

Appendix

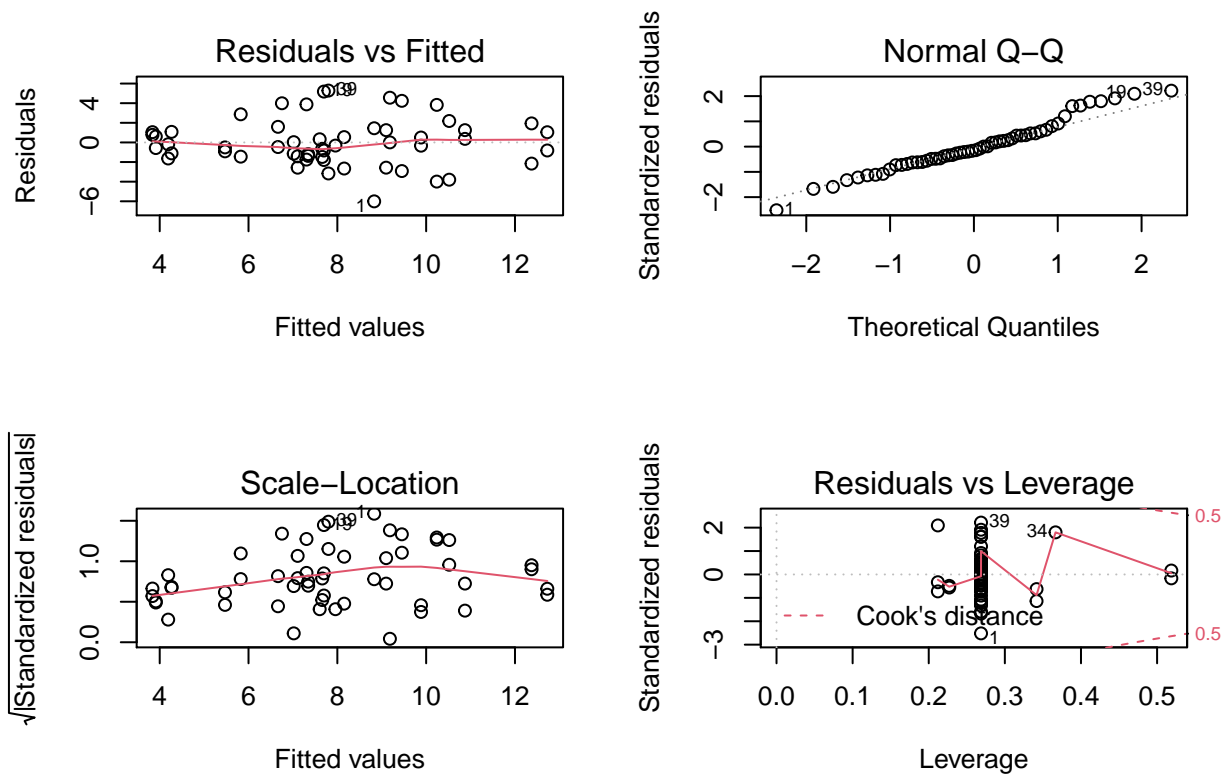
Import data set:

```
seed_cut = read.csv("Seedings_cut.csv")
all_dat = read.csv("All_data.csv")
plot_dat = read.csv("Plots_data.csv")
```

Model for BA:

```
mod1 = lm(plot_dat$Basal.Area..m2.ha.1. ~ as.factor(plot_dat$Harvested) +
          as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
          as.factor(plot_dat$SoilType), data = plot_dat )

par(mfrow = c(2,2))
plot(mod1)
```



```
summary(mod1)
```

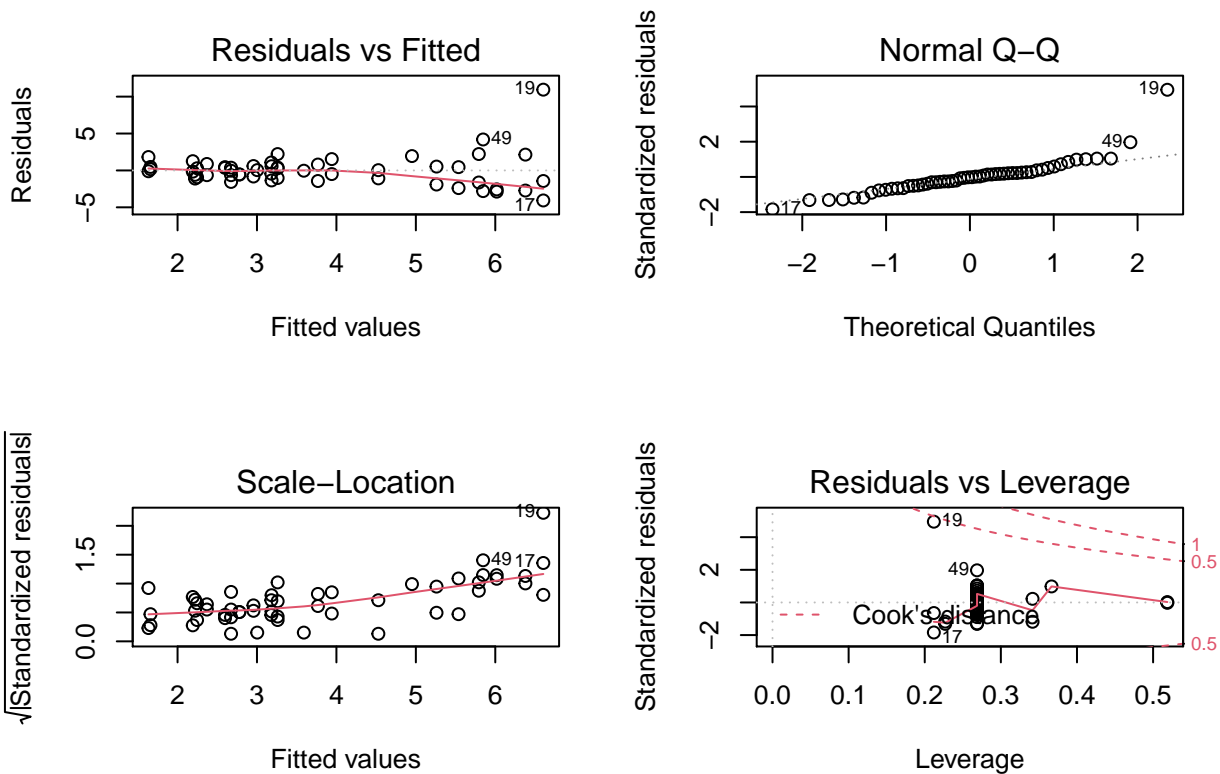
```
##
## Call:
## lm(formula = plot_dat$Basal.Area..m2.ha.1. ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
```

```
## -6.005 -1.442 -0.328 1.207 5.283
##
## Coefficients:
##
## Estimate Std. Error t value
## (Intercept) 9.98885 2.44506 4.085
## as.factor(plot_dat$Harvested)Yes -0.35407 0.76278 -0.464
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No -7.88785 3.41552 -2.309
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes -1.13568 1.97195 -0.576
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 -3.06215 3.11793 -0.982
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 -1.83516 1.97195 -0.931
## as.factor(plot_dat$SoilType)BL, CHL 2.09032 2.78876 0.750
## as.factor(plot_dat$SoilType)CL 3.85544 1.97195 1.955
## as.factor(plot_dat$SoilType)CL, KK 7.35159 2.78876 2.636
## as.factor(plot_dat$SoilType)CT -1.19353 1.97195 -0.605
## as.factor(plot_dat$SoilType)EK 0.08858 2.13374 0.042
## as.factor(plot_dat$SoilType)EL, CHL 5.70967 1.97195 2.895
## as.factor(plot_dat$SoilType)KK 2.16567 1.97195 1.098
## as.factor(plot_dat$SoilType)KK, BT 1.90663 3.05588 0.624
## as.factor(plot_dat$SoilType)KT 1.38552 2.78876 0.497
## Pr(>|t|)
## (Intercept) 0.000212 ***
## as.factor(plot_dat$Harvested)Yes 0.645099
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.026304 *
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 0.567979
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.332099
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.357768
## as.factor(plot_dat$SoilType)BL, CHL 0.458023
## as.factor(plot_dat$SoilType)CL 0.057760 .
## as.factor(plot_dat$SoilType)CL, KK 0.011974 *
## as.factor(plot_dat$SoilType)CT 0.548517
## as.factor(plot_dat$SoilType)EK 0.967099
## as.factor(plot_dat$SoilType)EL, CHL 0.006174 **
## as.factor(plot_dat$SoilType)KK 0.278834
## as.factor(plot_dat$SoilType)KK, BT 0.536312
## as.factor(plot_dat$SoilType)KT 0.622103
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.789 on 39 degrees of freedom
## Multiple R-squared: 0.4953, Adjusted R-squared: 0.3141
## F-statistic: 2.734 on 14 and 39 DF, p-value: 0.006686
```

Stem density model:

```
mod2 = lm(plot_dat$Stem.density...ha. ~ as.factor(plot_dat$Harvested) +
          as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
          as.factor(plot_dat$SoilType), data = plot_dat)

par(mfrow = c(2,2))
plot(mod2)
```



