# DAFTAR PUSTAKA

Abdurachman, A., S. Sutomo, dan N. Sutrisno. (2005). Teknologi Pengendalian Erosi Lahan Berlereng dalam Teknologi Pengelolaan Lahan Kering Menuju Pertanian Produktif dan Ramah Lingkungan. Puslitbangtanak.

Agus, F., Subiksa, I.G.M., & Wahyunto. (2012). Sistem Pertanian Lahan Kering di Indonesia. Balai Penelitian Tanah.

Allorerung, D., M. Syakir, Z. Poeloengan dan R. W. Syafaruddin. (2010). Budidaya Kelapa Sawit. Aska Media. Bogor.

Boerhendhy, I. dan K. Amypalupy. (2016). Optimalisasi produktivitas karet melalui penggunaan bahan tanam, pemeliharaan, sistem eksploitasi dan peremajaan tanaman. Jurnal Penelitian dan Pengembangan Pertanian 30(123-30).

Cregg, B. M. dan R. Suzuki. (2009). Weed control and organic mulches affect physiology and growth of landscape shrubs. Hort. Scienc. 44(5): 1419–1429.

Depten, Http://www.ditjenbun.deptan.go.id., (2010). Limbah Kelapa sawit. Diakses pada 15 september 2023.

Fauzi, Y., Yustina, E.W., Iman, S. dan Rudi, H. (2008). Kelapa Sawit : Budi daya, pemanfaatan hasil dan limbah, analisis usaha dan pemasaran. Edisi Revisi. Penebar Swadaya, Jakarta. 169.

Gultom, A. Y., Sampoerno, & Saputra, S. I. (2017). pengaruh pemberian mulsa tandan kosong kelapa sawit terhadap pertumbuhan bibit kelapa sawit ( Elaeis Guineensis Jacq.) di Main Nursery. Jom Faferta, 4(1), 1–13.

Hartanto, R., Putra, E.T.S., & Nugroho, A. (2015). Pengaruh Penggunaan Mulsa terhadap Pertumbuhan Gulma pada Perkebunan Kelapa Sawit. Jurnal Pertanian Tropis.

Hidayat, Y., Putra, A.S., & Lestari, D. (2014). Pengaruh Mulsa terhadap Pertumbuhan Diameter Batang Bibit Kelapa Sawit di Main Nursery. Jurnal Penelitian Kelapa Sawit.

Lubis, A. (2008). Kelapa Sawit di Indonesia. Pusat Penelitian Kelapa Sawit. Edisi 362.

Lubis, A.U. (2008). Kelapa Sawit (Elaeis guineensis Jacq.) di Indonesia (Edisi 2). Medan: Pusat Penelitian Kelapa Sawit. Hlm. 1-73

Mangoensoekarjo, S. dan Semangun, H. (2008). Pengantar ilmu penyakit tumbuhan. Yogyakarta. Gadjah Mada University Press. 754

Marpaung, F., Siregar, D.M., & Hutabarat, D. (2018). Manajemen Penyiraman pada Bibit Kelapa Sawit di Main Nursery. Pusat Penelitian Kelapa Sawit.

Marschner, H. (2012). Marschner's Mineral Nutrition of Plants. Academic Press.

Mubiyanto, B.M. 1997. Tanggapan tanaman kopi terhadap cekaman air. Jurnal Puslit Kopi dan Kakao 13(2): 83-95.

Nugroho, A., Susanto, D., & Pratama, D. (2018). Pengaruh Volume Penyiraman terhadap Suhu Tanah di Perkebunan Kelapa Sawit. Jurnal Pertanian Tropis.

O'Neill, P. (2011). Photosynthesis in Plants. Springer.

Pahan, I. (2013). Panduan Lengkap Kelapa Sawit. Penebar Swadaya.

Pahan, I. 2006. Panduan Lengkap Kelapa Sawit, Manajemen Agribisnis dari Hulu ke Hilir. Penebar Swadaya. Jakarta.

Pahan, I. 2008. Panduan Lengkap Kelapa Sawit. Penebar Swadaya. Jakarta. 412

Pujiono, A., Mu'in, A., & Rahayu, E. (2019). Pengaruh Macam Dan Ketebalan Mulsa Organik Terhadap Pertumbuhan Bibit Kelapa Sawit Dan Untuk Menekan Pertumbuhan Gulma Di Pembibitan Kelapa Sawit Main Nursery. 1(1), 1–7. JOM Faprta Instiper Yogyakarta

Rahayu, M., Hidayat, Y., & Siregar, S.P. (2019). Pengaruh Volume Penyiraman terhadap Pertumbuhan Berat Kering Tajuk dan Berat Segar Akar Bibit Kelapa Sawit di Main Nursery. Jurnal Penelitian Kelapa Sawit.

