

## DAFTAR PUSTAKA

- Apriliyanto, E. (2020). PENGARUH PEMBERIAN SILIKA TERHADAP HASIL TANAMAN OKRA. *Jurnal Agrosains Dan Teknologi*, 4(2), 56–63.
- Darwati, I., Rosita, S. M. D., & Bernani. (2002). Respon daun ungu (*Graptophyllum pictum* L.) terhadap cekaman air. In *J Littri* (Vol. 8, Issue 3, pp. 73–76).
- Diedrich, T., Dybowska, A., Schott, J., Valsami-Jones, E., & Oelkers, E. H. (2012). The dissolution rates of SiO<sub>2</sub> nanoparticles as a function of particle size. *Environmental Science & Technology*, 46(9), 4909–4915.
- Effendy, I., Gribaldi, G., & Jalal, B. A. (2019). Aplikasi Sabut Kelapa Dan Pupuk Bokasi Kotoran Ayam Terhadap Pertumbuhan Bibit Sawit Di Pre Nurseri. *Jurnal Agrotek Tropika*, 7(2), 405. <https://doi.org/10.23960/jat.v7i2.3367>
- Fauzi, W. R., & Susila Putra, E. T. (2019). DAMPAK PEMBERIAN KALIUM DAN CEKAMAN KEKERINGAN TERHADAP SERAPAN HARA DAN PRODUKSI BIOMASSA BIBIT KELAPA SAWIT (*Elaeis guineensis* Jacq.). *Jurnal Penelitian Kelapa Sawit*, 27(1), 41–56. <https://doi.org/10.22302/iopri.jur.jpks.v27i1.74>
- Febrianto, E. B., Tarigan, M., Azri, I., Studi, P., Perkebunan, B., Tinggi, S., Pertanian, I., & Perkebunan, A. (n.d.). EVALUASI KARAKTER AGRONOMI KELAPA SAWIT (*Elaeis guineensis* Jacq.) VARIETAS DXP AVROS PADA KONDISI CEKAMAN KEKERINGAN DI MAIN NURSERY Evaluation Of Palm Oil Agronomic Characters (*Elaeis guineensis* Jacq.) Variety Of DxP Avros On The Drought Stress Condition. 2019, 202–211.
- Fitriani, H. P., & Haryanti, S. (2016). Pengaruh penggunaan pupuk nanosilika terhadap pertumbuhan tanaman tomat (*Solanum lycopersicum*) var. Bulat. *Buletin Anatomi Dan Fisiologi Dh Sellula*, 24(1), 34–41.
- Harahap, F. (2012). Fisiologi Tumbuhan: Hormon. *Hormone*, 1(1), 353–372.

<http://digilib.unimed.ac.id/1641/6/Bab VII.pdf>

- Hudori, M. (2015). Analisis Akar Penyebab Masalah Variabilitas Free Fatty Acid (FFA) pada Crude Palm Oil (CPO) di Pabrik Kelapa Sawit. *Proceding of Operational Excellence Conference-2nd*, 2(1998), 185–192.
- Isa, M., Bai, S., Yokoyama, T., Ma, J. F., Ishibashi, Y., Yuasa, T., & Iwaya-Inoue, M. (2010). Silicon enhances growth independent of silica deposition in a low-silica rice mutant, Lsi1. *Plant and Soil*, 331, 361–375. <https://doi.org/10.1007/s11104-009-0258-9>
- Jumin, H. B. (1992). *Ekologi Tanaman Suatu Pendekatan Fisiologis*. Jakarta. Rajawali Press.
- Mangoensoekarjo, S., & Semangun, H. (2008). *Manajemen agrobisnis kelapa sawit*. Gadjah Mada University Press.
- Pahan, I. (2012). Panduan Lengkap Kelapa Sawit Manajemen Agribisnis dari Hulu Hingga Hilir. *Penerbit Swadaya*, 411.
- Pandutama, M. H., Mudjiharjati, A., Suyono, & Wustadimin. (2016). ILMU TANAH: Dasar-dasar Ilmu Tanah. *Rajawali Pers, Pnu 1109*, 236.
- Purba, J. H. V., & Sipayung, T. (2018). Perkebunan kelapa sawit indonesia dalam perspektif pembangunan berkelanjutan. *Masyarakat Indonesia*, 43(1).
- Putri, F. M., Suedy, S. W. A., & Darmanti, S. (2017). Pengaruh Pupuk Nanosilika Terhadap Jumlah Stomata, Kandungan Klorofil dan Pertumbuhan Padi Hitam (*Oryza sativa L. cv. japonica*). *Buletin Anatomi Dan Fisiologi*, 2(1). <https://doi.org/10.14710/baf.2.1.2017.72-79>
- Rilandani, R., Prima, W., & Efendi, R. (2020). Rancang Bangun Alat Penyiraman Bibit Kelapa Sawit Berbasis NodeMCU. *Journal of Vocational Education and Information Technology*, 1(1), 1–6.