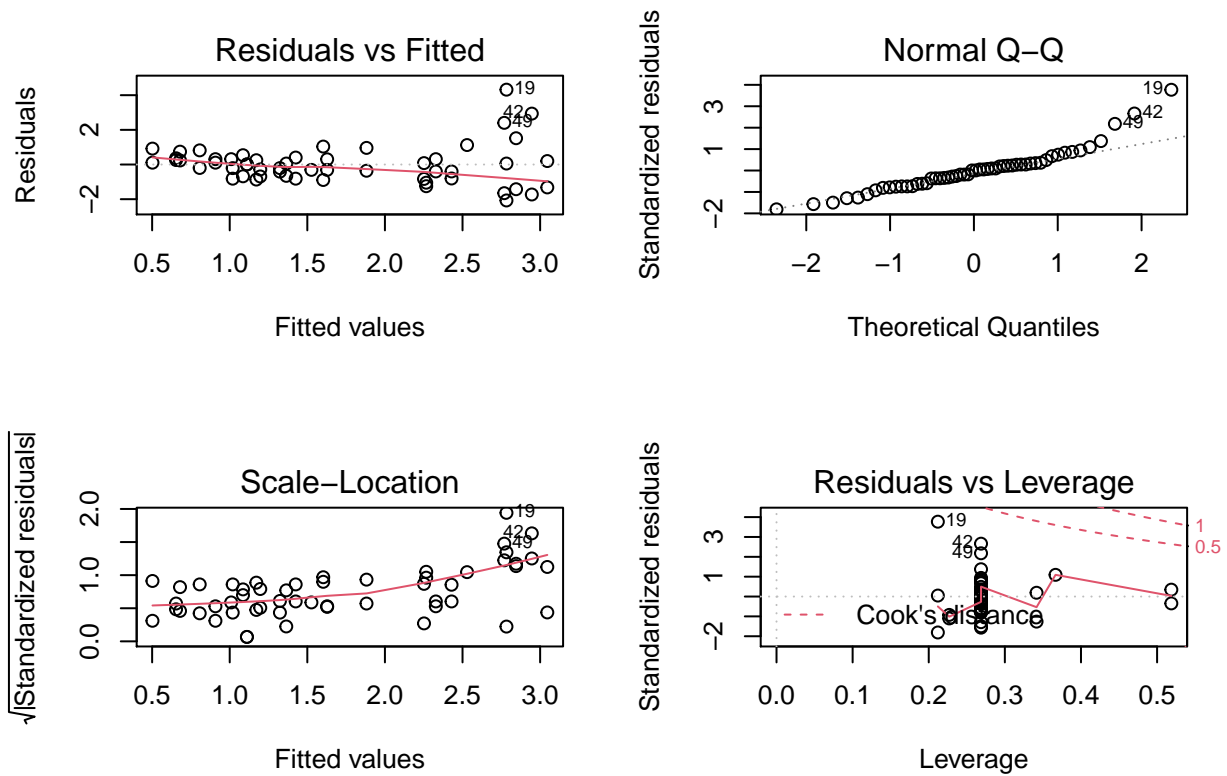
```
summary(mod2)
```

```
##
## Call:
## lm(formula = plot_dat$Stem.density...ha. ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -4.0687 -1.0666 -0.0380  0.5571 10.9434
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)         3.4883     2.1838   1.597
## as.factor(plot_dat$Harvested)Yes
## -0.5863         0.6813  -0.861
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No
## -0.2029         3.0506  -0.067
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes
## -0.7607         1.7612  -0.432
## as.factor(plot_dat$Forest.sAge..years.)10 to 15
##  1.3693         2.7848   0.492
## as.factor(plot_dat$Forest.sAge..years.)16 to 30
##  1.0397         1.7612   0.590
## as.factor(plot_dat$SoilType)BL, CHL
## -1.0397         2.4908  -0.417
## as.factor(plot_dat$SoilType)CL
##  2.0794         1.7612   1.181
## as.factor(plot_dat$SoilType)CL, KK
## -0.3297         2.4908  -0.132
## as.factor(plot_dat$SoilType)CT
## -0.5072         1.7612  -0.288
## as.factor(plot_dat$SoilType)EK
##  1.7703         1.9057   0.929
## as.factor(plot_dat$SoilType)EL, CHL
##  2.6119         1.7612   1.483
## as.factor(plot_dat$SoilType)KK
## -0.5072         1.7612  -0.288
## as.factor(plot_dat$SoilType)KK, BT
##  2.5076         2.7294   0.919
```

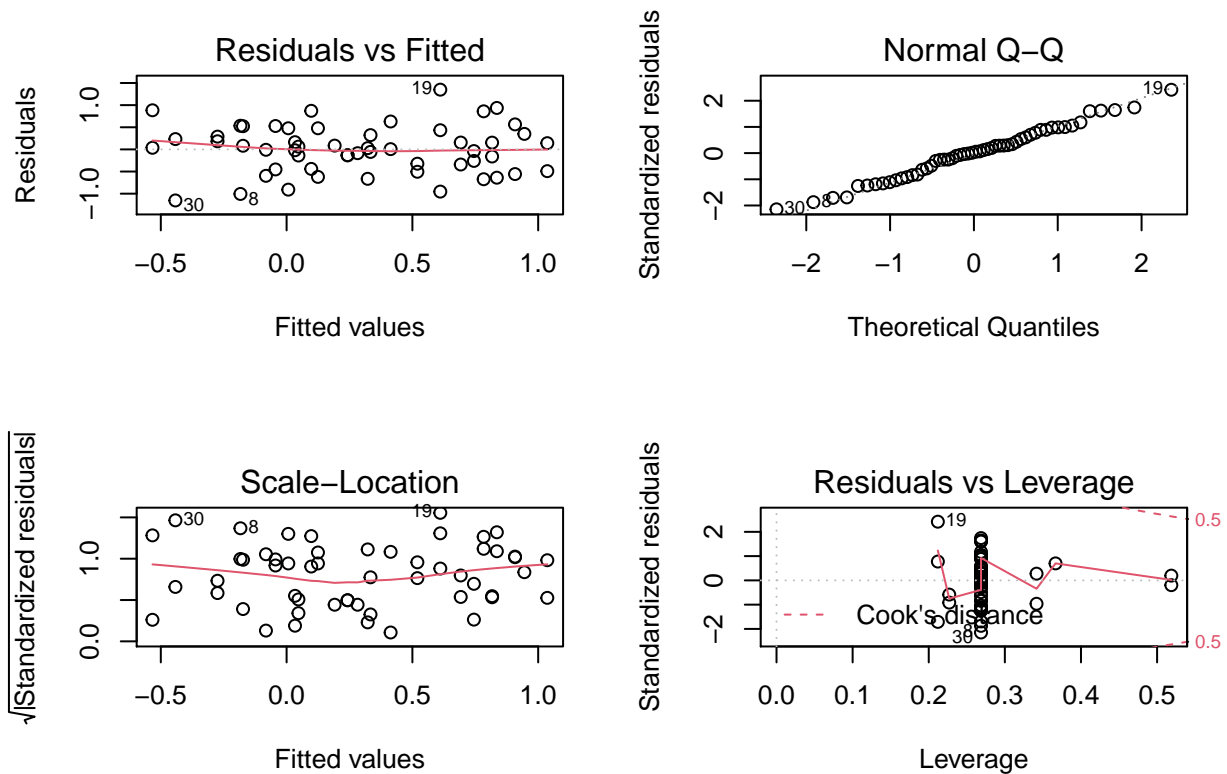
```
## as.factor(plot_dat$SoilType)KT          0.4564      2.4908    0.183
##                                         Pr(>|t|)
## (Intercept)                          0.118
## as.factor(plot_dat$Harvested)Yes        0.395
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No    0.947
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes    0.668
## as.factor(plot_dat$Forest.sAge..years.)10 to 15    0.626
## as.factor(plot_dat$Forest.sAge..years.)16 to 30    0.558
## as.factor(plot_dat$SoilType)BL, CHL          0.679
## as.factor(plot_dat$SoilType)CL              0.245
## as.factor(plot_dat$SoilType)CL, KK          0.895
## as.factor(plot_dat$SoilType)CT              0.775
## as.factor(plot_dat$SoilType)EK              0.359
## as.factor(plot_dat$SoilType)EL, CHL          0.146
## as.factor(plot_dat$SoilType)KK              0.775
## as.factor(plot_dat$SoilType)KK, BT          0.364
## as.factor(plot_dat$SoilType)KT              0.856
##
## Residual standard error: 2.491 on 39 degrees of freedom
## Multiple R-squared:  0.3464, Adjusted R-squared:  0.1117
## F-statistic: 1.476 on 14 and 39 DF,  p-value: 0.1662
```

population size structures (stem density with ha):

```
## group 1
mod_group1 = lm(plot_dat$Adult_1...ha. ~ as.factor(plot_dat$Harvested) +
                as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group1)
```



```
mod_group1_log <- lm(log(plot_dat$Adult_1...ha.) ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group1_log)
```



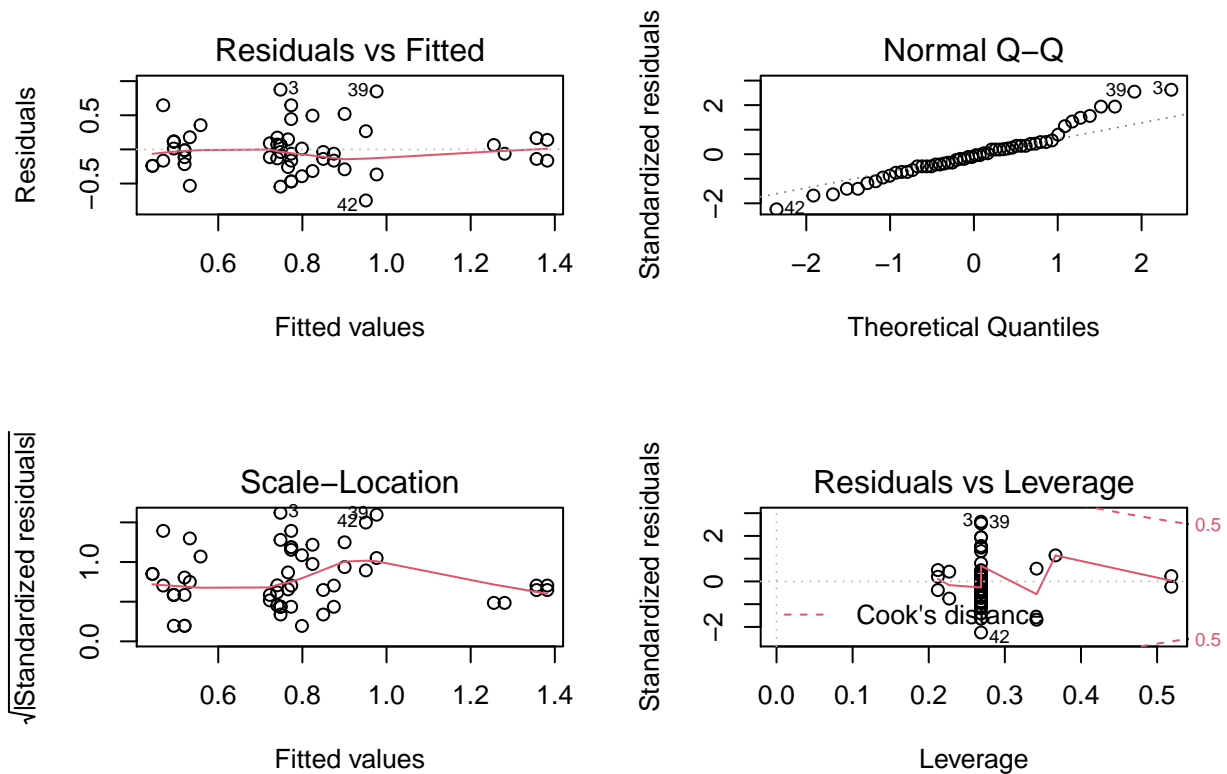
```
summary(mod_group1_log)
```

```
##
## Call:
## lm(formula = log(plot_dat$Adult_1...ha.) ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.15328 -0.41565  0.01725  0.34324  1.34921
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)      0.06020    0.55096   0.109
## as.factor(plot_dat$Harvested)Yes -0.09116    0.17188  -0.530
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No  0.17334    0.76963   0.225
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes -0.42211    0.44435  -0.950
## as.factor(plot_dat$Forest.sAge..years.)10 to 15  0.95965    0.70258   1.366
## as.factor(plot_dat$Forest.sAge..years.)16 to 30  0.77544    0.44435   1.745
## as.factor(plot_dat$SoilType)BL, CHL -0.41695    0.62840  -0.664
## as.factor(plot_dat$SoilType)CL  0.36976    0.44435   0.832
## as.factor(plot_dat$SoilType)CL, KK -0.18645    0.62840  -0.297
## as.factor(plot_dat$SoilType)CT -0.08001    0.44435  -0.180
## as.factor(plot_dat$SoilType)EK  0.62266    0.48081   1.295
## as.factor(plot_dat$SoilType)EL, CHL  0.49439    0.44435   1.113
## as.factor(plot_dat$SoilType)KK -0.31558    0.44435  -0.710
## as.factor(plot_dat$SoilType)KK, BT  0.01319    0.68860   0.019
```

```
## as.factor(plot_dat$SoilType)KT          0.48654      0.62840      0.774
##                                         Pr(>|t|)
## (Intercept)                          0.9136
## as.factor(plot_dat$Harvested)Yes        0.5989
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.8230
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 0.3480
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.1798
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.0888
## as.factor(plot_dat$SoilType)BL, CHL      0.5109
## as.factor(plot_dat$SoilType)CL          0.4104
## as.factor(plot_dat$SoilType)CL, KK      0.7683
## as.factor(plot_dat$SoilType)CT          0.8580
## as.factor(plot_dat$SoilType)EK          0.2029
## as.factor(plot_dat$SoilType)EL, CHL     0.2727
## as.factor(plot_dat$SoilType)KK          0.4818
## as.factor(plot_dat$SoilType)KK, BT      0.9848
## as.factor(plot_dat$SoilType)KT          0.4434
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6284 on 39 degrees of freedom
## Multiple R-squared:  0.3967, Adjusted R-squared:  0.1801
## F-statistic: 1.831 on 14 and 39 DF, p-value: 0.06855
```

group 2:

```
mod_group2 = lm(plot_dat$Audlt_2...ha. ~ as.factor(plot_dat$Harvested) +
                as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group2)
```



