

DAFTAR PUSTAKA

- Agus F, Kurnia U, Adimihardja A, Dariah A. 2006. *Sifat Fisik dan Metode Analisisnya*. Balai Besar Litbang Sumberdaya Lahan Pertanian. Badan Penelitian dan Pengembangan Pertanian, Departemen Pertanian.
- Arabia T, Zainabun, Royani I. 2015. *Karakteristik Tanah Krueng Raya Kecamatan Mesjid Raya Kabupaten Aceh Barat*. Jurnal Manajemen Sumberdaya Lahan, 1(1).
- Arifin, Z. 2011. *Analisis Nilai Indeks Kualitas Tanah Entisol pada Penggunaan Lahan yang Berbeda*. Fakultas Pertanian UNRAM. Jogjakarta. Vol. 21 No. 1.
- Arsyad, Sitanala. 1989. *Konservasi Tanah dan Air*. IPB. Bogor.
- Arsyad, Sitanala. 2006. *Konservasi Tanah dan Air*. Institut Pertanian Bogor. Bogor.
- Asdak, C. 2007. *Hidrologi dan Pengelolaan Daerah Aliran Sungai*. Gaja Mada University Press. Yogyakarta.
- Balai Penelitian Sumberdaya Lahan Pertanian. 2017. *Pedoman Pengamatan Tanah di Lapangan*. Balai Besar Penelitian dan Pengembangan Sumberdaya Lahan Pertanian. 137 hal.
- Balai Penelitian Tanah. 2009. *Analisis Kimia Tanah Tanaman, Air, dan Pupuk*. Balai Besar Litbang Sumberdaya Lahan Pertanian Balai Pembangunan dan Penelitian Pertanian Departemen Pertanian. 215 hal.
- Badan Pusat Statistik. 2019. *Kabupaten Enrekang Dalam Angka Tahun 2018*. Kabupaten Enrekang.
- Djaenudin. D., H. Marwan., H., Subagyo., A., Mulyani dan N. Suharta. 2011 *Kriteria Kesesuaian Lahan Untuk Komoditas Pertanian*. Balai Penelitian Tanah. Pusat Penelitian dan Pengembangan Pertanian. Departemen Pertanian. Bogor.
- Eswaran, H. and C. Sys. 1970. *An evaluation of the free iron in tropical andesitic soils*. *Pedologie* 20:62-65.
- Faintis, D. 2007. *Morfologi dan Klasifikasi Tanah*. Fakultas Pertanian Universitas Andalas. Padang. 193 hal.

- Hairiah, Kurniatun., Sardjono, M.A dan Sabarnudin, S. 2003. *Pengantar Agroforestri: Bahan Ajar 1*. Buku. World Agroforestry Centre (ICRAF). Bogor. 44 Halaman.
- Hanafiah, K.A. 2005. *Dasar-Dasar Ilmu Tanah*. PT. Raja Grafindo Persada. Jakarta. 305 hal.
- Hanafiah, K.A. 2010. *Dasar-Dasar Ilmu Tanah*. PT. Raja Grafindo Persada. Jakarta.
- Hanafiah, K.A. 2014. *Dasar-Dasar Ilmu Tanah*. PT. Rajawali Pres. Jakarta.
- Hardjowigeno, S. 2003. *Ilmu Tanah*. Akademika Pressindo. Jakarta.
- Intara, Y. I., A. Sapei., Erizal., N. Sembiring., M. H. Bintoro., Djoefrie. 2011. *Pengaruh Pemberian Bahan Organik Pada Tanah Liat dan Lempung Berliat Terhadap Kemampuan Mengikat Air*. Jurnal Ilmu Pertanian Indonesia. 16(2): 130-135.
- Lal, R. dan M. K. Shukla. 2004. *Principles of Soil Physics*. Marcel Dekker, Inc. New York
- Mas'ud, F. 2014. *Penentuan Bulk Density*. Laboratorium Kimia Tanah, Jurusan Ilmu Tanah, Fakultas Pertanian, Universitas Hasanuddin, Makassar.
- Munibah K, Sitorus SRP, Rustiadi E, Gandasasmita K, Hartrisari. 2010. *Dampak Perubahan Penggunaan Lahan terhadap Erosi di DAS Cidanau, Banten*. *Jurnal Tanah dan Iklim*, 32:55-69.
- Munsell AH. 2009. *Munsell Soil Color Book*. Grand Rapids (US): X-Rite.
- Maria, R., Lestiana, H., dan Mulyono, A. *Upaya Konservasi Tanah dan Air dengan Agroforestri di Subang Selatan*. Pusat Penelitian Geoteknologi LIPI. Bandung.
- Naldo, R.A., 2011. *Sifat Fisika Ultisol Limau Manis Tiga Tahun Setelah Pemberian Beberapa Jenis Pupuk Hijau*. Skripsi. Fakultas Pertanian. Universitas Andalas.
- Nurhayati, H. 1989. *Pupuk dan Pemupukan*. Fakultas Pertanian Universitas Andalas. Padang.
- Sartohadi, junun., Suratman, Jamulya, Dewi, Nur Indah Sari. 2013. *Pengantar Geografi Tanah*. Pustaka Belajar. Yogyakarta.