- Rustam, E. L., & Agus, W. (2011). Buku Pintar Kelapa Sawit. *Pt. Agromedia Pustaka. Jakarta Selatan.*
- Santi, L. P., Goenadi, D. H., Barus, J., & Dariah, A. (2020). Pengaruh Bio-Nano Silika Terhadap Hasil dan Efisiensi Penggunaan Air Kedelai Hitam di Lahan Kering Masam. *Jurnal Tanah Dan Iklim*, 42(1), 43. <https://doi.org/10.21082/jti.v42n1.2018.43-52>
- Setyorini, T., Hartati, R. M., & Damanik, A. L. (2020). Pertumbuhan Bibit Kelapa Sawit Di Pre Nursery Dengan Pemberian Pupuk Organik Cair (Kulit Pisang) Dan Pupuk Npk. *Agritrop : Jurnal Ilmu-Ilmu Pertanian (Journal of Agricultural Science)*, 18(1), 98–106. <https://doi.org/10.32528/agritrop.v18i1.3284>
- Sugito, Y. (1999). *Ekologi Tanaman. Fakultas Pertanian Universitas Brawijaya. Malang*, 121.Taiz, L & Zeiger E. 2002. Plant Physiology. U.S.:Sinauer Associates. 33-67
- Taiz, L., & Zeiger, E. (2002). *Plant physiology*. Sinauer associates.
- Triyadi, S. (2018). *Skripsi Pertumbuhan Bibit Kelapa Sawit ( Main Nursery ) Dengan Interval Penyiraman Air Dan Dosis Abu Boiler Berbeda Growth of Oil Palm Seedling ( Main Nursery ) With Watering Interval Time and Dosage Ash of Palm Oil Mill.*
- Wahyu Firmansyah, Titin Setyorini, S. S. (2022). ISSN 1410-3796 (Print) ISSN 2722-6018 (Online). 28.
- Wahyu Trisnawati, D., Susetya Putra, N., & Heru Purwanto, B. (2017). Pengaruh Nitrogen dan Silika terhadap Pertumbuhan dan Perkembangan Spodoptera litura (Lepidoptera: Noctuidae) pada Kedelai. *Planta Tropika: Journal of Agro Science*, 5(1), 52–61. <https://doi.org/10.18196/pt.2017.071.52-61>

Zargar, S. M., Mahajan, R., Bhat, J. A., Nazir, M., & Deshmukh, R. (2019). Role of silicon in plant stress tolerance: opportunities to achieve a sustainable cropping system. *3 Biotech*, 9(3), 73.

## LAMPIRAN

*Lampiran 1.* Hasil sidik ragam parameter tinggi tanaman.

<b>Descriptive Statistics</b>					
Dependent Variable:			Mean	Std. Deviation	N
PUPUK_SILIKA					
D1	F1	48.6333	7.95760	3	
	F2	54.0667	4.13078	3	
	F3	50.4333	4.67582	3	
	Total	51.0444	5.59534	9	
D2	F1	43.6333	4.75430	3	
	F2	49.3667	4.16693	3	
	F3	41.5000	12.27803	3	
	Total	44.8333	7.75194	9	
D3	F1	47.4333	7.00095	3	
	F2	49.6333	5.92818	3	
	F3	52.0667	4.48813	3	
	Total	49.7111	5.48668	9	
Total	F1	46.5667	6.23258	9	
	F2	51.0222	4.75599	9	
	F3	48.0000	8.51205	9	
	Total	48.5296	6.69235	27	
<b>Tests of Between-Subjects Effects</b>					
Dependent Variable:					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	63958.317 <sup>a</sup>	9	7106.480	160.996	0.000
PUPUK_SILIKA	192.445	2	96.223	2.180	0.142
FREKUENSI_P	93.121	2	46.560	1.055	0.369
PUPUK_SILIKA *	84.377	4	21.094	0.478	0.752
Error	794.533	18	44.141		
Total	64752.850	27			

a. R Squared = .988 (Adjusted R Squared = .982)

## Post Hoc Tests

### **PUPUK\_SILIKA**

#### **Homogeneous Subsets**

##### **TINGGI\_TANAMAN**

Duncan<sup>a,b</sup>

PUPUK_SILIKA	N	Subset	1
D2	9	44.8333	a
D3	9	49.7111	a
D1	9	51.0444	a
Sig.		0.075	

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 44.141.

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

### **FREKUENSI\_PENYIRAMAN**

#### **Homogeneous Subsets**

##### **TINGGI\_TANAMAN**

Duncan<sup>a,b</sup>

FREKUENSI_PENYIRAMAN	N	Subset	1
F1	9	46.5667	p
F3	9	48.0000	p
F2	9	51.0222	p
Sig.		0.194	

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 44.141.

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

Lampiran 2. Hasil sidik ragam parameter parameter jumlah daun.

Descriptive Statistics					
Dependent Variable:		Mean	Std. Deviation	n	N
PUPUK_SILIKA					
D1	1	8.0000	0.00000	3	
	2	7.6667	0.57735	3	
	3	9.0000	1.00000	3	
	Total	8.2222	0.83333	9	
D2	1	8.6667	0.57735	3	
	2	8.6667	0.57735	3	
	3	8.6667	1.15470	3	
	Total	8.6667	0.70711	9	
D3	1	9.0000	1.00000	3	
	2	8.6667	2.30940	3	
	3	8.6667	1.52753	3	
	Total	8.7778	1.48137	9	
Total	1	8.5556	0.72648	9	
	2	8.3333	1.32288	9	
	3	8.7778	1.09291	9	
	Total	8.5556	1.05003	27	
Tests of Between-Subjects Effects					
Dependent Variable:		Type III Sum of Squares	df	Mean Square	F
Source					Sig.
Model	1981.000 <sup>a</sup>		9	220.111	165.083
PUPUK_SILIKA	1.556		2	0.778	0.583
FREKUENSI_PENYIRAMA N	0.889		2	0.444	0.333
PUPUK_SILIKA * FREKUENSI_PENYIRAMA N	2.222		4	0.556	0.417
Error	24.000		18	1.333	
Total	2005.000		27		

a. R Squared = .988 (Adjusted R Squared = .982)

## Post Hoc Tests

### PUPUK\_SILIKA

#### Homogeneous Subsets

##### JUMLAH\_DAUN

Duncan<sup>a,b</sup>

PUPUK_SILIKA	N	Subset	
		1	
D1	9	8	a
D2	9	9	a
D3	9	9	a
Sig.		0.347	

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 1.333.

