```
> head(mydata)
           y       x1        x2       x3       x4       x5
1  0.3833838 82.19762 128.38572 2.963222 8.148025 66.49398
2 14.8224896 83.84911 117.74896 2.415674 5.945306 59.39393
3 15.5270754 92.79354  98.81826 2.682626 5.933339 69.98642
4 -3.3207493 85.35254 108.51833 2.985579 2.967865 72.07055
5 10.0196414 85.64644  97.02792 3.335348 7.580771 65.93392
6 26.9836869 93.57532  96.28504 2.174727 5.578532 65.00873
```

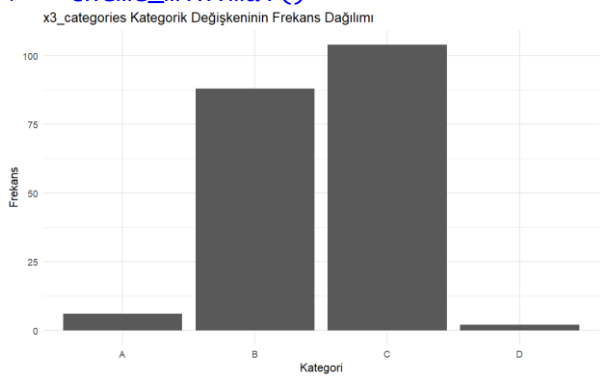
```
> names(newdata)
[1] "y"           "x1"          "x2"          "x3_f_factor" "x4"          "
x5"
```

```
> x3_categories <- cut(x3, breaks = category_centers, labels = c("A", "B",
"C", "D"))
> newdata <- data.frame(y, x1, x2, x3_categories, x4, x5)
> head(newdata)
           y       x1        x2 x3_categories       x4       x5
1  0.3833838 82.19762 128.38572              B 8.148025 66.49398
