

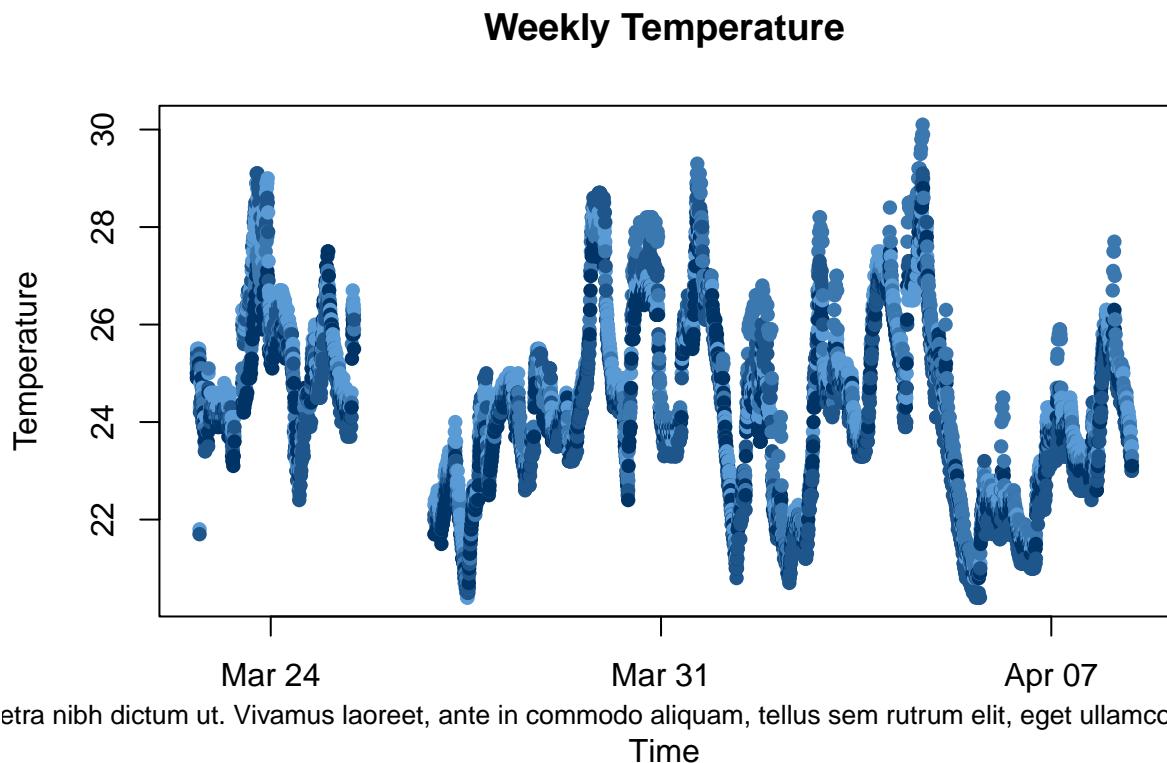
Weekly Reporting

agrotech live | wigglelabs

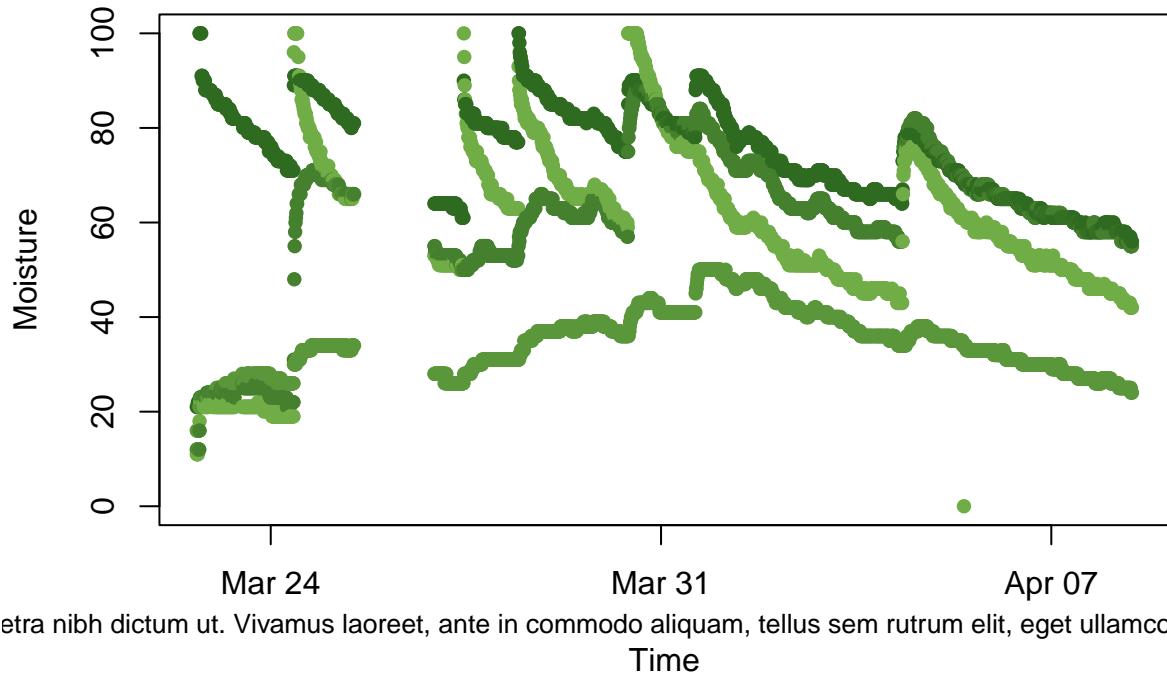
2025-04-08

Time Series

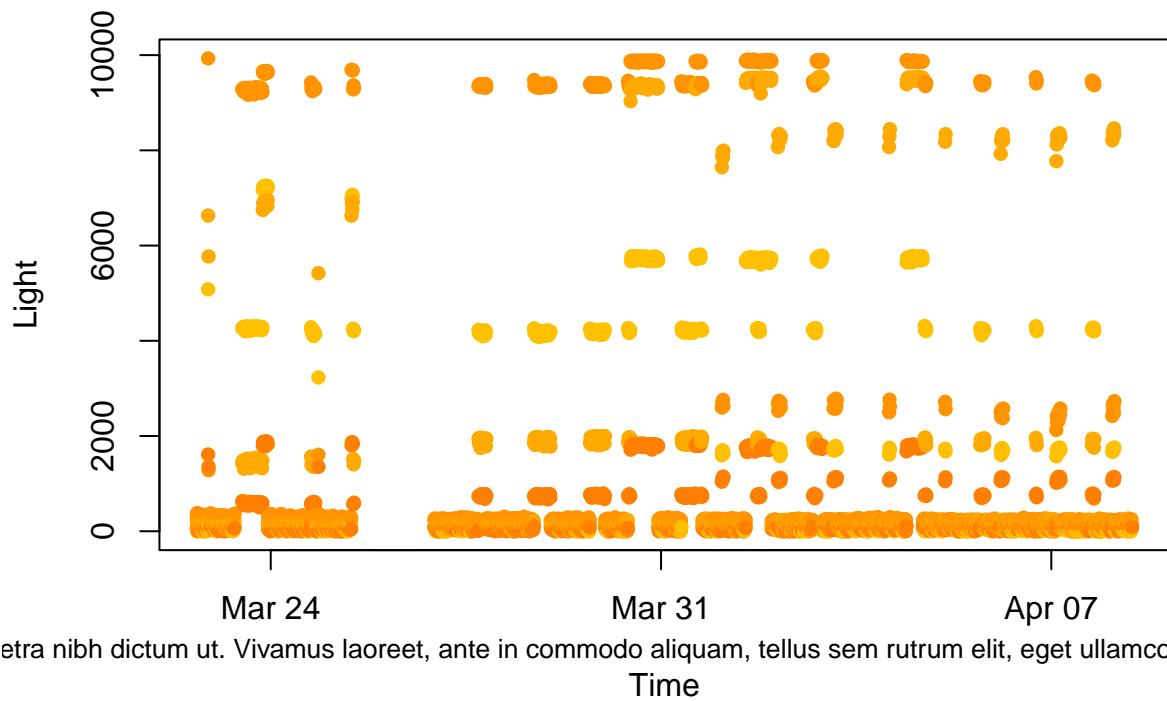
This section examines the relationships between sensor variables (temperature, moisture, light, and conductivity) over the past week. Pairwise scatter plots illustrate how these variables interact, while color coding emphasizes key patterns and potential correlations.



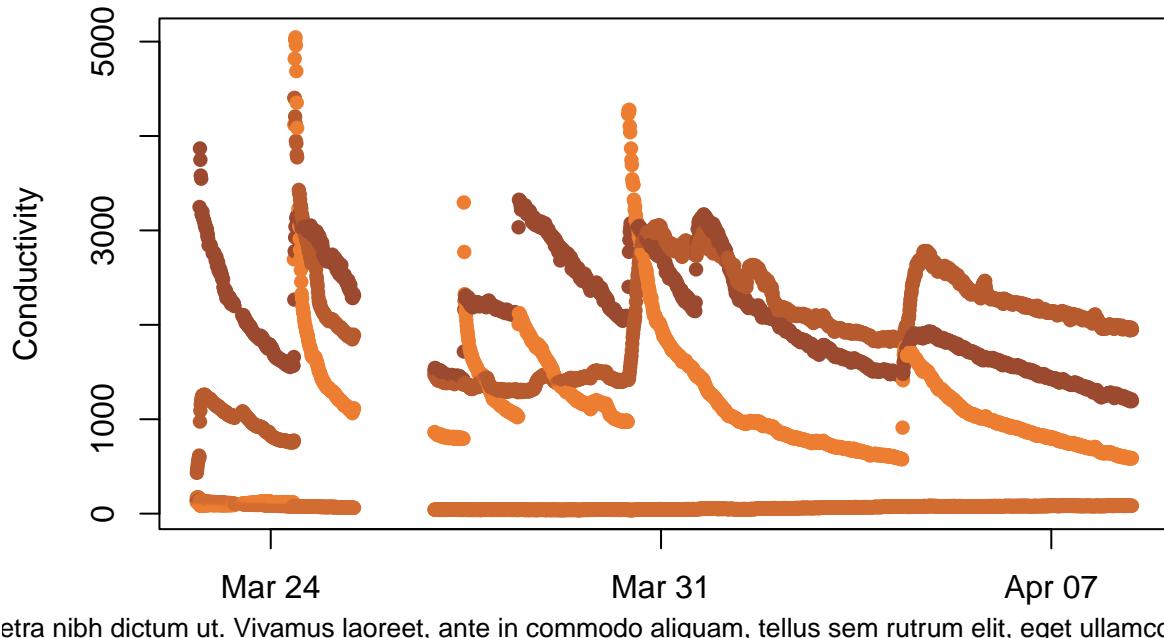
Weekly Moisture



Weekly Light



Weekly Conductivity



extra nibh dictum ut. Vivamus laoreet, ante in commodo aliquam, tellus sem rutrum elit, eget ullamcorper ju:
Time

Matrices

Correlation Matrices

```
Temperature <- c(agt_data$Temperature)
Moisture <- c(agt_data$Moisture)
Light <- c(agt_data$Light)
Conductivity <- c(agt_data$Conductivity)

matrix_data <- data.frame(Temperature, Moisture, Light, Conductivity)
print("Covariance Matrix")
```

```
## [1] "Covariance Matrix"
```

```
cov_matrix <- cov(matrix_data)
cov_matrix
```

```
##           Temperature      Moisture       Light Conductivity
## Temperature  3.32935305 -2.050425e-02  2387.243     -82.4216
## Moisture     -0.02050425  3.842116e+02  2825.471    16856.1879
## Light        2387.24268846  2.825471e+03 7536726.402   99557.7722
## Conductivity -82.42160384  1.685619e+04  99557.772   931264.5243
```

```
print("Correlation Matrix")
```

```
## [1] "Correlation Matrix"
```

```

cor_matrix <- cor(matrix_data)
cor_matrix

##                  Temperature      Moisture      Light Conductivity
## Temperature    1.0000000000 -0.0005732957  0.47656843 -0.04680849
## Moisture       -0.0005732957  1.0000000000  0.05250664   0.89112291
## Light          0.4765684323  0.0525066351  1.00000000   0.03757918
## Conductivity   -0.0468084873  0.8911229122  0.03757918   1.00000000

