

DAFTAR PUSTAKA

- Afrizon, 2017. “*Pertumbuhan Bibit Kelapa Sawit (Elaeis guineensis Jacq.) dengan Pemberian Pupuk Organik dan Anorganik*”. Jurnal Agritepa, 3:95-105.
- Alatas, A., 2015. “*Trend Produksi dan Ekspor Minyak Sawit (CPO) Indonesia*”. Leading & Enlightening Journal UMY, 1:115-124.
- Jauhary & Lestarningrati . “*Aplikasi Sistem Monitoring Tanaman Berbasis Android.*” Semarang : Unikom, 2018.
- Nugraho, Agung. “*Buku Teknologi Agroindustri Kelapa Sawit ?*” .2019. Diakses pada bulan Agustus 2019.
- Nugroho,T. C., Oksana, O., & Aryanti, E (2013). *Analisis Sifat Kimia Tanah Gambut yang dikonversiMenjadi Perkebunan Kelapa Sawit, di kabupaten Kampar*. Jurnal Agroteknologi, 4(1), 26-30. <https://doi.org/10.24014/jav,v4i1>.
- Nur'islamia, Annis Shella, dkk. 2019. *Karakteristik Sensor Ph Tanah Dan Sensor Konduktivitas Pada Rancang Bangun Sistem Pengukuran Kualitas Tanah*. Prosiding Seminar Fisika (E-Journal). Vol. 8. 2019.
- Pahan, I. 2015. *Panduan Teknis Budidaya Kelapa Sawit untuk Praktisi Perkebunan*. Penebar Swadaya. Jakarta. 116 hlm.
- Pahan, I., 2012. “*Panduan Lengkap Kelapa Sawit*”. Penebar Swadaya, Jakarta.
- RR. Darlita, R. D., Joy.& Sudirja, R. “*Analisis Beberapa Sifat Kimia Tabah terhadap Peningkatan Produksi Kelapa Sawit Terhadap Peningkatan Produksi Kelapa Sawit pada Tanah Pasir di Perkebunan Kelapa sawit Selangkun, Agrikultura, 28 (1), 15-20.* <https://doi.org/10.24198/agrikulturav28i1>.
- S.M. Nur, “*Karakteristik Kelapa Sawit Sebagai Bahan Baku Bioenergi*, Tegal : PT Insan Fajar Mandiri Nusantara, 2014.

- Sinauarduino. 2016. “*Mengenal Arduino Software (IDE)*”. Diunduh di <https://www.sinauarduino.com/artikel/mengenalarduino-sortware-ide/> tanggal 4 April 2019.
- Siswanto, B. (2019). Sebaran Unsur Hara N, P, K Dan Ph Dalam Tanah. *Buana Sains*, 18(2), 109-124.
- Souqy, A. A. 2018. “*Rancang Bangun Smart Garden Berbasis IoT Menggunakan Aplikasi Blynk.*” Skripsi. Balikpapan: Jurusan Teknik Elektronika Politeknik Negeri Balikpapan
- Syam, R. 2013. “*Dasar Dasar Teknik Sensor*”. Makassar.
- Turban and R. Kono, “*Skripsi Sistem Informasi Geografis Letak Lokasi Service Handphone Berbasis Andoroid*”, Ruslan kono, Gorontalo 2017.
- V. R, Juniardy, *Protype Alat Penyemprot Air Otomatis Pada Kebun Pembibitan Sawit Berbasis Sensor kelembaban dan Mikrokontroler AVR ATMEGA*, Jurnal coding Sistem Komputer Universitas Tanjungpura.
- Wang, C., Daneshmand, M., Dohler, M., & Hu, R. Q. 2013. “*Guest Editorial Special Issue on Internet of Things (IoT): Architecture, Protocols and Services. J. IEEE Sensors*”. 13(10): 3505-3510.
- Wicaksono, A. W., Widasari, E. R., & Utaminingrum, F. 2017.” *Implementasi Sistem Kontrol dan Monitoring pH pada Tanaman Kentang Aeroponik secara Wireless. J.*” Pengembangan Teknologi Informasi dan Ilmu Komputer. 1(5): 386–398.

