

**Supplementary Table 1.** Results of linear regression analyses  $y = a + bx$  for relationships between dry pea crop yield parameters (y) as a function of pea aphid density (x) during the 2009 and 2010 early reproductive growth stage infestation experiments, Moscow, Idaho.

Dependent variable	Independent variable <sup>a</sup>	Regression model statistics and parameters						
		<i>n</i>	<i>F</i>	<i>P &gt; F</i>	<i>r</i> <sup>2</sup>	MSE <sup>d</sup>	<i>a</i>	<i>b</i>
Total number of seeds	INITIAL	52	3.00	0.0894	0.06	2890.39	99.53	-0.168
	DAY 3	52	8.71	0.0048	0.15	2609.3	104.59	-0.3308
	DAY 10	52	9.05	0.0041	0.15	2594.4	104.66	-0.2545
	DAY 17	52	0.09	0.7659	0.00	3026.36	98.19	-0.0148
	aphid*DD <sub>2,4° C 0-17</sub>	52	7.12	0.0103	0.12	2682.1	105.34	-0.0009
	aphid*DD <sub>2,4° C 3-17</sub>	52	7.04	0.0106	0.12	2685.5	105.14	-0.0011
Weight/seed	INITIAL	52	0.96	0.3311	0.02	0.0008	0.1672	-0.000049
	DAY 3	52	24.11	<	0.33	0.0005	0.1751	-0.000249
	DAY 10	52	106.23	<	0.68	0.0003	0.1797	-0.000273
	DAY 17	52	64.52	<	0.59	0.0002	0.178	-0.000098
	aphid*DD <sub>2,4° C 0-17</sub>	52	10.48	0.0021	0.17	0.0007	0.173	-0.0000006
	aphid*DD <sub>2,4° C 3-17</sub>	52	10.64	0.002	0.18	0.0007	0.173	-0.0000007
Yield	INITIAL	52	3.47	0.0684	0.06	79.79	16.73	-0.03003
	DAY 3	52	13.39	0.0006	0.21	67.32	17.92	-0.06587
	DAY 10	52	14.25	0.0004	0.22	66.41	17.95	-0.0511
	DAY 17	52	1.23	0.2733	0.03	81.47	17.09	-0.0089
	aphid*DD <sub>2,4° C 0-17</sub>	52	10.00	0.0027	0.17	71.11	17.98	-0.00019
	aphid*DD <sub>2,4° C 3-17</sub>	52	9.95	0.0027	0.17	71.18	17.94	-0.00022
Relative yield <sup>b</sup>	INITIAL	52	1.98	0.1653	0.04	0.0669	0.5639	-0.00066
	DAY 3	52	32.76	<	0.39	0.0421	0.6384	-0.00258
	DAY 10	52	43.70	<	0.47	0.0372	0.6464	-0.00212
	DAY 17	52	30.60	<	0.41	0.0377	0.6599	-0.00096
	aphid*DD <sub>2,4° C 0-17</sub>	52	15.44	0.0003	0.24	0.0532	0.626	-0.000006
	aphid*DD <sub>2,4° C 3-17</sub>	52	15.68	0.0002	0.24	0.053	0.626	-0.000008
Economic yield	INITIAL	52	3.37	0.0723	0.06	79.48	16.6	-0.0295
	DAY 3	52	13.34	0.0006	0.21	66.97	17.81	-0.0656
	DAY 10	52	14.43	0.0004	0.22	65.84	17.86	-0.0512
	DAY 17	52	1.24	0.2716	0.03	80.94	17.01	-0.0089
	Aphid*DD <sub>2,4° C 0-17</sub>	52	9.86	0.0028	0.16	70.87	17.85	-0.0002
	Aphid*DD <sub>2,4° C 3-17</sub>	52	9.80	0.0029	0.16	70.93	17.82	-0.0002
Relative economic yield <sup>c</sup>	INITIAL	52	1.89	0.1746	0.04	0.0664	0.5596	-0.0006
	DAY 3	52	32.80	<	0.39	0.0416	0.6344	-0.0026
	DAY 10	52	44.39	<	0.47	0.0365	0.6429	-0.0021
	DAY 17	52	30.54	<	0.41	0.0374	0.6566	-0.0009
	Aphid*DD <sub>2,4° C 0-17</sub>	52	15.24	0.0003	0.23	0.0528	0.6216	-0.000006
	Aphid*DD <sub>2,4° C 3-17</sub>	52	15.47	0.0003	0.24	0.0526	0.6212	-0.000008

INITIAL is the number of pea aphids released during the early reproductive growth stage; DAY3, DAY10, and DAY17 are number of pea aphids censused from two plants per A-frame three, 10, and 17 days post-infestation; aphid\*DD<sub>2.4°C</sub><sub>3-17</sub> is the cumulative aphid:degree days above 2.4 °C from DAY3 through DAY17; aphid\*DD<sub>2.4°C</sub><sub>0-17</sub> is the cumulative aphid:degree days above 2.4 °C from INITIAL through DAY17.

Relative yield is the total weight of all seeds from each A-frame, standardised to the highest yielding control plot (0 aphids infested).

Relative economic yield is the total weight of #1 grade seeds from each A-frame, standardised to the highest yielding control plot (0 aphids infested).

MSE, mean squared error.

**Supplementary Table 2.** Results of quadratic regression analyses  $y = a + bx + cx^2$  for relationships between dry pea crop yield parameters (y) as a function of pea aphid density (x) during the 2009 and 2010 early reproductive growth stage experiments, Moscow, Idaho.