```

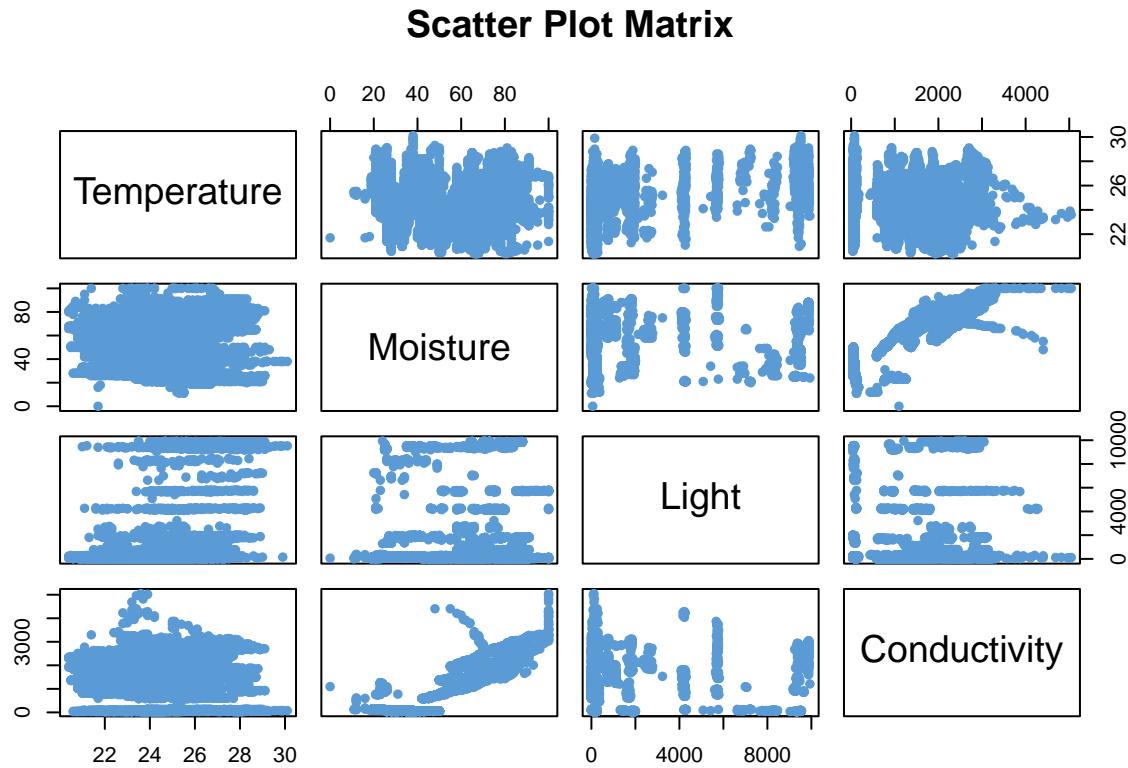
Plotting variables against each other.

```

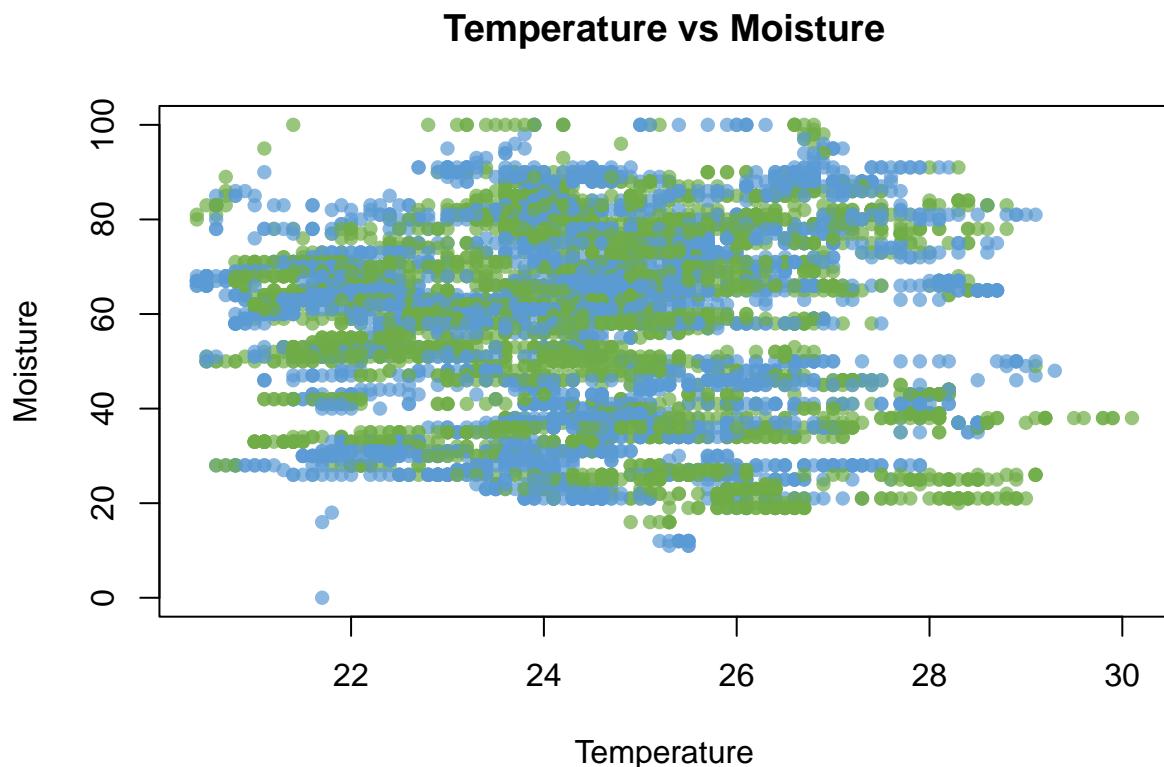
# Define the color palette
colors <- c(
  temperature = "#5B9BD5", # Soft blue
  moisture = "#70AD47", # Sage green
  light = "#FFC000", # Warm yellow
  conductivity = "#ED7D31" # Muted orange
)

# Assuming agt_data is your data frame
pairs(agt_data[, c("Temperature", "Moisture", "Light", "Conductivity")],
  col = colors["temperature"],
  pch = 16,
  main = "Scatter Plot Matrix")

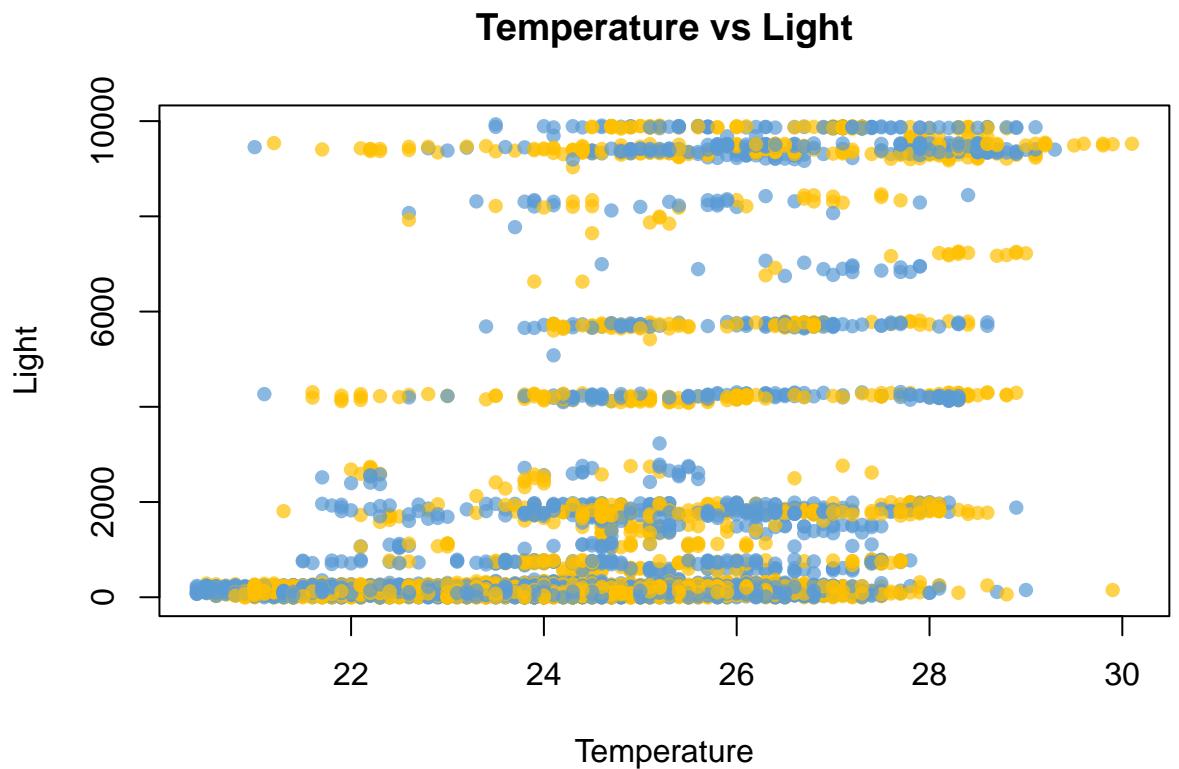
```



```
# Plot Temperature vs Moisture
plot(agt_data$Temperature, agt_data$Moisture,
  col = adjustcolor(colors[c("temperature", "moisture")], alpha=0.7),
  xlab = "Temperature",
  ylab = "Moisture",
  main = "Temperature vs Moisture",
  pch = 16)
```

