

1 **Table S1** Site and agronomic management details

2

Year	Sites	Nearest Town	Soil type	Plot length (m)	Plot width (m)	Row spacing (cm)	Sowing depth (cm)	Latitude	Longitude	Sowing Date	Harvest Date	Fungicide application		
												1	2	3
2017	17_1	Corrigin	Loamy clay	10	1.52	25.4	1.5	-32.35704	117.95961	28/04/2017	11/11/2017	11/08/2017		
	17_2	Dandaragan	Sand	10	1.52	25.4	1	-30.28782	115.53747	2/05/2017	10/11/2017	8/09/2017		
	17_3	Greenough	Clay	10	1.52	25.4	1	-28.81609	114.74334	1/05/2017	31/10/2017	16/08/2017		
	17_4	Katanning	Loamy clay	10	1.52	25.4	1.5	-33.68495	117.52923	6/05/2017	17/11/2017	16/08/2017		
	17_5	Kojonup	Sandy loam	10	1.52	25.4	1.5	-33.96794	117.1328	7/05/2017	18/11/2017	17/08/2017		
	17_6	Williams	Loam	10	1.52	25.4	1.5	-33.07302	116.7821	4/05/2017	2/12/2017	11/08/2017		
	17_7	York	Sandy loam	10	1.52	25.4	1.5	-31.90872	116.70548	30/05/2017	15/11/2017	4/09/2017		
2018	18_1	Bolgart	Loamy gravel	10	1.52	25.4	1.5	-31.18343	116.56762	11/05/2018	12/11/2018	31/08/2018		
	18_2	Corrigin	Sandy loam	10	1.52	25.4	1	-32.38377	117.9265	25/05/2018	3/12/2018	31/08/2018		
	18_3	Cranbrook	Sandy loam	12	1.52	25.4	1	-34.33918	117.56718	5/05/2018	28/11/2018	11/09/2018		
	18_4	Cunderdin	Sandy loam	12	1.52	25.4	1	-31.56406	117.26985	2/05/2018	8/11/2018	31/08/2018		
	18_5	Dandaragan	Sand	12	1.52	25.4	1	-30.13769	115.5219	26/04/2018	21/11/2018	7/08/2018		
	18_6	Greenough	Loam	12	1.52	25.4	1.5	-28.97918	114.78736	24/04/2018	30/10/2018	8/08/2018		
	18_7	Kojonup	Gravelly loam	12	1.52	25.4	1	-33.91303	116.96344	19/05/2018	8/12/2018	6/09/2018		
	18_8	Mingenew	Loam	12	1.52	25.4	1	-29.16243	115.5859	24/04/2018	1/11/2018	17/08/2018		
	18_9	Wagin	Loam	12	1.52	25.4	1	-33.27223	117.59235	27/04/2018	29/11/2018	24/08/2018		
	18_10	Williams	Sandy loam	12	1.52	25.4	1	-32.99047	116.8988	26/04/2018	7/12/2018	7/08/2018		
2019	19_1	Bolgart	Loam	10	1.52	25.4	1	-31.17879	116.54111	30/04/2019	6/11/2019	2/09/2019	9/09/2019	
	19_2	Dandaragan	Loam	12	1.52	25.4	1	-30.65821	115.72298	23/04/2019	7/11/2019	21/08/2019		
	19_3	Kojonup	Sandy loam	10	1.52	25.4	1	-33.8902	116.97895	18/05/2019	27/11/2019	6/09/2019		
	19_4	Mingenew	Loam	10	1.52	25.4	1	-29.20254	115.3215	25/04/2019	1/11/2019	21/08/2019	27/08/2019	
	19_5	Williams	Loam	10	1.52	25.4	1	-32.98096	116.88902	13/05/2019	18/11/2019	21/08/2019	28/08/2019	6/09/2019
2020	20_1	Kojonup	Sandy loam	10	1.85	25.4	1	-33.7496	116.884	9-May-20	25/12/2020	12/08/2020		
	20_2	Moonyanooka	Sandy loam	12	1.85	25	1.5	-28.7945	114.7674	18-May-20	12/11/2019	6/08/2020		
	20_3	Toodyay	Loam	10	1.85	25.4	1	-31.47053	116.49358	18/04/2020	15/11/2020	31/07/2020	7/08/2020	

3

4 **Table S2** Effect of fungicide application on Sclerotinia stem rot disease incidence (proportion of infected plants) and grain yield (t/ha) of ATR Bonito
5 and Hyola 559T at 25 field sites across 4 years. Significance indicated by probability (P) values (*blank* not significant, * <0.05, ** <0.01, *** <0.001).

