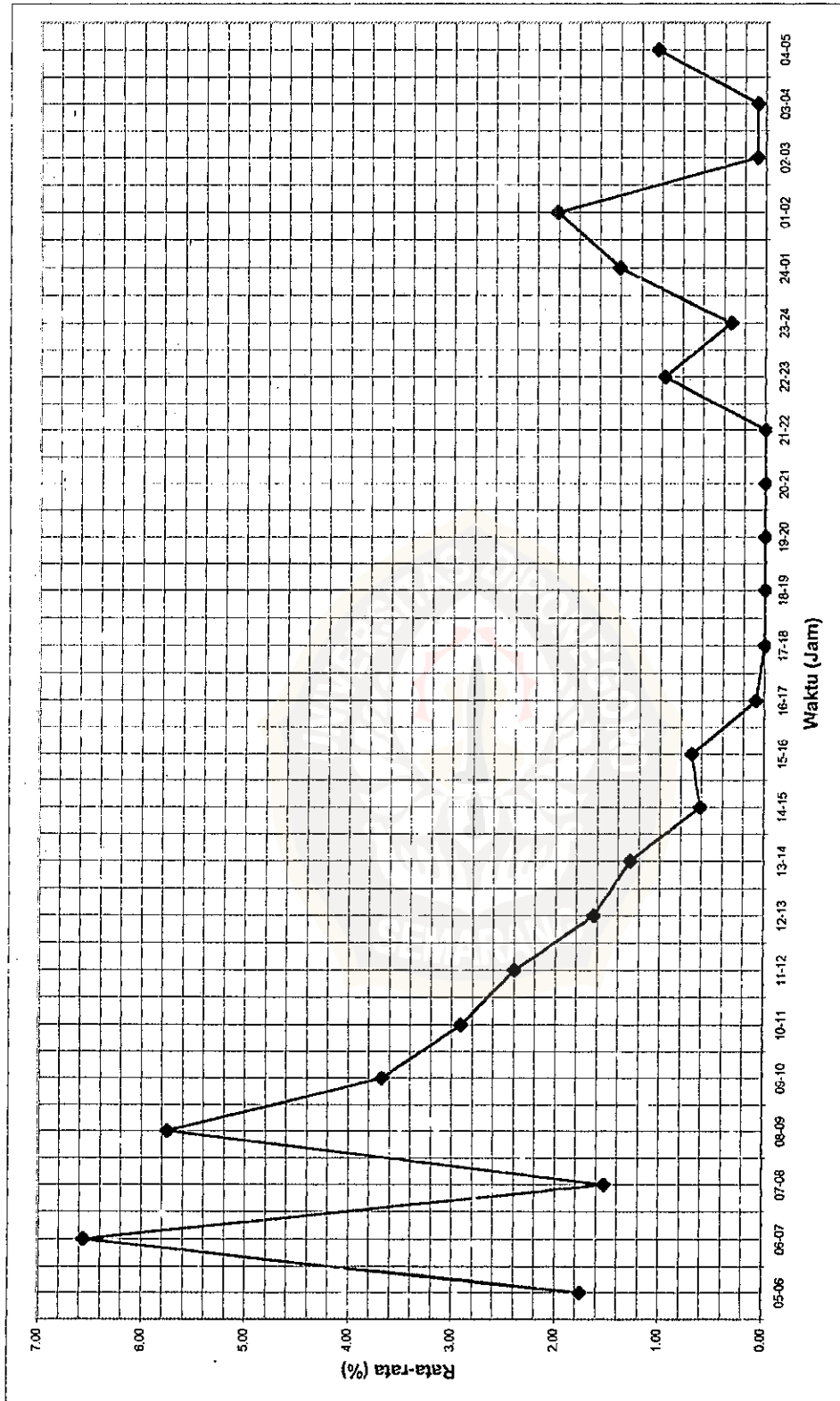