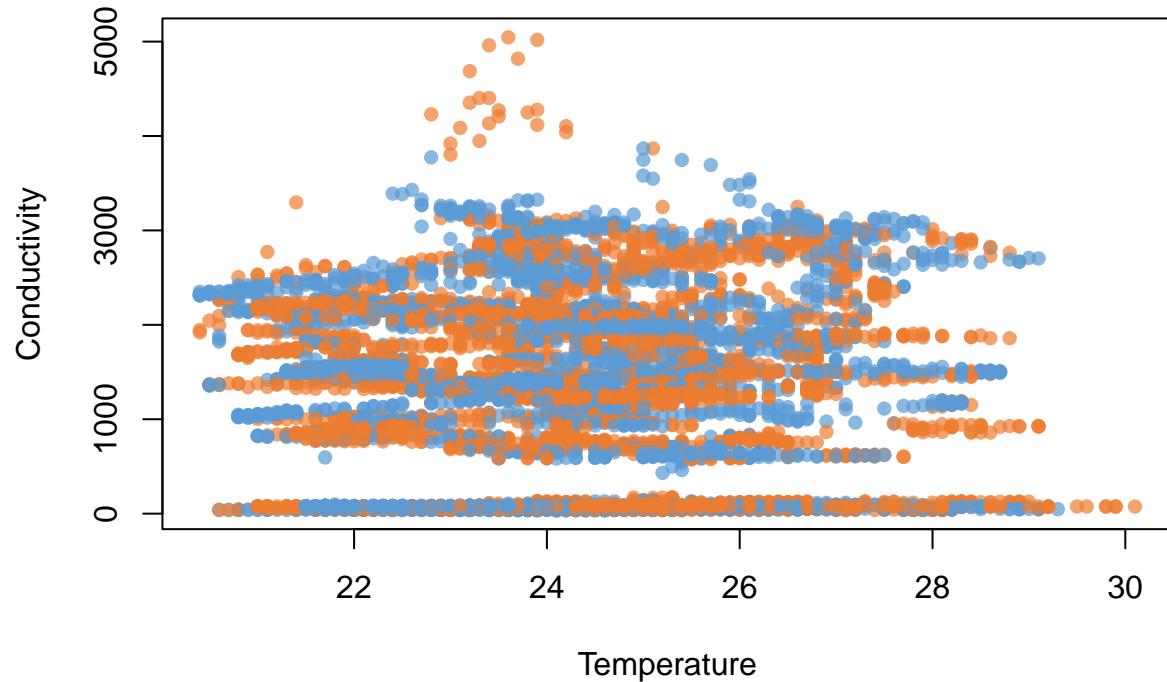


```
# Plot Temperature vs Light
plot(agt_data$Temperature, agt_data$Light,
  col = adjustcolor(colors[c("temperature", "light")], alpha=0.7),
  xlab = "Temperature",
  ylab = "Light",
  main = "Temperature vs Light",
  pch = 16)
```

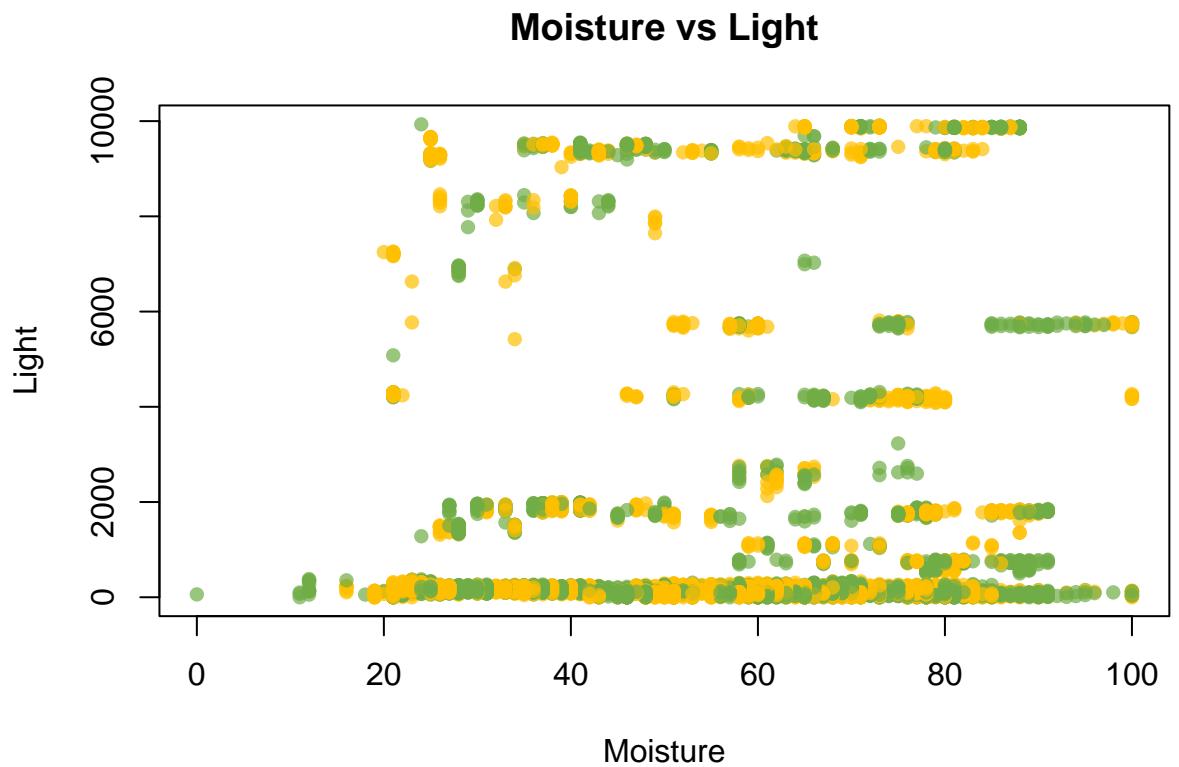


```
# Plot Temperature vs Conductivity
plot(agt_data$Temperature, agt_data$Conductivity,
      col = adjustcolor(colors[c("temperature", "conductivity")], alpha=0.7),
      xlab = "Temperature",
      ylab = "Conductivity",
      main = "Temperature vs Conductivity",
      pch = 16)
```