- Sembiring, S. 2008. *Sifat Kimia dan Fisik Tanah Pada Areal Bekas Tambang Bauksit Di Pulau Bintan, Riau*. Balai Penelitian Kehutanan Aek Nauli. *Info Hutan* 5(2): 123-134.
- Setyowati, D. L. 2007. *Sifat Fisik Tanah dan Kemampuan Tanah dalam Meresap Air*. Jurusan Geografi FIS UNNES. *Vol 4 Nomor 2 tahun 2004* halaman 114.
- Suryani Christianto, Baharuddin, dan Anna. 2011. *Dinamika Sifat Fisik Tanah pada Areal Pertanaman Kakao Akibat Alih Guna Hutan di Kecamatan Papalang Kabupaten Mamuju*. Jurusan Kehutanan UNHAS. Makassar. Hal 2-3.
- Susanto, R. H dan R. H. Purnomo. 1997. *Pengantar Fisika Tanah*. Mitra Gama Widya. Yogyakarta.
- Syawal, F., A. Rauf., dan Rahmawaty. 2017. *Upaya Rehabilitasi Tanah Sawah Terdegradasi Dengan Menggunakan Kompos Sampah Kota Di Desa Serdang Kecamatan Beringin Kabupaten Deli Serdang*. *Jurnal Pertanian Tropik* 4(3): 183-189.
- Rauf, A., Rahmawaty, dan H. Wijoyo. 2015. *Kajian Karakteristik Lahan Kawasan Relokasi Pengungsi Erupsi Gunung Sinabung Kabupaten Karo Sebagai Dasar Penggunaan Lahan Berbasis Pengelolaan DAS*. *Jurnal Pertanian Tropis* 2(1): 41-53.
- Rauf, A. 2016. *Dampak Kebakaran Lahan Perkebunan Kelapa Sawit Di Lahan Gambut Kabupaten Aceh Barat Daya Terhadap Sifat Tanah Gambut*. *Jurnal Pertanian Tropik* 3(3): 256-266.
- Tetegan, M., B. nicoullaud, D. Baize, A. Boutheir, dan I. Cousin. 2011. *The contribution of rock fragment to the available water content of stony soils: proposition of new pedotransfer functions*. *Geoderma*. 165: 40-49.
- Tolaka W, Wardah, Rahmawati. 2013. *Sifat Fisik Tanah pada Hutan Primer, Agroforestri, dan Kebun Kakao di Subdas Wera Saluopa Desa Lebani Kecamatan Pamona Puselemba Poso*. *Warta Rimba*, 1 (1).
- UNITED STATES DEPARTEMEN OF AGRICULTURE, 2000. The Color of Soil. (online) Available at: <http://www.nrcs.usda.gov> (accessed 20 Februari 2016).