2 14.8224896 83.84911 117.74896              B 5.945306 59.39393
3 15.5270754 92.79354  98.81826              B 5.933339 69.98642
4 -3.3207493 85.35254 108.51833              B 2.967865 72.07055
5 10.0196414 85.64644  97.02792              C 7.580771 65.93392
6 26.9836869 93.57532  96.28504              B 5.578532 65.00873
```

```
> unique_values <- unique(newdata$x3_categories)
> print(unique_values)
[1] B C A D
Levels: A B C D
```

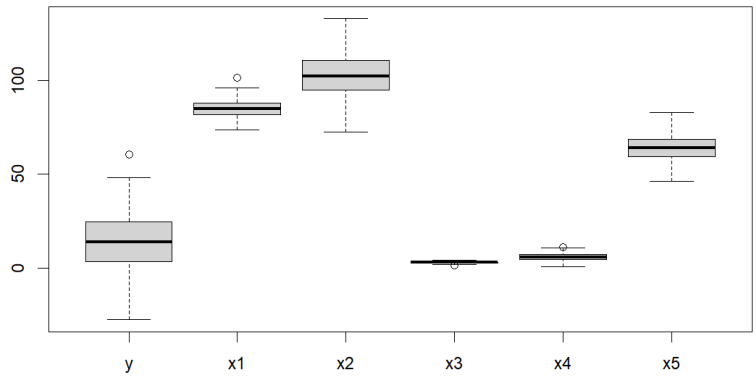
```
> print(missing_columns)
character(0)
```

```
> #kategorik değişken için frekans analizi yapıyorum
> category_counts <- as.data.frame(table(newdata$x3_categories))
> ggplot(category_counts, aes(x = Var1, y = Freq)) +
+   geom_bar(stat = "identity") +
+   labs(x = "Kategori", y = "Frekans", title = "x3_categories Kategorik De
ğişkeninin Frekans Dağılımı") +