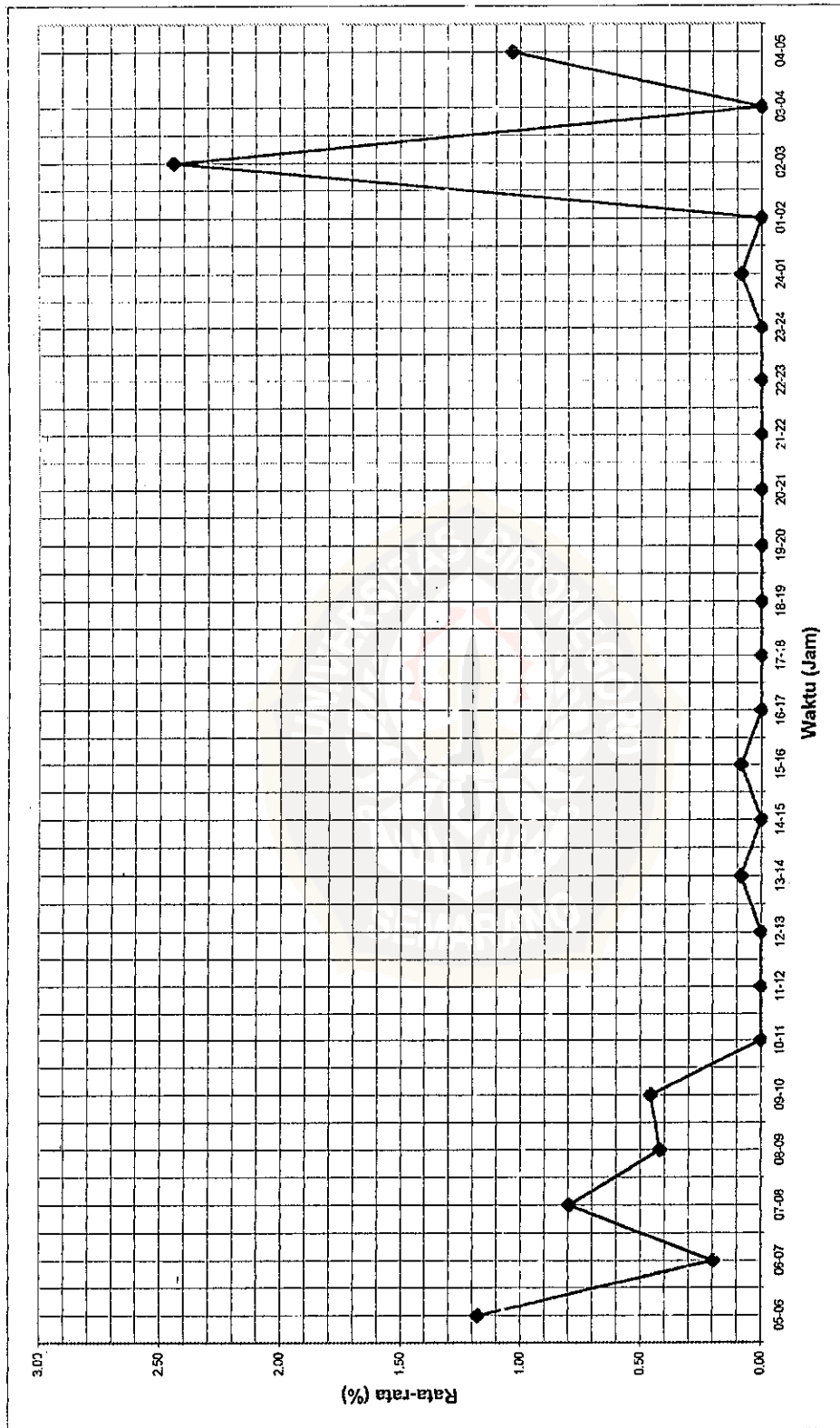


