Supplementary Figure S1. Root rot disease rating scale for eight crop species, where: 0 = healthy roots; 1 = small, light-brown lesions on < 25% of the tap root; 2 = brown lesions on 25-49% of the tap root; 3 = brown lesions on 50-74% of the tap root, tap root constricted; and 4 = tap root severely girdled, brown lesions on > 75% of the tap root with limited lateral roots. The scale was adapted from Hwang et al. [25].

Supplementary Table S1. Comparison of root rot severity on cultivars representing eight different crop species at 21 days after seeding in potting medium treated with different concentrations of *Fusarium proliferatum* inoculum.

Crop	Cultivar	Disease Severity[a]	
		Low Inoculum[b]	High Inoculum[c]
Wheat	AC Crystal	1.06 a	2.29 AB
	Katepwa	1.46 ab	2.00 A
	Lillian	1.35 ab	2.06 AB
Barley	AB Tofield	1.23 ab	1.86 A
	Canmore	1.72 bcd	2.10 AB
Faba bean	Malik	1.31 ab	2.13 AB
	Fabelle	2.24 de	2.89 CDE
Pea	CDC Amarillo	1.57 abc	2.56 BCD
	AAC Barrhead	2.01 cde	2.37 ABC
	CDC Greenwater	2.03 cde	2.90 CDE
	AAC Carver	2.26 e	3.10 EFG
Lentil	CDC Nimble	1.62 bc	3.01 DEF
	CDC Lima CL	2.30 ef	3.70 H
Canola	Westar	2.33 ef	3.06 DEF
	L255PC	2.99 g	3.68 H
Lupine	Arabella	2.83 fg	2.97 DE
	Mirabor	2.90 g	3.68 H
Soybean	AAC Mandor	2.51 efg	3.13 EFG
	AKRAS R2	3.03 gh	3.53 FGH
	OT15-02	3.55 h	3.61 GH

[a] Root rot disease severity as assessed on a 0-4 scale [25], where: 0 = healthy roots; 1 = small, light-brown lesions on < 25% of the tap root; 2 = brown lesions on 25-49% of the tap root; 3 = brown lesions on 50-74% of the tap root, tap root constricted; and 4 = tap root severely girdled, brown lesions on > 75% of the tap root with limited lateral roots.

[b] Treated with a low concentration (3×10^4 colony forming units (cfu)/g potting medium) of *F. proliferatum* inoculum.

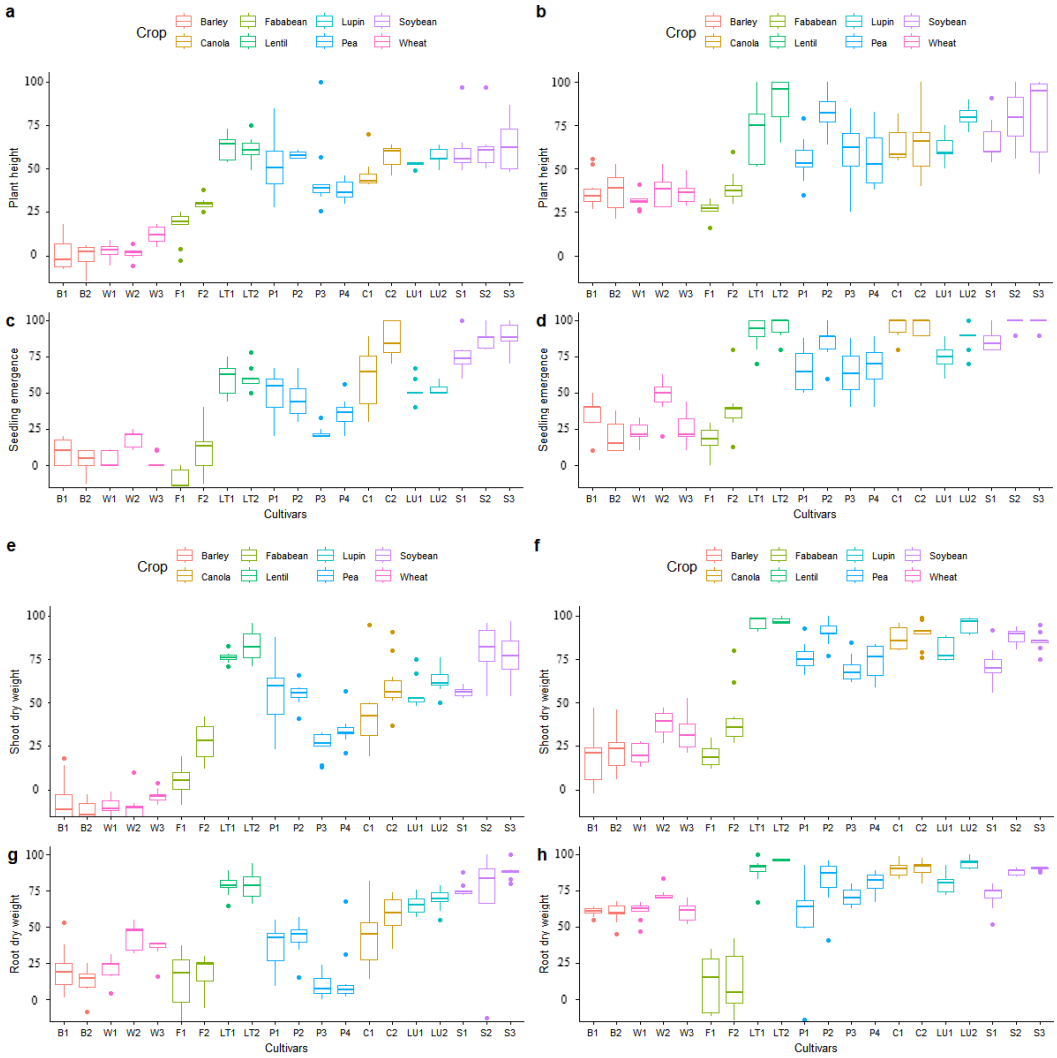
[c] Treated with a high concentration (6×10^4 cfu/g potting medium) of *F. proliferatum* inoculum.

