8	17.5
	S. nodorum (10^4 conidia/mL)	2.8	9.7	13.4

Effect of the predisposition of *G. graminis* on germination of *S. nodorum* conidium

	Treatment	**Percentage germination**

Cultivars		Time in hours after inoculation of *S. nodorum*								
		2	**4**	**6**	**8**	**10**	**13**	**16**	**19**	**22**
Champlein	*G. graminis* + *S. nodorum* (2.8×10^6 conidia/mL) (Sequential stress)	80	93.3	94.7	98.7	97.3	N/A	N/A	N/A	N/A
	S. nodorum (2.8×10^6 conidia/mL)	68	90.7	96	97.3	98.7	N/A	N/A	N/A	N/A
		Length of germ-tubes (µm)								
	G. graminis + *S. nodorum* (2.8×10^6 conidia/mL) (Sequential stress)	1.2	1.2	1.4	1.5	1.6	N/A	N/A	N/A	N/A
	S. nodorum (2.8×10^6 conidia/mL)	1.1	1.2	1.3	1.5	1.6	N/A	N/A	N/A	N/A
		Number of germ-tubes								
	G. graminis + *S. nodorum* (2.8×10^6 conidia/mL) (Sequential stress)	N/A	N/A	N/A	N/A	80.3	142.8	188.9	244.6	251.9
	S. nodorum (2.8×10^6 conidia/mL)	N/A	N/A	N/A	N/A	68.9	123.1	185	238	221

(*N/A- Not available*)

For raw data – Click here (.xlsx file)
Reference– Jenkins PD, Jones GD (1980) Predisposition to *Septoria nodorum* as a result of take-all (*Gaeumannomyces graminis*) infection of wheat. Ann. appl. Biol. **95:**47-52

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*

The inference from the study: Jenkins and Jones, 1980 study focus on the predisposition of root pathogen *G. graminis* on the foliar pathogen *S. nodorum* causing infection in wheat plants. The studies performed on the cultivars Flinor, Maris Ranger, Champlein and Sappo revealed that the pre inoculation of *G. graminis* increased the number of lesions and more pycnidia per unit area of lesion on leaves in comparison with the singly inoculated *S. nodorum* only. **The overall observation concludes the increased susceptibility of plants to foliar pathogens in the presence of root infection.**