Table S1. Amount of *V. longisporum* VL43-DNA detected by qPCR with ITS primers in *B. napus*. Status of infection rate in mycelium-spore inoculated plants calculated in ng VL DNA g^{-1} FW; VL without +S/-S fertilization: samples of 3 dpi without different sulfur fertilization, only distilled water as required; 7 dpi and 14 dpi: plants were fertilized with different sulfur supply; due to the limited plant material, only one measurement could be carried out. TPI I, 1 h before the onset of the light; TPI II, 3 h after the onset of the light; TPI III, 1 h before the light is switched off; TPI IV, 3 h after the light is switched off. Significant change in the measured values over the harvest period 3, 7 and 14 dpi ($p = 0.001$); Significant decrease in VL43-DNA contents between 3 and 14 dpi ($p = 0.0008$) and 7 and 14 dpi ($p = 0.03$).

3 dpi/ng VL DNA g^{-1} FW	**VL without +S/-S fertilization**	**VL without +S/-S fertilization**
TPI I	18.65	30.31
TPI II	10.48	67.53
TPI III	65.59	225.51
TPI IV	76.39	63.54
7 dpi/ng VL DNA g^{-1} FW	**VL +S**	**VL -S**
TPI I	2.35	5.14
TPI II	18.69	12.86
TPI III	27.58	63.59
TPI IV	19.66	32.27
14 dpi/ng VL DNA g^{-1} FW	**VL +S**	**VL -S**
TPI I	8.59	1.54
TPI II	1.42	29.06
TPI III	0.87	10.74
TPI IV	0.83	3.06

Table S2. Contents of iGSLs (glucobrassicin, neoglucobrassicin and 4-hydroxyglucobrassicin) in mock- and mycelium-spore inoculated plants at 7 dpi and 14 dpi; data from 7 and 14 dpi represent the result of one measurement; hypothetical SDs of samples from 7 dpi based on previous measurements can range between 2-25%; random SDs of samples from 14 dpi based on three dependent technical replicates; the reason for only one measurement is the low amount of the plant material due to space limitation in climatic chambers; Significant differences in dpi ($p = 0.0001$) and different sulfur supply ($p = 0.00005$).

Glucobrassicin [nmol g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	144.96	173.06	89.57	98.57	TPI I	89.41 ± 4.86	94.49 ± 2.67	0.29	0.35
TPI II	125.51	213.65	69.79	109.92	TPI II	85.15	106.98	0.17 ± 0.02	4.02 ± 0.33
TPI III	194.77	203.16	178.41	133.67	TPI III	111.84 ± 7.85	108.51	8.32	1.52
TPI IV	137.08	238.15	71.64	131.54	TPI IV	89.98	128.79 ± 2.33	0.93	4.02 ± 0.18
Neoglucobrassicin [nmol g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	37.63	21.18	27.03	25.48	TPI I	18.52 ± 1.79	18.72 ± 1.30	3.79	1.71
TPI II	21.84	21.52	30.44	16.26	TPI II	29.46	16.14	2.86 ± 0.84	5.11 ± 0.68
TPI III	43.57	22.93	36.22	18.05	TPI III	22.83 ± 0.45	15.00	9.38	4.02
TPI IV	34.73	32.02	33.76	20.28	TPI IV	20.30	24.57 ± 1.75	3.92	3.53 ± 0.19
4-Hydroxyglucobrassicin [nmol g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**

TPI I	6.35	20.62	10.78	1.98	TPI I	11.33 ± 1.96	10.69 ± 3.95	0.17	0.19
TPI II	10.25	26.68	8.86	14.41	TPI II	17.34	8.04	0.15 ± 0.03	0.30 ± 0.03
TPI III	9.16	24.66	15.52	13.67	TPI III	22.61 ± 2.67	15.67	0.82	0.15
TPI IV	8.30	8.58	6.10	10.76	TPI IV	17.19	21.10 ± 1.09	0.12	0.19 ± 0.03