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

### FREKUENSI\_PENYIRAMAN

#### Homogeneous Subsets

##### JUMLAH\_DAUN

Duncan<sup>a,b</sup>

FREKUENSI_PENYIRAMAN	N	Subset	
		1	
2	9	8	p
1	9	9	p
3	9	9	p
Sig.		0.450	

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 1.333.

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

*Lampiran 3.* Hasil sidik ragam parameter berat segar tajuk.

### **Descriptive Statistics**

Dependent Variable:

PUPUK_SILIKA		Mean	Std. Deviation	N
D1	F1	44.7333	10.26823	3
	F2	40.9267	3.02573	3
	F3	49.9167	3.16579	3
	Total	45.1922	6.81364	9
D2	F1	70.5200	9.17460	3
	F2	64.6567	26.17768	3
	F3	51.7467	6.11635	3
	Total	62.3078	16.45901	9
D3	F1	56.2133	5.09610	3
	F2	50.1467	38.04480	3
	F3	59.7600	3.76347	3
	Total	55.3733	19.73854	9
Total	F1	57.1556	13.38181	9
	F2	51.9100	25.35332	9
	F3	53.8078	5.99630	9
	Total	54.2911	16.39598	27

### **Tests of Between-Subjects Effects**

Dependent Variable:

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	81734.682 <sup>a</sup>	9	9081.631	33.789	0.000
PUPUK_SILIKA	1334.051	2	667.026	2.482	0.112
FREKUENSI_PE	126.975	2	63.488	0.236	0.792
NYIRAMAN					
PUPUK_SILIKA *	690.487	4	172.622	0.642	0.639
FREKUENSI_PE					
NYIRAMAN					
Error	4838.016	18	268.779		
Total	86572.698	27			

a. R Squared = .944 (Adjusted R Squared = .916)

### **Post Hoc Tests**

## **PUPUK\_SILIKA**

### **Homogeneous Subsets**

#### **BERAT SEGAR TAJUK**

Duncan<sup>a,b</sup>

PUPUK_SILIKA	N	Subset		
		1	2	
D1	9	45.1922		b
D3	9	55.3733	55.3733	ab
D2	9		62.3078	a
Sig.		0.204	0.381	

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 268.779.

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

## **FREKUENSI PENYIRAMAN**

### **Homogeneous Subsets**

#### **BERAT SEGAR TAJUK**

Duncan<sup>a,b</sup>

FREKUENSI PENYIRAMAN	N	Subset		
		1		
F2	9	51.9100		p
F3	9	53.8078		p
F1	9	57.1556		p
Sig.		0.530		

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 268.779.

a. Uses Harmonic Mean Sample Size = 9.000.

Lampiran 4. Hasil sidik ragam berat kering tajuk.

<b>Descriptive Statistics</b>					
Dependent Variable:					
PUPUK_SILIKA		Mean	Std. Deviation	N	
D1	F1	10.2767	1.81949	3	
	F2	9.2767	1.06707	3	
	F3	10.9767	0.43776	3	
	Total	10.1767	1.30679	9	
D2	F1	15.9733	2.43716	3	
	F2	16.3767	7.48877	3	
	F3	12.2500	1.71875	3	
	Total	14.8667	4.48618	9	
D3	F1	12.7433	2.71563	3	
	F2	12.5767	10.21550	3	
	F3	13.9667	1.10961	3	
	Total	13.0956	5.35468	9	
Total	F1	12.9978	3.20584	9	
	F2	12.7433	7.06128	9	
	F3	12.3978	1.66817	9	
	Total	12.7130	4.40719	27	
<b>Tests of Between-Subjects Effects</b>					
Dependent Variable:					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	4503.575 <sup>a</sup>	9	500.397	24.667	0.000
PUPUK_SILIKA	100.959	2	50.479	2.488	0.111
FREKUENSI PENYIRAMAN	1.632	2	0.816	0.040	0.961
PUPUK_SILIKA * FREKUENSI PENYIRAMAN	37.259	4	9.315	0.459	0.765
Error	365.157	18	20.287		
Total	4868.732	27			

a. R Squared = .925 (Adjusted R Squared = .887)

## Post Hoc Tests

### PUPUK\_SILIKA

#### Homogeneous Subsets

##### BERAT\_KERING\_TAJUK

Duncan<sup>a,b</sup>

PUPUK_SILIKA	N	Subset	
		1	2
D1	9	10.1767	b
D3	9	13.0956	13.0956 ab
D2	9	14.8667	a
Sig.		0.186	0.415

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

#### Homogeneous Subsets

##### BERAT\_KERING\_TAJUK

Duncan<sup>a,b</sup>

FREKUENSI_PENYI RAMAN	N	Subset	
		1	
F3	9	12.3978	p
F2	9	12.7433	p
F1	9	12.9978	p
Sig.		0.793	

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 20.287.

a. Uses Harmonic Mean Sample  
Size = 9.000.

b. Alpha = .05.

Lampiran 5. Hasil sidik ragam berat segar akar.