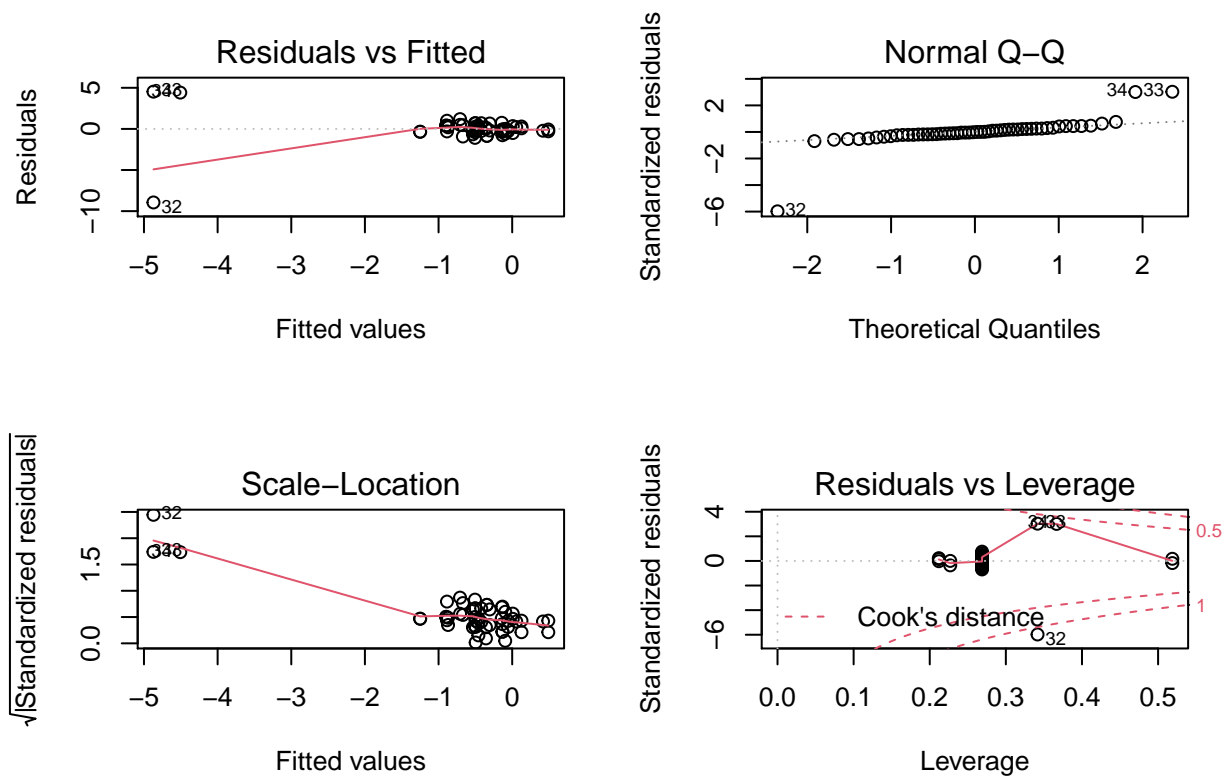
```
summary(mod_group2)
```

```
##
## Call:
## lm(formula = plot_dat$Audlt_2...ha. ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.74797 -0.16492 -0.02545  0.13308  0.87496
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)      5.705e-01  3.416e-01  1.670
## as.factor(plot_dat$Harvested)Yes      2.555e-02  1.066e-01  0.240
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No -7.607e-02  4.772e-01 -0.159
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes -2.029e-01  2.755e-01 -0.736
## as.factor(plot_dat$Forest.sAge..years.)10 to 15  8.875e-01  4.356e-01  2.037
## as.factor(plot_dat$Forest.sAge..years.)16 to 30  3.804e-01  2.755e-01  1.381
## as.factor(plot_dat$SoilType)BL, CHL      2.886e-15  3.897e-01  0.000
## as.factor(plot_dat$SoilType)CL      1.268e-01  2.755e-01  0.460
## as.factor(plot_dat$SoilType)CL, KK      2.789e-01  3.897e-01  0.716
## as.factor(plot_dat$SoilType)CT      7.607e-02  2.755e-01  0.276
## as.factor(plot_dat$SoilType)EK     -2.155e-01  2.981e-01 -0.723
## as.factor(plot_dat$SoilType)EL, CHL      6.086e-01  2.755e-01  2.209
## as.factor(plot_dat$SoilType)KK      2.218e-15  2.755e-01  0.000
## as.factor(plot_dat$SoilType)KK, BT     -5.148e-01  4.270e-01 -1.206
```



```
## as.factor(plot_dat$SoilType)KT          3.550e-01  3.897e-01  0.911
##                                         Pr(>|t|)
## (Intercept)                           0.1030
## as.factor(plot_dat$Harvested)Yes        0.8118
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.8742
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 0.4660
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.0484 *
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.1753
## as.factor(plot_dat$SoilType)BL, CHL      1.0000
## as.factor(plot_dat$SoilType)CL          0.6479
## as.factor(plot_dat$SoilType)CL, KK       0.4783
## as.factor(plot_dat$SoilType)CT          0.7839
## as.factor(plot_dat$SoilType)EK          0.4741
## as.factor(plot_dat$SoilType)EL, CHL      0.0331 *
## as.factor(plot_dat$SoilType)KK          1.0000
## as.factor(plot_dat$SoilType)KK, BT       0.2352
## as.factor(plot_dat$SoilType)KT          0.3678
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.3897 on 39 degrees of freedom
## Multiple R-squared:  0.3557, Adjusted R-squared:  0.1244
## F-statistic: 1.538 on 14 and 39 DF,  p-value: 0.143

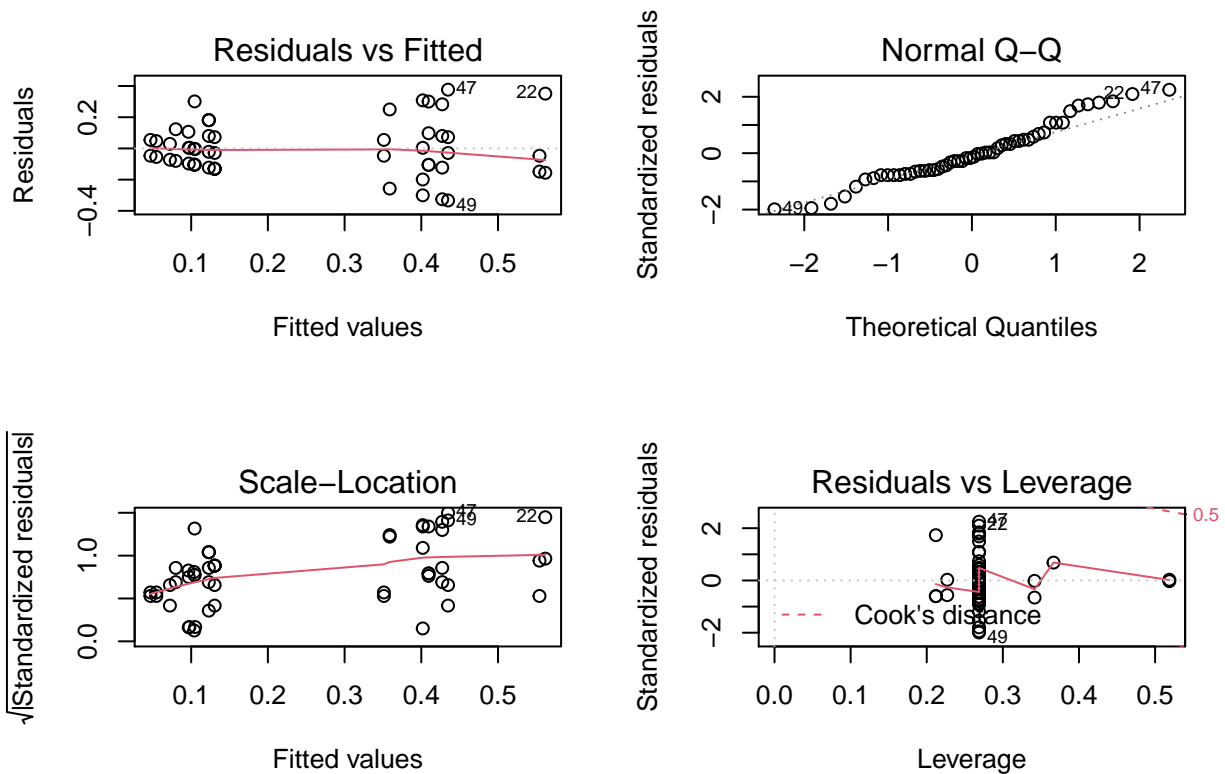
plot_dat$Audlt_2...ha.[plot_dat$Audlt_2...ha. == 0] <- 0.000001
mod_group2_log = lm(log(plot_dat$Audlt_2...ha.) ~ as.factor(plot_dat$Harvested) +
                    as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                    as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group2_log)
```



group 3:

```
mod_group3 = lm(plot_dat$Audlt_3...ha. ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)

par(mfrow = c(2,2))
plot(mod_group3)
```