+   theme_minimal()
```



```
summary(category_counts)
 Var1       Freq
 A:1   Min.   :  2
 B:1   1st Qu.:  5
 C:1   Median : 47
 D:1   Mean   : 50
       3rd Qu.: 92
       Max.   :104
```

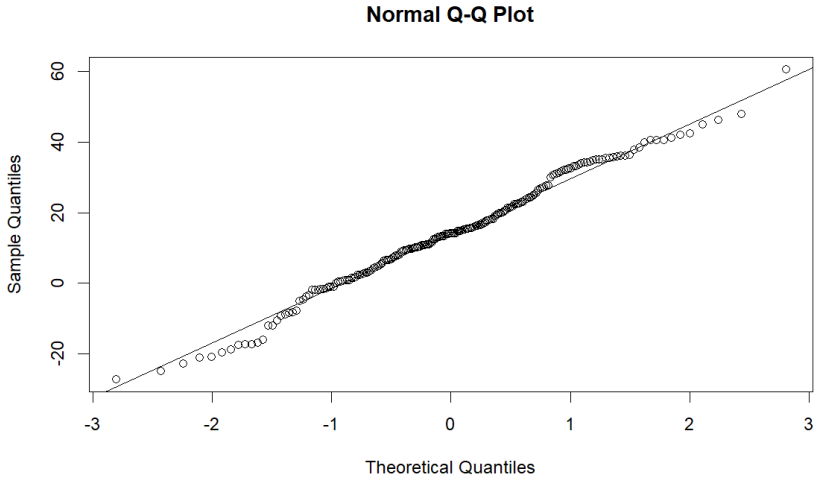
```
> boxplot(mydata)
```



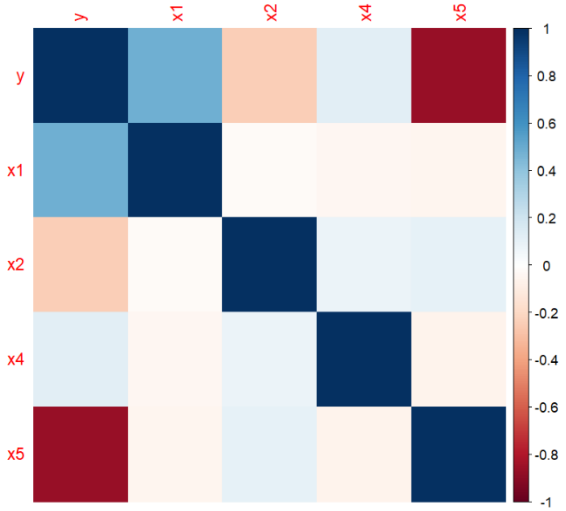

```
> summary(outliers)
   Mode   FALSE    TRUE
logical     199       1
```

```
print(outlier_values)
          y       x1       x2 x3_categories       x4       x5
11 60.64595 91.12041 103.4309              C 5.205939 46.44458
```

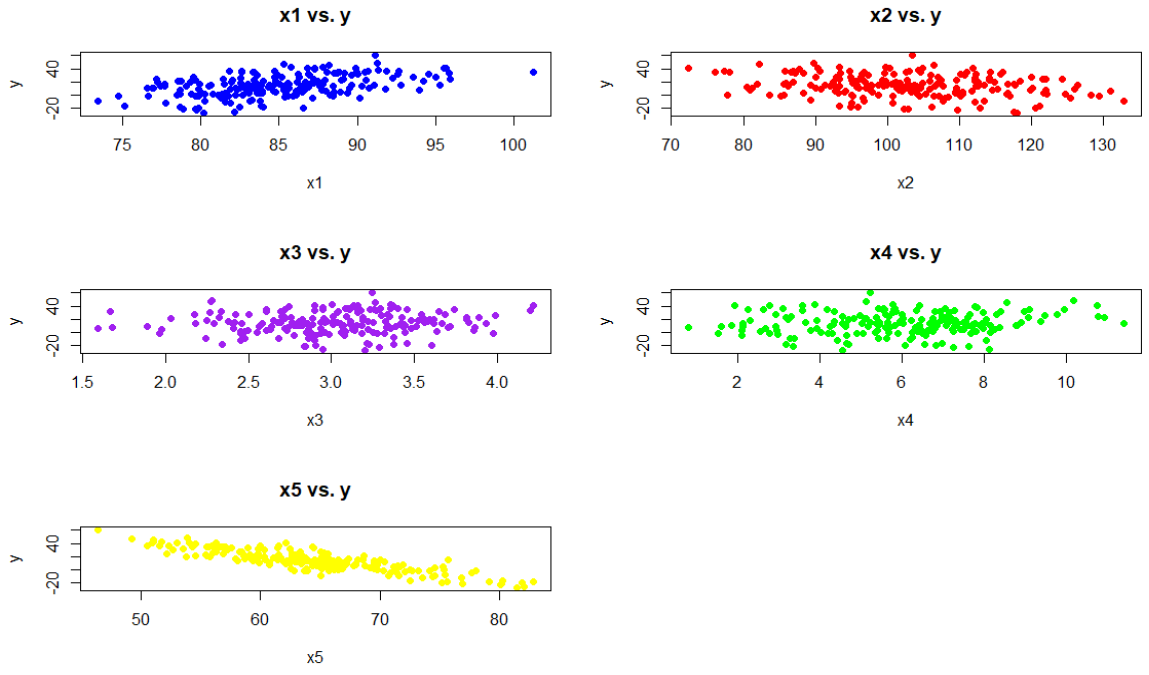
```
> qqnorm(newdata$y)
> qqline(newdata$y)
```



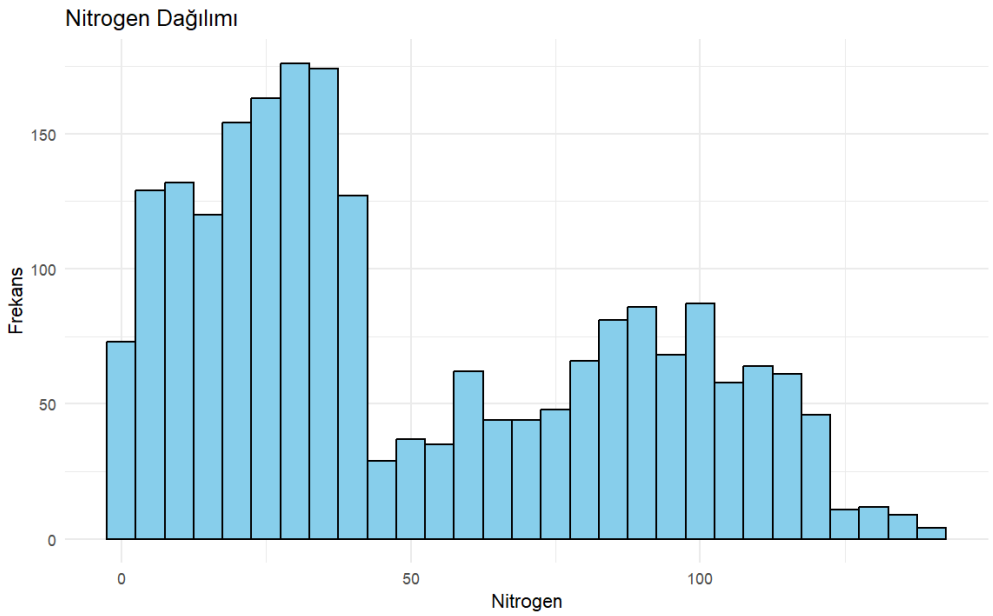
```
> corrplot(correlation_matrix, method = "color")
```



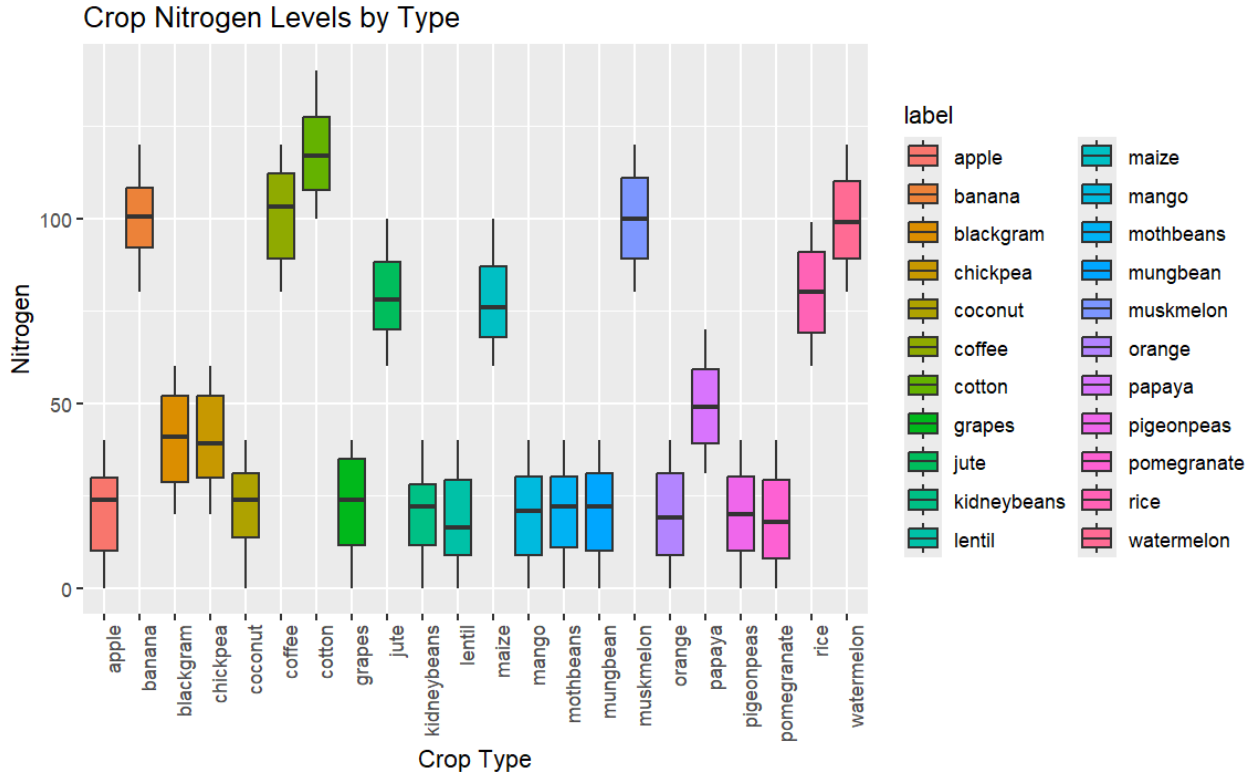

```
> # Bağımsız değişkenlerin grafiğini çizme
> par(mfrow=c(3,2)) # Grafiklerin yan yana yerleştirilmesi için ayar