Descriptive Statistics					
Dependent Variable:					
PUPUK_SILIKA		Mean	Std. Deviation	N	
D1	F1	13.5067	0.83128	3	
	F2	12.6300	1.60894	3	
	F3	20.0500	2.25209	3	
	Total	15.3956	3.79709	9	
D2	F1	21.5100	0.45574	3	
	F2	20.4333	9.34204	3	
	F3	16.1867	4.13894	3	
	Total	19.3767	5.66520	9	
D3	F1	21.4800	3.45740	3	
	F2	18.3033	17.47959	3	
	F3	19.7533	5.00358	3	
	Total	19.8456	9.35566	9	
Total	F1	18.8322	4.37797	9	
	F2	17.1222	10.53810	9	
	F3	18.6633	3.90851	9	
	Total	18.2059	6.73664	27	

Tests of Between-Subjects Effects					
Dependent Variable:					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	9218.266 <sup>a</sup>	9	1024.252	20.238	0.000
PUPUK_SILIKA	107.615	2	53.807	1.063	0.366
FREKUENSI_PENYI RAMAN	15.983	2	7.991	0.158	0.855
PUPUK_SILIKA * FREKUENSI_PENYI RAMAN	145.364	4	36.341	0.718	0.591
Error	910.979	18	50.610		
Total	10129.245	27			

a. R Squared = .910 (Adjusted R Squared = .865)

## Post Hoc Tests

### PUPUK\_SILIKA

#### Homogeneous Subsets

##### BERAT SEGAR AKAR

Duncan<sup>a,b</sup>

PUPUK_SILIKA	N	Subset
D1	9	15.3956 a
D2	9	19.3767 a
D3	9	19.8456 a
Sig.		0.225

Means for groups in homogeneous subsets are

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

### FREKUENSI PENYIRAMAN

#### Homogeneous Subsets

##### BERAT SEGAR AKAR

Duncan<sup>a,b</sup>

FREKUENSI_PENYI RAMAN	N	Subset
F2	9	17.1222 p
F3	9	18.6633 p
F1	9	18.8322 p
Sig.		0.636

Means for groups in homogeneous subsets are

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

Lampiran 6. Hasil sidik ragam berat kering akar.

### Descriptive Statistics

Dependent Variable:

PUPUK_SILIKA		Mean	Std. Deviation	N
D1	F1	2.9367	0.19858	3
	F2	2.6300	0.38974	3
	F3	3.9133	0.46608	3
	Total	3.1600	0.66257	9
D2	F1	4.8100	0.19672	3
	F2	4.5700	2.25076	3
	F3	3.7500	1.19465	3
	Total	4.3767	1.36552	9
D3	F1	4.5933	0.75791	3
	F2	3.9667	3.76342	3
	F3	4.3867	1.13015	3
	Total	4.3156	2.01996	9
Total	F1	4.1133	0.97506	9
	F2	3.7222	2.36317	9
	F3	4.0167	0.90135	9
	Total	3.9507	1.51313	27

### Tests of Between-Subjects Effects

Dependent Variable:

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	435.044 <sup>a</sup>	9	48.338	18.952	0.000
PUPUK_SILIKA	8.458	2	4.229	1.658	0.218
FREKUENSI_PE	0.747	2	0.374	0.146	0.865
NYIRAMAN					
PUPUK_SILIKA * FREKUENSI_PE NYIRAMAN	4.413	4	1.103	0.433	0.783
Error	45.911	18	2.551		
Total	480.955	27			

a. R Squared = .905 (Adjusted R Squared = .857)

## Post Hoc Tests

### PUPUK\_SILIKA

#### Homogeneous Subsets

##### BERAT\_KERING\_AKAR

Duncan<sup>a,b</sup>

PUPUK_SILIKA	N	Subset	
		1	
D1	9	3.1600 a	
D3	9	4.3156 a	
D2	9	4.3767 a	
Sig.		0.142	

Means for groups in homogeneous subsets are

- a. Uses Harmonic Mean Sample Size = 9.000.
- b. Alpha = .05.

### FREKUENSI\_PENYIRAMAN

#### Homogeneous Subsets

##### BERAT\_KERING\_AKAR

Duncan<sup>a,b</sup>

FREKUENSI_PE NYIRAMAN	N	Subset	
		1	
F2	9	3.7222 p	
F3	9	4.0167 p	
F1	9	4.1133 p	
Sig.		0.630	

Means for groups in homogeneous subsets are

- a. Uses Harmonic Mean Sample Size = 9.000.
- b. Alpha = .05.

Lampiran 7. Hasil sidik ragam parameter panjang akar.

<b>Descriptive Statistics</b>					
Dependent Variable:					
PUPUK_SILIKA		Mean	Std. Deviation	N	
D1	F1	65.2667	3.70720	3	
	F2	50.1000	16.38994	3	
	F3	68.5333	7.89958	3	
	Total	61.3000	12.59980	9	
D2	F1	70.3333	7.85005	3	
	F2	54.5667	15.32851	3	
	F3	54.1333	5.76223	3	
	Total	59.6778	12.09750	9	
D3	F1	56.8000	7.53459	3	
	F2	52.0000	27.30842	3	
	F3	58.6667	6.39557	3	
	Total	55.8222	14.82319	9	
Total	F1	64.1333	8.25212	9	
	F2	52.2222	17.77933	9	
	F3	60.4444	8.64785	9	
	Total	58.9333	12.92160	27	

<b>Tests of Between-Subjects Effects</b>					
Dependent Variable:					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	95079.900 <sup>a</sup>	9	10564.433	62.635	0.000
PUPUK_SILIKA	142.509	2	71.254	0.422	0.662
FREKUENSI_PEN_YIRAMAN	669.262	2	334.631	1.984	0.166
PUPUK_SILIKA * FREKUENSI_PEN_YIRAMAN	493.409	4	123.352	0.731	0.582
Error	3035.980	18	168.666		
Total	98115.880	27			

a. R Squared = .969 (Adjusted R Squared = .954)

