

DAFTAR PUSTAKA

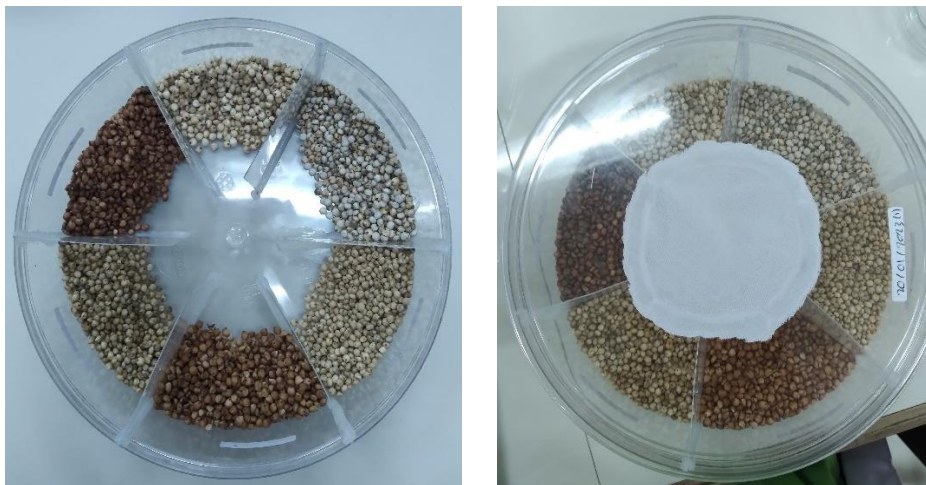
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LAMPIRAN

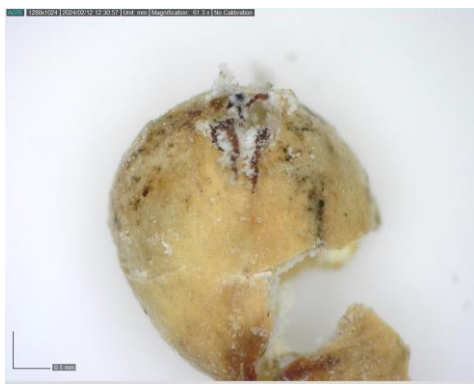


Gambar Lampiran 1. Arena pengujian preferensi serangga *Sitophilus zeamais* dan *Rhyzopertha dominica*.



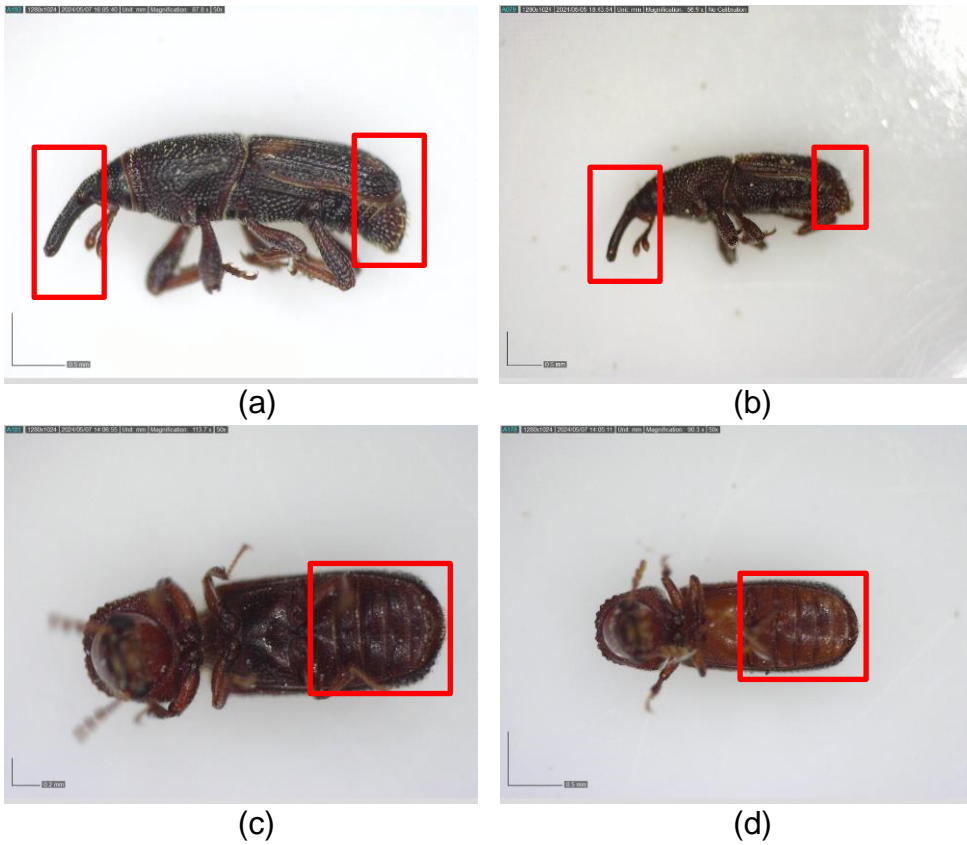
(a)