Santoso, B., Wibowo, A., & Siregar, S.P. (2017). Pengaruh Volume Penyiraman terhadap Kelembaban Tanah pada Bibit Kelapa Sawit di Main Nursery. Jurnal Penelitian Kelapa Sawit.

Setiadi, R., & Raharjo, S. (2017). Efektivitas Mulsa dalam Pengendalian Gulma pada Tanaman Perkebunan. Jurnal Agronomi Indonesia.

Setiawan, B., Prasetyo, L.B., & Rahmawati, E. (2017). Pengaruh Interaksi Mulsa dan Penyiraman terhadap Pertumbuhan Gulma dan Bibit Kelapa Sawit. Jurnal Agronomi Indonesia.

Siregar, S.P., Purba, R.Y., & Ginting, M. (2014). Manajemen Air pada Perkebunan Kelapa Sawit. Pusat Penelitian Kelapa Sawit.

Smith, L., & Jones, R. (2015). Optimal Light Conditions for Plant Growth. Journal of Horticultural Science, 88(2), 123-135.

Song, A. N. dan Y. Banyo. 2011. Konsentrasi klorofil daun sebagai indikator kekurangan air pada tanaman. Jurnal Ilmiah Sains 11(2): 166-173.

Sukmawan, Y., & Riniarti, D. (2020). Respons Pertumbuhan Bibit Kelapa Sawit Akibat Pengaturan Bobot Mulsa Tandan Kosong dan Frekuensi Penyiraman. Jurnal Penelitian Kelapa Sawit, 28(3), 159–168. https://doi.org/10.22302/iopri.jur.jpks.v28i3.121

Sukmawan, Y., Sesar, A. K. R., Parapasan, Y., Riniarti, D., & Utoyo, B. (2018). Pengaruh Mulsa Organik dan Volume Air Siraman pada Beberapa Sifat Kimia Tanah di Pembibitan Utama Kelapa Sawit Effect of Organic Mulch and Watering Volume on Several Chemical Properties of Soil in Oil Palm Main-Nursery. 273–279.

Sukmawan, Y., Sukmawan, Y., Utoyo, B., & Rifai, A. (2019). Efisieni Air Pada Pembibitan Utama Kelapa Sawit Melalui Aplikasi Mulsa Organik Dan Pengaturan Volume Penyiraman. 3, 141–154.

Susanto, D., & Purwanto, H. (2015). Manfaat Mulsa Organik untuk Peningkatan Kesuburan Tanah dan Pertumbuhan Tanaman Perkebunan. Jurnal Agronomi Indonesia.

Susanto, D., Pratama, D., & Supriatna, E. (2018). Pengaruh Pengaturan Volume Penyiraman terhadap Pertumbuhan Diameter Batang Bibit Kelapa Sawit di Main Nursery. Jurnal Pertanian Tropis.

Vidianto, D. Z., S. Fatimah, dan C. Wasonowati. 2013. Penerapan panjang talang dan jarak tanam dengan sistem hidroponik NFT (nutrient film technique) pada tanaman kailan (Brassica oleraceae var. alboglabra). Agrovigor 6(2): 128-135.

Wahyuni, S., Hidayat, Y., & Rahayu, M. (2013). Pengaruh Mulsa terhadap Pertumbuhan Tanaman Perkebunan. Jurnal Agronomi Indonesia.

Wijaya, R., Santoso, D., & Sudirman, A. (2016). Pengaruh Penggunaan Mulsa terhadap Retensi Kelembaban dan Suhu Tanah di Perkebunan Kelapa Sawit. Jurnal Penelitian Pertanian.

Wirianata, H. (2013). Dasar-Dasar Agronomi Kelapa Sawit. Instiper, Yogyakarta.