Site	ATR Bonito						Hyola 559TT					
	Disease Incidence (\pm se)			Yield (t/a) (\pm se)			Disease Incidence (\pm se)			Yield (t/a) (\pm se)		
	Untreated	Treated	P	Untreated	Treated	P	Untreated	Treated	P	Untreated	Treated	P
17_1	0.00 (0.00)	0.00 (0.00)		2.33 (0.09)	2.59 (0.14)		0.00 (0.00)	0.00 (0.00)		2.87 (0.09)	2.69 (0.09)	
17_2	0.01 (0.01)	0.00 (0.00)		1.79 (0.11)	1.66 (0.16)		0.02 (0.02)	0.00 (0.00)		1.90 (0.07)	1.94 (0.04)	
17_3	0.05 (0.02)	0.02 (0.01)		1.51 (0.03)	1.49 (0.13)		0.07 (0.02)	0.05 (0.03)		1.91 (0.06)	2.03 (0.10)	
17_4	0.00 (0.00)	0.00 (0.00)		2.09 (0.06)	1.91 (0.29)		0.00 (0.00)	0.01 (0.01)		2.29 (0.04)	2.50 (0.33)	
17_5	0.03 (0.02)	0.05 (0.03)		2.79 (0.08)	3.08 (0.19)		0.01 (0.01)	0.01 (0.01)		3.16 (0.14)	3.22 (0.24)	
17_6	0.02 (0.01)	0.03 (0.02)		2.74 (0.09)	2.40 (0.25)		0.01 (0.01)	0.01 (0.01)		2.34 (0.06)	2.33 (0.20)	
17_7	0.00 (0.00)	0.00 (0.00)		1.51 (0.13)	1.40 (0.07)		0.00 (0.00)	0.00 (0.00)		1.61 (0.18)	1.73 (0.14)	
18_1	0.15 (0.02)	0.05 (0.02)	*	2.21 (0.08)	2.26 (0.01)		0.17 (0.04)	0.11 (0.05)		2.40 (0.11)	2.63 (0.05)	
18_2	0.03 (0.01)	0.02 (0.01)		1.67 (0.14)	1.73 (0.04)		0.03 (0.02)	0.01 (0.01)		1.65 (0.08)	1.89 (0.06)	
18_3	0.00 (0.00)	0.00 (0.00)		2.22 (0.04)	2.25 (0.15)		0.04 (0.04)	0.00 (0.00)		2.36 (0.07)	2.62 (0.13)	
18_4	0.03 (0.01)	0.05 (0.02)		2.53 (0.12)	2.51 (0.17)		0.04 (0.02)	0.01 (0.01)		2.68 (0.14)	2.86 (0.15)	
18_5	0.02 (0.01)	0.00 (0.00)		1.60 (0.04)	1.69 (0.08)		0.05 (0.01)	0.01 (0.01)		2.16 (0.09)	2.38 (0.04)	