(b)

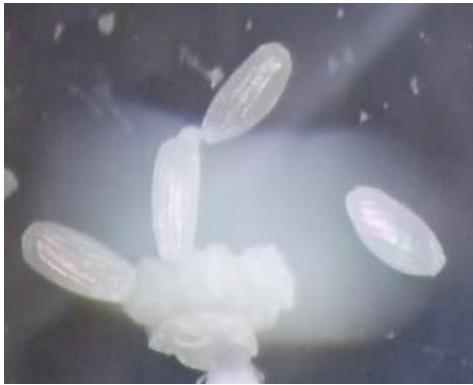


(c)

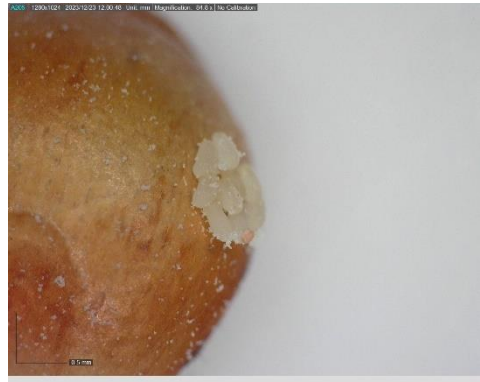
Gambar Lampiran 2. *Sitophilus zeamais*: (a) *Egg plug*; (b) imago; (c) imago di dalam biji sorgum.



Gambar Lampiran 3. Perbedaan morfologi imago jantan dan betina *Sitophilus zeamais* dan *Rhyzopertha dominica*: (a) imago jantan; (b) imago betina; (c) imago jantan; (d) imago betina.



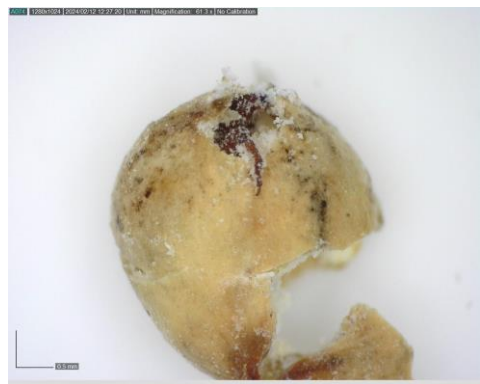
(a)



(b)



(c)



(d)

Gambar Lampiran 4. *Rhyzopertha dominica*: (a) telur pada arena preferensi; (b) telur pada biji sorgum; (c) imago; (d). imago di dalam biji sorgum.



(a)



(b)



(c)



(d)

