

## DAFTAR PUSTAKA

Aditiya, d. R. (2021). Herbisida : risiko terhadap lingkungan dan efek menguntungkan. *Saintekno* : jurnal sains dan teknologi, 19(1), 6–10. <https://journal.unnes.ac.id/nju/index.php/saintekno/article/view/28371>

- Daramola, O. S., Johnson, W. G., Jordan, D. L., & Chahal, G. S. (2022). *Spray water quality and herbicide performance : a review*. <https://doi.org/10.1017/wet.2022.97>
- Gunsolus, J. L., Agronomist, E., & Science, W. (n.d.). *Herbicide Mode of Action*.
- Rohman, R. F., & Chozin, M. A. (2025). *Determining granule size of Cyperus rotundus tuber- based bioherbicide for weed control in upland rice*. 53(April), 35–43.
- Zames, J. L. N. (2025). *Jurnal Ilmiah Pertanian ( JIPERTA ) Palm Plantations*. 7(April), 270–276. <https://doi.org/10.31289/jiperta.v7i2.6013>
- Hafiz, a., purba, e., & damanik, b. S. J. (2018). Efikasi beberapa herbisida secara tunggal dan campuran terhadap clidemia hirta (l.) D. Don. Di perkebunan kelapa sawit. *Jurnal agroekoteknologi universitas sumatera utara*, 2(2337), 1578–1583.
- Kasasian, l. 2004. *Weed control in the tropic*. Leonard hill book co., london. 307 hal.
- Moenandir, j. (2010). *Ilmu gulma* (d. Hersanjaya, ed.; cet 1). Universitas brawijaya press (ub press).
- Pahan, i. (2008). *Panduan lengkap kelapa sawit: manajemen agribisnis dari hulu hingga hilir*. Penebar swadaya.
- Pahan, i. (2013). *Panduan lengkap kelapa sawit manajemen agribisnis dari hulu hingga hilir*. Jakarta: penebar swadaya.
- Pani, a., ardi, & efendi, s. 2022. Vegetation analysis and the effectiveness of methyl metsulfuron herbicide to control weeds in immature oil palm plantation analisis vegetasi dan efektifitas herbisida metil metsulfuron terhadap gulma. *Celebes agricultural*, 2(2), 65–74. <https://doi.org/10.52045/jca.v2i2.280>.
- Prabaningrum, l., & moekasan, t. K. (2016). Pengaruh ph air pelarut dan umur larutan semprot terhadap efikasi pestisida pada tanaman kentang (effect of solvent water ph and the age pf spray solution on the efficacy of pesticide in potatoes). *Jurnal hortikultura*, 26(1), 113 120.
- Sari, w. P., ardi, & efendi, s. 2020. Analisis vegetasi gulma pada beberapa kelas umur acacia mangium willd. Di hutan tanaman industri (hti). *Jurnal hutan tropis*, 8(2), 185–194.
- Satyawibawa, i. Dan y. E. Widyastuti. 1999. *Kelapa sawit belum menghasilkan : usaha budidaya, pemanfaatan hasil, dan aspek pemasaran*. Penebar swadaya. Jakarta. 218 hlm.
- Silaban, a. A., & agung, n. (2017). Uji efektivitas herbisida amonium glufosinat dengan paraquat dalam mengendalikan gulma stenochlaena palustris pada tanaman kelapa sawit. *Jurnal produksi tanaman*, 5(12), 2032–2040.