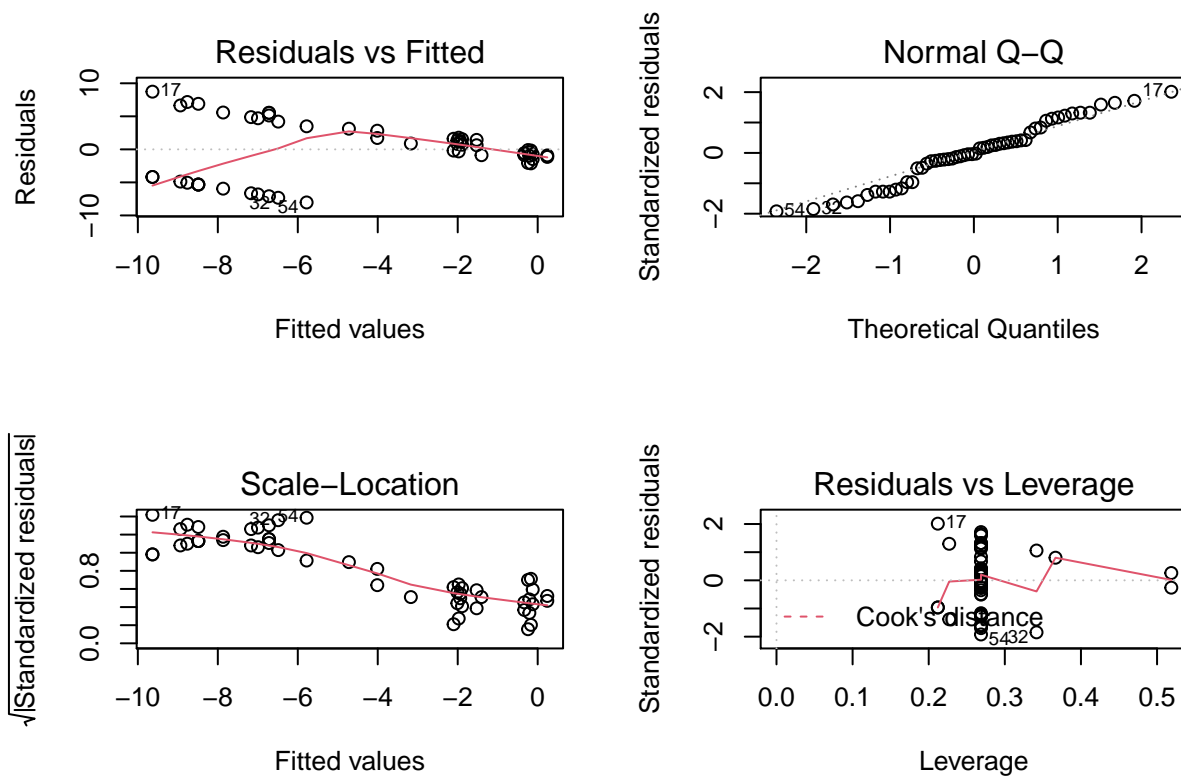
```
summary(mod_group3)
```

```
##
## Call:
## lm(formula = plot_dat$Audlt_3...ha. ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.33345 -0.10523 -0.02536  0.07987  0.37658
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)      5.110e-01  1.717e-01   2.975
## as.factor(plot_dat$Harvested)Yes      -7.589e-03  5.357e-02  -0.142
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No      -7.100e-01  2.399e-01  -2.960
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes      -1.007e-15  1.385e-01   0.000
## as.factor(plot_dat$Forest.sAge..years.)10 to 15      -6.847e-01  2.190e-01  -3.127
## as.factor(plot_dat$Forest.sAge..years.)16 to 30      -3.804e-01  1.385e-01  -2.746
## as.factor(plot_dat$SoilType)BL, CHL       3.297e-01  1.959e-01   1.683
## as.factor(plot_dat$SoilType)CL       3.043e-01  1.385e-01   2.197
## as.factor(plot_dat$SoilType)CL, KK       6.086e-01  1.959e-01   3.107
## as.factor(plot_dat$SoilType)CT       -7.607e-02  1.385e-01  -0.549
## as.factor(plot_dat$SoilType)EK       -2.662e-02  1.499e-01  -0.178
## as.factor(plot_dat$SoilType)EL, CHL       2.282e-01  1.385e-01   1.648
## as.factor(plot_dat$SoilType)KK       2.789e-01  1.385e-01   2.014
## as.factor(plot_dat$SoilType)KK, BT       2.782e-01  2.146e-01   1.296
```

```
## as.factor(plot_dat$SoilType)KT          5.072e-02  1.959e-01  0.259
##                                         Pr(>|t|)
## (Intercept)                            0.00500 **
## as.factor(plot_dat$Harvested)Yes        0.88809
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.00521 **
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 1.00000
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.00334 **
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.00907 **
## as.factor(plot_dat$SoilType)BL, CHL      0.10036
## as.factor(plot_dat$SoilType)CL          0.03402 *
## as.factor(plot_dat$SoilType)CL, KK       0.00352 **
## as.factor(plot_dat$SoilType)CT          0.58595
## as.factor(plot_dat$SoilType)EK          0.85992
## as.factor(plot_dat$SoilType)EL, CHL     0.10742
## as.factor(plot_dat$SoilType)KK          0.05094 .
## as.factor(plot_dat$SoilType)KK, BT      0.20256
## as.factor(plot_dat$SoilType)KT          0.79705
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1959 on 39 degrees of freedom
## Multiple R-squared:  0.5109, Adjusted R-squared:  0.3353
## F-statistic: 2.91 on 14 and 39 DF, p-value: 0.004274

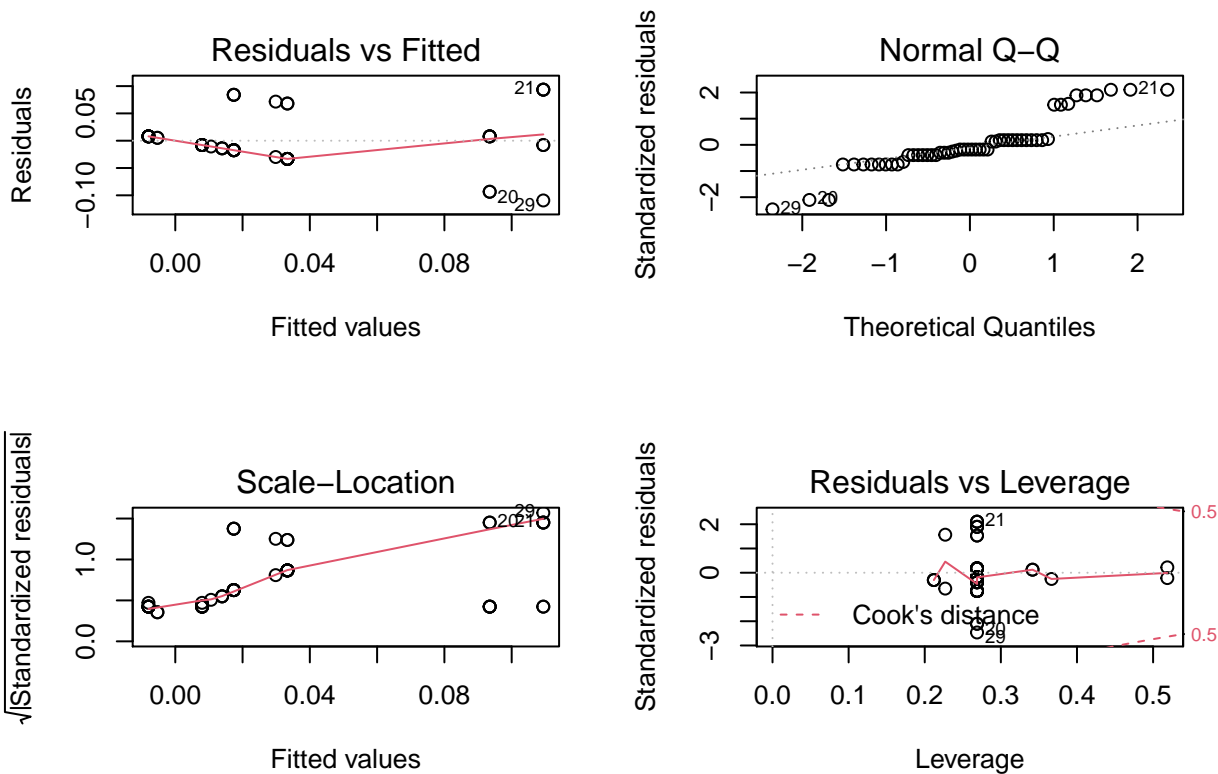
plot_dat$Audlt_3...ha.[plot_dat$Audlt_3...ha. == 0] <- 0.000001
mod_group3_log = lm(log(plot_dat$Audlt_3...ha.) ~ as.factor(plot_dat$Harvested) +
                    as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                    as.factor(plot_dat$SoilType), data = plot_dat)

par(mfrow = c(2,2))
plot(mod_group3_log)
```



group 4:

```
mod_group4 = lm(plot_dat$Audlt_4...ha. ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group4)
```

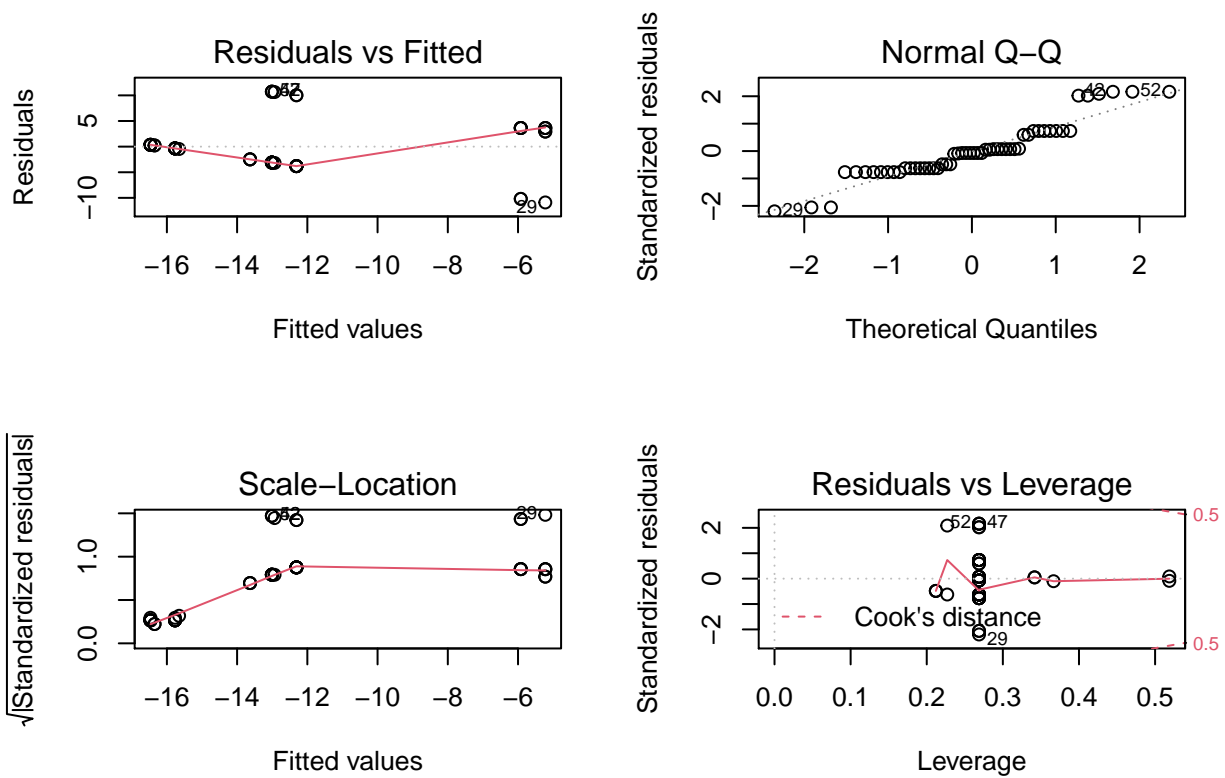


```
summary(mod_group4)
```

```
##
## Call:
## lm(formula = plot_dat$Audlt_4...ha. ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.109401 -0.017390 -0.007968  0.007968  0.093465
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)      1.188e-01  4.553e-02  2.610
## as.factor(plot_dat$Harvested)Yes      1.594e-02  1.420e-02  1.122
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No -1.268e-01  6.359e-02 -1.994
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes -6.201e-17  3.672e-02  0.000
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 -1.268e-01  5.805e-02 -2.184
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 -1.014e-01  3.672e-02 -2.763
## as.factor(plot_dat$SoilType)BL, CHL      2.536e-02  5.192e-02  0.488
## as.factor(plot_dat$SoilType)CL      3.258e-17  3.672e-02  0.000
## as.factor(plot_dat$SoilType)CL, KK      1.014e-01  5.192e-02  1.953
## as.factor(plot_dat$SoilType)CT     -2.536e-02  3.672e-02 -0.691
## as.factor(plot_dat$SoilType)EK     -2.270e-02  3.973e-02 -0.571
## as.factor(plot_dat$SoilType)EL, CHL     -2.536e-02  3.672e-02 -0.691
## as.factor(plot_dat$SoilType)KK      1.026e-16  3.672e-02  0.000
## as.factor(plot_dat$SoilType)KK, BT      2.188e-02  5.690e-02  0.385
```