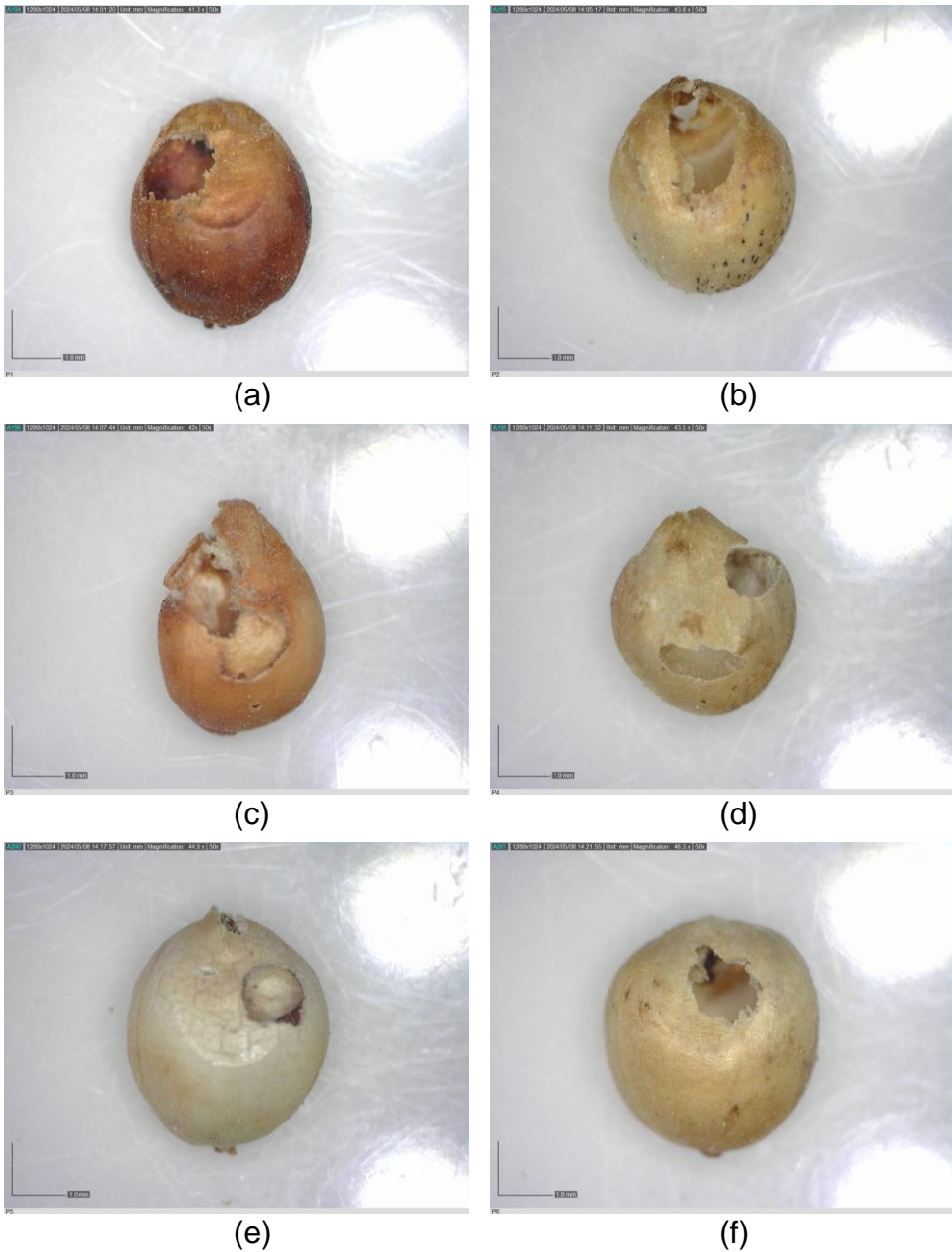


(e)