Gambar 06. Grafik persentase rata-rata pemunculan / penetasan parasitoid pada hari ke-1.



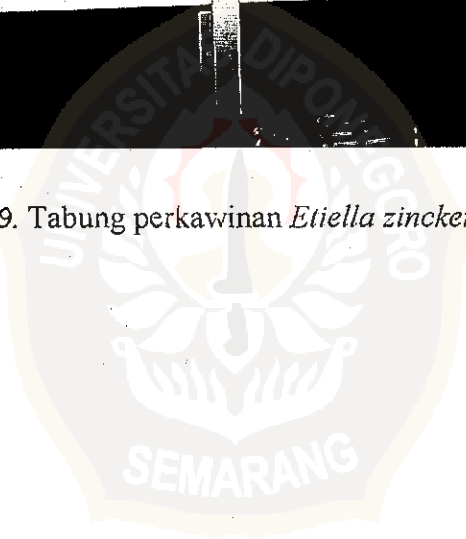
Gambar 07. Grafik persentase rata-rata pemunculan / penetasan parasitoid pada hari ke-2.



Gambar 08. Grafik persentase rata-rata pemunculan / penetasan parasitoid pada hari ke-3.

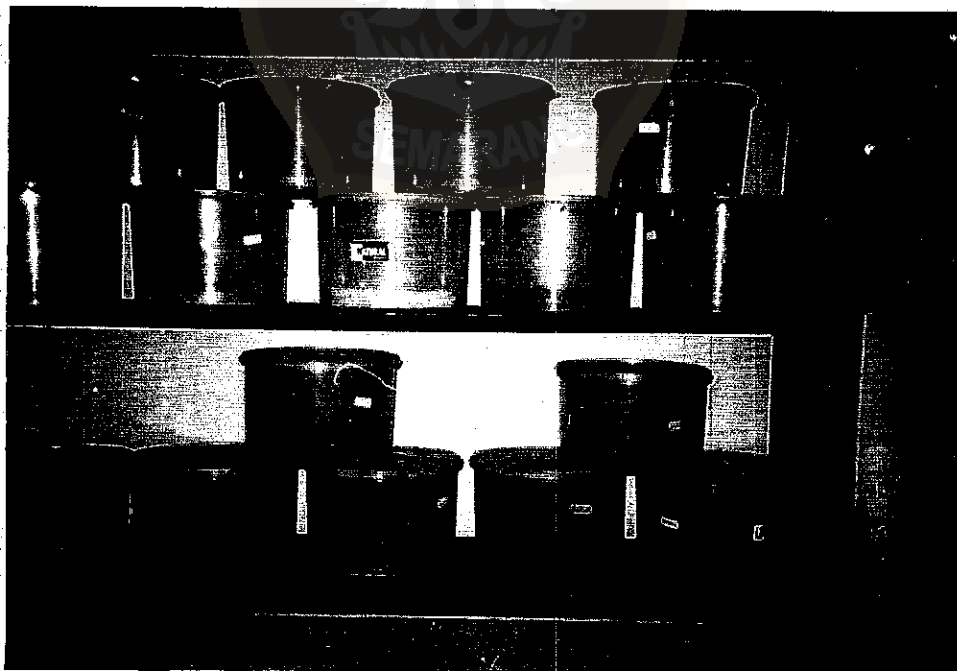


Gambar 09. Tabung perkawinan *Etiella zinckenella*





Gambar 10. Bentuk tempat pemeliharaan parasitoid *Trichogramma nana*



Gambar 11. Bentuk tempat pemeliharaan inang pengganti *Coreyra cephalonica*



Gambar 12. Bentuk tempat pemeliharaan inang *Etiella zinckenella*



Gambar 13. Tabung perkawinan *Corcyra cephalonica*

Lampiran 01

Daya Parasitasi *Trichogramma nana* pada berbagai jumlah *Etiella zinckenella*.

Ulangan	Parasitasi (%)				
	10 : 40	10 : 50	10 : 60	10 : 70	10 : 80
1.	40,00	30,00	15,00	4,30	26,30
2.	25,00	32,00	31,70	41,40	32,50
3.	15,00	20,00	11,70	22,90	16,30
4.	40,00	40,00	71,70	50,00	31,30
5.	45,00	62,00	28,30	55,70	28,80
Rata-rata	33,00	36,80	31,68	34,86	27,04

Data ditransformasikan ke arc sin \sqrt{X} . Data 0 diubah dulu menjadi $\frac{1}{4n}$. Data 100 diubah dulu menjadi $100 - \frac{1}{4n}$, disini n = jumlah telur terparasit.