- Sumintapura, a. H., & iskandar, r. S. (1980). Pengantar herbisida. Pt. Kartanusaantara.
- Syah, r. A. (2021). Ta: penerapan segmentation targeting dan positioning (stp) herbisida sistemik selektif dengan merek nikko 500ml di ud salim abadi. 8751052.[http://repository.polinela.ac.id/2205/%0ahttp://repository.polinela.ac.id/2205/2/bab 1 %26 bab 2\\_18751052 - riy an adrian syah.pdf](http://repository.polinela.ac.id/2205/%0ahttp://repository.polinela.ac.id/2205/2/bab%201%26%20bab%202_18751052-riyan%20adrian%20syah.pdf).
- Talahatu, d. R., & papilaya, p. M. (2015). Pemanfaatan ekstrak daun cengkeh (*syzygium aromaticum* l.) Sebagai herbisida alami terhadap pertumbuhan gulma rumput teki (*cyperus rotundus* l.). *Biopendix: jurnal biologi, pendidikan dan terapan*, 1(2), <https://doi.org/10.30598/biopendixvol1issue2page160-170>
- Tomlin, c. D. S. 2011. *The e-pesticides manual version 3.0 (thirteenth edition)*. British crop protection council
- (bps), b. P. S. (2024). *Statistik kelapa sawit indonesia*.
- Afrianti, i., yolanda, r., purnama, a. A., studi, p., biologi, p., pengaraian, u. P., & vegetasi, a. (2014). (*elaeis quinensis jacq.*) Di desa suka maju kecamatan rambah.
- Bulian, m., hari, b., adriadi, a., & solfiyeni, c. (2012). *Analisis vegetasi gulma pada perkebunan kelapa sawit (e lais quineensis jacq.) Di kilangan, muaro bulian, batang hari vegetation analysis of weed in palm oil plantation (elaeis quineensis jacq.) In. 1(2)*, 108–115.
- Daramola, o. S., johnson, w. G., jordan, d. L., & chahal, g. S. (2022). *Spray water quality and herbicide performance : a review*. <https://doi.org/10.1017/wet.2022.97>
- Dibisono, y., sari, p. M., & susanti, r. (2022). *Analysis of weed vegetation in agricultural land simalingkar b sub- district, medan tuntungan*. 6(2), 58–66.
- Gunsolus, j. L., agronomist, e., & science, w. (n.d.). *Herbicide mode of action*.
- Haryadi, a. (2017). *Uji resistensi gulma rumput belulangan (eleusine indica), jalantir (erigeron sumatrensis), dan teki udelan (cyperus kyllingia) asal perkebunan jambu biji lampung timur terhadap herbisida glifosat*.
- Hastuti, n. Y., j. Sembodo, d. R., & evizal, r. (2017). Efikasi herbisida amonium glufosinatt gulma umum pada perkebunan karet yang menghasilkan [hevea brasiliensis (muell.) Arg]. *Jurnal penelitian pertanian terapan*, 15(1), 41–47. <https://doi.org/10.25181/jppt.v15i1.110>
- Low, e. L., chan, k., zaki, n. M., taranenko, e., ordway, j. M., wischmeyer, C., buntjer, j., amin, m., halim, a., shazana, n., mohd, n., nagappan, j., Rosli, r., bondar, e., amiruddin, n., sarpan, n., ting, n., chan, p., ong- abdullah, m., ... singh, r. (2024). Chromosome-scale *elaeis guineensis* and *e. Oleifera* assemblies : comparative genomics of oil palm and other arecaceae. *G3: genes, genomes, genetics*, 14(9), 1–17. <https://doi.org/10.1093/g3journal/jkae135>

- Duke, s. O., & powles, s. B. (2008). Glyphosate: a once-in-a-century herbicide. *Pest management science*, 64(4), 319–325.
- Giesy, j. P., dobson, s., & solomon, k. R. (2000). Ecotoxicological risk assessment for roundup herbicide. *Reviews of environmental contamination and toxicology*, 167, 35–120.
- Efsa. (2005). Conclusion regarding the peer review of the pesticide risk assessment of the active substance glufosinate. *Efsa scientific report*.
- Atlas, r. M., & bartha, r. (1998). *Microbial ecology: fundamentals and applications*. Benjamin/cummings.
- Brady, n. C., & weil, r. R. (2016). *The nature and properties of soils* (15th ed.). Pearson.
- Duke, s. O., & powles, s. B. (2008). Glyphosate: a once-in-a-century herbicide. *Pest management science*, 64(4), 319–325.
- Nalewaja, j. D., & matysiak, r. (1993). Influence of ph and adjuvants on herbicide performance. *Weed technology*, 7(1), 166–172.
- Senseman, s. A. (ed.). (2007). *Herbicide handbook* (9th ed.). Weed science society of america.
- Powles, s. B., & yu, q. (2010). Evolution in action: plants resistant to herbicides. *Annual review of plant biology*, 61, 317–347.
- Takano, h. K., & dayan, f. E. (2020). Glufosinate-ammonium: a review of the current state of knowledge. *Pest management science*, 76, 3911–392.
- Nasution, a. A., sopandie, d., & lontoh, a. P. (2024). *Pengelolaan gulma kelapa sawit (elaeis guineensis jacq.) Di kebun negeri lama selatan, sumatera utara weed*. 12(1), 1–12.
- Pardamean, m. (2013). Panduan lengkap pengelolaan kebun dan pabrik kelapa sawit : kelapa sawit (edisi pertama). *Pt agromedia pustaka.*, 16(2), 69–80. <https://doi.org/10.14692/jfi.16.2.69-80>
- Prabaningrum, l., & moekasan, t. K. (2016). Pengaruh ph air pelarut dan umur larutan semprot terhadap efikasi pestisida pada tanaman kentang. *Jurnal hortikultura*, 26(1), 113. <https://doi.org/10.21082/jhort.v26n1.2016.p113-120>
- Prasetyo, h., & zaman, s. (2016). *Pengendalian gulma perkebunan kelapa sawit (elaeis guineensis jacq.) Di perkebunan padang halaban, sumatera utara*. 4(1), 87–93.
- Powles, s.b., & preston, c. (2017). Evolved glyphosate resistance in plants: biochemical and genetic basis of resistance. *Weed technology*. Cambridge