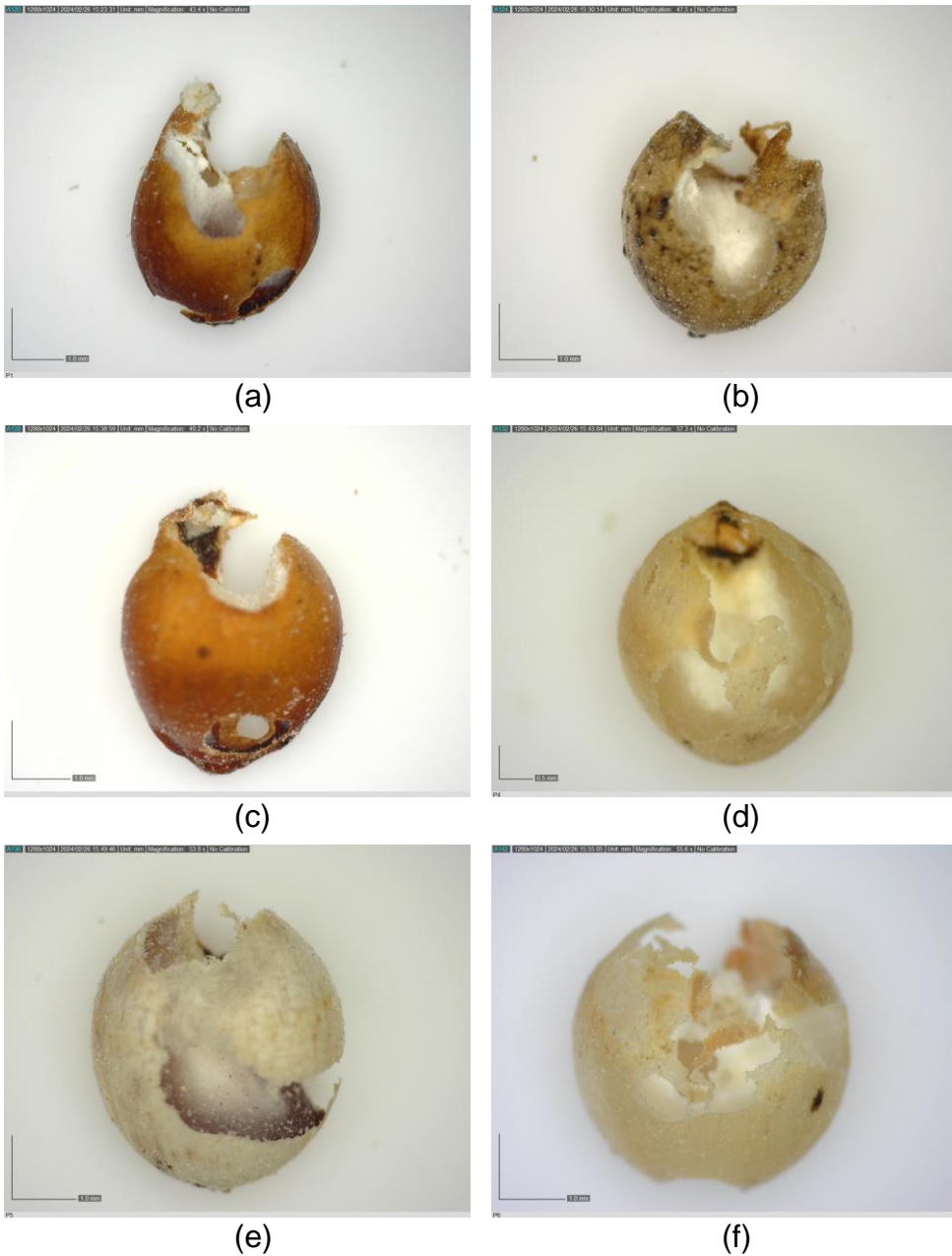


(f)

Gambar Lampiran 5. Kultivar sorgum yang digunakan dalam penelitian: (a) Suri-4; (b) Kawali; (c) Super 2; (d) Soper 6; (e) Super 1; (f) Numbu



Gambar Lampiran 6. Kerusakan biji sorgum yang disebabkan oleh serangan hama *Sitophilus zeamais* pada setiap pakan perlakuan: (a) Suri 4; (b) Kawali; (c) Super 2; (d) Soper 6; (e) Super 1; (f) Numbu



Gambar Lampiran 7. Kerusakan biji sorgum yang disebabkan oleh serangan hama *Rhyzopertha dominica* pada setiap pakan perlakuan: (a) Suri 4; (b) Kawali; (c) Super 2; (d) Soper 6; (e) Super 1; (f) Numbu

Tabel Lampiran 1. Deskripsi sorgum kultivar Suri-4

Variabel	Deskripsi
Tahun dilepas	22 November 2014
Asal	Merupakan perbaikan galur Intoduksi galur 15020, introduksi dari ICRISAT, India tahun 2002
Umur	Berbunga 50% : ± 55 hst Panen : ± 95 hst
Tinggi tanaman	± 239,4 cm
Kedudukan tangkai	Dipucuk
Sifat/bentuk malai	Terbuka/Terkulai
Panjang malai	± 29 cm
Warna biji	Cokelat tua kemerahan
Ukuran biji	Panjang
Kadar protein	± 15,42%
Kadar lemak	± 3,96%
Kadar karbohidrat	± 64,93%
Kadar Gula (Brix)	± 15,05%
Kadar tanin	± 0,013% b.k
Bobot 1000 biji	± 32,4 gram
Rata-rata hasil	± 4,8 t/ha (KA 10%)
Potensi hasil	± 5,7 t/ha (KA 10%)
Ketahanan	Tahan terhadap hama <i>Aphis</i> , agak tahan terhadap penyakit antraknosa, dan bercak daun
Pemulia	Fatmawati dan Muahmmad Azrai