## Post Hoc Tests

### PUPUK\_SILIKA

#### Homogeneous Subsets

##### PANJANG\_AKAR

Duncan<sup>a,b</sup>

	N	Subset	
PUPUK_SILIKA	9	1	
D3	9	55.8222	a
D2	9	59.6778	a
D1	9	61.3000	a
Sig.		0.409	

Means for groups in homogeneous subsets are

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

### FREKUENSI\_PENYIRAMAN

#### Homogeneous Subsets

##### PANJANG\_AKAR

Duncan<sup>a,b</sup>

	N	Subset	
FREKUENSI_PEN	9	1	
YIRAMAN	9	52.2222	p
F3	9	60.4444	p
F1	9	64.1333	p
Sig.		0.081	

Means for groups in homogeneous subsets are

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

Lampiran 8. Hasil sidik ragam diameter batang.

<b>Descriptive Statistics</b>					
Dependent Variable:		Mean	Std. Deviation	n	N
PUPUK_SILIKA					
D1	F1	15.1333	1.61967	3	
	F2	15.1333	0.64291	3	
	F3	18.2333	0.90185	3	
	Total	16.1667	1.83439	9	
D2	F1	19.6000	1.85203	3	
	F2	18.8667	2.51064	3	
	F3	18.3667	1.68028	3	
	Total	18.9444	1.85143	9	
D3	F1	18.1333	0.51316	3	
	F2	16.7333	5.64476	3	
	F3	18.6667	1.33167	3	
	Total	17.8444	3.03690	9	
Total	F1	17.6222	2.33815	9	
	F2	16.9111	3.50373	9	
	F3	18.4222	1.17875	9	
	Total	17.6519	2.50651	27	

<b>Tests of Between-Subjects Effects</b>						
Dependent Variable:		Type III Sum of Squares	df	Mean Square	F	Sig.
Source						
Model	8475.607 <sup>a</sup>		9	941.734	168.479	0.000
PUPUK_SILIKA	35.223		2	17.611	3.151	0.067
FREKUENSI_PEN YIRAMAN	10.287		2	5.144	0.920	0.416
PUPUK_SILIKA * FREKUENSI_PEN YIRAMAN	17.224		4	4.306	0.770	0.558
Error	100.613		18	5.590		
Total	8576.220		27			

a. R Squared = .988 (Adjusted R Squared = .982)

## Post Hoc Tests

### PUPUK\_SILIKA

#### Homogeneous Subsets

##### DIAMETER\_BATANG

Duncan<sup>a,b</sup>

PUPUK_SILIKA	N	Subset		
		1	2	
D1	9	16.1667	b	
D3	9	17.8444	17.8444 ab	
D2	9	18.9444 a		
Sig.		0.150	0.337	

Means for groups in homogeneous subsets are

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

### FREKUENSI\_PENYIRAMAN

#### Homogeneous Subsets

##### DIAMETER\_BATANG

Duncan<sup>a,b</sup>

FREKUENSI_PENYIRAMAN	N	Subset		
		1		
F2	9	16.9111 p		
F1	9	17.6222 p		
F3	9	18.4222 p		
Sig.		0.215		

Means for groups in homogeneous subsets

a. Uses Harmonic Mean Sample Size = 9.000.

b. Alpha = .05.

*Lampiran 9. Data hasil pengamatan parameter tinggi tanaman.*

TINGGI TANAMAN	MINGGU 1	MINGGU 2	MINGGU 3	MINGGU 4	MINGGU 5	MINGGU 6	MINGGU 7	MINGGU 8	MINGGU 9	MINGGU 10	MINGGU 11	MINGGU 12
D1F1 U1	27,3	28,1	28,8	28,9	30,5	31,1	32,8	35,9	36,8	40,1	43,2	44,6
D1F1 U2	27,1	27,2	27,8	27,9	28,5	29,1	31,4	32,6	32,6	33,9	37,1	43,5
D1F1 U3	29	30,2	30,5	30,5	30,7	30,9	34,4	44,9	48,1	49	52,1	57,8
D2F1 U1	26,6	28	29,3	29,4	30,5	32	34,8	40,8	42,8	43,9	48,5	48,5
D2F1 U2	25,1	25,8	26,1	27,9	28,3	33,9	33,9	37	38	39,8	42,3	43,4
D2F1 U3	28,1	28,6	28,8	28,9	30	30,2	30,4	30,5	30,7	34,4	36	39
D3F1 U1	35,6	36,5	37,3	37,5	37,9	38	38,5	39	39,9	49,1	54,1	54,5
D3F1 U2	27,1	27	27,9	28,1	28,6	29,5	31,4	33,7	35,7	39,6	42,5	47,3
D3F1 U3	22,5	23	24	24,5	24,9	25	25,9	28	30,3	35,1	35,8	40,5
D1F2 U1	37	38,2	38,8	39	39,5	39,7	39,7	39,9	41,2	48,1	53,9	56,6
D1F2 U2	30,3	32,1	32,8	33,1	33,5	36,7	39,5	45,6	47,5	49,5	52,5	56,3
D1F2 U3	26,1	27,6	27,8	28	29,7	30,5	37,1	40,4	40,6	46,4	48	49,3
D2F2 U1	30,5	31,4	31,5	31,9	32	32,2	32,5	32,5	34,9	37,6	37,6	45
D2F2 U2	33,6	35	35,5	35,5	35,9	36	36,1	36,1	38,1	39,9	44,4	49,8
D2F2 U3	28,5	32,5	32,7	34,1	35,3	36,4	37,3	42,2	45,2	46,2	50,9	53,3
D3F2 U1	35,4	36,5	36,6	37,1	37,8	37,9	38	42,2	43,4	50	52,5	53,4
D3F2 U2	26,5	29,5	29,6	30	33	33,5	39,7	42,1	44	49,9	51,5	52,7
D3F2 U3	28,8	28,4	29,5	29,5	30	30,2	30,5	33,5	34,4	39,5	41,1	42,8
D1F3 U1	31,3	30,1	31,1	34	37,1	38,2	43,6	48,6	48,6	49,1	52,8	54,8
D1F3 U2	31	27,6	32,4	32,8	33,9	35,6	35,6	39,4	41,6	44	48,7	51
D1F3 U3	22,4	23,1	25,7	26,5	26,6	32,3	33,2	38,6	39,9	41,9	44,4	45,5
D2F3 U1	33,8	33,7	33,4	33,9	34,1	34,3	34,5	34,5	39,8	41,8	42,3	44,5
D2F3 U2	28,5	31,8	31,9	32,1	34,4	38,5	39,9	43,3	46,3	46,3	46,6	52
D2F3 U3	25,1	27,1	27,7	27,2	27,4	27,4	27,5	27,5	27,6	27,7	27,7	28
D3F3 U1	36	34,7	36,4	36,4	36,8	37	37	40	42,7	44,3	51,9	55
D3F3 U2	29,1	30,7	30,9	31	32,5	35,2	37	42,8	44,7	46,1	51,9	54,3
D3F3 U3	26,5	26,8	27,5	27,6	28,5	31,2	31,2	36,5	39,1	39,8	43,5	46,9