Hasil transformasi:

Ulangan	Parasitasi (%)				
	10 : 40	10 : 50	10 : 60	10 : 70	10 : 80
1.	40,00	30,00	22,79	11,97	30,90
2.	30,00	32,00	31,70	41,40	32,50
3.	22,79	26,56	20,00	28,59	23,81
4.	40,00	40,00	57,86	50,00	31,30
5.	45,00	62,00	32,90	55,70	32,46
Jumlah	117,79	190,56	164,49	187,66	150,97
Rata-rata	35,56	38,11	32,90	37,53	30,19

$$\begin{aligned} \text{Jumlah total} &= 117,79 + 190,56 + 164,49 + 187,66 + 150,97 \\ &= 871,47 \end{aligned}$$

$$\begin{aligned} \text{db total} &= (p)(n) - 1 \\ &= (5)(5) - 1 = 24 \end{aligned}$$

$$\begin{aligned} \text{db perlakuan} &= n - 1 \\ &= 5 - 1 = 4 \end{aligned}$$

$$\begin{aligned} \text{db galat} &= n(p - 1) \\ &= 5(5 - 1) = 20 \end{aligned}$$

p = ulangan

n = perlakuan

$$\begin{aligned} \text{FK} &= \frac{(\sum_{i=1}^p \sum_{j=1}^n y_{ij})^2}{pn} \\ &= \frac{(871,47)^2}{5 \times 5} \\ &= \frac{759459,961}{25} \\ &= 30378,398 \end{aligned}$$

$$\begin{aligned} \text{JK total} &= \sum_{i=1}^n X_i^2 - \text{FK} \\ &= [(40,00)^2 + \dots + (31,30)^2 + (32,46)^2] - \text{FK} \\ &= 33711,28 - 30378,398 \\ &= 3332,882 \end{aligned}$$

$$\text{JK perlakuan} = \frac{\sum_{i=1}^p T_i^2}{p} - \text{FK}$$



$$= \frac{(177,79)^2 + (190,56)^2 + (164,49)^2 + (187,66)^2 + (150,97)^2}{5} - FK$$

$$= \frac{152986,828}{5} - 30378,398$$

$$= 30597,366 - 30378,398$$

$$= 218,968$$

$$JK \text{ Galat} = JK \text{ total} - JK \text{ perlakuan}$$

$$= 3332,882 - 218,968$$

$$= 3113,914$$

$$KT \text{ perlakuan} = \frac{JK_{\text{perlakuan}}}{n-1}$$

$$= \frac{218,968}{4}$$

$$= 54,742$$

$$KT \text{ Galat} = \frac{JK_{\text{Galat}}}{n(p-1)}$$

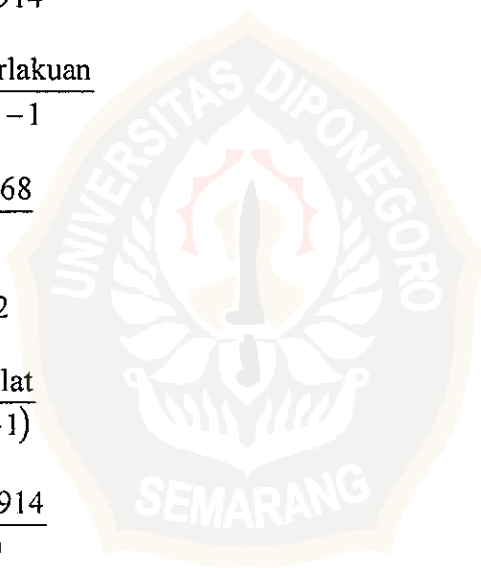
$$= \frac{3113,914}{20}$$

$$= 155,696$$

$$F \text{ hitung} = \frac{KT_{\text{perlakuan}}}{KT_{\text{galat}}}$$

$$= \frac{54,742}{155,696}$$

$$= 0,35$$



F tabel

$$f_1 = n - 1 = 4$$

$$f_2 = n(p - 1) = 20$$

untuk tingkat signifikansi 5 % = 2,87

ANOVA

SK	db	JK	KT	F hit	F tabel
Perlakuan	4	218,968	54,742	0,35 ^{tn}	2,87
Galat	20	3113,914	155,696		
Total	24	3332,882			

$$KK = 35,8 \%$$

Karena F hitung lebih kecil dari F tabel, maka berarti jumlah telur *Etiella zinckenella* tidak berpengaruh terhadap daya parasitasi parasitoid *Trichogramma nana*.