> plot(x1, y, main = "x1 vs. y", xlab = "x1", ylab = "y", col = "blue", pch
= 16)
> plot(x2, y, main = "x2 vs. y", xlab = "x2", ylab = "y", col = "red", pch
= 16)
> plot(x3, y, main = "x3 vs. y", xlab = "x3", ylab = "y", col = "purple", p
ch = 16)
> plot(x4, y, main = "x4 vs. y", xlab = "x4", ylab = "y", col = "green", pc
h = 16)
> plot(x5, y, main = "x5 vs. y", xlab = "x5", ylab = "y", col = "yellow", p
ch = 16)
```



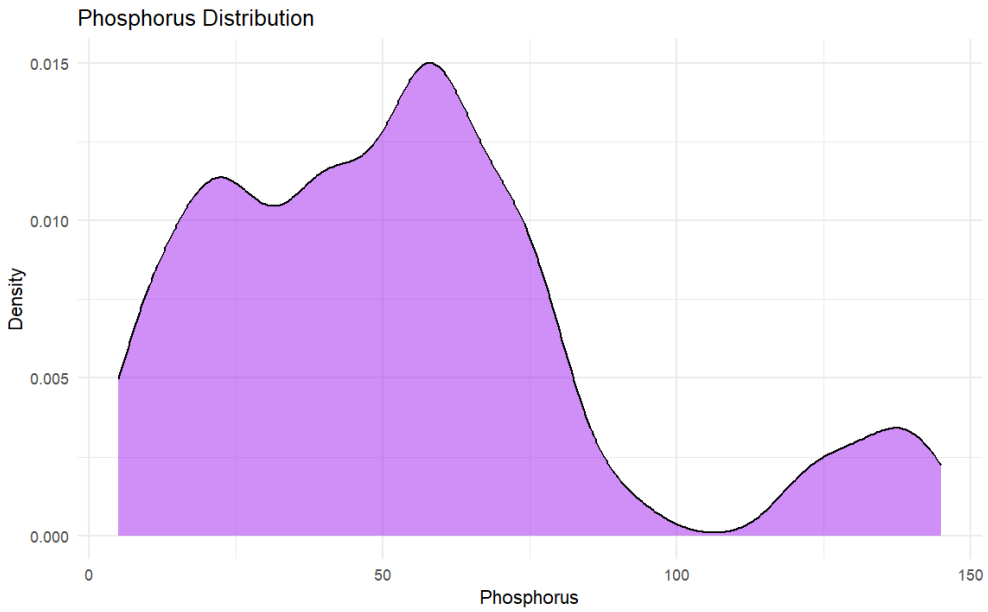
```
data <- read.csv("crop.csv")
> head(data)
  Nitrogen phosphorus potassium temperature humidity       ph rainfall labe
l  X X.1
1       90         42        43    20.87974 82.00274 6.502985 202.9355  ric
e NA  NA
2       85         58        41    21.77046 80.31964 7.038096 226.6555  ric
e NA  NA
3       60         55        44    23.00446 82.32076 7.840207 263.9642  ric