LAMPIRAN

Kode Program Sistem Monitoring Kesesuaian Lahan Pertanian Untuk Penanaman Kelapa Sawit Berbasis IoT Sebagai berikut :

```
#include <Adafruit_Sensor.h>
#include <DHT.h>
#include <DHT_U.h>
#define DHTPIN 14 // Digital pin connected to the DHT sensor
#define DHTTYPE DHT11 // DHT 11
DHT_Unified dht(DHTPIN, DHTTYPE);
uint32_t delayMS;
void setup() {
  Serial.begin(9600);
  // Initialize device.
  dht.begin();
  Serial.println(F("DHTxx Unified Sensor Example"));
  // Print temperature sensor details.
  sensor_t sensor;
  dht.temperature().getSensor(&sensor);
  Serial.println(F("-----"));
  Serial.println(F("Temperature Sensor"));
  Serial.print (F("Sensor Type: ")); Serial.println(sensor.name);
  Serial.print (F("Driver Ver: ")); Serial.println(sensor.version);
  Serial.print (F("Unique ID: ")); Serial.println(sensor.sensor_id);
  Serial.print (F("Max Value: ")); Serial.print(sensor.max_value); Serial.println(F("°C"));
  Serial.print (F("Min Value: ")); Serial.print(sensor.min_value); Serial.println(F("°C"));
  Serial.print (F("Resolution: ")); Serial.print(sensor.resolution); Serial.println(F("°C"));
```

```
int sensorPin = 12; // select the input pin for the potentiometer
int sensorValue = 0; // variable to store the value coming from the sensor

void setup() {
  Serial.begin(9600);
  // declare the ledPin as an OUTPUT:
}

void loop() {
  // read the value from the sensor:
  sensorValue = analogRead(sensorPin);
  // turn the ledPin on
  float nilaiPH = ((-0.0139*sensorValue)+7.7851)*(-1);
  // nilai=map(sensorValue,0,4095,0,14);
  Serial.println(nilaiPH);
  delay(500);
}
```



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```
int sensorPin = 12; // select the input pin for the potentiometer
int sensorValue = 0; // variable to store the value coming from the sensor

void setup() {
  Serial.begin(9600);
  // declare the ledPin as an OUTPUT:
}

void loop() {
  // read the value from the sensor:
  sensorValue = analogRead(sensorPin);
  // turn the ledPin on
  float nilaiPH = ((-0.0139*sensorValue)+7.7851)*(-1);
  // nilai=map(sensorValue,0,4095,0,14);
  Serial.println(nilaiPH);
  delay(500);
}
```

```
int sensorKelembapanTanahPin = 13; // select the input pin for the potentiometer
int sensorstatuskelembapan = 0; // variable to store the value coming from the sensor
int sensorpHtanah = 12; // select the input pin for the potentiometer
int sensorstatuspHtanah = 0; // variable to store the value coming from the sensor
void setup() {
  Serial.begin(9600);
  // declare the ledPin as an OUTPUT:
}

void loop() {
  // read the value from the sensor:
  sensorstatuskelembapan = analogRead(13);
  sensorstatuspHtanah = analogRead(12);

  // turn the ledPin on
  int nilai = map(sensorstatuskelembapan, 0, 4095, 100, 0);
  Serial.print(nilai);
  Serial.println(" %");
  float nilaiPH = ((-0.0139*sensorstatuspHtanah)+3.2851)*(-1);
  // nilai=map(sensorValue,0,4095,0,14);
  Serial.println(nilaiPH);
  //Serial.println(sensorstatuspHtanah);
  delay(500);
}
```