Keterangan:

SK = sumber keragaman

db = derajat bebas

JK = jumlah kuadrat

KT = kuadrat tengah

tn = tidak nyata

$$\begin{aligned} \text{Rataan umum} &= \frac{G}{pn} & G &= \left(\sum_{i=1}^p \sum_{j=1}^n y_{ij} \right) \\ &= \frac{871,47}{25} \end{aligned}$$

$$= 34,86$$

$$\begin{aligned}\text{Koefisien keragaman} &= \frac{\sqrt{KT_{\text{galat}}}}{\text{rataan umum}} \times 100 \\ &= \frac{\sqrt{155,696}}{34,86} \times 100 \\ &= \frac{12,48}{34,86} \times 100 \\ &= 35,8 \%\end{aligned}$$



Lampiran 02

Daye Tetas Parasitoid pada berbagai jumlah telur *Etiella zinckenella*.

Ulangan	Penetasan (%)				
	10 : 40	10 : 50	10 : 60	10 : 70	10 : 80
1.	31,30	53,30	33,30	33,30	57,10
2.	60,00	31,30	42,10	44,80	84,60
3.	83,30	40,00	85,70	75,00	61,50
4.	62,50	70,00	76,70	100	88,00
5.	88,90	48,40	88,20	69,20	87,00
Rata-rata	65,20	48,60	65,20	64,46	75,64

Data ditransformasikan ke arc sin \sqrt{x} . Data 0 diubah dulu menjadi $\frac{1}{4}n$. Data 100 diubah dulu menjadi $100 - \frac{1}{4}n$, disini n = jumlah telur yang menetas.

Hasil transformasi:

Ulangan	Parasitasi (%)				
	10 : 40	10 : 50	10 : 60	10 : 70	10 : 80
1.	31,30	53,30	33,30	33,30	57,10
2.	60,00	31,30	42,10	44,80	66,89
3.	65,88	40,00	67,78	60,00	61,50
4.	62,50	70,00	61,14	72,84	69,73
5.	70,54	48,40	69,91	69,20	68,87
Jumlah	290,22	243	274,23	280,14	324,09
Rata-rata	58,04	48,60	54,85	56,03	64,82

$$\begin{aligned} \text{Jumlah total} &= 290,22 + 243 + 274,23 + 280,14 + 324,09 \\ &= 1411,68 \end{aligned}$$

$$\begin{aligned}
 FK &= \frac{(1411,68)^2}{pn} \\
 &= \frac{1992840,42}{5 \times 5} \\
 &= 79713,617
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ total} &= [(31,3)^2 + (60,0)^2 + \dots + (69,73)^2 + (68,87)^2] - FK \\
 &= 84498,6 - 79713,617 \\
 &= 4784,983
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ perlakuan} &= \frac{(290,22)^2 + (243)^2 + (274,23)^2 + (280,14)^2 + (324,09)^2}{p} - FK \\
 &= \frac{401991,489}{5} - 79713,617 \\
 &= 80398,298 - 79713,617 \\
 &= 684,681
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ Galat} &= JK \text{ total} - JK \text{ perlakuan} \\
 &= 4784,983 - 684,681 \\
 &= 4100,302
 \end{aligned}$$

$$\begin{aligned}
 KT \text{ perlakuan} &= \frac{JK \text{ perlakuan}}{n - 1} \\
 &= \frac{684,681}{4} \\
 &= 171,17
 \end{aligned}$$

$$\begin{aligned}
 \text{KT Galat} &= \frac{\text{JKGalat}}{n(p-1)} \\
 &= \frac{4100,302}{5(5-1)} \\
 &= 203,02
 \end{aligned}$$

$$\begin{aligned}
 F \text{ hitung} &= \frac{\text{KTperlakuan}}{\text{KTgalat}} \\
 &= \frac{171,17}{205,02} \\
 &= 0,84
 \end{aligned}$$

ANOVA

SK	db	JK	KT	F hit	F tabel
Perlakuan	4	684,681	171,17	0,84 ⁱⁿ	2,87
Galat	20	4100,302	205,02		
Total	24	4784,983			

$$\text{KK} = 25,4 \%$$

Karena F hitung lebih kecil dari F tabel, maka berarti jumlah telur *Etiella zinckenella* tidak berpengaruh terhadap daya tetas parasitoid.