Table S3. Contents of aGSLs (progoitrin, glucoalyssin, glucoraphanin, glucobrassicanapin and gluconapin) in mock- and mycelium-spore inoculated plants at 7 dpi and 14 dpi; data from 7 and 14 dpi represent the result of one measurement; hypothetical SDs of samples from 7 dpi based on previous measurements can range between 3-35%; random SDs of samples from 14 dpi based on three dependent technical replicates; the reason for only one measurement is the low amount of the plant material due to space limitation in climatic chambers; Significant differences in dpi ($p = 0.002$) and different sulfur supply ($p = 0.00006$).

Progoitrin [nmol g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	46.69	116.38	26.18	32.96	TPI I	75.73 ± 5.39	81.23 ± 8.60	1.44	1.38
TPI II	67.91	147.12	12.71	77.83	TPI II	62.30	91.98	1.12 ± 0.39	0.94 ± 0.23
TPI III	74.50	165.23	83.52	77.06	TPI III	144.08 ± 13.49	97.57	0.62	1.04
TPI IV	60.46	108.50	18.34	57.77	TPI IV	83.74	115.09 ± 3.81	0.96	0.39 ± 0.03
Glucoalyssin [nmol g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	21.29	79.30	8.57	9.29	TPI I	62.20 ± 3.60	62.70 ± 5.49	7.34	7.30
TPI II	22.25	70.05	7.18	41.80	TPI II	59.38	83.87	4.75 ± 1.39	4.66 ± 0.33
TPI III	29.51	81.34	36.07	13.70	TPI III	121.51 ± 15.68	82.21	3.83	5.06
TPI IV	24.17	52.28	5.08	14.98	TPI IV	74.60	76.85 ± 4.06	5.55	3.62 ± 0.31
Glucoraphanin [nmol g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	3.73	11.99	0.90	1.64	TPI I	13.59 ± 0.70	10.89 ± 0.80	2.11	3.03
TPI II	2.82	10.24	1.16	6.78	TPI II	15.57	15.71	1.77 ± 0.46	4.31 ± 1.27
TPI III	3.33	12.38	5.44	2.76	TPI III	15.05 ± 1.26	13.12	4.39	3.35
TPI IV	2.87	9.00	0.77	2.98	TPI IV	14.80	12.52 ± 0.87	2.38	4.96 ± 0.56
Glucobrassicanapin [nmol g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	11.55	32.97	2.65	3.59	TPI I	40.08 ± 2.41	42.39 ± 3.19	0.09	0.05
TPI II	16.89	34.22	1.30	23.85	TPI II	30.38	39.52	0.05 ± 0.02	0.18 ± 0.09
TPI III	18.55	39.10	20.91	6.79	TPI III	72.11 ± 5.51	53.44	0.01	0.19
TPI IV	11.31	22.84	2.06	5.34	TPI IV	41.24	63.94 ± 1.25	0.04	0.44 ± 0.14
Gluconapin [nmol g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	9.59	46.48	3.06	5.83	TPI I	33.28 ± 2.52	34.28 ± 2.91	0.24	0.56
TPI II	14.71	38.76	2.74	24.13	TPI II	32.41	37.68	0.23 ± 0.03	1.07 ± 0.29

Table S4. Contents of the bGSL gluconasturtiin in mock- and mycelium-spore inoculated plants at 7 dpi and 14 dpi; data from 7 and 14 dpi represent the result of one measurement; hypothetical SDs of samples from 7 dpi based on previous measurements can range between 1-25%; random SDs of samples from 14 dpi based on three dependent technical replicates; the

reason for only one measurement is the low amount of the plant material due to space limitation in climatic chambers; Significant differences in dpi ($p = 0.0000005$) and different sulfur supply ($p = 0.0001$), significant difference between control and VL-infected plants ($p = 0.000001$).