```
#define BLYNK_PRINT Serial
#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>

char auth[] = "WFjsmaTekVD_YxtQXJSjnaLQmBOZeHK4";
char ssid[] = "realme C3";
char pass[] = "takbepaket";

int sensorKelembapantanahPin = 35;
int sensorstatuskelembapan = 0;
int sensorpHtanah = 34;
int sensorstatuspHtanah = 0;
#include "DHT.h"
#include <Wire.h>
#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27 , 16, 2);
#define DHTPIN 14
#define DHTTYPE DHT11 // DHT 11
DHT dht(DHTPIN, DHTTYPE);
```

```
void setup() {  
  Serial.begin(9600);  
  dht.begin();  
  lcd.init();  
  // Serial.println  
  // Print a message to the LCD.  
  lcd.backlight();  
  //lcd.setCursor(3, 0);  
  lcd.setCursor(0, 0);  
  
  lcd.print("ASSALAMUALAIKUM");  
  delay(1000);  
  lcd.setCursor(0, 1);  
  lcd.print(" SELAMAT DATANG ");  
  delay(2000);  
  lcd.setCursor(0, 0);  
  lcd.print("          PADA          ");  
  delay(1000);  
  lcd.setCursor(0, 1);  
  lcd.print("ALAT MONITORING");  
  delay(2000);  
  lcd.setCursor(0, 0);  
  lcd.print("KESESUAIAN LAHAN");  
  delay(1000);  
}
```



```
lcd.setCursor(0, 1);
lcd.print(" DI PROJEK AMRI ");
delay(2000);
lcd.setCursor(0, 0);
lcd.print(" PHYSICS 3 2018 ");
delay(1000);
lcd.clear();
lcd.setCursor(0, 1);
lcd.print("..INISIALISASI..");
delay(3000);
lcd.clear();
// declare the ledPin as an OUTPUT:

Blynk.begin(auth, ssid, pass, "iot.serangkota.go.id", 8080);
}

void loop() {

// read the value from the sensor:
sensorstatuskelembapan = analogRead(35);
sensorstatuspHtanah = analogRead(34);
float nilaikelembapan = map(sensorstatuskelembapan, 0, 4095, 100, 0);
//float nilaiPH = (-0.0179*sensorstatuspHtanah)+7.7851)*-1;
```

```
float nilaiPH = ((-0.0169 * sensorstatuspHtanah) + 7.7860) * -1;
//float nilaiPH = (-0.2864*sensorstatuspHtanah)+21.265 ;
float h = dht.readHumidity();
float t = dht.readTemperature();

Blynk.virtualWrite(V0, nilaikelembapan);
Blynk.virtualWrite(V1, nilaiPH);
Blynk.virtualWrite(V2, h);
Blynk.virtualWrite(V3, t);

//if (nilaiPH >14|| nilaiPH < 0){
//  nilaiPH=0;
//}

if (nilaikelembapan < 15 || nilaikelembapan < 0) {
  nilaikelembapan = 0;
}
lcd.setCursor(0, 0);
lcd.print("Soil= ");
lcd.print(nilaikelembapan);
lcd.setCursor(0, 1);
lcd.print("ph = ");
lcd.print(nilaiPH);
delay(1000);
```

```
    lcd.print("   lahan   ");
    lcd.setCursor(0, 1);
    lcd.print("   sesuai   ");
    lcd.clear();

}

if ((nilaikelembapan <= 70) && (nilaiPH <= 5.0) && (t <= 25));
{
    delay(2000);
    lcd.setCursor(0, 0);
    lcd.print("   lahan   ");
    lcd.setCursor(0, 1);
    lcd.print(" tidak sesuai ");
    delay(2000);
    lcd.clear();
}

Serial.println(String() + "Kelembaban Tanah : " + (nilaikelembapan) + " %" + " pH Tanah : " + (nilaiPH) +
                " Suhu : " + (t) + "°C" + " Kelembaban: " + (h) + " %");
delay(1000);

Blynk.run();
}
```