- Winarso, S. 2005. *Kesuburan Tanah: Dasar Kesehatan dan Kualitas Tanah*. Gava media. Jogjakarta. 296 hal.
- Wiskandar. 2002. *Pemanfaatan Pupuk Kandang Untuk Memperbaiki Sifat Fisik Tanah di Lahan Kritis yang Telah Diteras*. Fakultas Pertanian. UGM.
- Wulayaningsi, S.R. 2008. *Studi Analisis Kualitas Tanah pada Beberapa Penggunaan Lahan dan Hubungannya dengan Tingkat Erosi di SubDAS Keduang*. Wonogiri. Program Studi Ilmu Lingkungan Universitas Sebelas Maret.
- Wulandari, C., Budiono, P., Yuwono, S.B dan Herwanti, S. 2012. *Adoption of agroforestry patterns and crop systems around register 19 forest park, lampung province, indonesia*. Jurnal Manajemen Hutan. 12(2): 86-93.
- Yamani, A. 2007. Analisis sifat fisik dan kimia tanah pada kelerengan yang berbeda di CV Tabalong Timur Kabupaten Tabalong Kalimantan Selatan. Jurnal Universitas Lampung.

LAMPIRAN

Lampiran 1. Perhitungan *Bulk Density*

1. Plot 1

Kedalaman 30 cm

a. Titik 1

$$B = 496,81 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,9$$

$$B1 = 180,83 \text{ g} \quad = 235,8 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{496,81-180,83}{235,08} \text{ g/cm}^3$$

$$= 1,34 \text{ g/cm}^3$$

b. Titik 2

$$B = 442,89 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 182,37 \text{ g} \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{442,89-182,37}{232,71} \text{ g/cm}^3$$

$$= 1,24 \text{ g/cm}^3$$

c. Titik 3

$$B = 476,13 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 129,97 \text{ g} \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{476,13-129,97}{232,71} \text{ g/cm}^3$$

$$= 1,48 \text{ g/cm}^3$$

Kedalaman 60 cm

a. Titik 1

$$B = 514,10 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 182,50 \text{ g} \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{514,10-182,50}{232,71} \text{ g/cm}^3$$

$$= 1,42 \text{ g/cm}^3$$

b. Titik 2

$$B = 488,86 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,9$$

$$B1 = 182,00 \text{ g} \quad = 235,08 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{488,86-182,00}{235,08} \text{ g/cm}^3$$

$$= 1,30 \text{ g/cm}^3$$

c. Titik 3

$$B = 487,60 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,7$$

$$B1 = 183,14 \text{ g} \quad = 230,33 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{487,60-183,14}{230,33} \text{ g/cm}^3$$

$$= 1,32 \text{ g/cm}^3$$

2. Plot 2

Kedalaman 30 cm

a. Titik 1

$$B = 507,51 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,9$$

$$B1 = 182,85 \text{ g} \quad = 235,08 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{507,51-182,85}{235,08} \text{ g/cm}^3$$

$$= 1,38 \text{ g/cm}^3$$

b. Titik 2

$$B = 457,17 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 180,69 \text{ g} \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{457,17-180,69}{232,71} \text{ g/cm}^3$$

$$= 1,18 \text{ g/cm}^3$$

c. Titik 3

$$B = 464,01 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 181,96 \text{ g} \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{volume tanah} \text{ g/cm}^3$$

$$BD = \frac{464,01-181,96}{232,71} \text{ g/cm}^3$$

$$= 1,21 \text{ g/cm}^3$$

Kedalaman 60 cm

a. Titik 1

$$B = 514,10 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 182,50 \text{ g} \quad \quad \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{volume tanah} \text{ g/cm}^3$$