Gluconasturtiin [nmol g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	45.57	161.14	56.22	119.96	TPI I	50.96 ± 3.72	74.83 ± 4.18	6.51	16.46
TPI II	38.63	175.12	68.49	132.88	TPI II	51.01	88.05	7.51 ± 1.87	41.63 ± 3.26
TPI III	54.20	265.78	73.64	246.87	TPI III	58.02 ± 4.61	94.75	29.21	27.97
TPI IV	53.42	211.73	65.48	201.44	TPI IV	48.25	108.50 ± 3.44	10.64	39.03 ± 0.08

Table S5. Thiol analysis by HPLC: contents of cysteine and glutathione (GSH) in mock- and mycelium- spore inoculated plants at 7 and 14 dpi; data of 7 dpi represents the result of one measurement, data of 14 dpi represents the mean of three dependent technical replicates ± SD; the reason for only one measurement is the low amount of the plant material due to space limitation in climatic chambers; Significant differences in dpi ($p = 0.003$) and different sulfur supply ($p = 0.0005$).

Cysteine [nmol g^{-1} FW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	19.46	25.06	6.61	6.57	TPI I	15.55 ± 1.30	16.40 ± 1.21	4.86 ± 0.35	2.15 ± 0.97
TPI II	20.10	21.49	6.36	16.29	TPI II	18.44 ± 1.27	15.03 ± 1.38	2.09 ± 0.66	2.35 ± 0.23
TPI III	24.47	24.41	16.82	15.43	TPI III	14.73 ± 1.17	15.85 ± 1.89	3.47 ± 0.41	2.74 ± 0.75
TPI IV	21.10	23.20	7.92	12.00	TPI IV	19.75 ± 1.31	16.61 ± 1.74	3.01 ± 0.34	4.04 ± 0.88
GSH [nmol g^{-1} FW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	607.37	703.66	199.73	185.18	TPI I	529.03 ± 34.40	552.76 ± 17.12	50.70 ± 2.71	61.89 ± 1.93
TPI II	602.28	635.84	175.06	585.85	TPI II	532.53 ± 23.21	648.41 ± 20.23	66.61 ± 2.12	82.39 ± 3.44
TPI III	718.60	686.40	509.68	426.91	TPI III	604.46 ± 32.94	643.96 ± 50.59	107.78 ± 15.59	96.95 ± 15.04
TPI IV	571.95	619.67	202.85	196.34	TPI IV	639.49 ± 13.91	647.01 ± 30.64	88.46 ± 2.82	79.98 ± 3.40

Table S6. Elemental analysis: contents of sulfur, calcium, potassium and iron in mock- and mycelium- spore inoculated plants measured by ICP-OES at 7 and 14 dpi; data represent the mean of three dependent technical replicates ± SD; Difference in sulfur content between 7 and 14 dpi was significant ($p = 0.0001$), difference in the potassium content between 7 and 14 dpi was significant ($p = 0.0001$).

Sulfur [mg g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	8.43 ± 0.07	5.61 ± 0.03	1.39 ± 0.01	1.87 ± 0.01	TPI I	6.37 ± 0.03	5.59 ± 0.03	0.30 ± 0.00	0.62 ± 0.01
TPI II	8.09 ± 0.01	5.46 ± 0.03	1.23 ± 0.00	2.27 ± 0.01	TPI II	6.49 ± 0.05	4.56 ± 0.01	0.21 ± 0.00	0.73 ± 0.00
TPI III	9.40 ± 0.04	5.64 ± 0.01	3.27 ± 0.01	1.77 ± 0.02	TPI III	4.26 ± 0.01	4.37 ± 0.01	0.94 ± 0.00	0.73 ± 0.00
TPI IV	8.23 ± 0.02	8.96 ± 0.02	1.50 ± 0.01	2.02 ± 0.01	TPI IV	5.79 ± 0.02	4.59 ± 0.02	0.29 ± 0.00	0.56 ± 0.01
Calcium [mg g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**