$$\begin{aligned}
 \text{Rataan umum} &= \frac{G}{pn} \\
 &= \frac{1411,68}{25} \\
 &= 56,47
 \end{aligned}$$

$$\begin{aligned} KK &= \frac{\sqrt{KT_{\text{galat}}}}{\text{Rata Umum}} \times 100 \\ &= \frac{\sqrt{205,02}}{56,47} \times 100 \\ &= \frac{14,32}{56,47} \times 100 \\ &= 25,4 \% \end{aligned}$$



Lampiran 03

Daya Parasitasi *Trichogramma nana* pada berbagai jumlah telur *Coreyra cephalonica*.

Ulangan	Parasitasi (%)				
	10 : 40	10 : 50	10 : 60	10 : 70	10 : 80
1.	95,00	86,00	5,00	82,90	86,30
2.	77,50	90,00	93,30	84,30	70,00
3.	25,00	44,00	61,70	78,60	87,50
4.	80,00	80,00	81,70	48,60	83,80
5.	25,00	62,00	8,30	6,70	82,50
Rata-rata	60,50	72,40	50,00	60,22	82,02

Data ditransformasikan ke arc sin \sqrt{X} . Data 0 diubah dulu menjadi $\frac{1}{4}n$. Data 100 diubah dulu menjadi $100 - \frac{1}{4}n$, disini n = jumlah telur terparasit.

Hasil transformasi:

Ulangan	Parasitasi				
	10 : 40	10 : 50	10 : 60	10 : 70	10 : 80
1.	77,08	68,03	12,92	65,57	68,28
2.	61,68	71,56	75,00	66,66	70,00
3.	30,00	44,00	61,70	62,44	69,30
4.	63,44	63,44	64,67	48,60	66,27
5.	30,00	51,94	16,74	15,00	65,27
Jumlah	262,20	298,97	231,03	258,27	339,12
Rata-rata	52,44	59,79	46,21	51,65	67,82

$$\begin{aligned} \text{Jumlah total} &= 262,20 + 298,97 + 231,03 + 258,27 + 339,12 \\ &= 1389,59 \end{aligned}$$

$$\begin{aligned}
 FK &= \frac{(1389,59)^2}{pn} \\
 &= \frac{1930960,368}{5 \times 5} \\
 &= 77238,415
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ total} &= [(77,08)^2 + (61,68)^2 + \dots + (66,27)^2 + (65,27)^2] - FK \\
 &= 86284,17 - 77238,415 \\
 &= 9045,775
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ perlakuan} &= \frac{(262,20)^2 + (298,97)^2 + (231,03)^2 + (258,27)^2 + (339,12)^2}{p} - FK \\
 &= \frac{393212,77}{5} - 77238,415 \\
 &= 78642,554 - 77238,415 \\
 &= 1404,139
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ Galat} &= JK \text{ total} - JK \text{ perlakuan} \\
 &= 9045,755 - 1404,139 \\
 &= 7641,616
 \end{aligned}$$

$$\begin{aligned}
 KT \text{ perlakuan} &= \frac{JK \text{ perlakuan}}{n-1} \\
 &= \frac{1404,139}{5-1} \\
 &= 351,035
 \end{aligned}$$

$$\begin{aligned}
 \text{KT Galat} &= \frac{\text{JKGalat}}{n(p-1)} \\
 &= \frac{7641,616}{5(5-1)} \\
 &= 382,081
 \end{aligned}$$

$$\begin{aligned}
 \text{F hit} &= \frac{\text{KTperlakuan}}{\text{KTgalat}} \\
 &= \frac{351,035}{382,081} \\
 &= 0,92
 \end{aligned}$$

ANOVA

SK	db	JK	KT	F hit	F tabel
Perlakuan	4	1404,139	351,035	0,92 ^{ln}	2,87
Galat	20	7641,616	382,081		
Total	24	9045,755			

$$\text{KK} = 35,2\%$$

Karena F hitung lebih kecil dari F tabel, maka berarti jumlah telur *Corcyra cephalonica* tidak berpengaruh terhadap daya parasitasi parasitoid.