*Lampiran 10.* Data pengamatan parameter jumlah daun.

JUMLAH DAUN	MINGGU 1	MINGGU 2	MINGGU 3	MINGGU 4	MINGGU 5	MINGGU 6	MINGGU 7	MINGGU 8	MINGGU 9	MINGGU 10	MINGGU 11	MINGGU 12
D1F1 U1	4	5	5	5	6	6	6	6	7	7	8	8
D1F1 U2	3	3	3	3	4	5	5	6	6	7	7	8
D1F1 U3	3	4	4	4	5	6	6	6	7	7	7	8
D2F1 U1	3	3	4	4	4	5	5	6	6	6	7	7
D2F1 U2	4	4	5	5	5	6	6	6	7	7	8	8
D2F1 U3	3	3	4	4	4	5	5	6	6	7	7	8
D3F1 U1	5	6	6	6	6	7	7	7	8	8	9	8
D3F1 U2	3	4	5	5	6	6	6	7	7	8	8	9
D3F1 U3	4	5	5	5	6	7	7	8	8	9	9	10
D1F2 U1	4	4	5	5	5	6	6	7	7	7	8	8
D1F2 U2	4	5	5	6	6	7	7	7	8	8	9	9
D1F2 U3	4	4	5	5	6	6	6	7	7	7	8	9
D2F2 U1	4	4	4	4	5	5	6	6	6	7	7	8
D2F2 U2	4	5	5	5	6	6	6	7	8	8	8	9
D2F2 U3	6	7	8	8	9	10	10	9	10	9	10	9
D3F2 U1	5	5	6	6	6	7	7	7	8	8	9	10
D3F2 U2	4	5	5	5	6	6	6	7	7	8	8	8
D3F2 U3	4	4	5	5	5	6	6	7	7	7	8	8
D1F3 U1	4	5	5	5	6	6	7	8	8	8	8	9
D1F3 U2	3	4	4	5	5	6	6	6	7	7	8	8
D1F3 U3	5	5	6	7	7	10	9	9	9	9	9	10
D2F3 U1	4	4	4	5	5	6	6	7	7	8	9	10
D2F3 U2	5	5	6	7	7	8	8	8	9	8	9	10
D2F3 U3	4	4	4	4	4	5	5	5	5	6	6	6
D3F3 U1	5	5	5	6	6	6	7	7	8	8	9	9
D3F3 U2	4	5	5	6	6	7	7	8	8	8	9	10
D3F3 U3	3	3	4	4	4	5	5	5	6	6	7	7

*Lampiran 11.* Data hasil pengamatan parameter diameter batang.