TPI I	22.89 ± 0.18	15.73 ± 0.15	21.22 ± 0.25	21.33 ± 0.21	TPI I	16.86 ± 0.15	17.26 ± 0.04	22.81 ± 0.16	18.07 ± 0.18
TPI II	22.63 ± 0.32	14.73 ± 0.17	20.38 ± 0.22	16.78 ± 0.17	TPI II	18.27 ± 0.26	13.03 ± 0.01	23.83 ± 0.11	18.65 ± 0.15
TPI III	21.31 ± 0.16	13.19 ± 0.13	19.73 ± 0.14	16.66 ± 0.12	TPI III	13.33 ± 0.20	14.16 ± 0.05	17.23 ± 0.10	22.05 ± 0.17
TPI IV	21.46 ± 0.04	19.14 ± 0.17	20.01 ± 0.26	15.22 ± 0.05	TPI IV	16.06 ± 0.08	13.03 ± 0.02	20.24 ± 0.10	18.42 ± 0.06
Potassium [mg g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	57.81 ± 0.17	29.20 ± 0.08	48.56 ± 0.33	29.18 ± 0.21	TPI I	24.64 ± 0.00	7.85 ± 0.00	27.71 ± 0.25	15.91 ± 0.02
TPI II	52.00 ± 0.13	19.84 ± 0.00	31.39 ± 0.00	18.81 ± 0.01	TPI II	21.35 ± 0.11	10.36 ± 0.00	21.99 ± 0.09	16.88 ± 0.03
TPI III	62.42 ± 0.01	29.28 ± 0.04	41.51 ± 0.01	25.26 ± 0.12	TPI III	15.51 ± 0.06	7.32 ± 0.00	12.88 ± 0.00	19.94 ± 0.01
TPI IV	63.33 ± 0.29	26.21 ± 0.19	48.28 ± 0.25	20.89 ± 0.00	TPI IV	21.58 ± 0.00	11.69 ± 0.00	24.56 ± 0.09	19.17 ± 0.09
Iron [µg g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	101.98 ± 0.27	83.40 ± 0.47	104.45 ± 0.51	100.86 ± 0.36	TPI I	66.51 ± 0.23	91.61 ± 0.27	38.68 ± 0.28	49.16 ± 0.27
TPI II	102.79 ± 0.28	91.38 ± 0.31	105.55 ± 0.00	76.68 ± 0.20	TPI II	68.46 ± 0.04	59.13 ± 0.08	35.12 ± 0.19	35.47 ± 0.00
TPI III	92.44 ± 0.31	101.03 ± 0.16	107.76 ± 0.20	124.21 ± 0.83	TPI III	53.21 ± 0.47	62.24 ± 0.20	54.28 ± 0.04	48.29 ± 0.27
TPI IV	108.58 ± 0.00	113.52 ± 1.02	115.25 ± 0.08	170.63 ± 0.39	TPI IV	62.32 ± 0.27	57.47 ± 0.00	57.13 ± 0.08	66.22 ± 0.08

Table S7. Occurrence of occlusions at 14 and 21 dpi in the mid area of the xylem of *B. napus* plants infected with *V. longisporum* strain VL43; data represent the mean of five dependent technical replicates
± SD.

Occurrence of occlusions in the mid area of the xylem [%]					
14 dpi	**VL +S**	**VL -S**	**21 dpi**	**VL +S**	**VL -S**
TPI I	9.46 ± 0.29	19.53 ± 0.67	TPI I	1.12 ± 0.23	34.45 ± 1.61
TPI II	19.53 ± 0.89	9.73 ± 0.45	TPI II	34.45 ± 1.43	42.96 ± 0.83
TPI III	9.73 ± 0.52	12.15 ± 0.72	TPI III	42.96 ± 0.94	0.55 ± 1.52
TPI IV	12.15 ± 0.60	5.16 ± 1.33	TPI IV	0.55 ± 0.19	14.04 ± 0.33

Table S8. Elemental analysis: contents of calcium, potassium and iron in mock- and mycelium-spore inoculated plants measured by ICP-OES at 7 and 14 dpi; data represent the mean of three dependent technical replicates ± SD.