Tabel Lampiran 2. Deskripsi sorgum kultivar Kawali

Variabel	Deskripsi
Tahun dilepas	22 Oktober 2001
Asal	India
Umur	Berbunga 50% : ± 70 hst Panen : ± 100–110 hst
Tinggi tanaman	± 135 cm
Kedudukan tangkai	Dipucuk
Sifat/bentuk malai	Kompak/Elips
Panjang malai	± 28–29 cm
Bentuk biji	Bulat
Sifat Biji	Mudah Rontok
Warna biji	Krem
Ukuran biji	3,2; 3,0; 3,4 mm
Kadar protein	± 8,81%
Kadar lemak	± 1,97%
Kadar karbohidrat	± 87,87%
Bobot 1000 biji	± 30 gram
Rata-rata hasil	± 2,96 t/ha (KA 10%)
Potensi hasil	± 4,0–5,0 t/ha (KA 10%)
Ketahanan	Agak tahan terhadap hama <i>Aphis</i> , tahan terhadap penyakit karat, dan bercak daun.
Daerah sebaran	Dapat ditanam di lahan sawah dan tegalan

Tabel Lampiran 3. Deskripsi sorgum kultivar Super-2

Variabel	Deskripsi
Tahun dilepas	18 Desember 2013
Asal	Perbaikan galur 15021, introduksi dari ICRISAT
Umur	Berbunga 50% : \pm 60 hst Panen : \pm 115–120 hst
Tinggi tanaman	\pm 229,7 cm
Kedudukan tangkai	Dipucuk
Sifat/bentuk malai	Agak terserat/Simetris
Panjang malai	\pm 26 cm
Warna biji	Krem kemerahan
Ukuran biji	Panjang 4,63 mm, lebar 3,6 mm, diameter 2,92 mm
Kadar protein	\pm 9,2%
Kadar lemak	\pm 3,1%
Kadar karbohidrat	\pm 75,6%
Kadar Gula (Brix)	\pm 12,7%
Kadar tanin	\pm 0,3%
Bobot 1000 biji	\pm 30,1 gram
Rata-rata hasil	\pm 3,0 t/ha (KA 10%)
Potensi hasil	\pm 6,3 t/ha (KA 10%)
Ketahanan	Tahan hama <i>Aphis</i> , agak tahan antraknosa, karat, dan hawar daun
Pemulia	Marcia B. P, Sigit B. S, Nuning A, Aviv A, Sumarni S, Fatmawati R, M. Azrai

Tabel Lampiran 4. Deskripsi sorgum kultivar Soper-6

Variabel	Deskripsi
Tahun dilepas	2019
Asal	Perbaikan galur introduksi KT247-1-1-1, introduksi dari ICRISAT, India tahun 2002
Umur	Berbunga 50% : \pm 64 hst Panen : \pm 111 hst
Sifat tanaman	Tidak membentuk anakan dan dapat diratun
Tinggi tanaman	\pm 181 cm
Kedudukan tangkai	Dipucuk
Sifat/bentuk malai	Kompak/Simetris
Warna/Ukuran biji	Krem/Kecil
Kadar protein	\pm 15,05%
Kadar lemak	\pm 2,82%
Kadar karbohidrat	\pm 66,88%
Kadar tanin	\pm 0,07%
Bobot 1000 biji	\pm 24,92 gram
Rata-rata hasil	\pm 4,5 t/ha (KA 10%)
Potensi hasil	\pm 6,0 t/ha (KA 10%)
Ketahanan	Tahan terhadap hama <i>Aphis</i> , sangat tahan terhadap penyakit karat dan tahan penyakit antraknosa
Pemulia	Fatmawati dan muhammad Azrai, Amin Nur, Karlina S, Aviv Andriani, dan Roy Efendi

Tabel Lampiran 5. Deskripsi sorgum kultivar Super 1

Variabel	Deskripsi
Tahun dilepas	18 Desember 2013
Asal	Perbaikan populasi Watar Hamu Putih hasil koleksi plasma nutfah Balitsereal dari Pulau Sumba, Nusa Tenggara Timur
Umur	Berbunga 50% : \pm 56 hst Panen : \pm 105–110 hst
Tinggi tanaman	\pm 204,8 cm
Kedudukan tangkai	Dipucuk
Sifat/Bentuk malai	Kompak/Lonjong
Panjang malai	\pm 26,7 cm
Warna biji	Putih
Kadar protein	\pm 12,9%
Kadar lemak	\pm 2,2%
Kadar karbohidrat	\pm 71,3%
Kadar Gula (Brix)	\pm 13,5%
Kadar tanin	\pm 0,11%
Bobot 1000 biji	\pm 28,0 gram
Rata-rata hasil	\pm 2,6 t/ha (KA 10%)
Potensi hasil	\pm 5,7 t/ha (KA 10%)
Ketahanan	Tahan hama <i>Aphis</i> , tahan antraknosa, karat, dan hawar daun
Pemulia	Marcia B. P, Sigit B. S, Fatmawati R, Amin Nur, Muzdalifah, Nuning A, Sumarni Singgih, M. Azrai