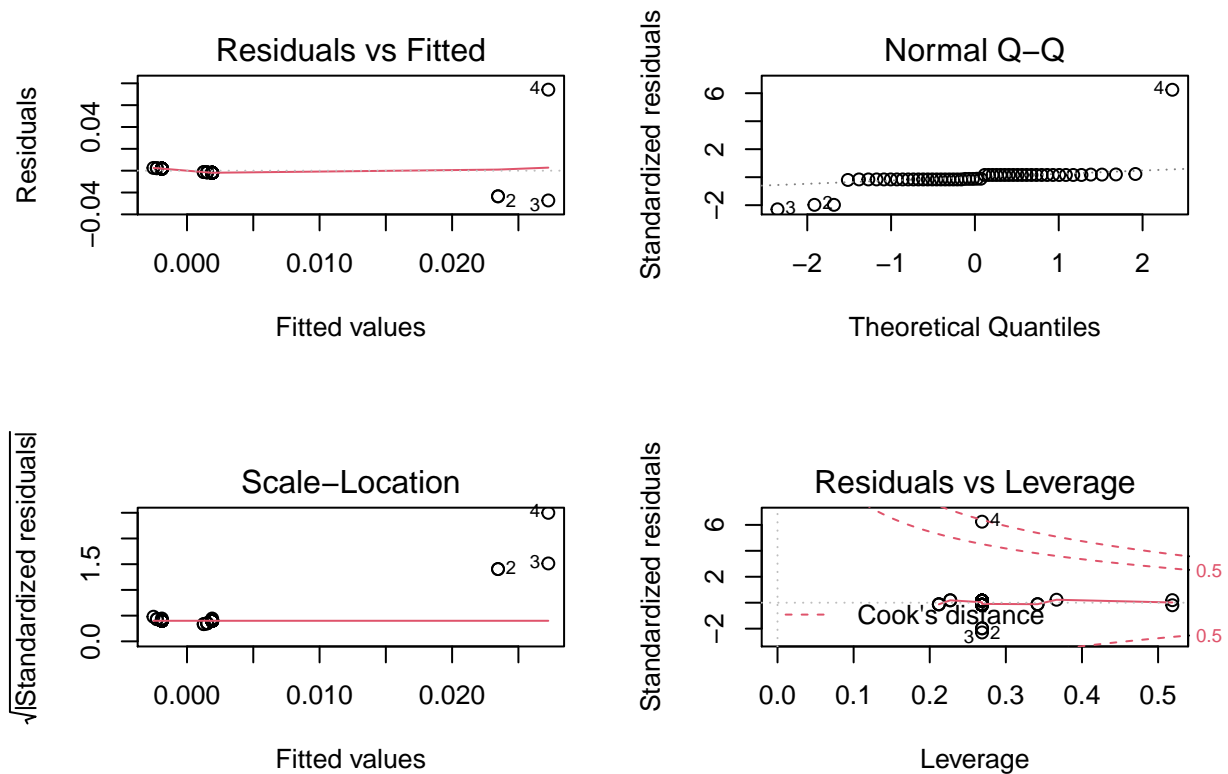
```
## as.factor(plot_dat$SoilType)KT          -2.536e-02  5.192e-02  -0.488
##                                         Pr(>|t|)
## (Intercept)                            0.0128 *
## as.factor(plot_dat$Harvested)Yes        0.2687
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.0532 .
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 1.0000
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.0350 *
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.0087 **
## as.factor(plot_dat$SoilType)BL, CHL      0.6280
## as.factor(plot_dat$SoilType)CL          1.0000
## as.factor(plot_dat$SoilType)CL, KK      0.0580 .
## as.factor(plot_dat$SoilType)CT          0.4939
## as.factor(plot_dat$SoilType)EK          0.5710
## as.factor(plot_dat$SoilType)EL, CHL     0.4939
## as.factor(plot_dat$SoilType)KK          1.0000
## as.factor(plot_dat$SoilType)KK, BT      0.7027
## as.factor(plot_dat$SoilType)KT          0.6280
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.05192 on 39 degrees of freedom
## Multiple R-squared:  0.4322, Adjusted R-squared:  0.2284
## F-statistic: 2.121 on 14 and 39 DF,  p-value: 0.03255
```

```
plot_dat$Audlt_4...ha.[plot_dat$Audlt_4...ha. == 0] <- 0.0000001
mod_group4_log = lm(log(plot_dat$Audlt_4...ha.) ~ as.factor(plot_dat$Harvested) +
                    as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                    as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group4_log)
```



group 5:

```
mod_group5 = lm(plot_dat$Audlt_5...ha. ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group5)
```

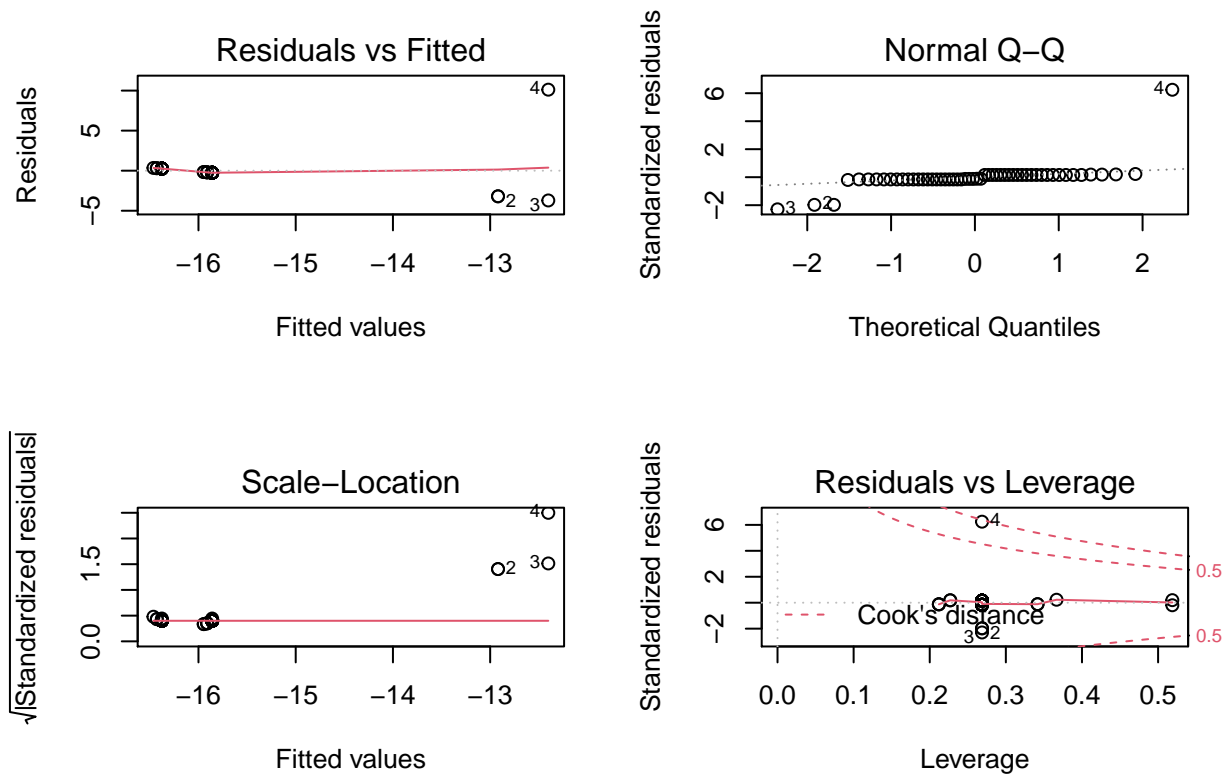



```
summary(mod_group5)
```

```
##
## Call:
## lm(formula = plot_dat$Audlt_5...ha. ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.027255 -0.001897 -0.001391  0.001897  0.074178
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)      1.897e-03  1.218e-02   0.156
## as.factor(plot_dat$Harvested)Yes      -3.794e-03  3.799e-03  -0.999
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No      -2.536e-02  1.701e-02  -1.491
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes      -2.827e-17  9.822e-03   0.000
## as.factor(plot_dat$Forest.sAge..years.)10 to 15      -2.536e-02  1.553e-02  -1.633
## as.factor(plot_dat$Forest.sAge..years.)16 to 30      -1.193e-17  9.822e-03   0.000
## as.factor(plot_dat$SoilType)BL, CHL       2.536e-02  1.389e-02   1.826
## as.factor(plot_dat$SoilType)CL      -2.087e-17  9.822e-03   0.000
## as.factor(plot_dat$SoilType)CL, KK       2.536e-02  1.389e-02   1.826
## as.factor(plot_dat$SoilType)CT      -2.964e-17  9.822e-03   0.000
## as.factor(plot_dat$SoilType)EK      -6.324e-04  1.063e-02  -0.060
## as.factor(plot_dat$SoilType)EL, CHL     -1.866e-17  9.822e-03   0.000
## as.factor(plot_dat$SoilType)KK       2.536e-02  9.822e-03   2.582
## as.factor(plot_dat$SoilType)KK, BT      2.498e-02  1.522e-02   1.641
```