university press.

- Ronaully, i. E., & ronaully, i. E. (2024). *Perkebunan kelapa sawit indonesia yang berkelanjutan*. 5(12), 5611–5624.
- Rohman, r. F., & chozin, m. A. (2025). Determining granule size of *cyperus rotundus* tuber-based bioherbicide for weed control in upland rice. *Jurnal agronomi indonesia*, 53(1), 35–43.
- Sawit, p. K., & plantations, p. (2025). *Jurnal ilmiah pertanian ( jiperta ) palm plantations*. 7(april), 270–276. <https://doi.org/10.31289/jiperta.v7i2.6013>
- Tolik, m., afrillah, m., & alfides, h. (2023). *Manajemen pengendalian gulma tanaman kelapa sawit ( elaeis guineensis jacq .) Di pt . Asn kebun tanah makmue aceh barat*. 19(1).
- Zein, z. (2021). *Kajian strategi integrasi nilai-nilai keberlanjutan kedalam proses pembangunan kelapa sawit rakyat di tapanuli selatan*. 14(1), 33– 47.

# LAMPIRAN

Lampiran 1. *Lay out* Penelitian

<b>M1A1U1</b>	<b>G2A2U1</b>	<b>G3A3U1</b>	<b>M1A2U1</b>
<b>G2A1U1</b>	<b>G3A2U1</b>	<b>M1A3U1</b>	<b>G2A3U1</b>
<b>G3A1U1</b>	<b>M1A1U2</b>	<b>G2A2U2</b>	<b>G3A3U2</b>
<b>M1A2U2</b>	<b>G2A1U2</b>	<b>G3A2U2</b>	<b>M1A3U2</b>
<b>G2A3U2</b>	<b>G3A1U2</b>	<b>M1A1U3</b>	<b>G2A2U3</b>
<b>G3A3U3</b>	<b>M1A2U3</b>	<b>G2A1U3</b>	<b>G3A2U3</b>
<b>M1A3U3</b>	<b>G2A3U3</b>	<b>G3A1U3</b>	<b>M1A1U4</b>
<b>G2A2U4</b>	<b>G3A3U4</b>	<b>M1A2U4</b>	<b>G2A1U4</b>
<b>G3A2U4</b>	<b>M1A3U4</b>	<b>G2A3U4</b>	<b>G3A1U4</b>

Keterangan :

- B1A1 : Methyl, air masam
- B1A2 : Methyl, air netral
- B1A3 : Methyl, air basa
- B2A1 : Glifosat, air masam
- B2A2 : Glifosat, air netral
- B2A3 : Glifosat air basa
- B3A1 : Glufosinat, air masam
- B3A2 : Glufosinat, air netral
- B3A3 : Glufosinat, air basa

Lampiran 2. Sidik ragam 1 hari setelah aplikasi

### Tests of Between-Subjects Effects

Dependent Variable: TK1

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.000 <sup>a</sup>	8	.000	.	.
Intercept	36.000	1	36.000	.	.
BAHAN	.000	2	.000	.	.
AIR	.000	2	.000	.	.
BAHAN * AIR	.000	4	.000	.	.
Error	.000	27	.000		
Total	36.000	36			
Corrected Total	.000	35			