Tabel Lampiran 6. Deskripsi sorgum kultivar Numbu

Variabel	Deskripsi
Tahun dilepas	22 Oktober 2001
Asal	India
Umur	Berbunga 50% : ± 69 hst Panen : ± 100–105 hst
Tinggi tanaman	± 187 cm
Kedudukan tangkai	Dipucuk
Sifat/bentuk malai	Kompak/Elips
Panjang malai	± 22–23 cm
Bentuk biji	Bulat lonjong
Sifat Biji	Mudah Rontok
Warna biji	Krem
Ukuran biji	4,2; 4,8; 4,4 mm
Kadar protein	± 9,12%
Kadar lemak	± 3,94%
Kadar karbohidrat	± 84,58%
Bobot 1000 biji	± 36–37 gram
Rata-rata hasil	± 3,11 t/ha (KA 10%)
Potensi hasil	± 4,0–5,0 t/ha (KA 10%)
Ketahanan	Tahan terhadap hama <i>Aphis</i> , tahan terhadap penyakit karat, dan bercak daun.
Daerah sebaran	Dapat ditanam di lahan sawah dan tegalan

Tabel Lampiran 7. ANOVA jumlah imago yang hadir (ketertarikan) serangga
S. zeamais

ANOVA imago total (jantan + betina)

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	4.087	5	0.817	3.584	0.012
Within Groups	6.842	30	0.228		
Total	10.929	35			

ANOVA imago jantan

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	4.624	5	0.925	4.218	0.005
Within Groups	6.577	30	0.219		
Total	11.201	35			

ANOVA imago betina

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.910	5	0.182	1.485	0.224
Within Groups	3.677	30	0.123		
Total	4.587	35			

Tabel Lampiran 8. ANOVA jumlah telur yang diletakkan oleh serangga *S. zeamais*

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	359.917	5	71.983	0.279	0.921
Within Groups	7740.833	30	258.028		
Total	8100.750	35			

Tabel Lampiran 9. ANOVA mortalitas imago pada berbagai kultivar oleh serangga
S. zeamais

ANOVA imago total (jantan + betina)

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.374	5	0.075	1.441	0.238
Within Groups	1.558	30	0.052		
Total	1.932	35			

ANOVA imago jantan

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.060	5	0.012	0.800	0.558
Within Groups	0.447	30	0.015		
Total	0.506	35			

ANOVA imago betina

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.357	5	0.071	2.182	0.083
Within Groups	0.982	30	0.033		
Total	1.340	35			

Tabel Lampiran 10. ANOVA jumlah imago baru (F_1) serangga *S. zeamais*
ANOVA imago total (jantan + betina)

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	915.889	5	183.178	0.705	0.624
Within Groups	7797.000	30	259.900		
Total	8712.889	35			

ANOVA imago jantan

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	3.239	5	0.648	0.463	0.801
Within Groups	41.980	30	1.399		
Total	45.219	35			

ANOVA imago betina

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	5.796	5	1.159	0.997	0.436
Within Groups	34.883	30	1.163		
Total	40.679	35			

Tabel Lampiran 11. ANOVA kesintasan pradewasa serangga *S. zeamais*

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.023	5	0.005	2.090	0.094
Within Groups	0.065	30	0.002		
Total	0.087	35			

Tabel Lampiran 12. ANOVA berat debu gerekan serangga *S. zeamais*

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.003	5	0.001	1.393	0.255
Within Groups	0.013	30	0.000		
Total	0.016	35			

Tabel Lampiran 13. ANOVA persentase kehilangan bobot benih serangga *S. zeamais*

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	1.636	5	0.327	0.908	0.489
Within Groups	10.808	30	0.360		
Total	12.444	35			

Tabel Lampiran 14. ANOVA kerusakan benih serangga *S. zeamais*

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	20.254	5	4.051	1.109	0.376
Within Groups	109.530	30	3.651		
Total	129.784	35			

Tabel Lampiran 15. ANOVA berat imago serangga *S. zeamais*

ANOVA imago total (jantan + betina)