18_6	not recorded			1.01 (0.20)	1.03 (0.23)		not recorded			1.85 (0.09)	1.88 (0.07)	
18_7	0.00 (0.00)	0.00 (0.00)		2.90 (0.05)	3.09 (0.09)		0.03 (0.02)	0.00 (0.00)		3.16 (0.05)	3.44 (0.01)	
18_8	0.00 (0.00)	0.00 (0.00)		1.56 (0.13)	1.42 (0.04)		0.00 (0.00)	0.00 (0.00)		1.80 (0.10)	1.83 (0.10)	
18_9	0.02 (0.01)	0.01 (0.01)		1.83 (0.07)	1.79 (0.01)		0.01 (0.01)	0.00 (0.00)		2.09 (0.04)	2.09 (0.09)	
18_10	0.00 (0.00)	0.00 (0.00)		2.17 (0.13)	2.36 (0.20)		0.00 (0.00)	0.00 (0.00)		2.56 (0.15)	2.62 (0.17)	
19_1	0.00 (0.00)	0.00 (0.00)		1.23 (0.09)	0.88 (0.19)		0.00 (0.00)	0.00 (0.00)		0.87 (0.20)	1.10 (0.10)	
19_2	0.00 (0.00)	0.00 (0.00)		2.56 (0.09)	2.55 (0.12)		0.00 (0.00)	0.00 (0.00)		2.76 (0.02)	2.88 (0.04)	
19_3	0.02 (0.01)	0.02 (0.02)		2.57 (0.08)	2.88 (0.05)		0.07 (0.05)	0.03 (0.02)		2.99 (0.12)	3.14 (0.07)	
19_4	0.00 (0.00)	0.00 (0.00)		1.46 (0.05)	1.42 (0.08)		0.00 (0.00)	0.00 (0.00)		1.66 (0.05)	1.58 (0.05)	
19_5	0.00 (0.00)	0.00 (0.00)		1.61 (0.16)	1.60 (0.16)		0.00 (0.00)	0.00 (0.00)		2.14 (0.33)	1.96 (0.15)	
20_1	0.03 (0.02)	0.07 (0.02)		2.65 (0.15)	2.90 (0.06)		0.13 (0.03)	0.09 (0.01)		2.65 (0.12)	2.86 (0.05)	
20_2	0.09 (0.04)	0.11 (0.05)		1.55 (0.12)	1.63 (0.06)		0.07 (0.07)	0.05 (0.03)		1.90 (0.10)	1.83 (0.18)	
20_3	0.04 (0.01)	0.04 (0.01)		3.33 (0.05)	3.59 (0.21)		0.05 (0.02)	0.01 (0.01)		3.66 (0.03)	3.56 (0.05)	
Average	0.02 (0.00)	0.02 (0.00)		2.06 (0.07)	2.09 (0.08)		0.03 (0.01)	0.02 (0.00)	**	2.30 (0.07)	2.39 (0.07)	*