Note: Different lowercase letters indicate significant differences ($p < 0.05$) within the 'Low Inoculum' column, while different uppercase letters indicate significant differences within the 'High Inoculum' column.

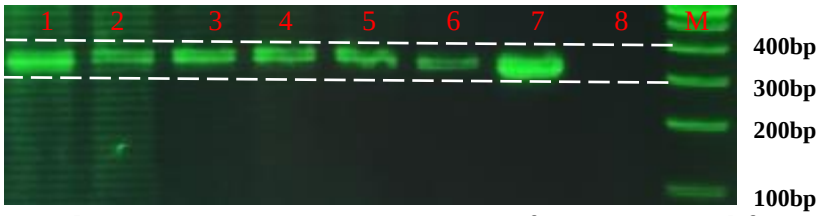
Supplementary Table S2. Principal Component Analysis of root rot disease severity and reductions in emergence, plant height, shoot and root dry weights of 20 cultivars representing 8 crop species grown in potting medium treated with different concentrations of *Fusarium proliferatum* inoculum.

Parameter	Low Inoculum Concentration[a]					High Inoculum Concentration[b]				
	PC1	PC2	PC3	PC4	PC5	PC1	PC2	PC3	PC4	PC5
Disease Severity	-0.4254	-0.5600	0.6152	-0.3559	-0.0247	-0.4364	-0.5245	-0.7019	0.0610	-0.1954
Emergence Reduction	-0.4645	-0.0237	0.1613	0.8704	0.0129	-0.4695	-0.0444	0.1828	0.5337	0.6778
Plant Height Reduction	-0.4613	-0.1467	-0.5582	-0.1369	-0.6598	-0.4657	-0.0640	0.1921	-0.8192	0.2664
Shoot Dry Weight Reduction	-0.4707	-0.0379	-0.4358	-0.1826	0.7442	-0.4665	-0.1095	0.5672	0.1987	-0.6397
Root Dry Weight Reduction	-0.4110	0.8143	0.3067	-0.2525	-0.1008	-0.3932	0.8408	-0.3397	0.0297	-0.1491

[a] Low, treated with a low concentration (3×10^4 colony forming units (cfu)/g potting medium) of *F. proliferatum* inoculum; [b]High, treated with a high concentration (6×10^4 cfu/g potting medium) of *F. proliferatum* inoculum.



Supplementary Figure S2. Reductions (%), relative to non-inoculated controls, in plant height, seedling emergence, and shoot and root weights of 20 cultivars representing eight crop species grown in potting medium treated with low (a, c, e, g) or high (b, d, f, h) concentrations of *Fusarium proliferatum* (3×10^4 and 6×10^4 colony forming units/g potting medium, respectively). Plant height (a,b) was measured at 14 days after seeding, seedling emergence (c,d) was measured at 7 days after seeding, shoot dry weight (e,f) was measured at 21 days after seeding, and root dry weight (g,h) was measured at 21 days after seeding. B1, barley cultivar 'AB Tofield'; B2, barley 'Canmore'; W1, wheat 'Katepwa'; W2, wheat 'AC Crystal'; W3, wheat 'Lillian'; P1, pea 'CDC Greenwater'; P2, pea 'AAC Carver'; P3, pea 'CDC Amarillo'; P4, pea 'AAC Barrhead'; S1, soybean 'AAC Mandor'; S2, soybean 'OT15-02'; S3, soybean 'AKRAS R2'; LU1, lupine 'Arabella'; LU2, lupine 'Mirabor'; L1, lentil 'CDC Nimble'; L2, lentil 'CDC Lima CL'; F1, faba bean 'Malik'; F2, faba bean 'Fabelle'; C1, canola 'Westar'; C2, canola 'L255PC'.



Supplementary Figure S3. Detection of *Fusarium proliferatum* in plant root tissues by PCR analysis with the *F. proliferatum*-specific primers TH5-F/TH6-R [31]. Plants were grown in potting medium inoculated with the fungus (3×10^4 cfu/g potting medium) and root tissues were collected shortly after flowering. Total genomic DNA was extracted and subjected to PCR. Lane 1, pea cultivar 'CDC Greenwater'; lane 2, pea 'AAC Carver'; lane 3, faba bean 'Fabelle'; lane 4, soybean 'AKRAS R2'; lane 5, lupine 'Arabella; lane 6, wheat 'AC Crystal'; lane 7, *F. proliferatum* isolate P002 (positive control); lane 8, nuclease-free water (negative control); lane M, 100 bp DNA ladder (Thermo Fisher Scientific, Mississauga, ON).