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.005	5	0.001	0.335	0.887
Within Groups	0.093	30	0.003		
Total	0.098	35			

ANOVA imago jantan

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.789	5	0.158	4.160	0.005
Within Groups	1.138	30	0.038		
Total	1.928	35			

ANOVA imago betina

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.015	5	0.003	0.849	0.526
Within Groups	0.107	30	0.004		
Total	0.122	35			

Tabel Lampiran 16. Uji T berat imago baru (F_1) Serangga *S. zeamais*
Kultivar Suri-4 (P1)

	Jantan	Betina
Mean	1.45	1.543182
Variance	0.075	0.002309
Observations	6	6
Pooled Variance	0.038654	
Hypothesized Mean Difference	0	
df	10	
t Stat	-0.8209	
P(T<=t) one-tail	0.215419	
t Critical one-tail	1.812461	
P(T<=t) two-tail	0.430837	
t Critical two-tail	2.228139	

Kultivar Kawali (P2)

	<i>Jantan</i>	<i>Betina</i>
Mean	1.48	1.514964
Variance	0.017	0.006103
Observations	5	5
Pooled Variance	0.011552	
Hypothesized Mean Difference	0	
df	8	
t Stat	-0.51437	
P(T<=t) one-tail	0.31045	
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.620899	
t Critical two-tail	2.306004	

Kultivar Super-2 (P3)

	<i>Jantan</i>	<i>Betina</i>
Mean	1.78	1.593545
Variance	0.037	0.00077
Observations	5	5
Pooled Variance	0.018885	
Hypothesized Mean Difference	0	
df	8	
t Stat	2.145306	
P(T<=t) one-tail	0.032122	*
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.064243	
t Critical two-tail	2.306004	

Kultivar Soper-6 (P4)

	<i>Jantan</i>	<i>Betina</i>
Mean	1.76	1.545714
Variance	0.063	0.013462
Observations	5	5
Pooled Variance	0.038231	
Hypothesized Mean Difference	0	
df	8	
t Stat	1.732832	
P(T<=t) one-tail	0.060679	
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.121359	
t Critical two-tail	2.306004	

Kultivar Super-1 (P5)		
	<i>Jantan</i>	<i>Betina</i>
Mean	1.5	1.561837
Variance	0.025	0.000832
Observations	5	5
Pooled Variance	0.012916	
Hypothesized Mean Difference	0	
df	8	
t Stat	-0.86032	
P(T<=t) one-tail	0.207326	
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.414652	
t Critical two-tail	2.306004	

Kultivar Numbu (P6)		
	<i>Jantan</i>	<i>Betina</i>
Mean	1.5	1.57475
Variance	0.025	0.000204
Observations	5	5
Pooled Variance	0.012602	
Hypothesized Mean Difference	0	
df	8	
t Stat	-1.05283	
P(T<=t) one-tail	0.161588	
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.323176	
t Critical two-tail	2.306004	

Tabel Lampiran 17. ANOVA jumlah imago yang hadir (ketertarikan) serangga
R. dominica

ANOVA imago total (jantan + betina)

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	125.333	5	25.067	0.697	0.630
Within Groups	1078.667	30	35.956		
Total	1204.000	35			

ANOVA imago jantan

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	36.667	5	7.333	0.730	0.606
Within Groups	301.333	30	10.044		
Total	338.000	35			

ANOVA imago betina

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	40.000	5	8.000	0.851	0.525
Within Groups	282.000	30	9.400		
Total	322.000	35			

Tabel Lampiran 18. ANOVA jumlah telur yang diletakkan oleh serangga *R. dominica*

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	156.300	5	31.260	5.090	0.002
Within Groups	184.234	30	6.141		
Total	340.534	35			

Tabel Lampiran 19. ANOVA mortalitas imago pada berbagai kultivar oleh serangga
R. dominica

ANOVA imago total (jantan + betina)

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.000	5	0.000	0.000	0.000
Within Groups	0.000	30	0.000		
Total	0.000	35			

ANOVA imago jantan

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.000	5	0.000	0.000	0.000
Within Groups	0.000	30	0.000		
Total	0.000	35			

ANOVA imago betina

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.000	5	0.000	0.000	0.000
Within Groups	0.000	30	0.000		
Total	0.000	35			

Tabel Lampiran 20. ANOVA jumlah imago baru (F_1) serangga *R. dominica*
ANOVA imago total (jantan + betina)