$$BD = \frac{514,10-182,50}{232,71} \text{ g/cm}^3$$

$$= 1,42 \text{ g/cm}^3$$

b. Titik 2

$$B = 449,97 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 180,56 \text{ g} \quad \quad \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{volume tanah} \text{ g/cm}^3$$

$$BD = \frac{448,97-180,56}{232,71} \text{ g/cm}^3$$

$$= 1,15 \text{ g/cm}^3$$

c. Titik 3

$$B = 480,53 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 183,27 \text{ g} \quad \quad \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{volume tanah} \text{ g/cm}^3$$

$$BD = \frac{480,53-183,27}{232,71} \text{ g/cm}^3$$

$$= 1,27 \text{ g/cm}^3$$

3. Plot 3

Kedalaman 30 cm

a. Titik 1

$$B = 471,78 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 182,27 \text{ g} \quad \quad \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{volume tanah} \text{ g/cm}^3$$

$$BD = \frac{471,78-182,27}{232,71} \text{ g/cm}^3$$

$$= 1,24 \text{ g/cm}^3$$

b. Titik 2

$$B = 459,54 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,7$$

$$B1 = 180,26 \text{ g} \quad = 230,33 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{459,54-180,26}{230,33} \text{ g/cm}^3$$

$$= 1,21 \text{ g/cm}^3$$

c. Titik 3

$$B = 489,90 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,9$$

$$B1 = 180,89 \text{ g} \quad = 235,08 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{489,90-180,89}{235,08} \text{ g/cm}^3$$

$$= 1,31 \text{ g/cm}^3$$

Kedalaman 60 cm

a. Titik 1

$$B = 501,26 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,9$$

$$B1 = 181,93 \text{ g} \quad = 235,08 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{501,26-181,93}{235,08} \text{ g/cm}^3$$

$$= 1,38 \text{ g/cm}^3$$

b. Titik 2

$$B = 488,99 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 180,61 \text{ g} \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{488,99-180,61}{232,71} \text{ g/cm}^3$$

$$= 1,32 \text{ g/cm}^3$$

c. Titik 3

$$B = 501,76 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 181,62 \text{ g} \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{501,76 - 181,62}{232,71} \text{ g/cm}^3$$

$$= 1,37 \text{ g/cm}^3$$

4. Plot 4

Kedalaman 30 cm

a. Titik 1

$$B = 465,54 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,7$$

$$B1 = 183,65 \text{ g} \quad = 230,33 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{465,54 - 183,65}{230,33} \text{ g/cm}^3$$

$$= 1,22 \text{ g/cm}^3$$

b. Titik 2

$$B = 479,69 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,9$$

$$B1 = 184,02 \text{ g} \quad = 235,08 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{479,69 - 184,02}{235,08} \text{ g/cm}^3$$

$$= 1,25 \text{ g/cm}^3$$

c. Titik 3

$$B = 489,97 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,6$$

$$B1 = 183,19 \text{ g} \quad = 227,96 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{489,97 - 183,19}{227,96} \text{ g/cm}^3$$

$$= 1,34 \text{ g/cm}^3$$

Kedalaman 60 cm

a. Titik 1

$$B = 502,32 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,9$$

$$B1 = 182,70 \text{ g} \quad = 235,08 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{502,32 - 182,70}{235,08} \text{ g/cm}^3$$

$$= 1,43 \text{ g/cm}^3$$

b. Titik 2

$$B = 501,66 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,7$$

$$B1 = 179,75 \text{ g} \quad = 230,33 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{501,66-179,75}{230,33} \text{ g/cm}^3$$
$$= 1,39 \text{ g/cm}^3$$

c. Titik 3

$$B = 496,68 \text{ g} \quad \text{Volume tanah} = 3,14 \times 2,75^2 \times 9,8$$