DIAMETER BATANG	MINGGU 1	MINGGU 2	MINGGU 3	MINGGU 4	MINGGU 5	MINGGU 6	MINGGU 7	MINGGU 8	MINGGU 9	MINGGU 10	MINGGU 11	MINGGU 12
D1F1 U1	5,1	9,1	9,2	9,4	9,9	10,2	10,2	10,5	10,5	11,5	12,8	14,3
D1F1 U2	5,6	6,4	9,1	9,4	10,3	10,5	11	11,6	11,7	13,3	13,3	14,1
D1F1 U3	9,1	9,1	9,2	9,4	12,4	12,7	13,5	14,3	14,8	15,2	15,8	17
D2F1 U1	7,4	8,4	9,1	9,1	9,3	11	11,5	12,4	14,7	14,7	14,8	15,4
D2F1 U2	6,3	7,9	8	8,3	8,4	9,7	10,3	10,7	12,6	12,6	15,3	15,6
D2F1 U3	6,8	7,8	8	8,4	8,8	10,6	11,2	12,2	12,8	12,8	13,4	14,4
D3F1 U1	10,5	11	12,6	12,7	12,7	12,9	13	13	13,5	15,2	16,8	18,3
D3F1 U2	8,6	9,6	9,6	9,7	9,7	13,9	14	14	14,3	15,9	17,8	19,1
D3F1 U3	9,3	10,1	11,2	12,2	13,5	13,5	13,5	15,6	16,3	16,3	16,7	17,3
D1F2 U1	10,7	10,9	12,8	12,9	12,9	14,1	14,4	15,4	15,4	15,4	15,6	21,7
D1F2 U2	10,5	11,3	11,7	12,1	13,2	14	14,2	14,4	15,3	16,9	18,8	18,9
D1F2 U3	10	10,4	11,1	11,8	12,3	14,1	14,1	15,3	15,3	15,6	16,5	18,2
D2F2 U1	8,9	8,9	10,6	11,5	11,9	13,4	13,4	13,6	14,2	14,5	14,8	18,6
D2F2 U2	8,7	9,6	10,3	11,2	11,9	13,1	14,1	15,7	16	16	16,5	16,5
D2F2 U3	9,2	12,5	13,4	13,5	13,5	13,5	14,8	15,9	17,1	17,7	17,7	21,5
D3F2 U1	9,7	10,7	10,7	10,8	10,8	13,3	13,3	13,8	16,3	16,7	18,1	20,2
D3F2 U2	6,2	8,1	10,7	11,5	11,7	12,8	12,8	12,9	13,1	13,2	14	16,9
D3F2 U3	7,9	9,5	10,1	10,1	10,3	10,7	12,6	13	13	15,4	16,1	18
D1F3 U1	7,7	10	10,4	10,4	11,5	14,3	14,3	14,3	14,4	15,9	16,8	17,7
D1F3 U2	6,9	10,4	10,4	10,4	11,3	11,3	12,2	13,5	13,8	14,8	16,6	18,7
D1F3 U3	7,6	9,2	10,7	13	13,8	14,9	15,2	15,2	15,7	15,7	17,1	18
D2F3 U1	7,9	10,9	11,8	12,2	12,3	12,3	12,3	14,8	16	16	16,1	18,2
D2F3 U2	9,4	14,6	14,9	15,1	15,1	16,3	16,9	16,9	17,5	17,7	19,7	21,5
D2F3 U3	6,1	7,3	7,4	7,4	7,5	8,5	8,5	8,5	8,5	8,6	9,5	10,5
D3F3 U1	9	11,1	11,3	12,2	13,3	13,3	13,7	15,9	15,9	17,3	17,9	18
D3F3 U2	10,3	10,6	12,7	13,7	14,4	15	15,2	15,5	16,9	18,5	19,8	20,2
D3F3 U3	7,9	7,9	9,3	9,5	10,5	12	12	12,9	14,2	15,3	16	17,8

*Lampiran 12.* Data hasil pengamatan berat segar tajuk.

B.B TAJUK	
D1F1 U1	38.84
D1F1 U2	38.77
D1F1 U3	56.59
D2F1 U1	40.85
D2F1 U2	43.99
D2F1 U3	37.94
D3F1 U1	48.2
D3F1 U2	47.98
D3F1 U3	53.57
D1F2 U1	72.26
D1F2 U2	78.7
D1F2 U3	60.6
D2F2 U1	35.74
D2F2 U2	71.49
D2F2 U3	86.74
D3F2 U1	54.86
D3F2 U2	55.68
D3F2 U3	44.7
D1F3 U1	61.95
D1F3 U2	52.21
D1F3 U3	54.48
D2F3 U1	52.9
D2F3 U2	8623
D2F3 U3	10.8
D3F3 U1	59.33
D3F3 U2	63.72
D3F3 U3	56.23

*Lampiran 13.* Data hasil pengamatan parameter berat kering tajuk..

B.K TAJUK	
D1F1 U1	9.79
D1F1 U2	8.75
D1F1 U3	12.29
D2F1 U1	9.2
D2F1 U2	10.38
D2F1 U3	8.25
D3F1 U1	10.92
D3F1 U2	11.44
D3F1 U3	10.57
D1F2 U1	14.24
D1F2 U2	18.76
D1F2 U3	14.92
D2F2 U1	8.17
D2F2 U2	18.12
D2F2 U3	22.84
D3F2 U1	13.5
D3F2 U2	12.96
D3F2 U3	10.29
D1F3 U1	15.77
D1F3 U2	10.52
D1F3 U3	11.94
D2F3 U1	12.46
D2F3 U2	22.85
D2F3 U3	2.42
D3F3 U1	13.85
D3F3 U2	15.13
D3F3 U3	12.92

*Lampiran 14.* Data hasil pengamatan parameter berat segar akar.

B.S AKAR	
D1F1 U1	12,65
D1F1 U2	14,31
D1F1 U3	13,56
D2F1 U1	14,30
D2F1 U2	12,50
D2F1 U3	11,09
D3F1 U1	17,55
D3F1 U2	20,68
D3F1 U3	21,92
D1F2 U1	21,84
D1F2 U2	20,99
D1F2 U3	21,70
D2F2 U1	13,00
D2F2 U2	17,38
D2F2 U3	30,92
D3F2 U1	18,27
D3F2 U2	18,87
D3F2 U3	11,42
D1F3 U1	24,72
D1F3 U2	17,84
D1F3 U3	21,88
D2F3 U1	16,32
D2F3 U2	36,69
D2F3 U3	1,90
D3F3 U1	17,62
D3F3 U2	25,47
D3F3 U3	16,17