6 **Table S3** Effect of fungicide application on Sclerotinia stem rot disease incidence (proportion of infected plants) and grain yield (t/ha) of ATR Mako
7 and InVigor T4510 at 18 field sites across 3 years. Significance indicated by probability (P) values (*blank* not significant, * <0.01, ** <0.05, *** <0.001).

8

Site	ATR Mako						InVigor T4510					
	Disease Incidence (\pm se)			Yield (t/a) (\pm se)			Disease Incidence (\pm se)			Yield (t/a) (\pm se)		
	Untreated	Treated	P	Untreated	Treated	P	Untreated	Treated	P	Untreated	Treated	P
18_1	0.31 (0.03)	0.15 (0.04)	***	2.00 (0.08)	2.21 (0.05)		0.15 (0.05)	0.05 (0.03)		2.48 (0.11)	2.70 (0.04)	
18_2	0.05 (0.01)	0.01 (0.01)		1.59 (0.06)	1.70 (0.22)		0.05 (0.01)	0.01 (0.01)		2.05 (0.10)	1.99 (0.09)	
18_3	0.03 (0.01)	0.00 (0.00)		2.31 (0.09)	2.40 (0.21)		0.01 (0.01)	0.00 (0.00)		2.72 (0.14)	2.89 (0.13)	
18_4	0.11 (0.02)	0.04 (0.01)		2.38 (0.17)	2.40 (0.07)		0.06 (0.02)	0.06 (0.01)		2.66 (0.16)	2.78 (0.12)	
18_5	0.03 (0.01)	0.02 (0.00)		1.39 (0.04)	1.60 (0.03)		0.00 (0.00)	0.01 (0.01)		1.93 (0.06)	2.21 (0.05)	
18_6	not recorded			1.21 (0.20)	1.16 (0.18)		not recorded			1.47 (0.14)	1.44 (0.36)	
18_7	0.01 (0.01)	0.01 (0.01)		2.88 (0.02)	2.93 (0.08)		0.03 (0.01)	0.00 (0.00)		3.34 (0.04)	3.40 (0.05)	
18_8	0.04 (0.00)	0.02 (0.01)		1.34 (0.13)	1.47 (0.04)		0.00 (0.00)	0.02 (0.01)		1.75 (0.05)	1.77 (0.11)	
18_9	0.03 (0.02)	0.00 (0.00)		1.96 (0.09)	1.94 (0.05)		0.00 (0.00)	0.00 (0.00)		2.33 (0.08)	2.30 (0.07)	
18_10	0.00 (0.00)	0.00 (0.00)		2.10 (0.06)	2.16 (0.22)		0.00 (0.00)	0.00 (0.00)		2.77 (0.14)	2.75 (0.24)	
19_1	0.00 (0.00)	0.00 (0.00)		0.87 (0.16)	0.79 (0.16)		0.00 (0.00)	0.00 (0.00)		1.09 (0.16)	1.23 (0.11)	
19_2	0.00 (0.00)	0.00 (0.00)		2.44 (0.04)	2.23 (0.13)		0.00 (0.00)	0.00 (0.00)		2.67 (0.18)	2.91 (0.08)	
19_3	0.05 (0.04)	0.03 (0.02)		2.62 (0.03)	2.66 (0.06)		0.05 (0.02)	0.03 (0.02)		3.06 (0.05)	3.21 (0.05)	
19_4	0.00 (0.00)	0.00 (0.00)		1.38 (0.10)	1.42 (0.07)		0.00 (0.00)	0.00 (0.00)		1.65 (0.09)	1.63 (0.06)	
19_5	0.00 (0.00)	0.01 (0.01)		1.56 (0.21)	1.51 (0.25)		0.00 (0.00)	0.00 (0.00)		2.02 (0.27)	2.13 (0.24)	
20_1	0.15 (0.05)	0.06 (0.01)		2.24 (0.05)	2.69 (0.14)		0.13 (0.04)	0.02 (0.01)		3.22 (0.05)	3.23 (0.04)	
20_2	0.14 (0.07)	0.14 (0.04)		1.53 (0.10)	1.40 (0.05)		0.18 (0.04)	0.05 (0.05)	*	1.96 (0.10)	1.95 (0.07)	
20_3	0.13 (0.04)	0.05 (0.01)		3.37 (0.06)	3.56 (0.16)		0.09 (0.04)	0.03 (0.01)	**	4.04 (0.22)	4.27 (0.10)	
Average	0.06 (0.01)	0.03 (0.01)	**	1.96 (0.09)	2.02 (0.10)		0.04 (0.01)	0.02 (0.00)	***	2.40 (0.10)	2.49 (0.11)	

9

Table S4. Effect of fungicide application on Sclerotinia stem rot disease incidence (proportion of infected plants) and grain yield (t/ha) of canola varieties at 18 field sites across 3 years. Significance indicated by probability (P) values (*blank* not significant, * <0.05, ** <0.01, *** <0.001).