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

Lampiran 3. Sidik ragam 4 hari setelah aplikasi

### Tests of Between-Subjects Effects

Dependent Variable: TK4

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4.889 <sup>a</sup>	8	.611	4.125	.003
Intercept	235.111	1	235.111	1587.000	.000
BAHAN	.056	2	.028	.187	.830
AIR	4.056	2	2.028	13.688	.000
BAHAN * AIR	.778	4	.194	1.313	.290
Error	4.000	27	.148		
Total	244.000	36			
Corrected Total	8.889	35			

a. R Squared = .550 (Adjusted R Squared = .417)

Lampiran 4. Sidik ragam 7 hari setelah aplikasi

**Tests of Between-Subjects Effects**

Dependent Variable: TK7

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6.000 <sup>a</sup>	8	.750	3.000	.015
Intercept	702.250	1	702.250	2809.000	.000
BAHAN	.167	2	.083	.333	.719
AIR	4.500	2	2.250	9.000	.001
BAHAN * AIR	1.333	4	.333	1.333	.283
Error	6.750	27	.250		
Total	715.000	36			
Corrected Total	12.750	35			

a. R Squared = .471 (Adjusted R Squared = .314)

Lampiran 5. Sidik ragam 10 hari setelah aplikasi

**Tests of Between-Subjects Effects**

Dependent Variable: TK10

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3.000 <sup>a</sup>	8	.375	.862	.559
Intercept	1806.250	1	1806.250	4150.532	.000
BAHAN	1.500	2	.750	1.723	.198
AIR	.667	2	.333	.766	.475
BAHAN * AIR	.833	4	.208	.479	.751
Error	11.750	27	.435		
Total	1821.000	36			
Corrected Total	14.750	35			

a. R Squared = .203 (Adjusted R Squared = -.033)

Lampiran 6. Sidik ragam 13 hari setelah aplikasi

**Tests of Between-Subjects Effects**

Dependent Variable: TK13

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.000 <sup>a</sup>	8	.000	.	.
Intercept	2916.000	1	2916.000	.	.
BAHAN	.000	2	.000	.	.
AIR	.000	2	.000	.	.
BAHAN * AIR	.000	4	.000	.	.
Error	.000	27	.000		
Total	2916.000	36			
Corrected Total	.000	35			

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

Lampiran 7. Sidik ragam 17 hari setelah aplikasi

**Tests of Between-Subjects Effects**

Dependent Variable: TK17

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.000 <sup>a</sup>	8	.000	.	.
Intercept	2916.000	1	2916.000	.	.
BAHAN	.000	2	.000	.	.
AIR	.000	2	.000	.	.
BAHAN * AIR	.000	4	.000	.	.
Error	.000	27	.000		
Total	2916.000	36			
Corrected Total	.000	35			

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

Lampiran 8. Sidik ragam berat segar

**Tests of Between-Subjects Effects**

Dependent Variable: Berat Segar

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3111.807 <sup>a</sup>	8	388.976	.537	.818
Intercept	172314.928	1	172314.928	237.831	.000
Bahan	1670.248	2	835.124	1.153	.331
Air	402.007	2	201.004	.277	.760
Bahan * Air	1039.551	4	259.888	.359	.836
Error	19562.203	27	724.526		
Total	194988.938	36			
Corrected Total	22674.010	35			

a. R Squared = .137 (Adjusted R Squared = -.118)

Lampiran 9. Sidik ragam berat kering

**Tests of Between-Subjects Effects**

Dependent Variable: Berat Kering

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	515.890 <sup>a</sup>	8	64.486	.517	.833
Intercept	22866.480	1	22866.480	183.195	.000
Bahan	330.412	2	165.206	1.324	.283
Air	68.715	2	34.357	.275	.761
Bahan * Air	116.763	4	29.191	.234	.917
Error	3370.151	27	124.820		
Total	26752.521	36			
Corrected Total	3886.041	35			

a. R Squared = .133 (Adjusted R Squared = -.124)

Lampiran 10. Dokumentasi kegiatan



Persiapan lahan



Persiapan Penanaman



Cek PH



Persiapan media tanam



Pengaplikasian



Gulma segar



Gulma mulai mati



Gulma mati 100%