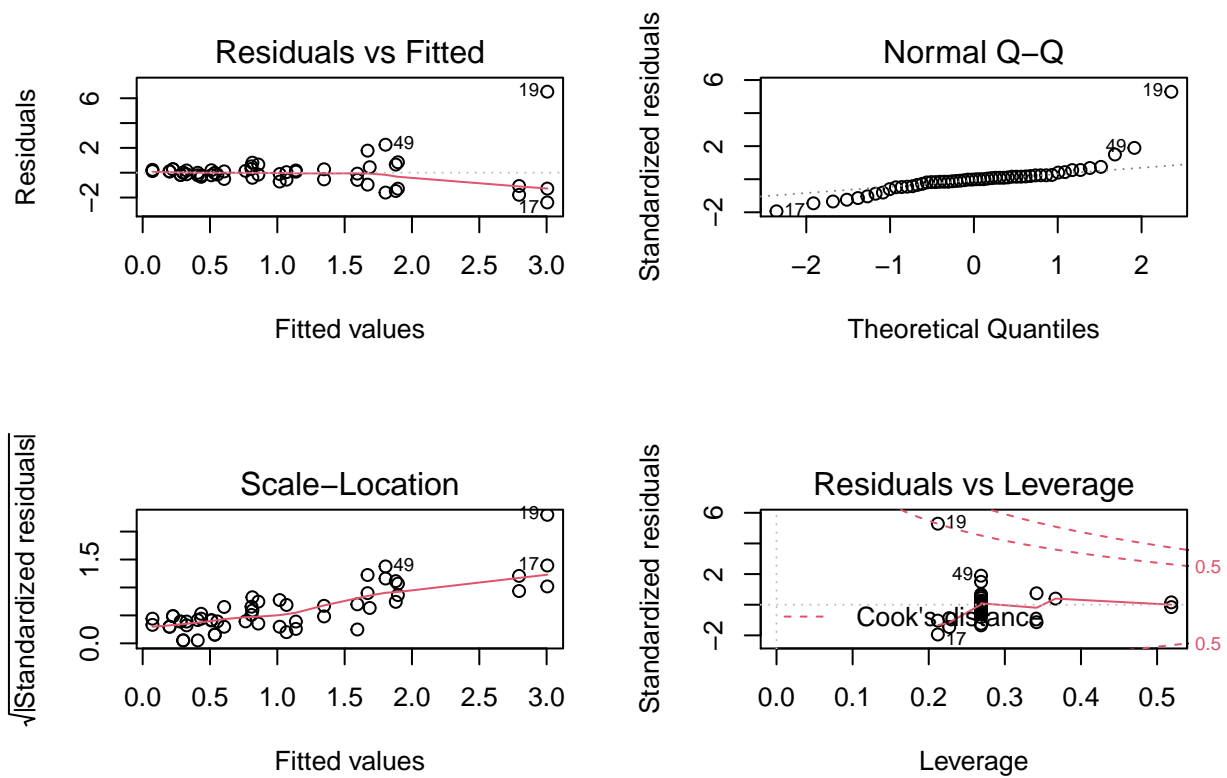
```
## as.factor(plot_dat$SoilType)KT          -2.776e-17  1.389e-02  0.000
##                                         Pr(>|t|)
## (Intercept)                            0.8770
## as.factor(plot_dat$Harvested)Yes        0.3241
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No  0.1441
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes  1.0000
## as.factor(plot_dat$Forest.sAge..years.)10 to 15  0.1105
## as.factor(plot_dat$Forest.sAge..years.)16 to 30  1.0000
## as.factor(plot_dat$SoilType)BL, CHL        0.0756 .
## as.factor(plot_dat$SoilType)CL            1.0000
## as.factor(plot_dat$SoilType)CL, KK        0.0756 .
## as.factor(plot_dat$SoilType)CT            1.0000
## as.factor(plot_dat$SoilType)EK            0.9529
## as.factor(plot_dat$SoilType)EL, CHL        1.0000
## as.factor(plot_dat$SoilType)KK            0.0137 *
## as.factor(plot_dat$SoilType)KK, BT        0.1088
## as.factor(plot_dat$SoilType)KT            1.0000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.01389 on 39 degrees of freedom
## Multiple R-squared:  0.2549, Adjusted R-squared:  -0.01256
## F-statistic: 0.953 on 14 and 39 DF,  p-value: 0.5151

plot_dat$Audlt_5...ha.[plot_dat$Audlt_5...ha. == 0] <- 0.0000001
mod_group5 = lm(log(plot_dat$Audlt_5...ha.) ~ as.factor(plot_dat$Harvested) +
                as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group5)
```

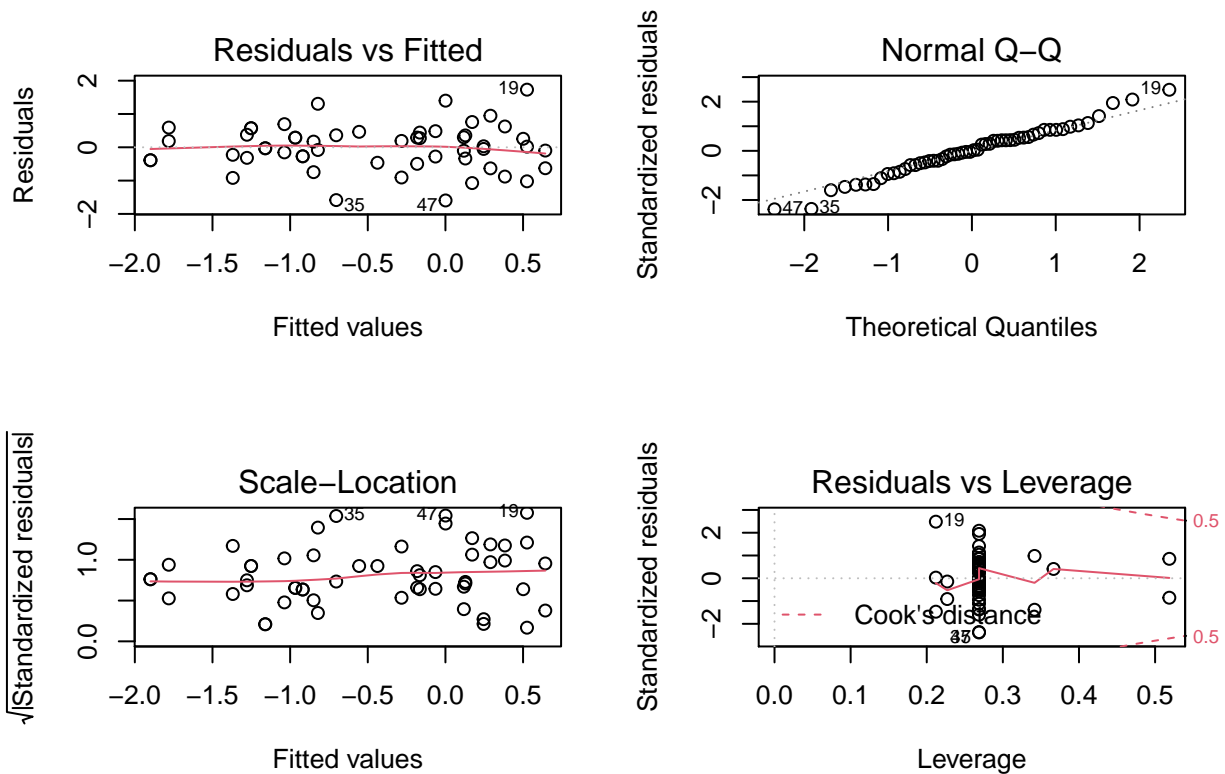


sapling:

```
mod_group_sap = lm(plot_dat$Saplings...ha. ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_sap)
```



```
mod_group_sap_log = lm(log(plot_dat$Saplings...ha.) ~ as.factor(plot_dat$Harvested) +
                        as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                        as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_sap_log)
```



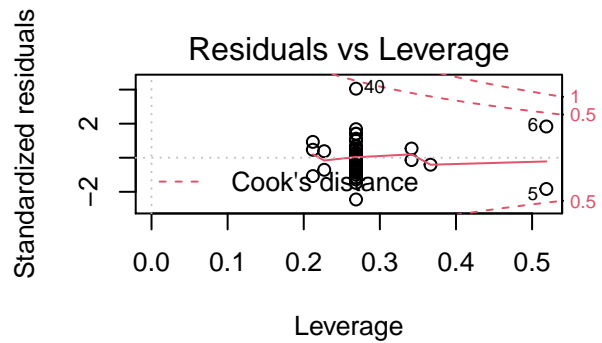
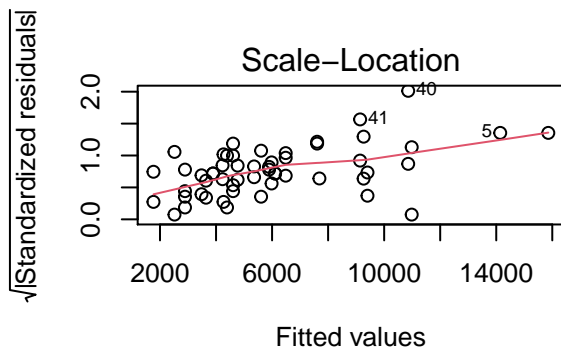
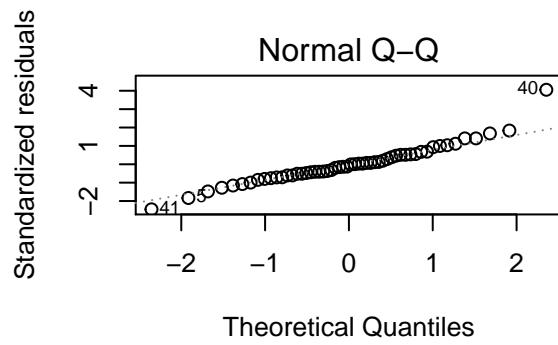
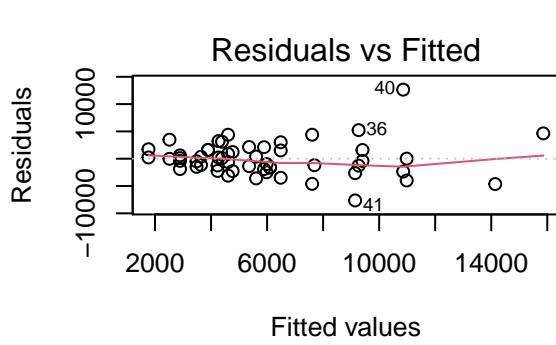
```
summary(mod_group_sap_log)
```

```
##
## Call:
## lm(formula = log(plot_dat$Saplings...ha.) ~ as.factor(plot_dat$Harvested) +
##      as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##      as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.59609 -0.37603 -0.00497  0.37224  1.72963
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)    -0.950075   0.687695  -1.382
## as.factor(plot_dat$Harvested)Yes      0.117865   0.214538   0.549
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No  1.522344   0.960644   1.585
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes -0.410801   0.554628  -0.741
## as.factor(plot_dat$Forest.sAge..years.)10 to 15  1.559581   0.876944   1.778
## as.factor(plot_dat$Forest.sAge..years.)16 to 30  1.078258   0.554628   1.944
## as.factor(plot_dat$SoilType)BL, CHL    -1.539192   0.784362  -1.962
## as.factor(plot_dat$SoilType)CL         0.283495   0.554628   0.511
## as.factor(plot_dat$SoilType)CL, KK    -1.850390   0.784362  -2.359
## as.factor(plot_dat$SoilType)CT        -0.538472   0.554628  -0.971
## as.factor(plot_dat$SoilType)EK         0.665680   0.600133   1.109
## as.factor(plot_dat$SoilType)EL, CHL    0.454690   0.554628   0.820
## as.factor(plot_dat$SoilType)KK        -0.754234   0.554628  -1.360
## as.factor(plot_dat$SoilType)KK, BT     0.326607   0.859494   0.380
```