# LAMPIRAN

Lampiran 1

Matrik perlakuan.

| Perlakuan | | Volume air | | |
|---|---|---|---|---|
| | | P0 | P1 | P2 |
| Ketebalan Mulsa | M0 | M0P0 | M0P1 | M0P2 |
| | M1 | M1P0 | M1P1 | M1P2 |
| | M2 | M2P0 | M2P1 | M2P2 |
| | M3 | M3P0 | M3P1 | M3P2 |

Layout penelitian

| | | |
|---|---|---|
| M2P2 U2 | M1P1 U1 | M1P2 U1 |
| M1P2 U3 | M3P0 U1 | M2P2 U3 |
| M0P0 U2 | M3P0 U2 | M2P1 U2 |
| M2P0 U2 | M1P0 U2 | M0P2 U2 |
| M0P2 U1 | M0P2 U3 | M2P1 U3 |
| M1P1 U2 | M3P0 U3 | M1P0 U1 |
| M0P0 U3 | M3P2 U3 | M0P1 U1 |
| M0P1 U3 | M0P0 U1 | M3P1 U3 |
| M3P2 U2 | M3P1 U1 | M1P0 U3 |
| M0P1 U2 | M2P2 U1 | M3P1 U2 |
| M1P1 U3 | M2P0 U3 | M1P2 U2 |
| M2P0 U1 | M2P1 U1 | M3P2 U1 |

Ketebalan mulsa tandan kosong kelapa sawit yang terdiri dari 4 aras yaitu.

M0 : Tanpa mulsa

M1 : 2 cm

M2 : 4 cm

M3 : 6 cm

Volume penyiraman air yang terdiri dari 3 aras yaitu.

P0 : 1000 mili liter/bibit/hari

P1 : 1500 mili liter/bibit/hari

P2 : 2000 mili liter/bibit/hari

Lampiran 2: Uji Anova dan Uji DMRT

**Tests of Between-Subjects Effects**

Dependent Variable: Tinggi_Bibit

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 653.089[a] | 11 | 59.372 | 15.680 | .000 |
| Intercept | 305852.909 | 1 | 305852.909 | 80776.199 | .000 |
| Ketebalan_Mulsa | 403.601 | 3 | 134.534 | 35.530 | .000 |
| Volume_Penyiraman | 192.909 | 2 | 96.454 | 25.474 | .000 |
| Ketebalan_Mulsa * Volume_Penyiraman | 86.064 | 6 | 14.344 | 3.788 | .009 |
| Error | 90.874 | 24 | 3.786 | | |
| Total | 311345.830 | 36 | | | |
| Corrected Total | 743.963 | 35 | | | |

a. R Squared = .878 (Adjusted R Squared = .822)

**Tinggi_Bibit**

Duncan[a,b,c]

| Ketebalan_Mulsa | N | Subset 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| M0 | 9 | 88.4778 | | | |
| M1 | 9 | | 91.4556 | | |
| M2 | 10 | | | 94.7800 | |
| M3 | 8 | | | | 97.0875 |
| Sig. | | 1.000 | 1.000 | 1.000 | 1.000 |

The means for the groups in homogeneous subsets are shown based on the observed means. The error term, represented by the Mean Square(Error), is 3.786.

a. The Harmonic Mean Sample Size is 8.944.

b. The group sizes are not equal, and the harmonic mean of the group sizes is applied. However, the Type I error levels may not be guaranteed.

c. The significance level (alpha) is 0.05.

**Tinggi_Bibit**

Duncan[a,b,c]

| Volume_Penyiraman | N | Subset 1 | Subset 2 | Subset 3 |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| P0 | 13 | 90.3692 | | |
| P1 | 12 | | 93.1500 | |
| P2 | 11 | | | 95.5727 |
| Sig. | | 1.000 | 1.000 | 1.000 |

The means for the groups in the homogeneous subset are shown based on the observed means. The error term is Mean Square(Error) = 3,786. a. Using the Harmonic Mean Sample Size = 11,944. b. The groups are unequal in size. The harmonic mean of the group sizes is used. The Type I error rate is not guaranteed. c. Alpha = 0.05.

**Tests of Between-Subjects Effects**

Dependent Variable: Jumlah_Daun

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 6.139[a] | 11 | .558 | 1.328 | .269 |
| Intercept | 8817.566 | 1 | 8817.566 | 20987.265 | .000 |
| Ketebalan_Mulsa | .845 | 3 | .282 | .670 | .579 |
| Volume_Penyiraman | .319 | 2 | .160 | .380 | .688 |
| Ketebalan_Mulsa * Volume_Penyiraman | 4.326 | 6 | .721 | 1.716 | .160 |
| Error | 10.083 | 24 | .420 | | |
| Total | 8978.000 | 36 | | | |
| Corrected Total | 16.222 | 35 | | | |

a. R Squared = .378 (Adjusted R Squared = .094)