Calcium [mg g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	17.51 ± 0.27	13.94 ± 0.14	11.75 ± 0.03	18.00 ± 0.20	TPI I	16.80 ± 0.24	14.27 ± 0.11	16.24 ± 0.01	12.71 ± 0.13
TPI II	21.29 ± 0.27	16.90 ± 0.13	16.36 ± 0.21	21.74 ± 0.16	TPI II	16.07 ± 0.08	17.23 ± 0.24	17.91 ± 0.05	19.85 ± 0.09
TPI III	20.83 ± 0.18	17.07 ± 0.12	21.58 ± 0.24	13.15 ± 0.18	TPI III	16.18 ± 0.12	16.56 ± 0.26	21.47 ± 0.13	17.09 ± 0.01
TPI IV	14.01 ± 0.10	14.19 ± 0.08	16.79 ± 0.04	12.73 ± 0.11	TPI IV	15.45 ± 0.06	14.93 ± 0.16	18.85 ± 0.12	15.68 ± 0.23
Potassium [mg g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	38.10 ± 0.11	27.66 ± 0.14	21.68 ± 0.23	35.27 ± 0.17	TPI I	14.88 ± 0.05	5.86 ± 0.00	33.36 ± 0.09	12.11 ± 0.03
TPI II	35.79 ± 0.17	34.01 ± 0.00	23.64 ± 0.13	40.75 ± 0.14	TPI II	6.76 ± 0.00	5.38 ± 0.00	27.96 ± 0.26	12.81 ± 0.04
TPI III	49.47 ± 0.22	25.27 ± 0.04	26.58 ± 0.06	10.80 ± 0.06	TPI III	7.58 ± 0.00	8.19 ± 0.02	26.86 ± 0.13	15.48 ± 0.03

TPI IV	31.22 ± 0.17	19.64 ± 0.13	43.25 ± 0.18	15.31 ± 0.01	TPI IV	14.41 ± 0.06	12.33 ± 0.08	8.42 ± 0.00	35.74 ± 0.27
Iron [µg g^{-1} DW]									
7 dpi	**C +S**	**VL +S**	**C -S**	**VL -S**	**14 dpi**	**C +S**	**VL +S**	**C -S**	**VL -S**
TPI I	102.13 ± 0.00	77.01 ± 0.00	91.76 ± 0.55	87.51 ± 0.00	TPI I	69.13 ± 0.00	60.20 ± 0.04	44.49 ± 0.00	50.67 ± 0.16
TPI II	112.91 ± 0.00	76.10 ± 0.00	127.91 ± 0.00	91.85 ± 0.08	TPI II	68.01 ± 0.00	72.47 ± 0.43	49.52 ± 0.00	60.71 ± 0.20
TPI III	127.68 ± 0.00	83.05 ± 0.00	112.32 ± 0.00	96.23 ± 0.00	TPI III	70.68 ± 0.00	72.32 ± 0.00	60.04 ± 0.00	85.39 ± 0.19
TPI IV	67.79 ± 0.00	75.08 ± 0.00	99.86 ± 0.00	89.76 ± 0.00	TPI IV	66.35 ± 0.00	65.41 ± 0.12	54.67 ± 0.00	53.95 ± 0.04