$$B1 = 181,81 \text{ g} \quad = 232,71 \text{ cm}^3$$

$$BD = \frac{BKO (B-B1)}{\text{volume tanah}} \text{ g/cm}^3$$

$$BD = \frac{496,69-181,81}{232,71} \text{ g/cm}^3$$
$$= 1,35 \text{ g/cm}^3$$

Lampiran 2. Perhitungan Porositas

1. Plot 1

Kedalaman 30 cm

a. Titik 1

$$\text{Bulk density} = 1,34 \text{ g/cm}^3$$

$$\text{Partikel density} = 2,65 \text{ g/cm}^3$$

$$\text{Porositas} = 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\%$$

$$= 1 - \left(\frac{1,34}{2,65} \right) \times 100\%$$

$$= 49,43\%$$

b. Titik 2

$$\text{Bulk density} = 1,11 \text{ g/cm}^3$$

$$\text{Partikel density} = 2,65 \text{ g/cm}^3$$

$$\text{Porositas} = 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\%$$

$$= 1 - \left(\frac{1,11}{2,65} \right) \times 100\%$$

$$= 58,11\%$$

c. Titik 3

$$\text{Bulk density} = 1,48 \text{ g/cm}^3$$

$$\text{Partikel density} = 2,65 \text{ g/cm}^3$$

$$\text{Porositas} = 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\%$$

$$= 1 - \left(\frac{1,48}{2,65} \right) \times 100\%$$

$$= 44,15\%$$

Kedalaman 60 cm

a. Titik 1

$$\text{Bulk density} = 1,42 \text{ g/cm}^3$$

$$\text{Partikel density} = 2,65 \text{ g/cm}^3$$

$$\text{Porositas} = 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\%$$

$$= 1 - \left(\frac{1,42}{2,65} \right) \times 100\%$$

$$= 546,42\%$$

b. Titik 2

$$\text{Bulk density} = 1,30 \text{ g/cm}^3$$

$$\text{Partikel density} = 2,65 \text{ g/cm}^3$$

$$\begin{aligned}
\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\
&= 1 - \left(\frac{1,30}{2,65} \right) \times 100\% \\
&= 50,94\%
\end{aligned}$$

c. Titik 3

$$\begin{aligned}
\text{Bulk density} &= 1,32 \text{ g/cm}^3 \\
\text{Partikel density} &= 2,65 \text{ g/cm}^3 \\
\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\
&= 1 - \left(\frac{1,32}{2,65} \right) \times 100\% \\
&= 53,58\%
\end{aligned}$$

2. Plot 2

Kedalaman 30 cm

a. Titik 1

$$\begin{aligned}
\text{Bulk density} &= 1,32 \text{ g/cm}^3 \\
\text{Partikel density} &= 2,65 \text{ g/cm}^3 \\
\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\
&= 1 - \left(\frac{1,38}{2,65} \right) \times 100\% \\
&= 47,92\%
\end{aligned}$$

b. Titik 2

$$\begin{aligned}
\text{Bulk density} &= 1,18 \text{ g/cm}^3 \\
\text{Partikel density} &= 2,65 \text{ g/cm}^3 \\
\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\
&= 1 - \left(\frac{1,18}{2,65} \right) \times 100\% \\
&= 55,47\%
\end{aligned}$$

c. Titik 3

$$\begin{aligned}
\text{Bulk density} &= 1,21 \text{ g/cm}^3 \\
\text{Partikel density} &= 2,65 \text{ g/cm}^3 \\
\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\
&= 1 - \left(\frac{1,21}{2,65} \right) \times 100\% \\
&= 54,34\%
\end{aligned}$$