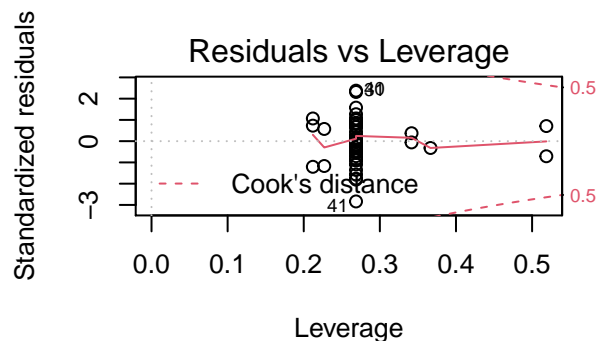
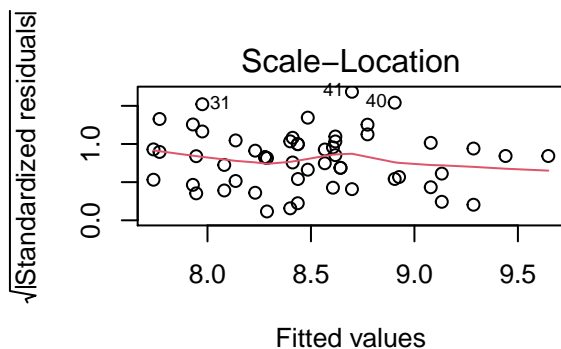
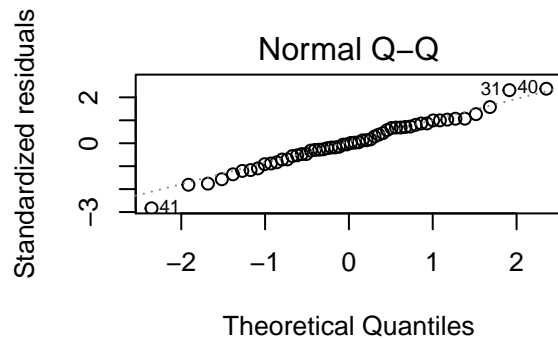
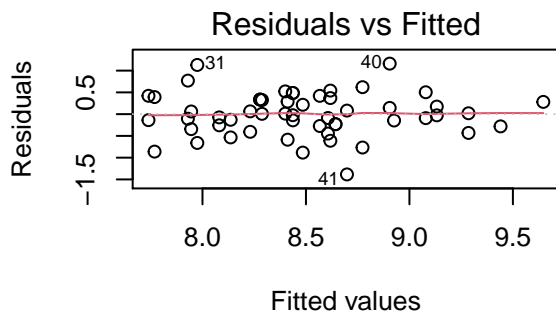
```
## as.factor(plot_dat$SoilType)KT          -0.008406    0.784362   -0.011
##                                         Pr(>|t|)
## (Intercept)                            0.1750
## as.factor(plot_dat$Harvested)Yes        0.5859
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.1211
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 0.4633
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.0831 .
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.0591 .
## as.factor(plot_dat$SoilType)BL, CHL      0.0569 .
## as.factor(plot_dat$SoilType)CL          0.6121
## as.factor(plot_dat$SoilType)CL, KK      0.0234 *
## as.factor(plot_dat$SoilType)CT          0.3376
## as.factor(plot_dat$SoilType)EK          0.2741
## as.factor(plot_dat$SoilType)EL, CHL     0.4173
## as.factor(plot_dat$SoilType)KK          0.1817
## as.factor(plot_dat$SoilType)KK, BT      0.7060
## as.factor(plot_dat$SoilType)KT          0.9915
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.7844 on 39 degrees of freedom
## Multiple R-squared:  0.5408, Adjusted R-squared:  0.3759
## F-statistic:  3.28 on 14 and 39 DF,  p-value: 0.001696
```

seedlings:

```
mod_group_sed = lm(plot_dat$Seedling.density....ha. ~ as.factor(plot_dat$Harvested) +
                    as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                    as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_sed)
```



```
mod_group_sed_log= lm(log(plot_dat$Seedling.density...ha.) ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
plot(mod_group_sed_log)
```

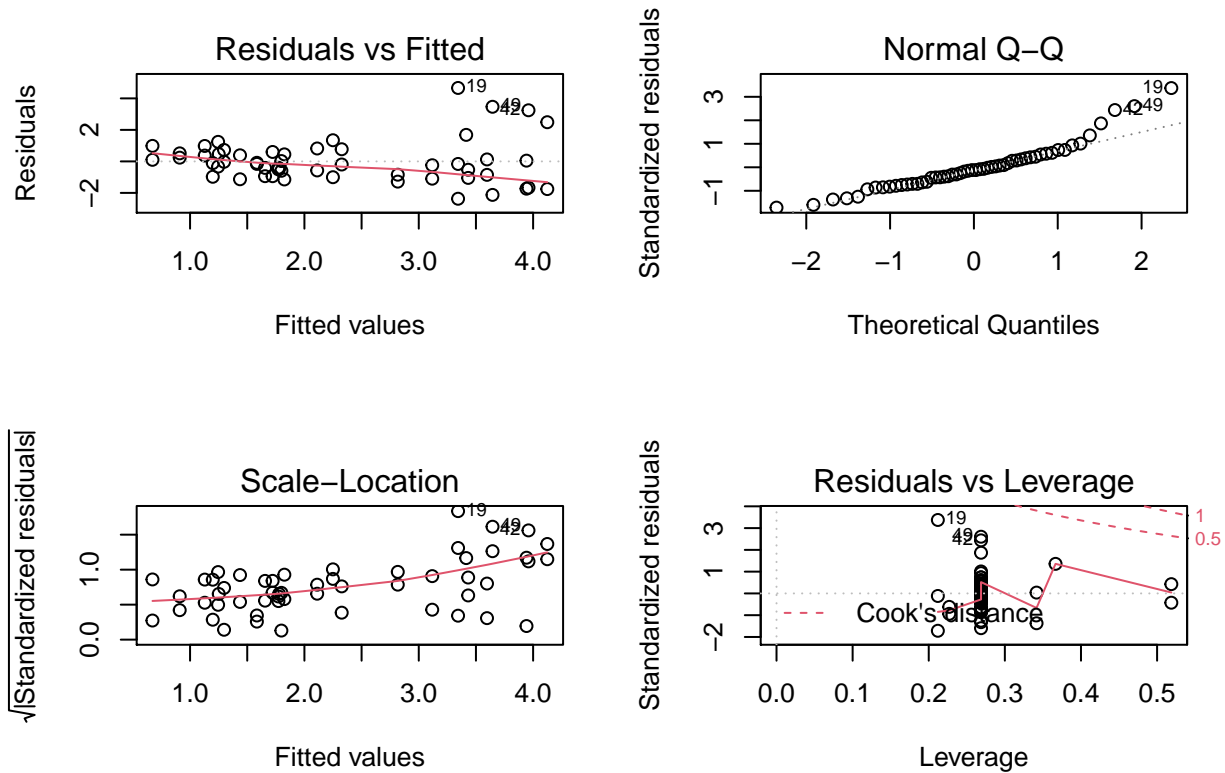


```
summary(mod_group_sed_log)
```

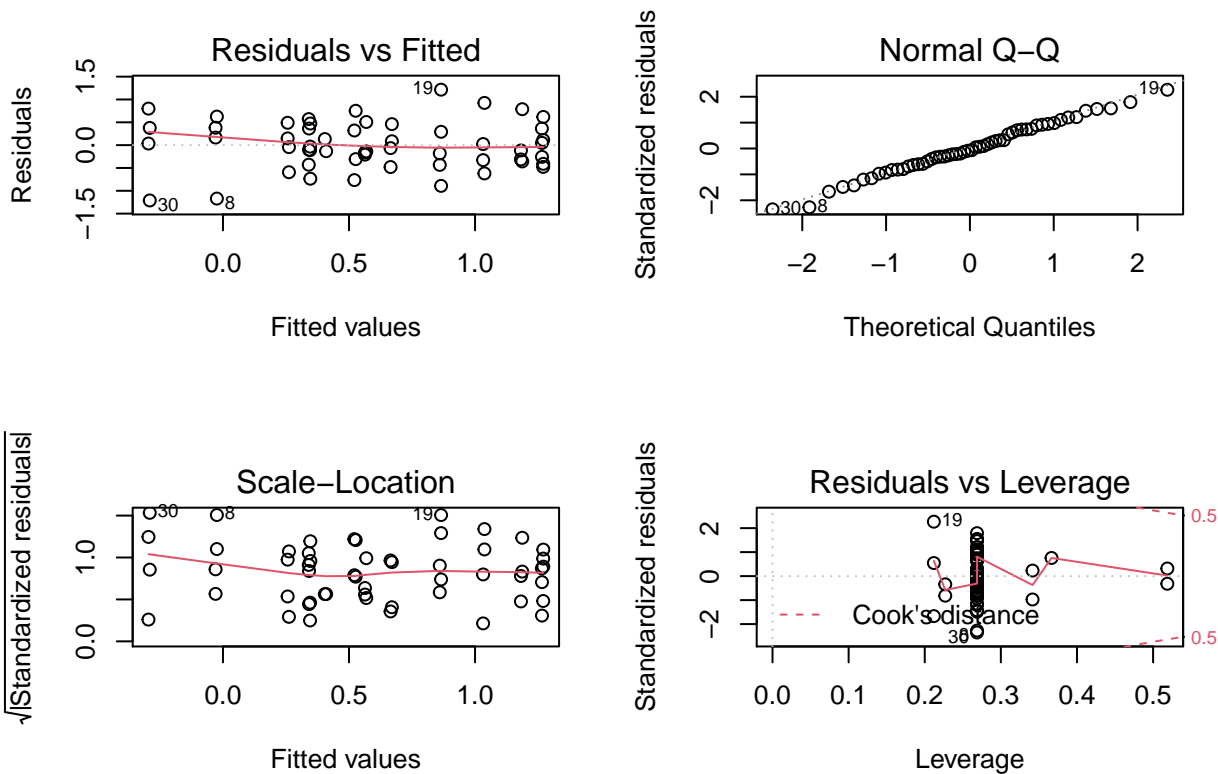
```
##
## Call:
## lm(formula = log(plot_dat$Seedling.density...ha.) ~ as.factor(plot_dat$Harvested) +
##      as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##      as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.38487 -0.26881 -0.00895  0.33440  1.16017
##
## Coefficients:
##                                     Estimate Std. Error t value
## (Intercept)                        7.5941     0.5007  15.168
## as.factor(plot_dat$Harvested)Yes    -0.2065     0.1562  -1.322
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No  0.4730     0.6994   0.676
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes -0.2983     0.4038  -0.739
## as.factor(plot_dat$Forest.sAge..years.)10 to 15  2.4727     0.6384   3.873
## as.factor(plot_dat$Forest.sAge..years.)16 to 30  1.3105     0.4038   3.246
## as.factor(plot_dat$SoilType)BL, CHL           0.2204     0.5710   0.386
## as.factor(plot_dat$SoilType)CL                -0.4703     0.4038  -1.165
## as.factor(plot_dat$SoilType)CL, KK             0.5757     0.5710   1.008
## as.factor(plot_dat$SoilType)CT                 0.6791     0.4038   1.682
## as.factor(plot_dat$SoilType)EK                 0.5259     0.4369   1.204
## as.factor(plot_dat$SoilType)EL, CHL            0.1670     0.4038   0.414
## as.factor(plot_dat$SoilType)KK                -0.1217     0.4038  -0.301
## as.factor(plot_dat$SoilType)KK, BT            -1.1507     0.6257  -1.839
## as.factor(plot_dat$SoilType)KT                 1.1411     0.5710   1.998
##                                     Pr(>|t|)
## (Intercept)                        < 2e-16 ***
## as.factor(plot_dat$Harvested)Yes    0.193829
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.502815
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 0.464491
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.000399 ***
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.002410 **
## as.factor(plot_dat$SoilType)BL, CHL           0.701652
## as.factor(plot_dat$SoilType)CL                0.251158
## as.factor(plot_dat$SoilType)CL, KK             0.319610
## as.factor(plot_dat$SoilType)CT                 0.100613
## as.factor(plot_dat$SoilType)EK                 0.235945
## as.factor(plot_dat$SoilType)EL, CHL            0.681407
## as.factor(plot_dat$SoilType)KK                 0.764721
## as.factor(plot_dat$SoilType)KK, BT             0.073537 .
## as.factor(plot_dat$SoilType)KT                 0.052683 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.571 on 39 degrees of freedom
## Multiple R-squared:  0.4591, Adjusted R-squared:  0.2649
## F-statistic: 2.364 on 14 and 39 DF, p-value: 0.0173
```