**Tests of Between-Subjects Effects**

Dependent Variable: Diameter_Batang

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 82.903[a] | 11 | 7.537 | 6.186 | .000 |
| Intercept | 88055.543 | 1 | 88055.543 | 72275.412 | .000 |
| Ketebalan_Mulsa | 55.026 | 3 | 18.342 | 15.055 | .000 |
| Volume_Penyiraman | 22.694 | 2 | 11.347 | 9.313 | .001 |
| Ketebalan_Mulsa * Volume_Penyiraman | 11.668 | 6 | 1.945 | 1.596 | .192 |
| Error | 29.240 | 24 | 1.218 | | |
| Total | 89622.810 | 36 | | | |
| Corrected Total | 112.143 | 35 | | | |

a. R Squared = .739 (Adjusted R Squared = .620)

**Diameter_Batang**

Duncan[a,b,c]

| Ketebalan_Mulsa | N | Subset 1 | 2 | 3 |
|---|---|---|---|---|
| M0 | 9 | 48.1889 | | |
| M1 | 9 | | 49.4444 | |
| M2 | 10 | | | 50.5900 |
| M3 | 8 | | | 51.3125 |
| Sig. | | 1.000 | 1.000 | .179 |

The means for the groups in homogeneous subsets are presented based on the observed means. The error term is represented by the Mean Square(Error) = 1.218.

a. The Harmonic Mean Sample Size is 8.944.

b. The group sizes are unequal, and the harmonic mean of these group sizes is used

However, Type I error levels may not be guaranteed. c. The significance level (Alpha) is set to 0.05.

**Diameter_Batang**

Duncan[a,b,c]

| Volume_Penyiraman | N | Subset 1 | 2 |
|---|---|---|---|
| P0 | 13 | 48.9154 | |
| P1 | 12 | | 50.2667 |
| P2 | 11 | | 50.5455 |
| Sig. | | 1.000 | .543 |

The means for the groups in homogeneous subsets are shown based on the observed means. The error term, represented by the Mean Square (Error), is 1.218.

a. The Harmonic Mean Sample Size is 11.944.

b. The group sizes are unequal, and the harmonic mean of the group sizes is applied. Type I error rates may not be guaranteed.

c. The significance level (alpha) is set at 0.05.

## Tests of Between-Subjects Effects

Dependent Variable: BST

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 40967.889[a] | 11 | 3724.354 | 5.685 | .000 |
| Intercept | 7776760.007 | 1 | 7776760.007 | 11870.651 | .000 |
| Ketebalan_Mulsa | 10568.310 | 3 | 3522.770 | 5.377 | .006 |
| Volume_Penyiraman | 21129.957 | 2 | 10564.979 | 16.127 | .000 |
| Ketebalan_Mulsa * Volume_Penyiraman | 10975.999 | 6 | 1829.333 | 2.792 | .033 |
| Error | 15723.000 | 24 | 655.125 | | |
| Total | 7892958.000 | 36 | | | |
| Corrected Total | 56690.889 | 35 | | | |

a. R Squared = .723 (Adjusted R Squared = .596)

## Tests of Between-Subjects Effects

Dependent Variable: BKT

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 64295.556[a] | 11 | 5845.051 | 15.526 | .000 |
| Intercept | 1744654.491 | 1 | 1744654.491 | 4634.176 | .000 |
| Ketebalan_Mulsa | 53827.830 | 3 | 17942.610 | 47.659 | .000 |
| Volume_Penyiraman | 10415.471 | 2 | 5207.735 | 13.833 | .000 |
| Ketebalan_Mulsa * Volume_Penyiraman | 2333.893 | 6 | 388.982 | 1.033 | .428 |
| Error | 9035.417 | 24 | 376.476 | | |
| Total | 1816171.000 | 36 | | | |
| Corrected Total | 73330.972 | 35 | | | |

a. R Squared = .877 (Adjusted R Squared = .820)

## BKT

Duncan[a,b,c]

| Ketebalan_Mulsa | N | Subset 1 | Subset 2 | Subset 3 |
|---|---|---|---|---|
| M0 | 9 | 178.5556 | | |
| M1 | 9 | 193.2222 | | |
| M2 | 10 | | 234.4000 | |
| M3 | 8 | | | 278.8750 |
| Sig. | | .123 | 1.000 | 1.000 |

The means for groups within homogeneous subsets are presented based on the observed means. The error term is the Mean Square(Error) = 376.476.

a. The Harmonic Mean Sample Size is 8.944.

b. The group sizes are not equal, so the harmonic mean of the group sizes is applied. Type I error rates are not guaranteed.

c. Alpha is set at 0.05.