Temperature vs Conductivity

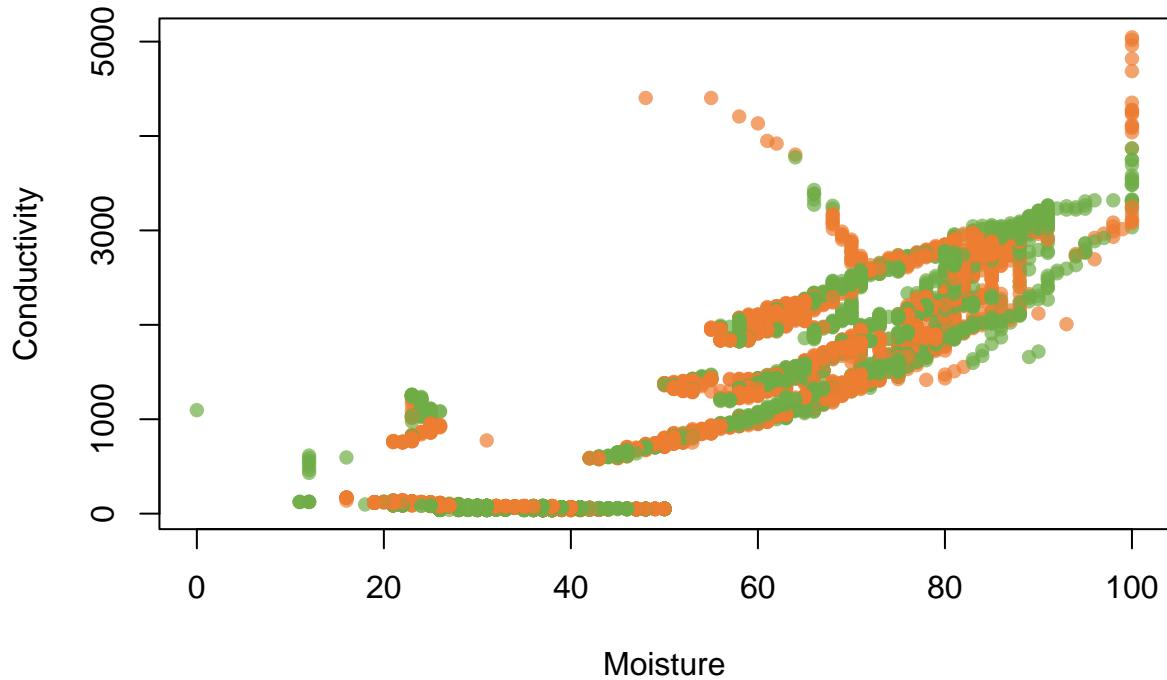


```
# Plot Moisture vs Light
plot(agt_data$Moisture, agt_data$Light,
      col = adjustcolor(colors[c("moisture", "light")], alpha=0.7),
      xlab = "Moisture",
      ylab = "Light",
      main = "Moisture vs Light",
      pch = 16)
```



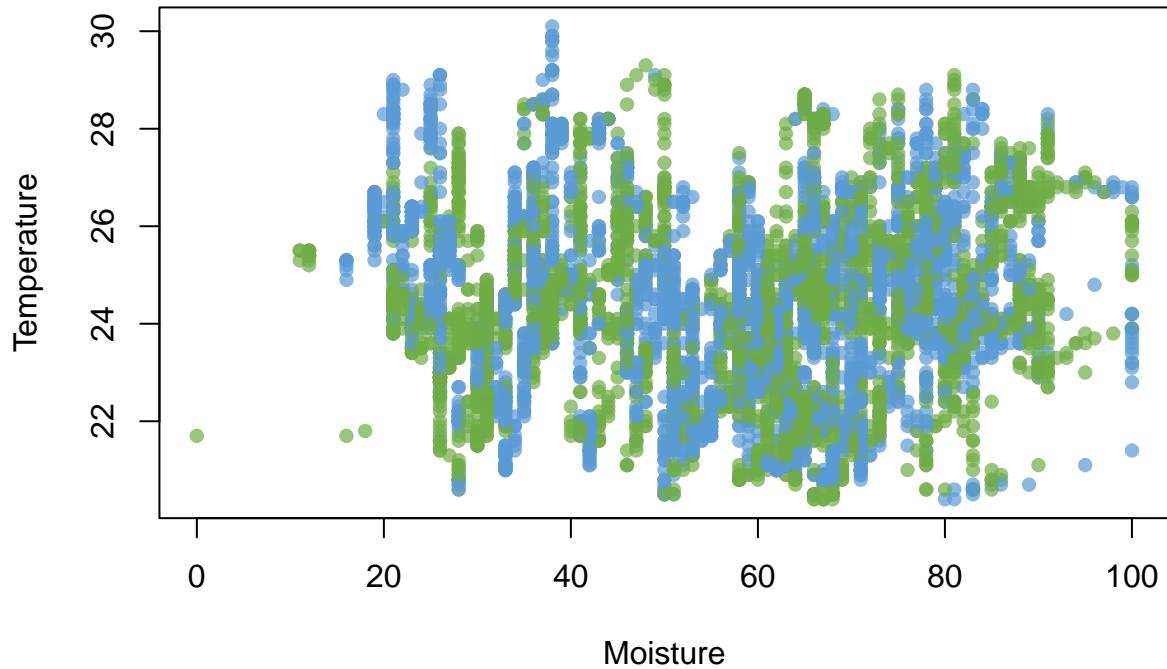
```
# Plot Moisture vs Conductivity
plot(agt_data$Moisture, agt_data$Conductivity,
      col = adjustcolor(colors[c("moisture", "conductivity")], alpha=0.7),
      xlab = "Moisture",
      ylab = "Conductivity",
      main = "Moisture vs Conductivity",
      pch = 16)
```