e NA  NA
4       74         35        40    26.49110 80.15836 6.980401 242.8640  ric
e NA  NA
5       78         42        42    20.13017 81.60487 7.628473 262.7173  ric
e NA  NA
6       69         37        42    23.05805 83.37012 7.073454 251.0550  ric
e NA  NA


unique_values <- unique(data$label)
> print(unique_values)
 [1] "rice"        "maize"       "chickpea"    "kidneybeans" "pigeonpeas"
"mothbeans"   "mungbean"
 [8] "blackgram"   "lentil"      "pomegranate" "banana"      "mango"
"grapes"      "watermelon"
[15] "muskmelon"   "apple"       "orange"      "papaya"      "coconut"
"cotton"      "jute"
[22] "coffee"

clean_data %>% count(label)
         label   n
1        apple 100
2       banana 100
3    blackgram 100
4     chickpea 100
5      coconut 100
6       coffee 100
7       cotton 100
8       grapes 100
9         jute 100
10 kidneybeans 100
11      lentil 100
12       maize 100
13       mango 100
14   mothbeans 100
15    mungbean 100
16   muskmelon 100
17      orange 100
18      papaya 100
19  pigeonpeas 100
20 pomegranate 100
21        rice 100
22  watermelon 100




ggplot(clean_data, aes(x = Nitrogen)) +
+   geom_histogram(binwidth = 5, fill = "skyblue", color = "black") +
+   labs(x = "Nitrogen", y = "Frekans", title = "Nitrogen Dağılımı") +
+   theme_minimal()
```



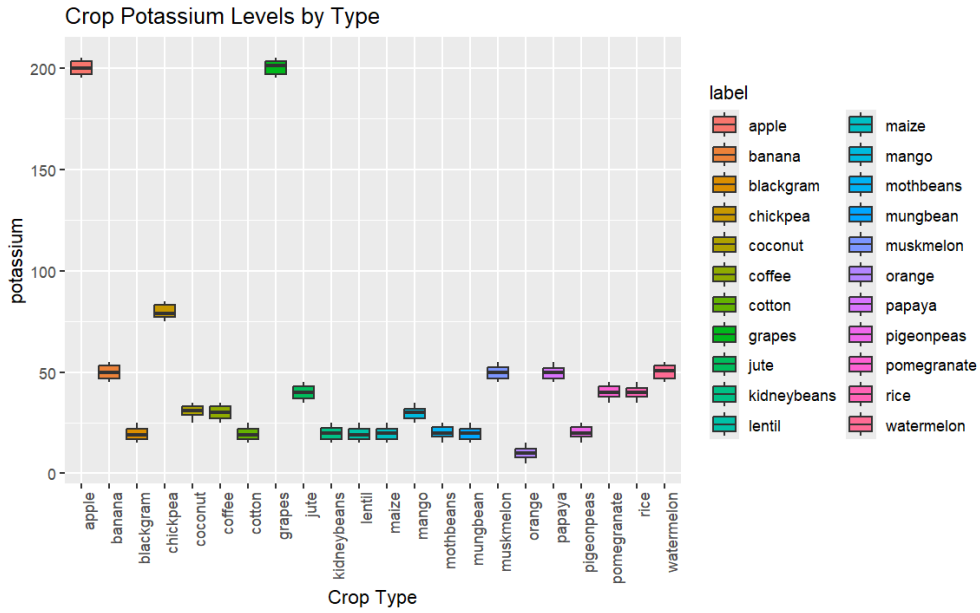

```
ggplot(clean_data, aes(x = label, y = Nitrogen, fill = label)) +
+   geom_boxplot() +
+   theme(axis.text.x = element_text(angle = 90, hjust = 1)) +
+   labs(x = "Crop Type", y = "Nitrogen", title = "Crop Nitrogen Levels by
Type")
```



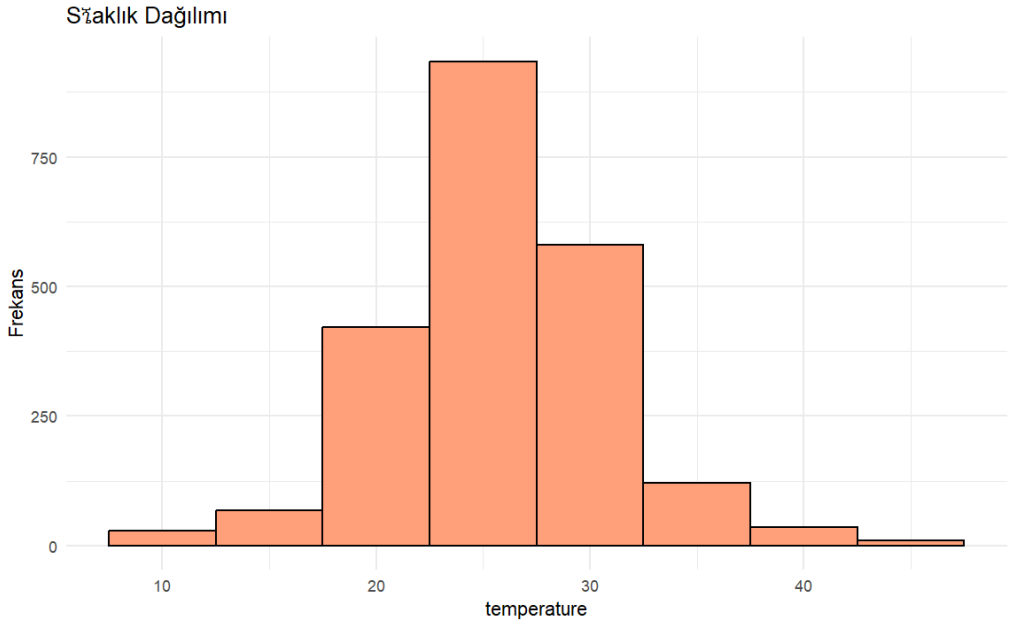

```
ggplot(clean_data, aes(x = phosphorus)) +