Variety	Site	Disease Incidence (\pm se)			Yield (t/ha) (\pm se)		
		Untreated	Fungicide at 30% flowering	P	Untreated	Fungicide at 30% flowering	P
DG 408RR	19_1	0.00 (0.00)	0.00 (0.00)		1.28 (0.08)	1.22 (0.12)	
	19_2	0.00 (0.00)	0.00 (0.00)		3.00 (0.07)	3.25 (0.06)	
	19_3	0.04 (0.02)	0.05 (0.03)		3.33 (0.07)	3.92 (0.34)	
	19_4	0.00 (0.00)	0.00 (0.00)		1.77 (0.11)	1.67 (0.03)	
	19_5	0.00 (0.00)	0.00 (0.00)		2.59 (0.17)	2.53 (0.12)	
	20_1	0.13 (0.03)	0.03 (0.02)	*	2.95 (0.08)	2.88 (0.16)	
	20_2	0.10 (0.01)	0.07 (0.04)		2.29 (0.17)	2.26 (0.01)	
	20_3	0.05 (0.01)	0.03 (0.01)		4.27 (0.06)	4.30 (0.20)	
	<i>Average</i>	<i>0.04 (0.01)</i>	<i>0.02 (0.01)</i>	*	<i>2.69 (0.18)</i>	<i>2.76 (0.21)</i>	
Pioneer 43Y23RR	19_1	0.00 (0.00)	0.00 (0.00)		1.33 (0.08)	1.34 (0.06)	
	19_2	0.00 (0.00)	0.00 (0.00)		3.09 (0.08)	2.74 (0.15)	
	19_3	0.03 (0.03)	0.03 (0.01)		3.79 (0.04)	3.33 (0.32)	
	19_4	0.00 (0.00)	0.00 (0.00)		1.67 (0.17)	1.89 (0.20)	
	19_5	0.00 (0.00)	0.00 (0.00)		2.58 (0.15)	2.74 (0.06)	
	20_1	0.16 (0.05)	0.07 (0.01)		2.76 (0.10)	3.14 (0.09)	
	20_2	0.05 (0.03)	0.12 (0.08)		2.22 (0.13)	2.42 (0.26)	
	20_3	0.09 (0.02)	0.02 (0.01)		3.73 (0.15)	3.78 (0.27)	
	<i>Average</i>	<i>0.04 (0.01)</i>	<i>0.03 (0.01)</i>		<i>2.65 (0.18)</i>	<i>2.67 (0.16)</i>	
Pioneer 44Y27RR	19_1	0.00 (0.00)	0.00 (0.00)		1.34 (0.08)	1.21 (0.20)	
	19_2	0.00 (0.00)	0.00 (0.00)		2.95 (0.12)	2.91 (0.17)	
	19_3	0.03 (0.02)	0.03 (0.01)		3.61 (0.23)	3.26 (0.14)	
	19_4	0.00 (0.00)	0.00 (0.00)		1.75 (0.11)	1.84 (0.11)	
	19_5	0.00 (0.00)	0.00 (0.00)		2.58 (0.08)	2.43 (0.03)	
	20_1	0.06 (0.03)	0.07 (0.01)		2.95 (0.09)	2.92 (0.07)	
	20_2	0.05 (0.01)	0.00 (0.00)		2.20 (0.09)	2.42 (0.27)	
	20_3	0.05 (0.01)	0.03 (0.01)		4.12 (0.02)	4.08 (0.10)	
	<i>Average</i>	<i>0.03 (0.01)</i>	<i>0.02 (0.01)</i>		<i>2.69 (0.18)</i>	<i>2.64 (0.08)</i>	
Hyola 350TT	19_1	0.00 (0.00)	0.00 (0.00)		0.96 (0.11)	1.36 (0.02)	
	19_2	0.00 (0.00)	0.00 (0.00)		2.85 (0.02)	2.80 (0.17)	
	19_3	0.06 (0.01)	0.01 (0.01)	*	3.01 (0.11)	2.93 (0.06)	
	19_4	0.00 (0.00)	0.00 (0.00)		1.63 (0.08)	1.68 (0.01)	
	19_5	0.00 (0.00)	0.00 (0.00)		1.90 (0.21)	2.12 (0.11)	
	<i>Average</i>	<i>0.01 (0.01)</i>	<i>0.00 (0.00)</i>	*	<i>2.07 (0.21)</i>	<i>2.18 (0.17)</i>	
Hyola 530XT	19_1	0.00 (0.00)	0.00 (0.00)		1.06 (0.08)	1.21 (0.11)	
	19_2	0.00 (0.00)	0.00 (0.00)		2.60 (0.11)	2.90 (0.16)	
	19_3	0.05 (0.02)	0.03 (0.01)		2.73 (0.12)	3.11 (0.10)	
	19_4	0.00 (0.00)	0.00 (0.00)		1.65 (0.10)	1.52 (0.11)	