Kedalaman 60 cm

a. Titik 1

$$\text{Bulk density} = 1,38 \text{ g/cm}^3$$

$$\text{Partikel density} = 2,65 \text{ g/cm}^3$$

$$\text{Porositas} = 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\%$$

$$= 1 - \left(\frac{1,38}{2,65} \right) \times 100\%$$

$$= 47,92\%$$

b. Titik 2

$$\text{Bulk density} = 1,15 \text{ g/cm}^3$$

$$\text{Partikel density} = 2,65 \text{ g/cm}^3$$

$$\text{Porositas} = 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\%$$

$$= 1 - \left(\frac{1,15}{2,65} \right) \times 100\%$$

$$= 56,60\%$$

c. Titik 3

$$\text{Bulk density} = 1,27 \text{ g/cm}^3$$

$$\text{Partikel density} = 2,65 \text{ g/cm}^3$$

$$\text{Porositas} = 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\%$$

$$= 1 - \left(\frac{1,27}{2,65} \right) \times 100\%$$

$$= 52,08\%$$

3. Plot 3

Kedalaman 30 cm

a. Titik 1

$$\text{Bulk density} = 1,24 \text{ g/cm}^3$$

$$\text{Partikel density} = 2,65 \text{ g/cm}^3$$

$$\text{Porositas} = 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\%$$

$$= 1 - \left(\frac{1,24}{2,65} \right) \times 100\%$$

$$= 53,21\%$$

b. Titik 2

$$\text{Bulk density} = 1,21 \text{ g/cm}^3$$

$$\text{Partikel density} = 2,65 \text{ g/cm}^3$$

$$\text{Porositas} = 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\%$$

$$= 1 - \left(\frac{1,21}{2,65}\right) \times 100\%$$

$$= 54,34\%$$

c. Titik 3

$$\begin{aligned} \text{Bulk density} &= 1,31 \text{ g/cm}^3 \\ \text{Partikel density} &= 2,65 \text{ g/cm}^3 \\ \text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}}\right) \times 100\% \\ &= 1 - \left(\frac{1,31}{2,65}\right) \times 100\% \\ &= 50,57\% \end{aligned}$$

Kedalaman 60 cm

a. Titik 1

$$\begin{aligned} \text{Bulk density} &= 1,38 \text{ g/cm}^3 \\ \text{Partikel density} &= 2,65 \text{ g/cm}^3 \\ \text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}}\right) \times 100\% \\ &= 1 - \left(\frac{1,38}{2,65}\right) \times 100\% \\ &= 47,92\% \end{aligned}$$

b. Titik 2

$$\begin{aligned} \text{Bulk density} &= 1,32 \text{ g/cm}^3 \\ \text{Partikel density} &= 2,65 \text{ g/cm}^3 \\ \text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}}\right) \times 100\% \\ &= 1 - \left(\frac{1,32}{2,65}\right) \times 100\% \\ &= 50,19\% \end{aligned}$$

c. Titik 3

$$\begin{aligned} \text{Bulk density} &= 1,37 \text{ g/cm}^3 \\ \text{Partikel density} &= 2,65 \text{ g/cm}^3 \\ \text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}}\right) \times 100\% \\ &= 1 - \left(\frac{1,37}{2,65}\right) \times 100\% \\ &= 48,30\% \end{aligned}$$

4. Plot 4

Kedalaman 30 cm

a. Titik 1

$$\begin{aligned} \text{Bulk density} &= 1,22 \text{ g/cm}^3 \\ \text{Partikel density} &= 2,65 \text{ g/cm}^3 \end{aligned}$$

$$\begin{aligned}
\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\
&= 1 - \left(\frac{1,22}{2,65} \right) \times 100\% \\
&= 53,96\%
\end{aligned}$$

b. Titik 2

$$\begin{aligned}
\text{Bulk density} &= 1,25 \text{ g/cm}^3 \\
\text{Partikel density} &= 2,65 \text{ g/cm}^3 \\
\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\
&= 1 - \left(\frac{1,25}{2,65} \right) \times 100\% \\
&= 52,83\%
\end{aligned}$$

c. Titik 3

$$\begin{aligned}
\text{Bulk density} &= 1,34 \text{ g/cm}^3 \\
\text{Partikel density} &= 2,65 \text{ g/cm}^3 \\
\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\
&= 1 - \left(\frac{1,34}{2,65} \right) \times 100\% \\
&= 49,43\%
\end{aligned}$$