$$\begin{aligned}
 \text{Rataan umum} &= \frac{G}{pn} \\
 &= \frac{1389,59}{25} \\
 &= 55,58
 \end{aligned}$$

$$\begin{aligned} KK &= \frac{\sqrt{KT_{\text{galat}}}}{\text{rataan umum}} \times 100 \\ &= \frac{382,081}{55,58} \times 100 \\ &= \frac{19,55}{55,58} \times 100 \\ &= 35,2 \% \end{aligned}$$



Lampiran 04

Daya Tetes Parasitoid pada berbagai jumlah telur *Corcyra cephalonica*.

Ulangan	Parasitasi (%)				
	10 : 40	10 : 50	10 : 60	10 : 70	10 : 80
1.	37,50	70,00	5,00	71,40	66,30
2.	75,00	54,00	83,30	75,70	56,30
3.	12,50	6,00	23,30	40,00	43,80
4.	35,00	44,00	58,30	15,70	40,00
5.	10,00	20,00	6,70	31,40	57,50
Rata-rata	34,00	38,80	35,32	46,84	52,78

Data ditransformasikan ke arc sin \sqrt{x} . Data 0 diubah dulu menjadi $\frac{1}{4}n$. Data 100 diubah dulu menjadi $100 - \frac{1}{4}n$, disini n = jumlah telur yang menetas.

Hasil transformasi:

Ulangan	Parasitasi (%)				
	10 : 40	10 : 50	10 : 60	10 : 70	10 : 80
1.	37,50	70,00	12,92	57,67	66,30
2.	60,00	54,00	65,88	60,47	56,30
3.	20,70	14,18	28,86	40,00	43,80
4.	35,00	44,00	58,30	23,34	40,00
5.	18,44	26,56	15,00	31,40	57,50
Jumlah	171,64	208,74	108,96	212,88	263,90
Rata-rata	34,33	41,75	36,19	42,58	52,78

$$\begin{aligned} \text{Jumlah total} &= 171,64 + 208,74 + 108,96 + 212,88 + 263,90 \\ &= 966,12 \end{aligned}$$

$$\begin{aligned}
 FK &= \frac{(966,12)^2}{5 \times 5} \\
 &= \frac{933387,854}{25} \\
 &= 37335,541
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ total} &= [(37,50)^2 + (60,00)^2 + \dots + (40,00)^2 + (57,50)^2] - FK \\
 &= 51125,4 - 37335,514 \\
 &= 13789,886
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ perlakuan} &= \frac{(171,64)^2 + (208,74)^2 + (108,96)^2 + (212,88)^2 + (263,90)^2}{5} - FK \\
 &= \frac{200904,9}{5} - 37335,514 \\
 &= 40180,98 - 37335,514 \\
 &= 2845,466
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ Galat} &= JK \text{ total} - JK \text{ perlakuan} \\
 &= 13789,886 - 2845,466 \\
 &= 10944,42
 \end{aligned}$$

$$\begin{aligned}
 KT \text{ perlakuan} &= \frac{JK \text{ perlakuan}}{n - 1} \\
 &= \frac{2845,466}{4} \\
 &= 711,367
 \end{aligned}$$

$$\begin{aligned}
 \text{KT Galat} &= \frac{\text{JKGalat}}{n(p-1)} \\
 &= \frac{10944,42}{20} \\
 &= 547,22 \\
 \text{F hit} &= \frac{\text{KTperlakuan}}{\text{KTgalat}} \\
 &= \frac{711,367}{547,22} \\
 &= 1,30
 \end{aligned}$$

ANOVA

SK	db	JK	KT	F hit	F tabel
Perlakuan	4	2845,466	711,367	1,30 ^m	2,87
Galat	20	10944,42	547,22		
Total	24	13789,886			

$$\text{KK} = 60,5 \%$$

Karena F hitung lebih kecil dari F tabel, maka berarti jumlah telur *Corcyra cephalonica* tidak berpengaruh terhadap daya tetas parasitoid.

$$\begin{aligned}
 \text{Rataan umum} &= \frac{G}{pn} \\
 &= \frac{966,12}{25} \\
 &= 38,64
 \end{aligned}$$