Variety	Site	Disease Incidence (\pm se)			Yield (t/ha) (\pm se)		
		Untreated	Fungicide at 30% flowering		Untreated	Fungicide at 30% flowering	
				P			P
	19_5	0.00 (0.00)	0.00 (0.00)		2.10 (0.12)	1.93 (0.08)	
	<i>Average</i>	0.01 (0.01)	0.00 (0.00)		2.03 (0.17)	2.14 (0.21)	
HyTTec Trophy	19_1	0.00 (0.00)	0.00 (0.00)		0.99 (0.13)	1.28 (0.06)	
	19_2	0.00 (0.00)	0.00 (0.00)		2.83 (0.06)	2.82 (0.16)	
	19_3	0.04 (0.01)	0.05 (0.01)		3.33 (0.14)	3.40 (0.02)	
	19_4	0.00 (0.00)	0.00 (0.00)		1.65 (0.08)	1.74 (0.08)	
	19_5	0.01 (0.01)	0.00 (0.00)		2.39 (0.30)	2.13 (0.34)	
	<i>Average</i>	0.01 (0.00)	0.01 (0.00)		2.24 (0.23)	2.28 (0.21)	
HyTTec Trident	20_1	0.05 (0.03)	0.06 (0.02)		3.28 (0.05)	3.26 (0.20)	
	20_2	0.05 (0.03)	0.04 (0.01)		2.07 (0.05)	2.22 (0.07)	
	20_3	0.05 (0.01)	0.03 (0.01)		3.46 (0.25)	3.69 (0.15)	
	<i>Average</i>	0.05 (0.01)	0.04 (0.01)		2.94 (0.23)	3.06 (0.23)	
InVigor R4022P	20_1	0.07 (0.02)	0.05 (0.02)		2.62 (0.06)	2.82 (0.05)	
	20_2	0.12 (0.03)	0.04 (0.01)		2.24 (0.09)	2.38 (0.13)	
	20_3	0.09 (0.02)	0.03 (0.01)		4.06 (0.11)	4.13 (0.12)	
	<i>Average</i>	0.09 (0.01)	0.04 (0.01)	*	2.97 (0.28)	3.11 (0.27)	
Xseed Raptor	20_1	0.10 (0.04)	0.04 (0.03)		3.02 (0.11)	3.06 (0.11)	
	20_2	0.07 (0.01)	0.06 (0.00)		2.04 (0.04)	2.05 (0.08)	
	20_3	0.08 (0.01)	0.04 (0.00)		4.12 (0.13)	3.88 (0.25)	
	<i>Average</i>	0.08 (0.01)	0.05 (0.01)		3.06 (0.31)	3.00 (0.28)	