Dependent variable	Independent variable <sup>a</sup>	Regression model statistics and parameters							
		n	F	P > F	r <sup>2</sup>	MSE <sup>d</sup>	a	b	c
Total number of seeds	INITIAL	52	2.19	0.1218	0.08	2868.91	104.87	-0.5169	0.0015
	DAY 3	52	5.38	0.0077	0.18	2563	111.54	-0.7246	0.0017
	DAY 10	52	4.59	0.0149	0.16	2632.9	107.08	-0.3562	0.0003
	DAY 17	52	5.09	0.0104	0.19	2509.10	86.69	0.4189	-0.0009
	aphid*DD <sub>2.4° C 0-17</sub>	52	4.80	0.0125	0.16	2614.10	113.86	-0.0023	0.00000002
	aphid*DD <sub>2.4° C 3-17</sub>	52	4.71	0.0134	0.16	2622	113.35	-0.0027	0.00000003
Weight/seed	INITIAL	52	0.48	0.6223	0.02	0.0008	0.167	-0.00003	-0.0000008
	DAY 3	52	14.66	< 0.0001	0.37	0.0005	0.179	-0.00049	0.000001
	DAY 10	52	54.99	< 0.0001	0.69	0.0002	0.178	-0.00019	-0.0000003
	DAY 17	52	32.99	< 0.0001	0.61	0.0002	0.179	-0.00014	0.00000009
	aphid*DD <sub>2.4° C 0-17</sub>	52	5.31	0.0082	0.18	0.0006	0.175	-0.0000008	3E-12
	aphid*DD <sub>2.4° C 3-17</sub>	52	5.41	0.0075	0.18	0.0007	0.175	-0.0000009	5E-12
Yield	INITIAL	52	2.24	0.1176	0.08	79.79	17.49	-0.0797	0.00022
	DAY 3	52	8.28	0.0008	0.25	65.08	19.24	-0.1409	0.00032
	DAY 10	52	7.37	0.0016	0.23	66.95	18.53	-0.0752	0.00008
	DAY 17	52	4.27	0.0204	0.17	71.51	15.46	0.0527	-0.000134
	aphid*DD <sub>2.4° C 0-17</sub>	52	6.25	0.0038	0.20	69.38	19.35	-0.0004	0.000000003
	aphid*DD <sub>2.4° C 3-17</sub>	52	6.18	0.004	0.20	69.54	19.27	-0.0005	0.000000004
Relative yield <sup>b</sup>	INITIAL	52	1.17	0.3184	0.05	0.0678	0.5503	0.00024	-0.000004
	DAY 3	52	20.19	< 0.0001	0.45	0.0389	0.6823	-0.00506	0.00001
	DAY 10	52	25.49	< 0.0001	0.51	0.0348	0.6818	-0.00361	0.000005
	DAY 17	52	14.95	< 0.0001	0.41	0.0385	0.6599	-0.00096	-0.000000003
	aphid*DD <sub>2.4° C 0-17</sub>	52	7.67	0.0013	0.24	0.0541	0.6361	-0.000008	2E-11
	aphid*DD <sub>2.4° C 3-17</sub>	52	7.80	0.0011	0.24	0.0539	0.6364	-0.000009	3E-11
Economic yield	INITIAL	52	2.17	0.1248	0.08	79.52	17.35	-0.0785	0.00021
	DAY 3	52	8.29	0.0008	0.25	64.69	19.14	-0.141	0.00032
	DAY 10	52	7.44	0.0015	0.23	66.41	18.42	-0.075	0.00007
	DAY 17	52	4.24	0.0209	0.16	71.14	15.39	0.052	-0.00013
	aphid*DD <sub>2.4° C 0-17</sub>	52	6.16	0.0041	0.20	69.18	19.21	-0.0004	0.000000003
	aphid*DD <sub>2.4° C 3-17</sub>	52	6.09	0.0043	0.19	69.33	19.14	-0.0004	0.000000004
Relative economic yield <sup>c</sup>	INITIAL	52	1.14	0.3278	0.04	0.0672	0.5456	0.0003	-0.000004
	DAY 3	52	20.30	< 0.0001	0.45	0.0384	0.6785	-0.0051	0.00001
	DAY 10	52	25.89	< 0.0001	0.51	0.0342	0.678	-0.0036	0.000005
	DAY 17	52	14.92	< 0.0001	0.41	0.0383	0.6566	-0.0009	0.000000002
	aphid*DD <sub>2.4° C 0-17</sub>	52	7.57	0.0014	0.24	0.0537	0.6313	-0.000008	2E-11
	aphid*DD <sub>2.4° C 3-17</sub>	52	7.69	0.0012	0.24	0.0535	0.6316	-0.000009	3E-11

INITIAL is the number of pea aphids released during the early reproductive growth stage;

DAY3, DAY10, and DAY17 are number of pea aphids censused from two plants per A-frame

three, 10, and 17 days post-infestation; aphid\*DD<sub>2.4° C 3-17</sub> is the cumulative aphid:degree days

above 2.4 °C from DAY3 through DAY17;  $\text{aphid} * \text{DD}_{2.4^{\circ}\text{C } 0-17}$  is the cumulative aphid:degree days above 2.4° C from INITIAL through DAY17.

Relative yield is the total weight of all seeds from each A-frame, standardised to the highest yielding control plot (0 aphids infested).

Relative economic yield is the total weight of #1 grade seeds from each A-frame, standardised to the highest yielding control plot (0 aphids infested).

MSE, mean squared error.