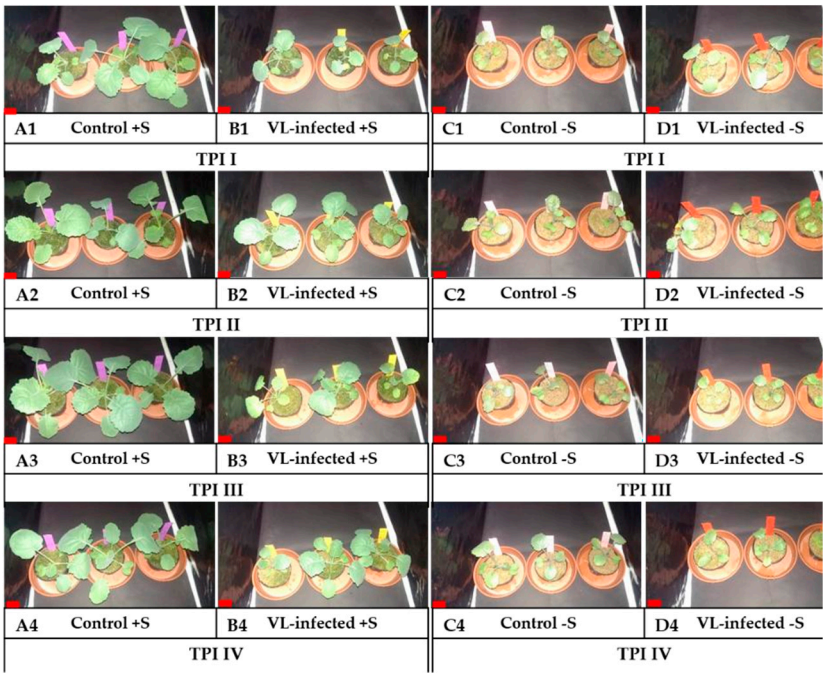

Figure S1. *Brassica napus* plants at 14 dpi cultivated at two different sulfur regimes and either infected with the *V. longisporum* strain VL43 or non-infected. Plants under sufficient (1 mM $MgSO_4$: +S) and deficient (0.01 mM $MgSO_4$: -S) sulfur supply at 14 dpi; A1-A4: control plants +S; B1-B4: VL-infected plants +S; C1-C4: control plants -S; D1-D4: VL-infected plants -S; red scale bar 5 cm.

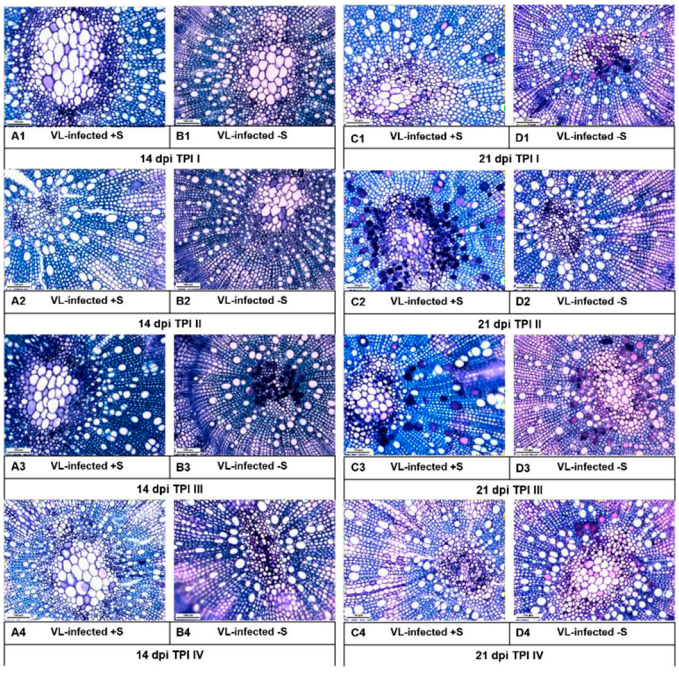

Figure S2. Occurrence of occlusions in the xylem of *B. napus*: toluidine blue stained cross sections of hypocotyls of mycelium-spore inoculated plants. 14 dpi: A1-A4: VL-infected +S at TPI I-IV; B1-B4: VL- infected -S at TPI I-IV; 21 dpi: C1-C4: VL-infected +S at TPI I-IV; D1-D4: VL-infected -S at TPI I-IV; scale bar 100 μm.