**BKT**

Duncan[a,b,c]

| Volume_Penyiraman | N | Subset 1 | Subset 2 |
|---|---|---|---|
| P0 | 13 | 201.0000 | |
| P1 | 12 | | 227.0000 |
| P2 | 11 | | 234.9091 |
| Sig. | | 1.000 | .329 |

The means for groups within homogeneous subsets are presented based on the observed means. The error term is the Mean Square(Error) = 376.476.
a. The Harmonic Mean Sample Size is 11.944.
b. The group sizes are unequal, so the harmonic mean of the group sizes is used. Type I error levels may not be guaranteed.
c. Alpha = 0.05.

**Tests of Between-Subjects Effects**

Dependent Variable: BSA

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 2775.722[a] | 11 | 252.338 | 5.254 | .000 |
| Intercept | 235160.002 | 1 | 235160.002 | 4896.687 | .000 |
| Ketebalan_Mulsa | 1998.052 | 3 | 666.017 | 13.868 | .000 |
| Volume_Penyiraman | 829.136 | 2 | 414.568 | 8.632 | .001 |
| Ketebalan_Mulsa * Volume_Penyiraman | 81.068 | 6 | 13.511 | .281 | .940 |
| Error | 1152.583 | 24 | 48.024 | | |
| Total | 240935.000 | 36 | | | |
| Corrected Total | 3928.306 | 35 | | | |

a. R Squared = .707 (Adjusted R Squared = .572)

**BSA**

Duncan[a,b,c]

| Ketebalan_Mulsa | N | Subset 1 | Subset 2 |
|---|---|---|---|
| M0 | 9 | 72.2222 | |
| M1 | 9 | 76.7778 | |
| M2 | 10 | | 85.0000 |
| M3 | 8 | | 91.2500 |
| Sig. | | .177 | .069 |

The means for groups within homogeneous subsets are shown, based on the observed means. The error term is represented by the Mean Square(Error) = 48.024.

a. The Harmonic Mean Sample Size is 8.944.

b. The group sizes are not equal, and the harmonic mean of the group sizes is used. Type I error levels may not be guaranteed.

c. Alpha = 0.05.

**BSA**

Duncan[a,b,c]

| Volume_Penyiraman | N | Subset 1 | Subset 2 |
|---|---|---|---|
| P0 | 13 | 76.1538 | |
| P1 | 12 | 81.3333 | 81.3333 |
| P2 | 11 | | 86.8182 |
| Sig. | | .080 | .065 |

The means for the groups in homogeneous subsets are shown based on the observed means. The error term is the Mean Square(Error) = 48.024.

a. The Harmonic Mean Sample Size is 11.944.

b. The group sizes are not equal, so the harmonic mean of the group sizes is applied. Type I error rates are not assured.

c. Alpha = 0.05.

**Tests of Between-Subjects Effects**

Dependent Variable:   BKA

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 612.535[a] | 11 | 55.685 | 12.049 | .000 |
| Intercept | 20873.472 | 1 | 20873.472 | 4516.601 | .000 |
| Ketebalan_Mulsa | 438.853 | 3 | 146.284 | 31.653 | .000 |
| Volume_Penyiraman | 132.279 | 2 | 66.140 | 14.311 | .000 |
| Ketebalan_Mulsa * Volume_Penyiraman | 80.346 | 6 | 13.391 | 2.898 | .029 |
| Error | 110.916 | 24 | 4.622 | | |
| Total | 21710.768 | 36 | | | |
| Corrected Total | 723.451 | 35 | | | |

a. R Squared = .847 (Adjusted R Squared = .776)

## Tests of Between-Subjects Effects

Dependent Variable: Panjang_Akar

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 824.244[a] | 11 | 74.931 | 1.909 | .090 |
| Intercept | 54939.533 | 1 | 54939.533 | 1399.735 | .000 |
| Ketebalan_Mulsa | 269.649 | 3 | 89.883 | 2.290 | .104 |
| Volume_Penyiraman | 222.956 | 2 | 111.478 | 2.840 | .078 |
| Ketebalan_Mulsa * Volume_Penyiraman | 362.770 | 6 | 60.462 | 1.540 | .208 |
| Error | 941.999 | 24 | 39.250 | | |
| Total | 57548.810 | 36 | | | |
| Corrected Total | 1766.243 | 35 | | | |

a. R Squared = .467 (Adjusted R Squared = .222)