+   geom_density(fill = "purple", alpha = 0.5) +
+   labs(x = "Phosphorus", y = "Density", title = "Phosphorus Distribution"
) +
+   theme_minimal()
```



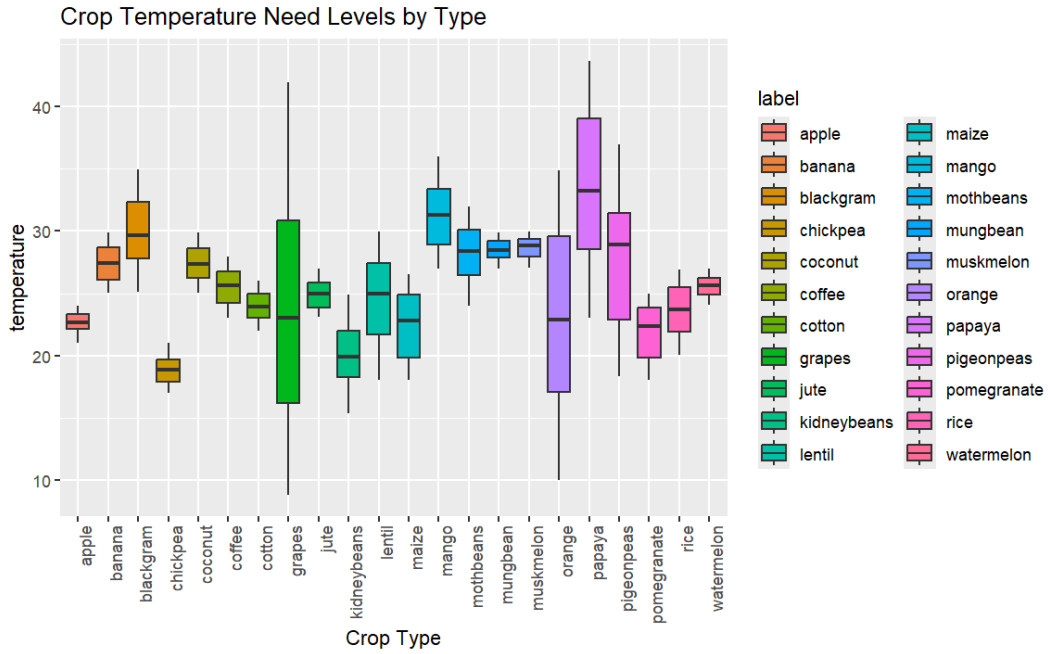

```
ggplot(clean_data, aes(x = label, y = potassium,fill = label)) +
+   geom_boxplot() +
+   theme(axis.text.x = element_text(angle = 90, hjust = 1)) +
+   labs(x = "Crop Type", y = "potassium", title = "Crop Potassium Levels by Type")

>
```




```
ggplot(clean_data, aes(x = temperature)) +
+   geom_histogram(binwidth = 5, fill = "lightsalmon", color = "black") +
+   labs(x = "temperature", y = "Frekans", title = "Sıcaklık Dağılımı") +
+   theme_minimal()
```

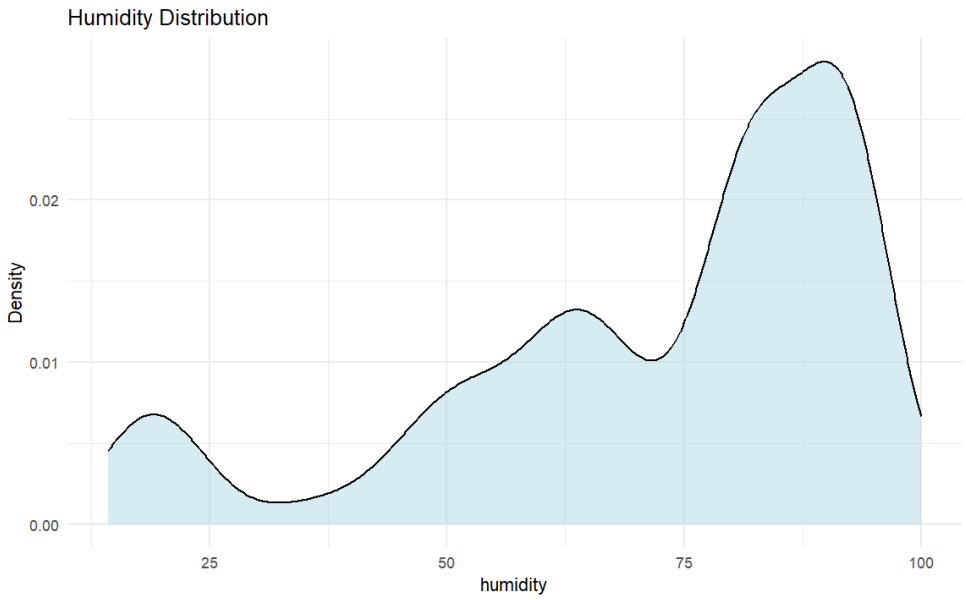



```
ggplot(clean_data, aes(x = label, y = temperature,fill = label)) +
+   geom_boxplot() +
+   theme(axis.text.x = element_text(angle = 90, hjust = 1)) +