Moisture vs Conductivity



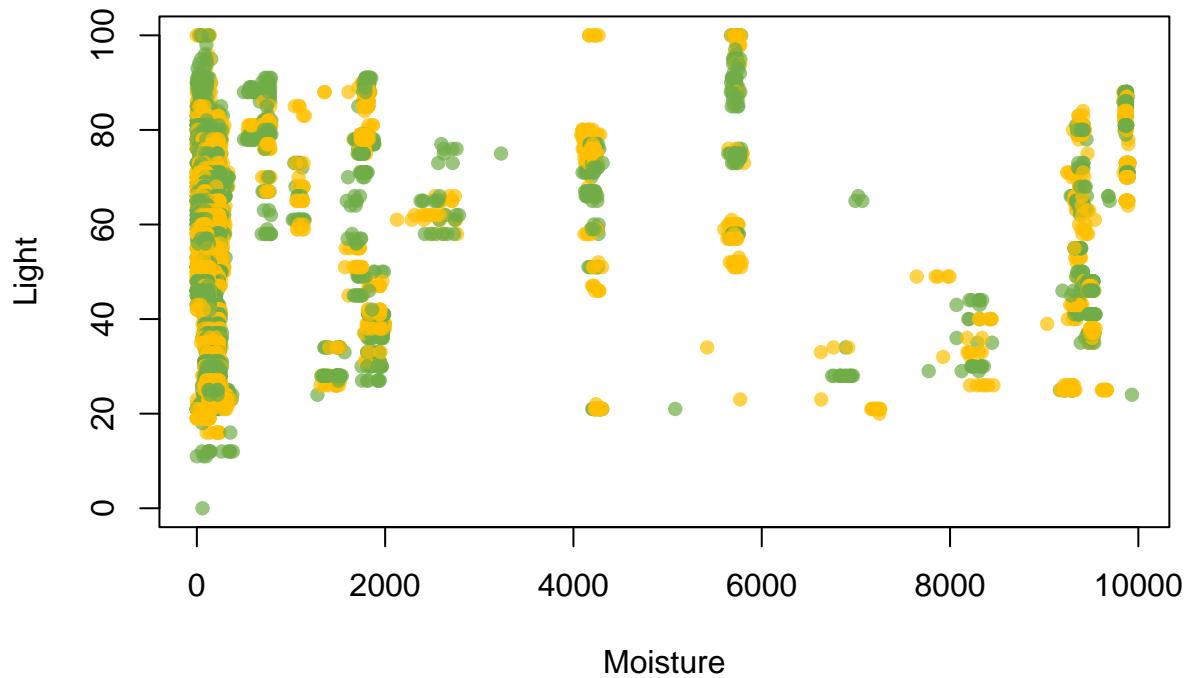
```
# Plot Light vs Conductivity
plot(agt_data$Moisture, agt_data$Temperature,
      col = adjustcolor(colors[c("moisture", "temperature")], alpha=0.7),
      xlab = "Moisture",
      ylab = "Temperature",
      main = "Moisture vs Temperature",
      pch = 16)
```

Moisture vs Temperature



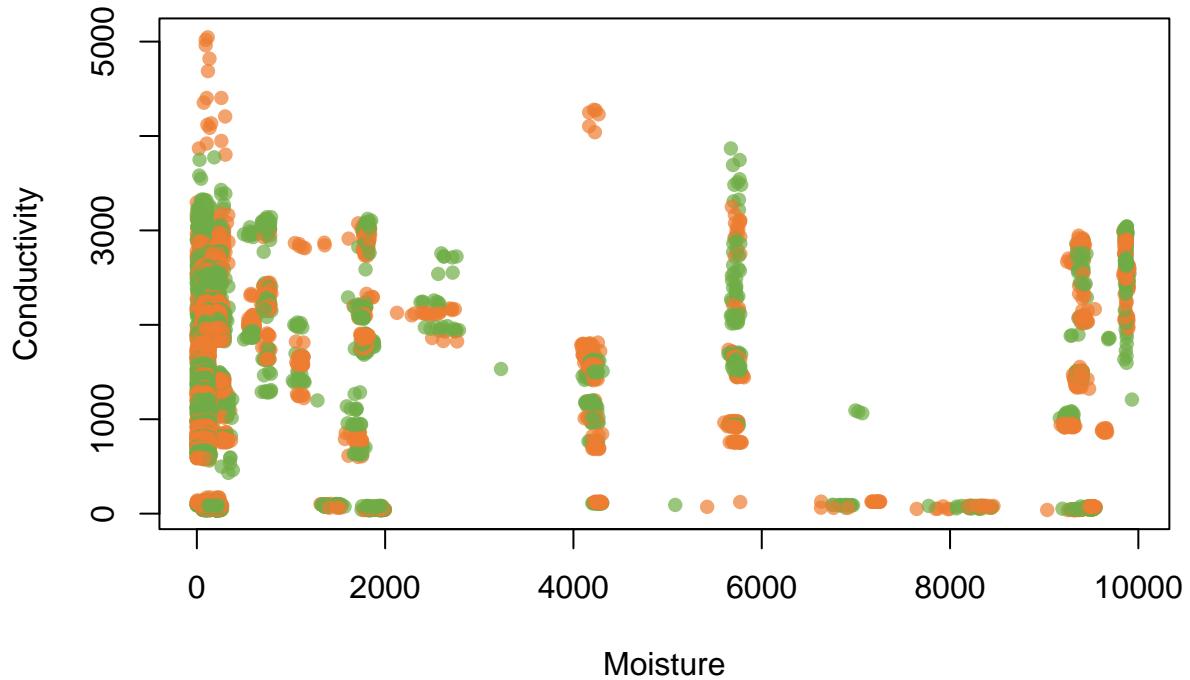
```
# Plot Moisture vs Light
plot(agt_data$Light, agt_data$Moisture,
      col = adjustcolor(colors[c("moisture", "light")], alpha=0.7),
      xlab = "Moisture",
      ylab = "Light",
      main = "Moisture vs Light",
      pch = 16)
```