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	160.216	5	32.043	5.295	0.001
Within Groups	181.553	30	6.052		
Total	341.769	35			

ANOVA imago jantan

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	91.193	5	18.239	5.475	0.001
Within Groups	99.942	30	3.331		
Total	191.134	35			

ANOVA imago betina

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	65.629	5	13.126	4.731	0.003
Within Groups	83.235	30	2.774		
Total	148.863	35			

Tabel Lampiran 21. ANOVA kesintasan pradewasa serangga *R. dominica*

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.073	5	0.015	1.067	0.398
Within Groups	0.409	30	0.014		
Total	0.481	35			

Tabel Lampiran 22. ANOVA berat debu gerakan serangga *R. dominica*

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.932	5	0.186	1.925	0.120
Within Groups	2.905	30	0.097		
Total	3.837	35			

Tabel Lampiran 23. ANOVA persentase kehilangan bobot benih serangga
R. dominica

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	3.925	5	0.785	0.531	0.751
Within Groups	44.313	30	1.477		
Total	48.238	35			

Tabel Lampiran 24. ANOVA kerusakan benih serangga *R. dominica*

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	126.692	5	25.338	1.529	0.211
Within Groups	497.317	30	16.577		
Total	624.009	35			

Tabel Lampiran 25. ANOVA berat imago baru (F_1) serangga *R. dominica*

ANOVA berat imago total (jantan + betina)

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.286	5	0.057	10.247	0.000
Within Groups	0.167	30	0.006		
Total	0.453	35			

ANOVA berat imago jantan

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.200	5	0.040	6.956	0.000
Within Groups	0.173	30	0.006		
Total	0.373	35			

ANOVA berat imago betina

	Sum of Squares	df	Mean Squars	F	Sig.
Beetween Groups	0.122	5	0.024	2.487	0.053
Within Groups	0.293	30	0.010		
Total	0.415	35			

Tabel Lampiran 26. Uji T berat imago baru (F_1) serangga *R. dominica*

	<i>Jantan</i>	<i>Betina</i>
Mean	1.110038	1.168617
Variance	0.00138	0.001201
Observations	6	6
Pooled Variance	0.00129	
Hypothesized Mean Difference	0	
df	10	
t Stat	-2.82462	
P(T<=t) one-tail	0.009009	**
t Critical one-tail	1.812461	
P(T<=t) two-tail	0.018017	
t Critical two-tail	2.228139	

Kultivar Kawali (P2)

	<i>Jantan</i>	<i>Betina</i>
Mean	1.127695	1.231683
Variance	0.010381	0.003695
Observations	5	5
Pooled Variance	0.007038	
Hypothesized Mean Difference	0	
df	8	
t Stat	-1.95991	
P(T<=t) one-tail	0.042835	*
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.085671	
t Critical two-tail	2.306004	

Kultivar Super-2 (P3)

	<i>Jantan</i>	<i>Betina</i>
Mean	1.13051	1.182914
Variance	0.002433	0.000894
Observations	5	5
Pooled Variance	0.001664	
Hypothesized Mean Difference	0	
df	8	
t Stat	-2.03136	
P(T<=t) one-tail	0.038348	*
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.076695	
t Critical two-tail	2.306004	

Kultivar Soper-6 (P4)

	<i>Jantan</i>	<i>Betina</i>
Mean	1.10401	1.148784
Variance	0.001452	0.00037
Observations	5	5
Pooled Variance	0.000911	
Hypothesized Mean Difference	0	
df	8	
t Stat	-2.34488	
P(T<=t) one-tail	0.023528	*
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.047056	
t Critical two-tail	2.306004	

Kultivar Super-1 (P5)

	<i>Jantan</i>	<i>Betina</i>
Mean	1.182611	1.207558
Variance	0.001788	0.002253
Observations	5	5
Pooled Variance	0.002021	
Hypothesized Mean Difference	0	
df	8	
t Stat	-0.87749	
P(T<=t) one-tail	0.202901	
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.405802	
t Critical two-tail	2.306004	

Kultivar Numbu (P6)

	<i>Jantan</i>	<i>Betina</i>
Mean	0.894427	0.978972
Variance	1.54E-32	0.002018
Observations	5	5
Pooled Variance	0.001009	
Hypothesized Mean Difference	0	
df	8	
t Stat	-4.20844	
P(T<=t) one-tail	0.001481	**
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.002962	
t Critical two-tail	2.306004	