+   labs(x = "Crop Type", y = "temperature", title = "Crop Temperature Need
Levels by Type")
```

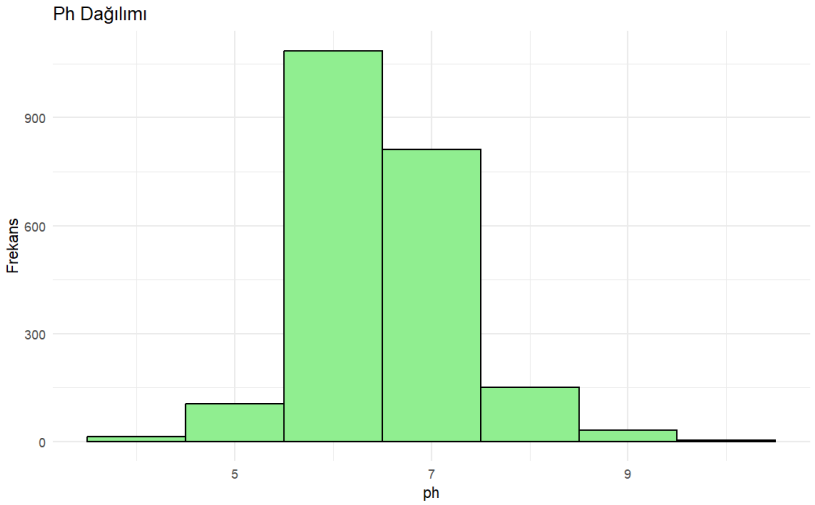



```
ggplot(clean_data, aes(x = humidity)) +
+   geom_density(fill = "lightblue", alpha = 0.5) +
+   labs(x = "humidity", y = "Density", title = "Humidity Distribution") +
```

```
+    theme_minimal()
```

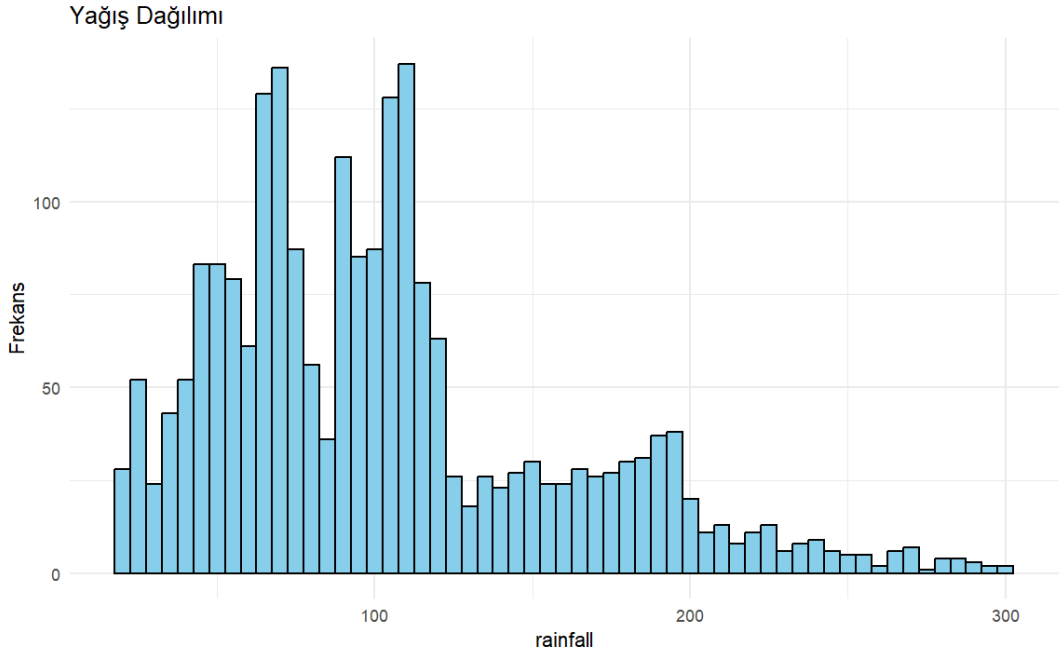



```
ggplot(clean_data, aes(x = ph)) +
+    geom_histogram(binwidth = 1, fill = "lightgreen", color = "black") +
+    labs(x = "ph", y = "Frekans", title = "Ph Dağılımı") +
+    theme_minimal()
```




```
ggplot(clean_data, aes(x = rainfall)) +
+    geom_histogram(binwidth = 5, fill = "skyblue", color = "black") +
+    labs(x = "rainfall", y = "Frekans", title = "Yağış Dağılımı") +
```

```
+    theme_minimal()
```




```
> corrplot(correlation_matrix_crop, method = "color")
```