Moisture vs Light



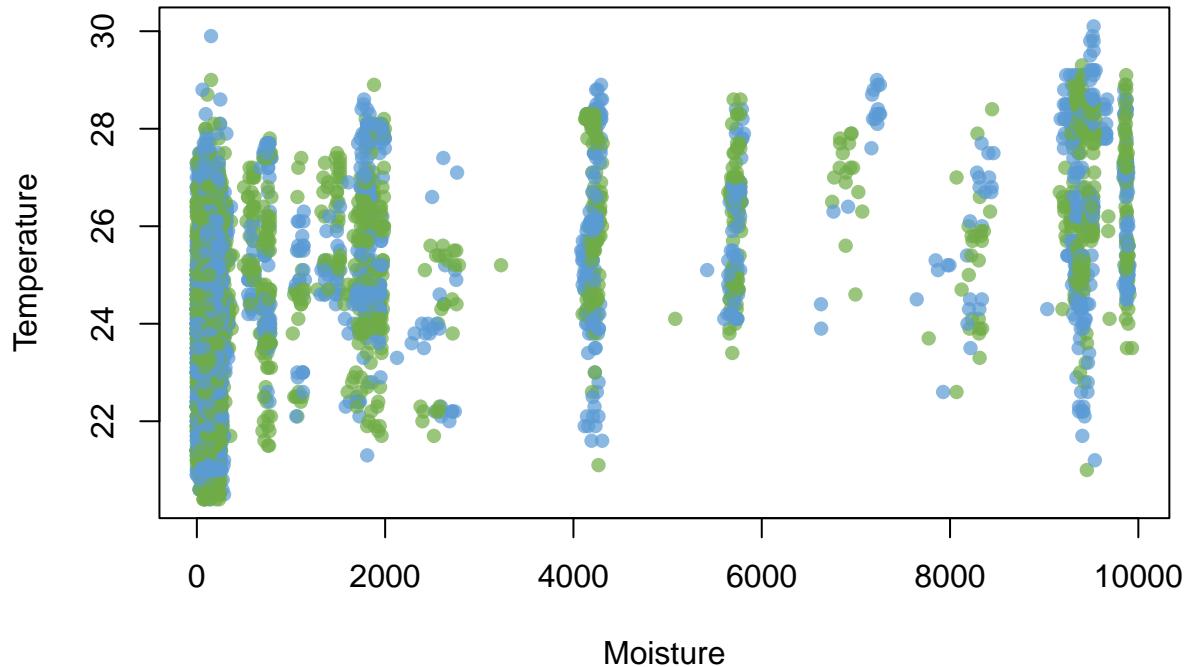
```
# Plot Moisture vs Conductivity
plot(agt_data$Light, agt_data$Conductivity,
      col = adjustcolor(colors[c("moisture", "conductivity")], alpha=0.7),
      xlab = "Moisture",
      ylab = "Conductivity",
      main = "Moisture vs Conductivity",
      pch = 16)
```

Moisture vs Conductivity



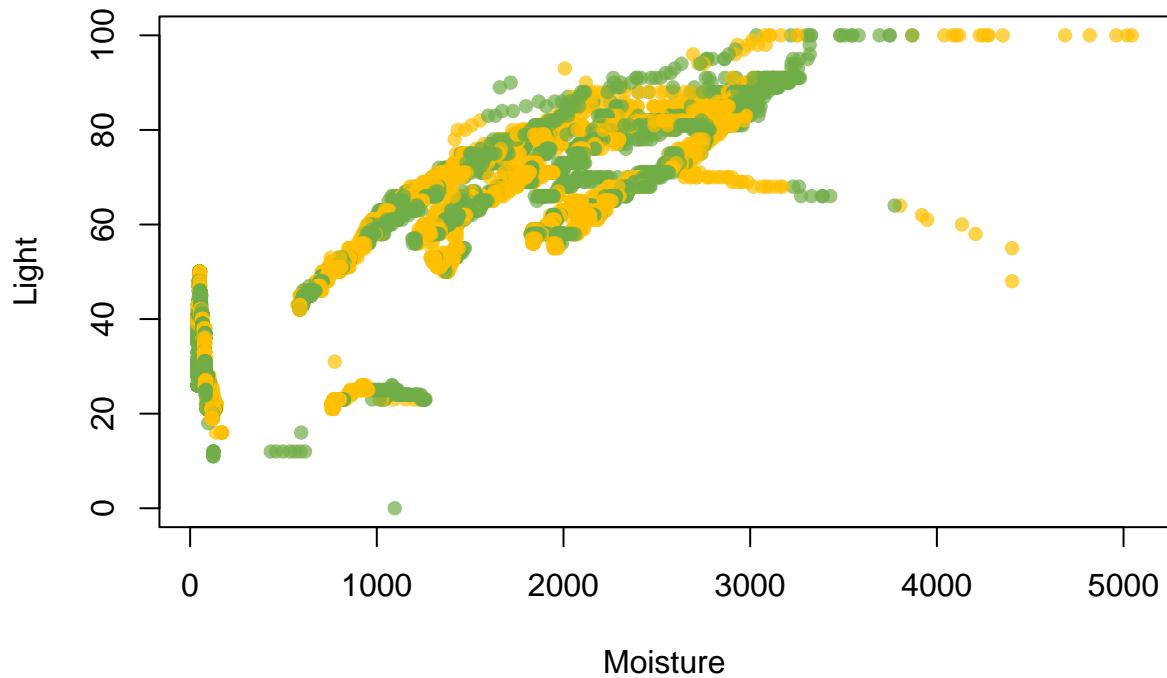
```
# Plot Light vs Conductivity
plot(agt_data$Light, agt_data$Temperature,
      col = adjustcolor(colors[c("moisture", "temperature")], alpha=0.7),
      xlab = "Moisture",
      ylab = "Temperature",
      main = "Moisture vs Temperature",
      pch = 16)
```