## Tests of Between-Subjects Effects

Dependent Variable: Volume_Akar

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 15482.639[a] | 11 | 1407.513 | 6.977 | .000 |
| Intercept | 235600.170 | 1 | 235600.170 | 1167.863 | .000 |
| Ketebalan_Mulsa | 11619.298 | 3 | 3873.099 | 19.199 | .000 |
| Volume_Penyiraman | 1940.706 | 2 | 970.353 | 4.810 | .018 |
| Ketebalan_Mulsa * Volume_Penyiraman | 3445.698 | 6 | 574.283 | 2.847 | .031 |
| Error | 4841.667 | 24 | 201.736 | | |
| Total | 251525.000 | 36 | | | |
| Corrected Total | 20324.306 | 35 | | | |

a. R Squared = .762 (Adjusted R Squared = .653)

## Tests of Between-Subjects Effects

Dependent Variable: pH_Tanah

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | .088[a] | 11 | .008 | 1.295 | .286 |
| Intercept | 1305.061 | 1 | 1305.061 | 211155.973 | .000 |
| Ketebalan_Mulsa | .040 | 3 | .013 | 2.159 | .119 |
| Volume_Penyiraman | .031 | 2 | .016 | 2.547 | .099 |
| Ketebalan_Mulsa * Volume_Penyiraman | .020 | 6 | .003 | .552 | .764 |
| Error | .148 | 24 | .006 | | |
| Total | 1331.270 | 36 | | | |
| Corrected Total | .236 | 35 | | | |

a. R Squared = .373 (Adjusted R Squared = .085)

### Tests of Between-Subjects Effects

Dependent Variable:   Kelembaban_Tanah

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 1074.306[a] | 11 | 97.664 | 4.688 | .001 |
| Intercept | 73633.333 | 1 | 73633.333 | 3534.400 | .000 |
| Ketebalan_Mulsa | 812.573 | 3 | 270.858 | 13.001 | .000 |
| Volume_Penyiraman | 229.198 | 2 | 114.599 | 5.501 | .011 |
| Ketebalan_Mulsa * Volume_Penyiraman | 114.825 | 6 | 19.138 | .919 | .499 |
| Error | 500.000 | 24 | 20.833 | | |
| Total | 74925.000 | 36 | | | |
| Corrected Total | 1574.306 | 35 | | | |

a. R Squared = .682 (Adjusted R Squared = .537)

### Kelembaban_Tanah

Duncan[a,b,c]

| Ketebalan_Mulsa | N | Subset 1 | Subset 2 |
|---|---|---|---|
| M0 | 9 | 41.1111 | |
| M1 | 9 | 42.2222 | |
| M2 | 10 | 45.0000 | |
| M3 | 8 | | 53.1250 |
| Sig. | | .100 | 1.000 |

The means for groups within homogeneous subsets are shown, based on the observed means.
The error term is represented by the Mean Square(Error) = 20.833.
a. The Harmonic Mean Sample Size is 11.944.
b. The group sizes are not equal, and the harmonic mean of the group sizes is applied. The Type I error rate may not be guaranteed.
c. The significance level (alpha) is set to 0.05.

### Kelembaban_Tanah

Duncan[a,b,c]

| Volume_Penyiraman | N | Subset 1 | Subset 2 |
|---|---|---|---|
| P0 | 13 | 42.3077 | |
| P1 | 12 | 45.8333 | 45.8333 |
| P2 | 11 | | 47.7273 |
| Sig. | | .071 | .321 |

The means for the groups within homogeneous
subsets are shown, based on the observed means.
The error term is represented by the Mean
Square(Error) = 20.833.
a. The Harmonic Mean of the sample size is
11.944.
b. The group sizes are unequal, so the harmonic
mean of the group sizes is applied. Type I error
levels are not ensured.
c. The significance level (Alpha) is 0.05.

**Tests of Between-Subjects Effects**

Dependent Variable:   Suhu_Tanah

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 30.222[a] | 11 | 2.747 | 9.891 | .000 |
| Intercept | 37248.980 | 1 | 37248.980 | 134096.327 | .000 |
| Ketebalan_Mulsa | 15.193 | 3 | 5.064 | 18.232 | .000 |
| Volume_Penyiraman | 12.839 | 2 | 6.419 | 23.110 | .000 |
| Ketebalan_Mulsa * Volume_Penyiraman | 3.934 | 6 | .656 | 2.360 | .062 |
| Error | 6.667 | 24 | .278 | | |
| Total | 38192.000 | 36 | | | |
| Corrected Total | 36.889 | 35 | | | |

a. R Squared = .819 (Adjusted R Squared = .736)

**Suhu_Tanah**

Duncan[a,b,c]

| Ketebalan_Mulsa | N | Subset 1 | Subset 2 | Subset 3 |
|---|---|---|---|---|
| M3 | 8 | 31.8750 | | |
| M2 | 10 | 32.1000 | | |
| M1 | 9 | | 32.7778 | |
| M0 | 9 | | | 33.4444 |
| Sig. | | .376 | 1.000 | 1.000 |

The means for the groups in the homogeneous subset are
shown based on the observed means.
The error is calculated using Mean Square(Error) of 278.
a. The harmonic mean sample size used is 8,944.
b. The groups are not equal in size, so the harmonic mean
of the group sizes is used. The type I error rate is not
guaranteed.
c. The significance level (alpha) is set at 0.05.