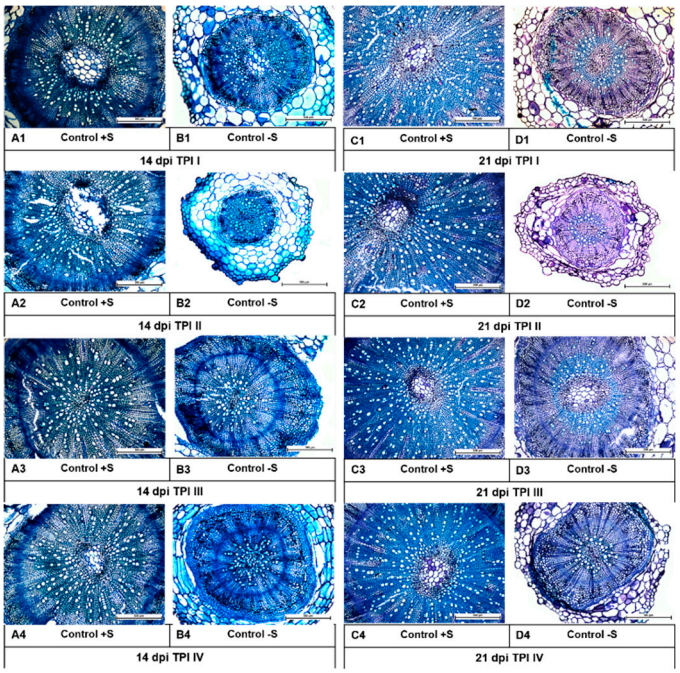

Figure S3. Cross sections of hypocotyls of control plants at 14 and 21 dpi. Cross sections were stained with toluidine blue; 14 dpi: A1-A4: control +S at TPI I-IV; B1-B4: control -S at TPI I-IV; 21 dpi: C1-C4: control +S at TPI I-IV; D1-D4: control -S at TPI I-IV; scale bar 500 μm.

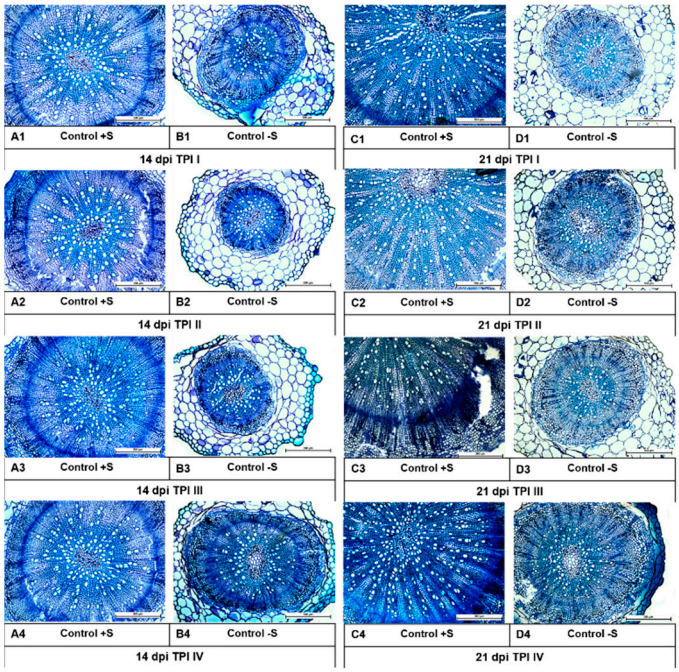

Figure S4. Cross sections of hypocotyls of control plants at 14 and 21 dpi. Cross sections were stained with toluidine blue; 14 dpi: A1-A4: control +S at TPI I-IV; B1-B4: control -S at TPI I-IV; 21 dpi: C1-C4: control +S at TPI I-IV; D1-D4: control -S at TPI I-IV; scale bar 500 μm.