Moisture vs Temperature

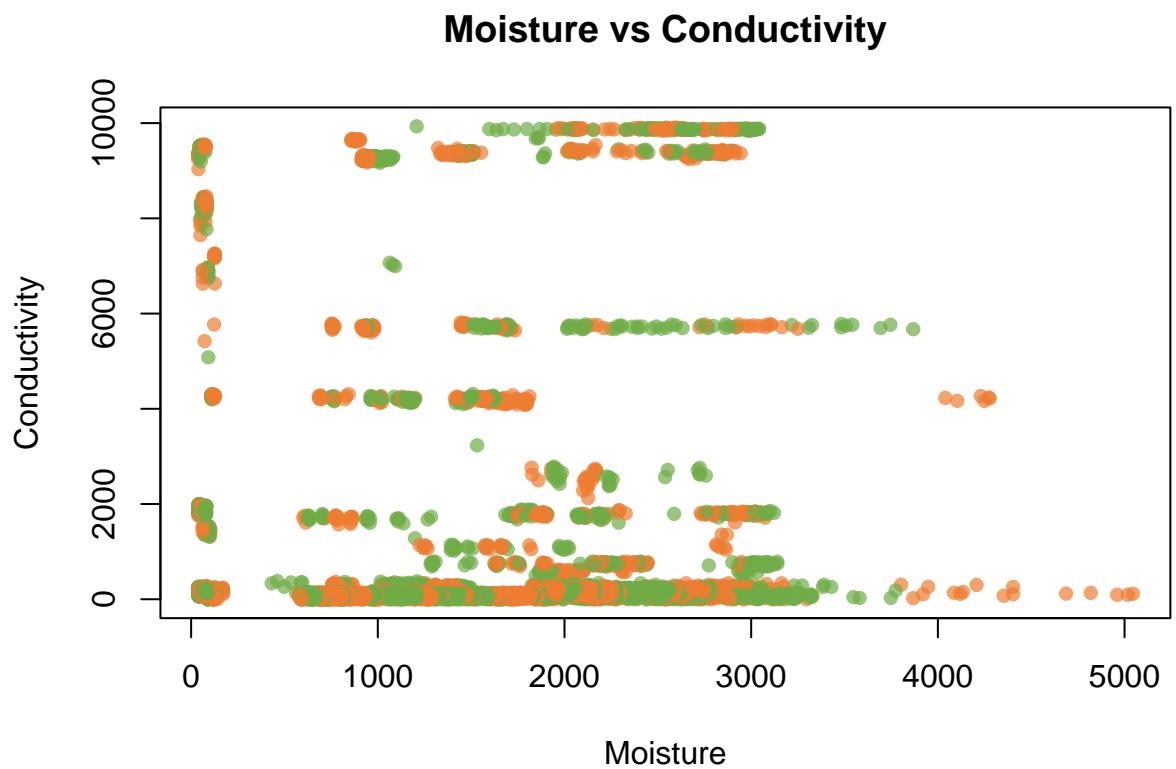


```
# Plot Moisture vs Light
plot(agt_data$Conductivity, agt_data$Moisture,
      col = adjustcolor(colors[c("moisture", "light")], alpha=0.7),
      xlab = "Moisture",
      ylab = "Light",
      main = "Moisture vs Light",
      pch = 16)
```

Moisture vs Light

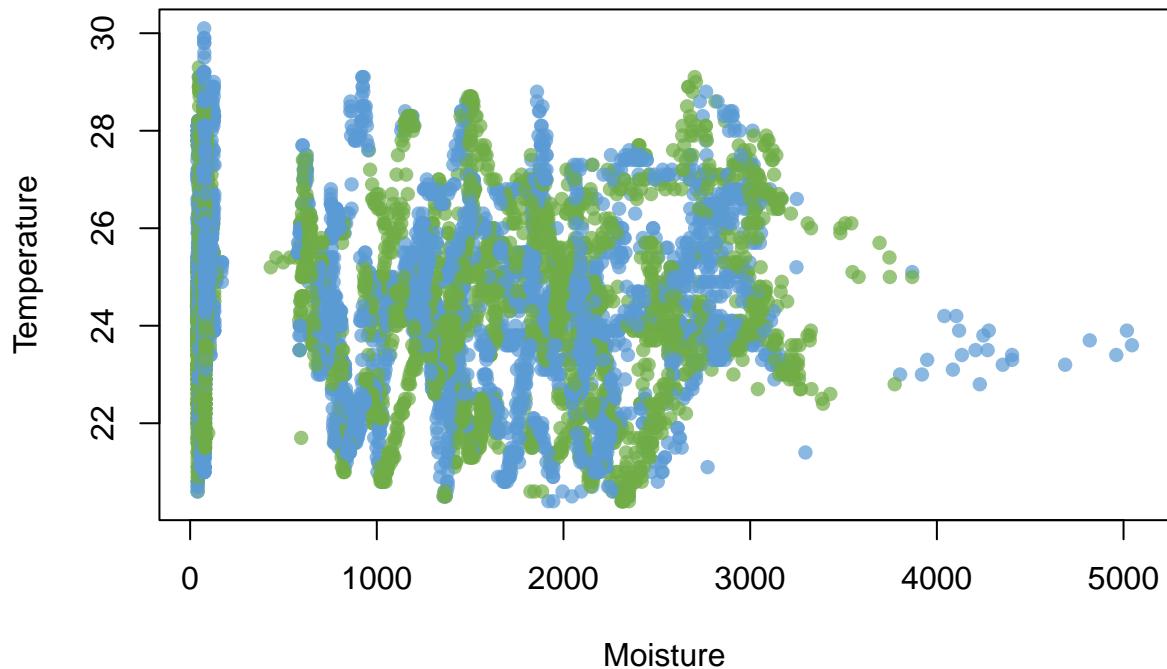


```
# Plot Moisture vs Conductivity
plot(agt_data$Conductivity, agt_data$Light,
      col = adjustcolor(colors[c("moisture", "conductivity")], alpha=0.7),
      xlab = "Moisture",
      ylab = "Conductivity",
      main = "Moisture vs Conductivity",
      pch = 16)
```



```
# Plot Light vs Conductivity
plot(agt_data$Conductivity, agt_data$Temperature,
      col = adjustcolor(colors[c("moisture", "temperature")], alpha=0.7),
      xlab = "Moisture",
      ylab = "Temperature",
      main = "Moisture vs Temperature",
      pch = 16)
```

Moisture vs Temperature



Heatmap

```
# Load required library
library(ggplot2)

# Select the relevant variables for correlation
matrix_data <- agt_data[, c("Temperature", "Moisture", "Light", "Conductivity")]

# Calculate the correlation matrix
cor_matrix <- cor(matrix_data, use = "complete.obs")

# Convert the correlation matrix into a format suitable for ggplot
cor_data <- as.data.frame(as.table(cor_matrix))
colnames(cor_data) <- c("Variable1", "Variable2", "Correlation")

# Create the heatmap using ggplot2
ggplot(cor_data, aes(x = Variable1, y = Variable2, fill = Correlation)) +
  geom_tile(color = "white") + # Heatmap tiles
  scale_fill_gradient2(low = "blue", high = "red", mid = "white",
                       midpoint = 0, limit = c(-1, 1),
                       name = "Correlation") + # Color scale
  theme_minimal() + # Clean theme
  theme(axis.text.x = element_text(angle = 45, vjust = 1, hjust = 1)) + # Rotate x-axis labels
```

```
labs(title = "Heatmap of Variable Correlations", x = "Variables", y = "Variables")
```