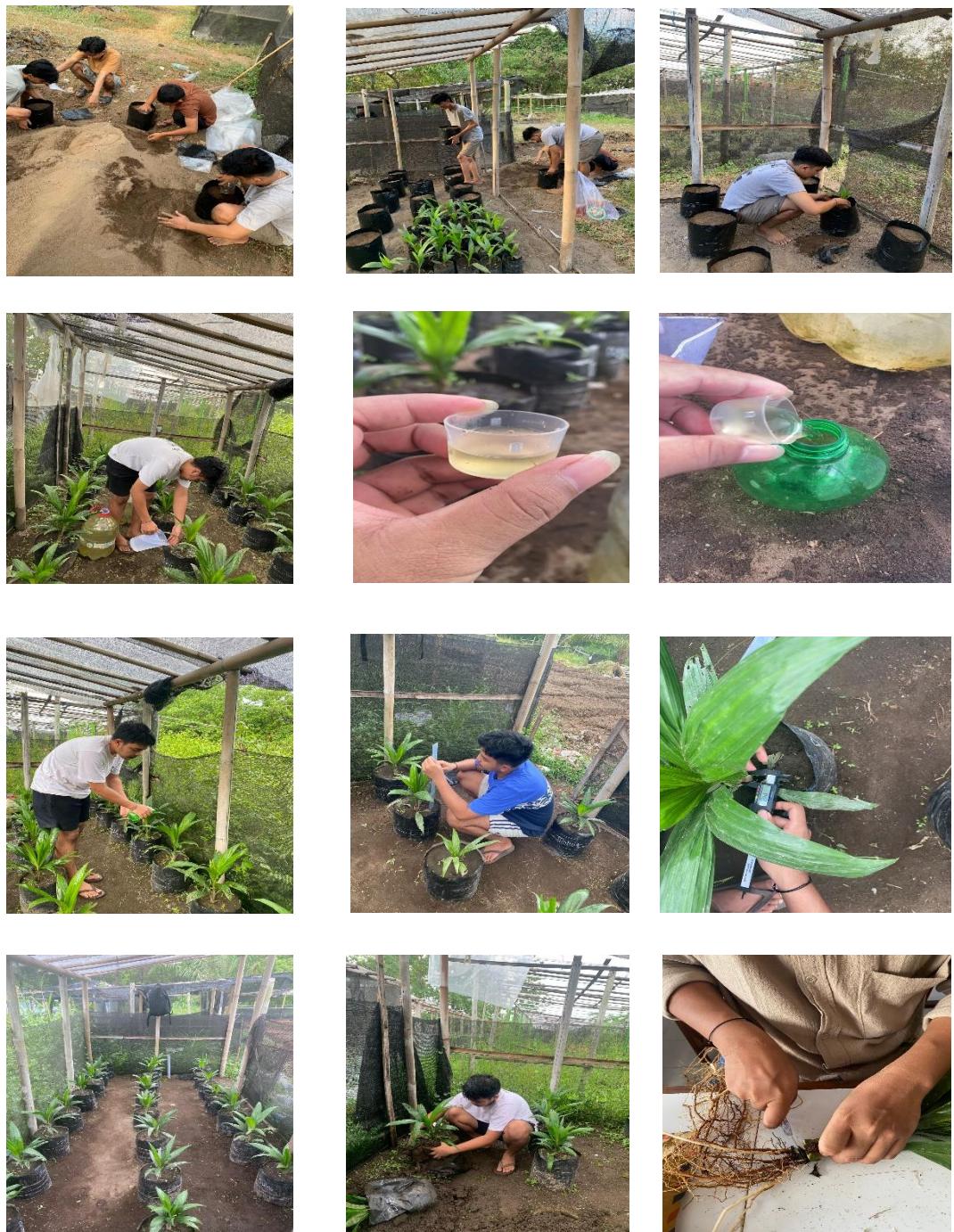
*Lampiran 15.* Hasil pengamatan parametyer berat kering akar.

B.K AKAR	
D1F1 U1	2,72
D1F1 U2	3,11
D1F1 U3	2,98
D2F1 U1	3,05
D2F1 U2	2,56
D2F1 U3	2,28
D3F1 U1	3,43
D3F1 U2	4,36
D3F1 U3	3,95
D1F2 U1	4,60
D1F2 U2	4,84
D1F2 U3	4,99
D2F2 U1	2,79
D2F2 U2	3,82
D2F2 U3	7,10
D3F2 U1	4,63
D3F2 U2	4,23
D3F2 U3	2,39
D1F3 U1	5,45
D1F3 U2	4,01
D1F3 U3	4,32
D2F3 U1	3,60
D2F3 U2	7,90
D2F3 U3	0,40
D3F3 U1	3,95
D3F3 U2	5,67
D3F3 U3	3,54

*Lampiran 16.* Hasil pengamatan parameter panjang akar.

P. AKAR	
D1F1 U1	61,7
D1F1 U2	69,1
D1F1 U3	65
D2F1 U1	41,5
D2F1 U2	39,8
D2F1 U3	69
D3F1 U1	65,5
D3F1 U2	77,5
D3F1 U3	62,6
D1F2 U1	62,5
D1F2 U2	70,3
D1F2 U3	78,2
D2F2 U1	48,5
D2F2 U2	43,2
D2F2 U3	72
D3F2 U1	57
D3F2 U2	57,9
D3F2 U3	47,5
D1F3 U1	52,5
D1F3 U2	52,4
D1F3 U3	65,5
D2F3 U1	66,5
D2F3 U2	69
D2F3 U3	20,5
D3F3 U1	61,9
D3F3 U2	62,8
D3F3 U3	51,3

*Lampiran 17.* Foto kegiatan penelitian.



Lampiran 18. Foto kegiatan penelitian.