**Suhu_Tanah**

Duncan[a,b,c]

| Volume_Penyiraman | N | Subset 1 | Subset 2 |
|---|---|---|---|
| P2 | 11 | 32.0909 | |
| P1 | 12 | 32.1667 | |
| P0 | 13 | | 33.3077 |
| Sig. | | .728 | 1.000 |

The average for the groups in the homogeneous subset is shown, based on the observed average. The error value is calculated using Mean Square (Error) of 0.278.

a. Using a harmonic mean sample size of 11,944.
b. The groups are not equal in size, so the harmonic mean of the group sizes is used. The Type I error rate cannot be guaranteed.
c. The significance level (alpha) is 0.05.

**Descriptive Statistics**

Dependent Variable: Kondisi_Gulma

| Ketebalan_Mulsa | Volume_Penyiraman | Mean | Std. Deviation | N |
|---|---|---|---|---|
| M0 | P0 | .0000 | .00000 | 3 |
| | P1 | 2.3333 | 1.15470 | 3 |
| | P2 | 2.3333 | 1.52753 | 3 |
| | Total | 1.5556 | 1.50923 | 9 |
| M1 | P0 | .0000 | .00000 | 3 |
| | P1 | .0000 | .00000 | 3 |
| | P2 | .0000 | .00000 | 3 |
| | Total | .0000 | .00000 | 9 |
| M2 | P0 | .0000 | .00000 | 4 |
| | P1 | .0000 | .00000 | 3 |
| | P2 | .0000 | .00000 | 3 |
| | Total | .0000 | .00000 | 10 |
| M3 | P0 | .0000 | .00000 | 3 |
| | P1 | .0000 | .00000 | 3 |
| | P2 | .0000 | .00000 | 2 |
| | Total | .0000 | .00000 | 8 |
| Total | P0 | .0000 | .00000 | 13 |
| | P1 | .5833 | 1.16450 | 12 |
| | P2 | .6364 | 1.28629 | 11 |
| | Total | .3889 | .99363 | 36 |

## Tests of Between-Subjects Effects

Dependent Variable: Kondisi_Gulma

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 27.222[a] | 11 | 2.475 | 8.099 | .000 |
| Intercept | 5.333 | 1 | 5.333 | 17.455 | .000 |
| Ketebalan_Mulsa | 16.262 | 3 | 5.421 | 17.740 | .000 |
| Volume_Penyiraman | 2.784 | 2 | 1.392 | 4.555 | .021 |
| Ketebalan_Mulsa * Volume_Penyiraman | 8.255 | 6 | 1.376 | 4.503 | .003 |
| Error | 7.333 | 24 | .306 | | |
| Total | 40.000 | 36 | | | |
| Corrected Total | 34.556 | 35 | | | |

a. R Squared = .788 (Adjusted R Squared = .691)

## Descriptive Statistics

Dependent Variable: BBG

| Ketebalan_Mulsa | Volume_Penyiraman | Mean | Std. Deviation | N |
|---|---|---|---|---|
| M0 | P0 | .0000 | .00000 | 3 |
| | P1 | 20.6667 | 24.66441 | 3 |
| | P2 | 6.3333 | 2.08167 | 3 |
| | Total | 9.0000 | 15.40292 | 9 |
| M1 | P0 | .0000 | .00000 | 3 |
| | P1 | .0000 | .00000 | 3 |
| | P2 | .0000 | .00000 | 3 |
| | Total | .0000 | .00000 | 9 |
| M2 | P0 | .0000 | .00000 | 4 |
| | P1 | .0000 | .00000 | 3 |
| | P2 | .0000 | .00000 | 3 |
| | Total | .0000 | .00000 | 10 |
| M3 | P0 | .0000 | .00000 | 3 |
| | P1 | .0000 | .00000 | 3 |
| | P2 | .0000 | .00000 | 2 |
| | Total | .0000 | .00000 | 8 |
| Total | P0 | .0000 | .00000 | 13 |
| | P1 | 5.1667 | 14.07017 | 12 |
| | P2 | 1.7273 | 3.10132 | 11 |
| | Total | 2.2500 | 8.35763 | 36 |