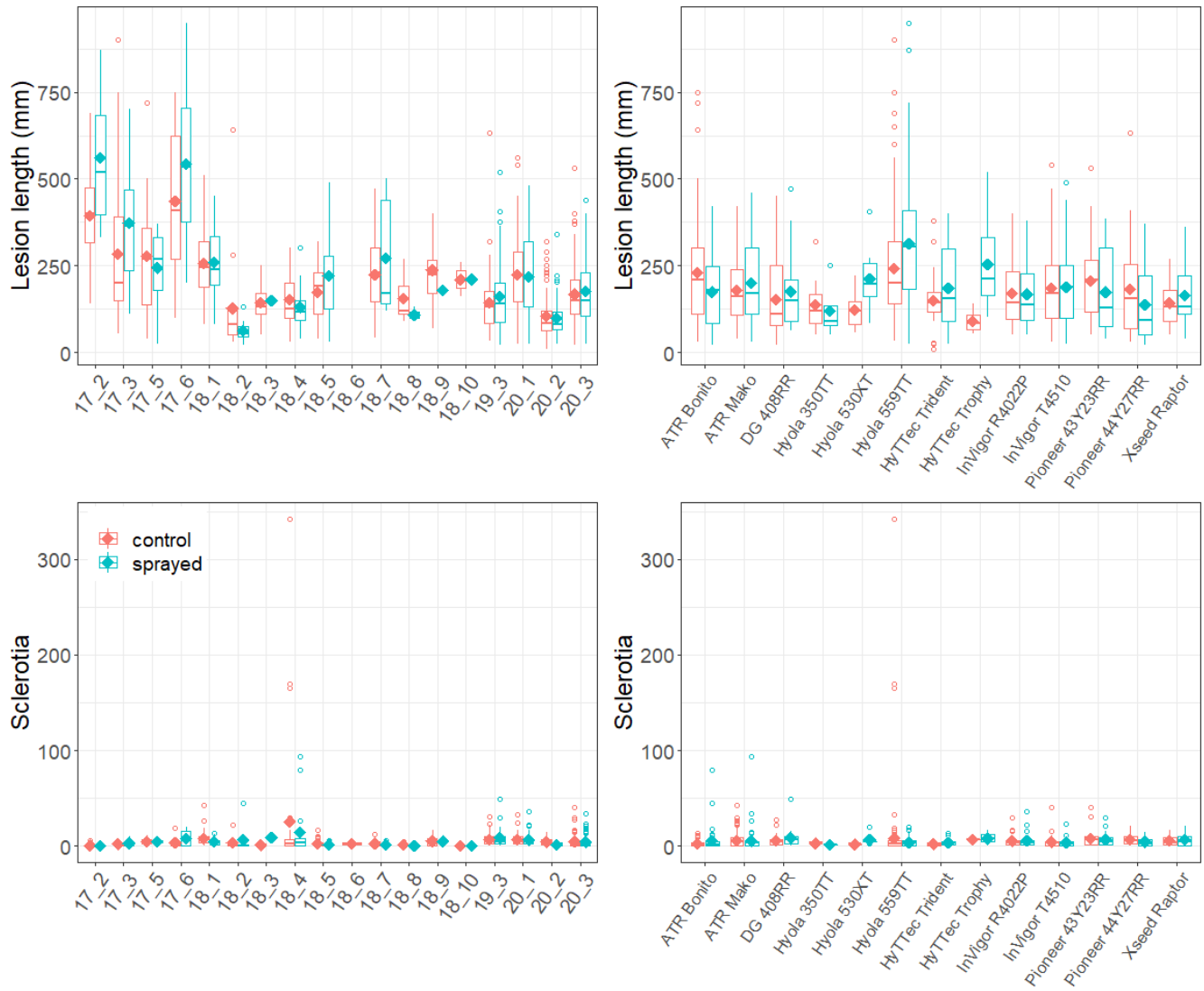
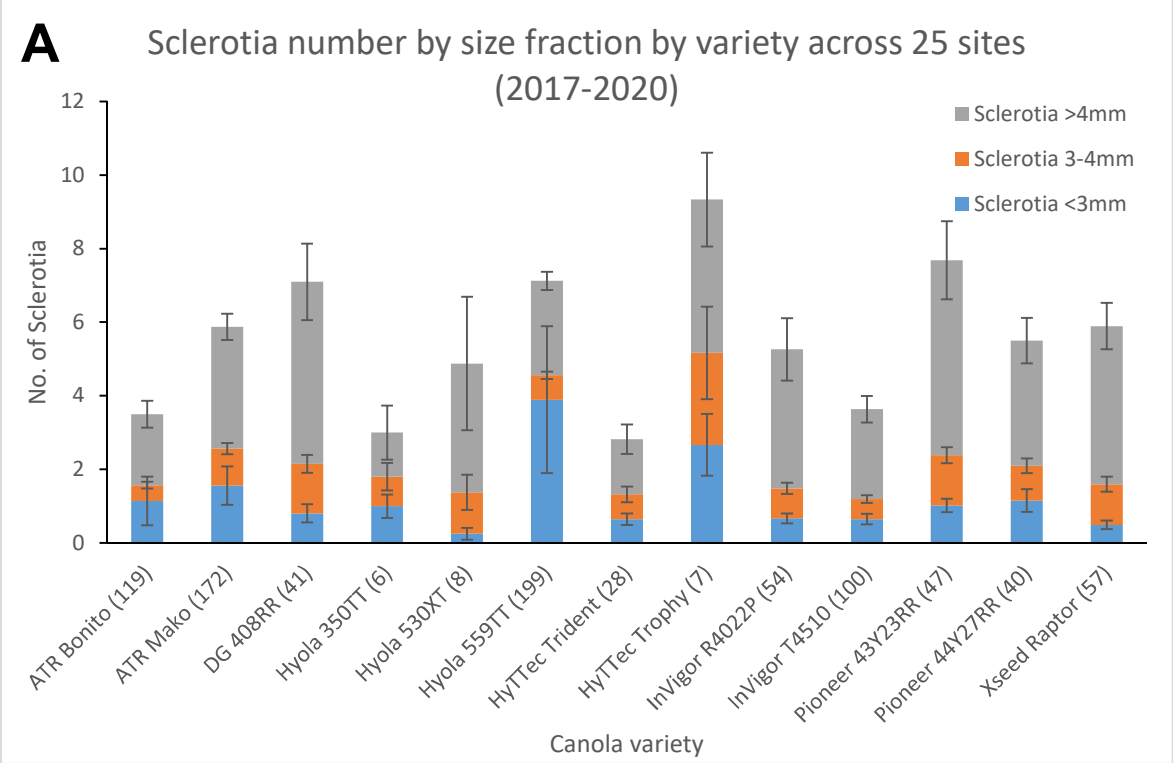
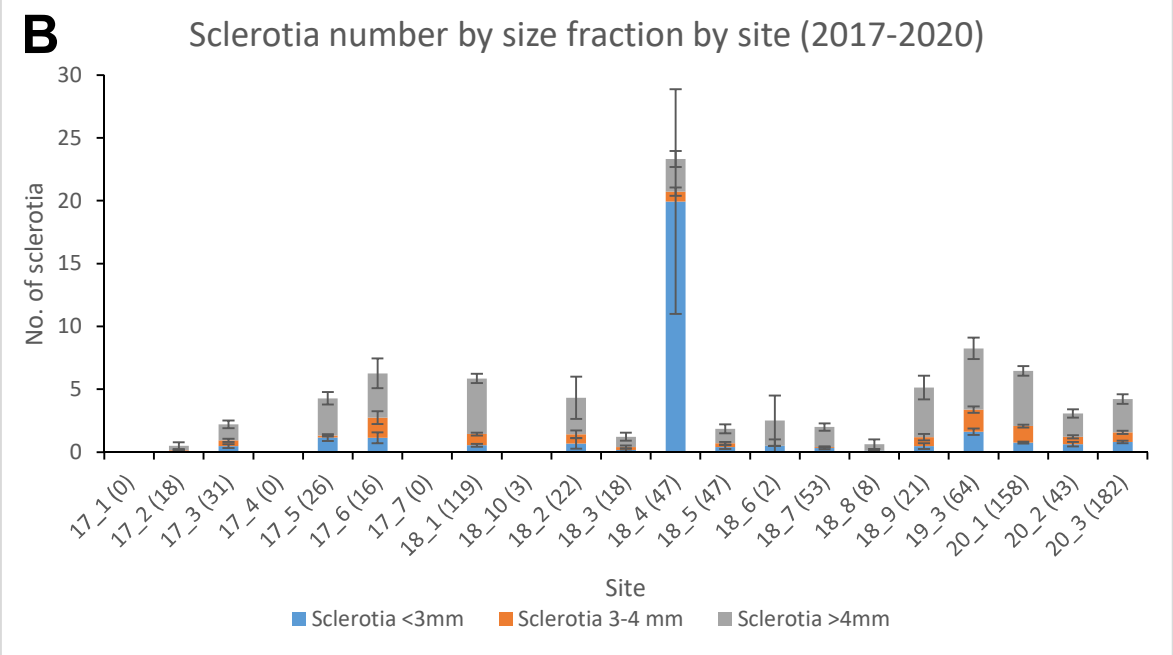


Figure S1 Lesion length and number of sclerotia in Sclerotinia stem rot diseased stems averaged by trial site and Variety across four growing seasons (2017-2020).

18



19



20

21

22

23

24

Figure S2. Number of sclerotia produced within a Sclerotinia stem rot diseased stem averaged by A) Variety and B) Site across four growing seasons (2017-2020), separated by size fractions of <3 mm, 3-4 mm and >4 mm. The number in brackets after the trial site name is the number of diseased stems included in the column mean.