Kedalaman 60 cm

a. Titik 1

$$\begin{aligned}
\text{Bulk density} &= 1,43 \text{ g/cm}^3 \\
\text{Partikel density} &= 2,65 \text{ g/cm}^3 \\
\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\
&= 1 - \left(\frac{1,43}{2,65} \right) \times 100\% \\
&= 46,04\%
\end{aligned}$$

b. Titik 2

$$\begin{aligned}
\text{Bulk density} &= 1,39 \text{ g/cm}^3 \\
\text{Partikel density} &= 2,65 \text{ g/cm}^3 \\
\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\
&= 1 - \left(\frac{1,39}{2,65} \right) \times 100\% \\
&= 47,55\%
\end{aligned}$$

c. Titik 3

$$\begin{aligned}
\text{Bulk density} &= 1,35 \text{ g/cm}^3 \\
\text{Partikel density} &= 2,65 \text{ g/cm}^3
\end{aligned}$$

$$\begin{aligned}\text{Porositas} &= 1 - \left(\frac{\text{Bulk Density}}{\text{Partikel Density}} \right) \times 100\% \\ &= 1 - \left(\frac{1,35}{2,65} \right) \times 100\% \\ &= 49,08\%\end{aligned}$$

Lampiran 3. Perhitungan Kandungan Bahan Kasar

1. Plot 1

a. Titik 1

Berat contoh tanah = 1.2 kg

Berat kerikil = 0,2 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.2}{1,2} \times 100\% \\ &= 16,66\% \end{aligned}$$

b. Titik 2

Berat contoh tanah = 1.3 kg

Berat kerikil = 0,3 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.3}{1,3} \times 100\% \\ &= 23,07\% \end{aligned}$$

c. Titik 3

Berat contoh tanah = 1.3 kg

Berat kerikil = 0,3 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.3}{1,3} \times 100\% \\ &= 23,07\% \end{aligned}$$

2. Plot 2

a. Titik 1

Berat contoh tanah = 1.4 kg

Berat kerikil = 0,2 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.2}{1,4} \times 100\% \\ &= 14,28\% \end{aligned}$$

b. Titik 2

Berat contoh tanah = 1.4 kg

Berat kerikil = 0,3 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.3}{1,4} \times 100\% \\ &= 21,42\% \end{aligned}$$

c. Titik 3

Berat contoh tanah = 2 kg

Berat kerikil = 0,2 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.2}{2} \times 100\% \end{aligned}$$

$$= 10\%$$

3. Plot 3

a. Titik 1

Berat contoh tanah = 1.4 kg

Berat kerikil = 0,3 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.3}{1,4} \times 100\% \\ &= 21,42\% \end{aligned}$$

b. Titik 2

Berat contoh tanah = 1.1 kg

Berat kerikil = 0,4 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.4}{1,1} \times 100\% \\ &= 36,36\% \end{aligned}$$

c. Titik 3

Berat contoh tanah = 1.3 kg

Berat kerikil = 0,5 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.5}{1,3} \times 100\% \\ &= 38,46\% \end{aligned}$$

4. Plot 4

a. Titik 1

Berat contoh tanah = 1 kg

Berat kerikil = 0,2 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.2}{1} \times 100\% \\ &= 20\% \end{aligned}$$

b. Titik 2

Berat contoh tanah = 1.2 kg

Berat kerikil = 0,5 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.5}{1,2} \times 100\% \\ &= 41,66\% \end{aligned}$$

c. Titik 3

Berat contoh tanah = 1.4 kg

Berat kerikil = 0,4 kg

$$\begin{aligned} \text{bahan kasar} &= \frac{0.4}{1,4} \times 100\% \\ &= 28,57\% \end{aligned}$$

Lampiran 4. Dokumentasi Penelitian



Pembuatan Plot



Pengambilan sampel



Pengamatan Warna Tanah



Pengovenan Sampel Tanah



Menimbang Sampel Tanah



Pengamatan Takstur Tanah