**Tests of Between-Subjects Effects**

Dependent Variable: BBG

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 1219.417[a] | 11 | 110.856 | 2.171 | .054 |
| Intercept | 178.531 | 1 | 178.531 | 3.497 | .074 |
| Ketebalan_Mulsa | 544.352 | 3 | 181.451 | 3.554 | .029 |
| Volume_Penyiraman | 171.601 | 2 | 85.800 | 1.681 | .207 |
| Ketebalan_Mulsa * Volume_Penyiraman | 508.217 | 6 | 84.703 | 1.659 | .175 |
| Error | 1225.333 | 24 | 51.056 | | |
| Total | 2627.000 | 36 | | | |
| Corrected Total | 2444.750 | 35 | | | |

a. R Squared = .499 (Adjusted R Squared = .269)

**BBG**

Duncan[a,b,c]

| Ketebalan_Mulsa | N | Subset 1 | Subset 2 |
|---|---|---|---|
| M1 | 9 | .0000 | |
| M2 | 10 | .0000 | |
| M3 | 8 | .0000 | |
| M0 | 9 | | 9.0000 |
| Sig. | | 1.000 | 1.000 |

The average for the groups in the homogeneous subset is shown, based on the observed mean values. The error value is calculated using Mean Square (Error) of 51.056.

a. Using a harmonic mean sample size of 8.944.

b. The groups are not equal in size, so the harmonic mean of the group sizes is used. The Type I error rate is not guaranteed.

c. Alpha is set at 0.05.

## Descriptive Statistics

Dependent Variable:   BKG

| Ketebalan_Mulsa | Volume_Penyiraman | Mean | Std. Deviation | N |
|---|---|---|---|---|
| M0 | P0 | .0000 | .00000 | 3 |
| | P1 | 2.1167 | 2.20148 | 3 |
| | P2 | 1.1900 | .06557 | 3 |
| | Total | 1.1022 | 1.43426 | 9 |
| M1 | P0 | .0000 | .00000 | 3 |
| | P1 | .0000 | .00000 | 3 |
| | P2 | .0000 | .00000 | 3 |
| | Total | .0000 | .00000 | 9 |
| M2 | P0 | .0000 | .00000 | 4 |
| | P1 | .0000 | .00000 | 3 |
| | P2 | .0000 | .00000 | 3 |
| | Total | .0000 | .00000 | 10 |
| M3 | P0 | .0000 | .00000 | 3 |
| | P1 | .0000 | .00000 | 3 |
| | P2 | .0000 | .00000 | 2 |
| | Total | .0000 | .00000 | 8 |
| Total | P0 | .0000 | .00000 | 13 |
| | P1 | .5292 | 1.34075 | 12 |
| | P2 | .3245 | .55662 | 11 |
| | Total | .2756 | .83934 | 36 |

## Tests of Between-Subjects Effects

Dependent Variable:   BKG

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 14.956[a] | 11 | 1.360 | 3.363 | .006 |
| Intercept | 2.678 | 1 | 2.678 | 6.624 | .017 |
| Ketebalan_Mulsa | 8.165 | 3 | 2.722 | 6.733 | .002 |
| Volume_Penyiraman | 1.747 | 2 | .874 | 2.161 | .137 |
| Ketebalan_Mulsa * Volume_Penyiraman | 5.131 | 6 | .855 | 2.116 | .089 |
| Error | 9.702 | 24 | .404 | | |
| Total | 27.391 | 36 | | | |
| Corrected Total | 24.657 | 35 | | | |

a. R Squared = .607 (Adjusted R Squared = .426)

**BKG**

Duncan[a,b,c]

| Ketebalan_Muls a | N | Subset 1 | 2 |
|---|---|---|---|
| M1 | 9 | .0000 | |
| M2 | 10 | .0000 | |
| M3 | 8 | .0000 | |
| M0 | 9 | | 1.1022 |
| Sig. | | 1.000 | 1.000 |

The average for the groups in the homogeneous subset is shown based on the observed average. The error is calculated using the Mean Square (Error) of 0.404.

a. Using the Harmonic Mean of the Sample Size of 8,944.

b. The groups are uneven in size, so the harmonic mean of the group sizes is used. The Type I error rate is not guaranteed.

c. Alpha is set at 0.05.