BA & size model: group 1:


```
mod_group_BA_1 = lm(plot_dat$BA_adult1.m2.ha. ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_BA_1)
```



```
mod_group_BA_1_log = lm(log(plot_dat$BA_adult1.m2.ha.) ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_BA_1_log)
```



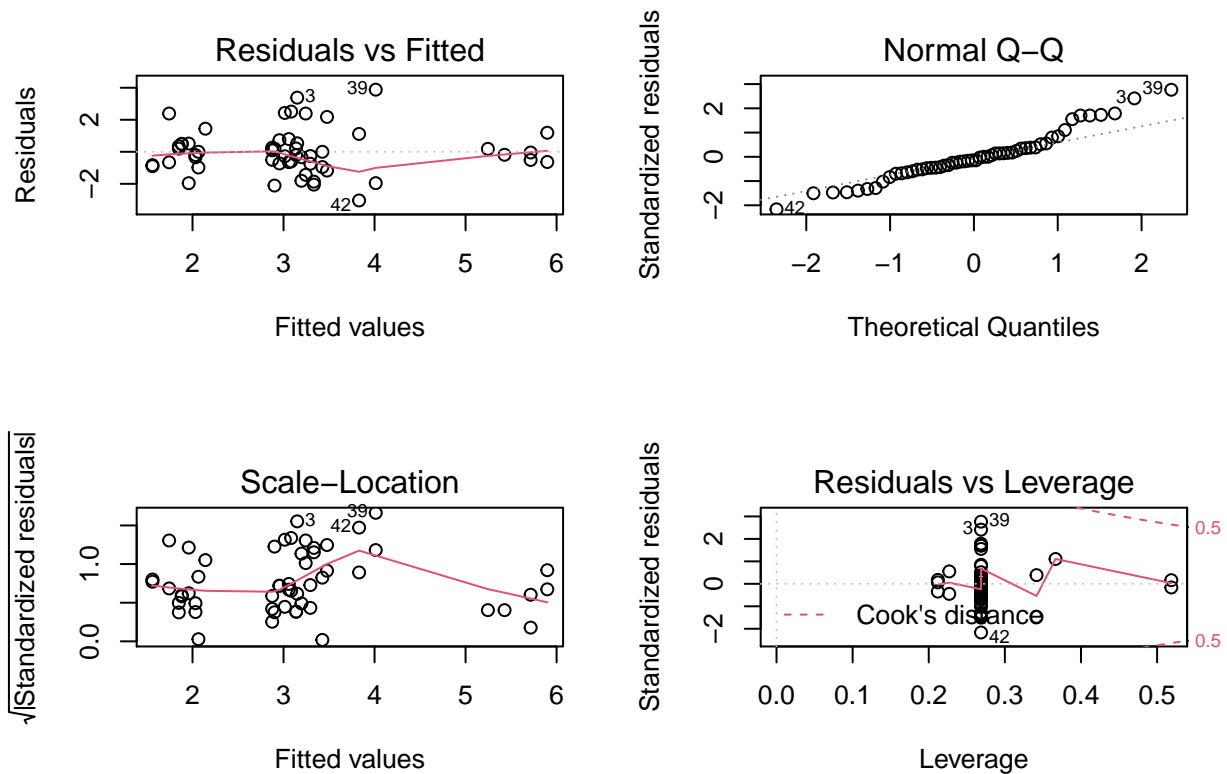
```
summary(mod_group_BA_1_log)
```

```
##
## Call:
## lm(formula = log(plot_dat$BA_adult1.m2.ha.) ~ as.factor(plot_dat$Harvested) +
##      as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##      as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.21186 -0.32468 -0.03802  0.37375  1.21470
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)      0.32841    0.52885   0.621
## as.factor(plot_dat$Harvested)Yes -0.00517    0.16498  -0.031
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No  0.07698    0.73875   0.104
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes -0.51715    0.42652  -1.212
## as.factor(plot_dat$Forest.sAge..years.)10 to 15  0.74163    0.67439   1.100
## as.factor(plot_dat$Forest.sAge..years.)16 to 30  0.85892    0.42652   2.014
## as.factor(plot_dat$SoilType)BL, CHL -0.42956    0.60319  -0.712
## as.factor(plot_dat$SoilType)CL  0.36713    0.42652   0.861
## as.factor(plot_dat$SoilType)CL, KK -0.05983    0.60319  -0.099
## as.factor(plot_dat$SoilType)CT -0.10163    0.42652  -0.238
## as.factor(plot_dat$SoilType)EK  0.60028    0.46151   1.301
## as.factor(plot_dat$SoilType)EL, CHL  0.60067    0.42652   1.408
## as.factor(plot_dat$SoilType)KK -0.14360    0.42652  -0.337
## as.factor(plot_dat$SoilType)KK, BT  0.31245    0.66097   0.473
```

```
## as.factor(plot_dat$SoilType)KT          0.53537    0.60319    0.888
##                                         Pr(>|t|)
## (Intercept)                            0.538
## as.factor(plot_dat$Harvested)Yes        0.975
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.918
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 0.233
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.278
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.051 .
## as.factor(plot_dat$SoilType)BL, CHL      0.481
## as.factor(plot_dat$SoilType)CL          0.395
## as.factor(plot_dat$SoilType)CL, KK      0.921
## as.factor(plot_dat$SoilType)CT          0.813
## as.factor(plot_dat$SoilType)EK          0.201
## as.factor(plot_dat$SoilType)EL, CHL     0.167
## as.factor(plot_dat$SoilType)KK          0.738
## as.factor(plot_dat$SoilType)KK, BT      0.639
## as.factor(plot_dat$SoilType)KT          0.380
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6032 on 39 degrees of freedom
## Multiple R-squared:  0.447, Adjusted R-squared:  0.2485
## F-statistic: 2.252 on 14 and 39 DF, p-value: 0.02316
```

group 2:

```
mod_group_BA_2 = lm(plot_dat$BA_adult2.m2.ha. ~ as.factor(plot_dat$Harvested) +
                    as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                    as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_BA_2)
```

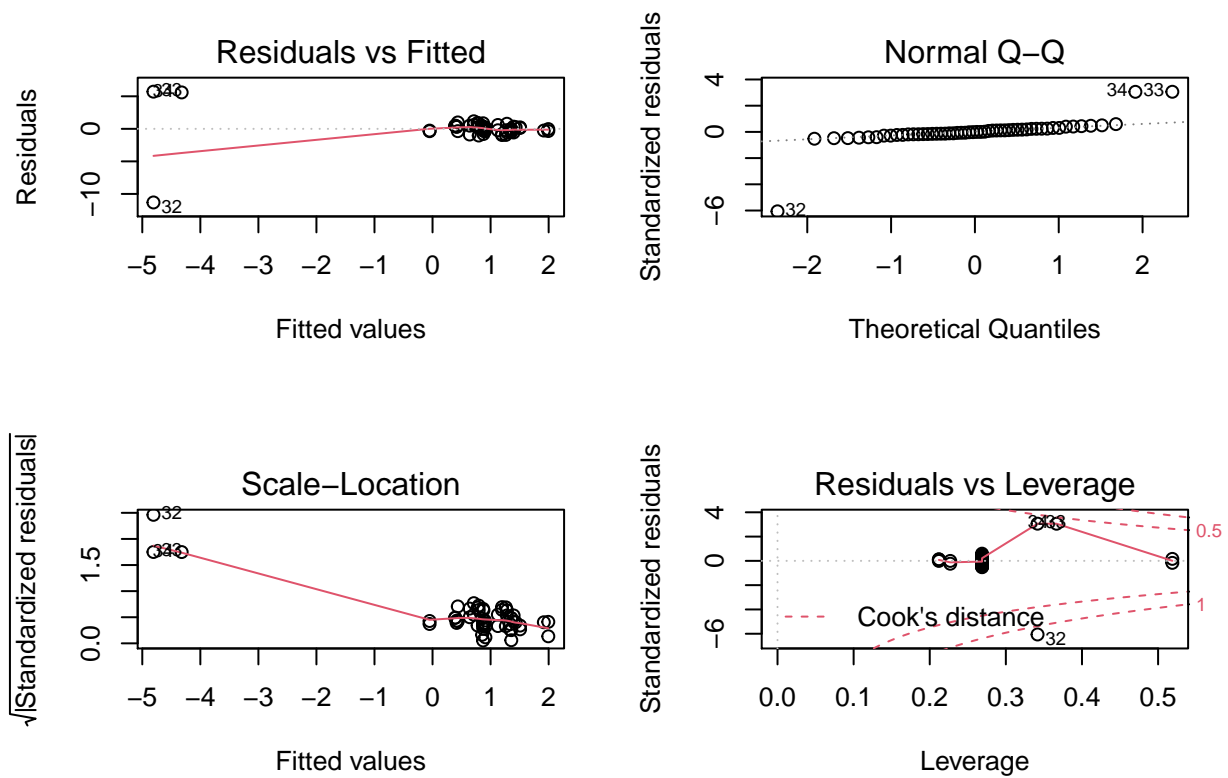


```
summary(mod_group_BA_2)
```

```
##
## Call:
## lm(formula = plot_dat$BA_adult2.m2.ha. ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -3.0373 -0.7392 -0.1934  0.5120  3.8790
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)      2.1467      1.4379   1.493
## as.factor(plot_dat$Harvested)Yes      0.1829      0.4486   0.408
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No -0.5141      2.0086  -0.256
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes -0.9293      1.1596  -0.801
## as.factor(plot_dat$Forest.sAge..years.)10 to 15  3.7785      1.8336   2.061
## as.factor(plot_dat$Forest.sAge..years.)16 to 30  1.6835      1.1596   1.452
## as.factor(plot_dat$SoilType)BL, CHL      0.2170      1.6400   0.132
## as.factor(plot_dat$SoilType)CL          0.3940      1.1596   0.340
## as.factor(plot_dat$SoilType)CL, KK      1.3815      1.6400   0.842
## as.factor(plot_dat$SoilType)CT          0.3427      1.1596   0.296
## as.factor(plot_dat$SoilType)EK        -0.9424      1.2548  -0.751
## as.factor(plot_dat$SoilType)EL, CHL      2.8142      1.1596   2.427
## as.factor(plot_dat$SoilType)KK          0.2495      1.1596   0.215
## as.factor(plot_dat$SoilType)KK, BT     -2.1204      1.7971  -1.180
```

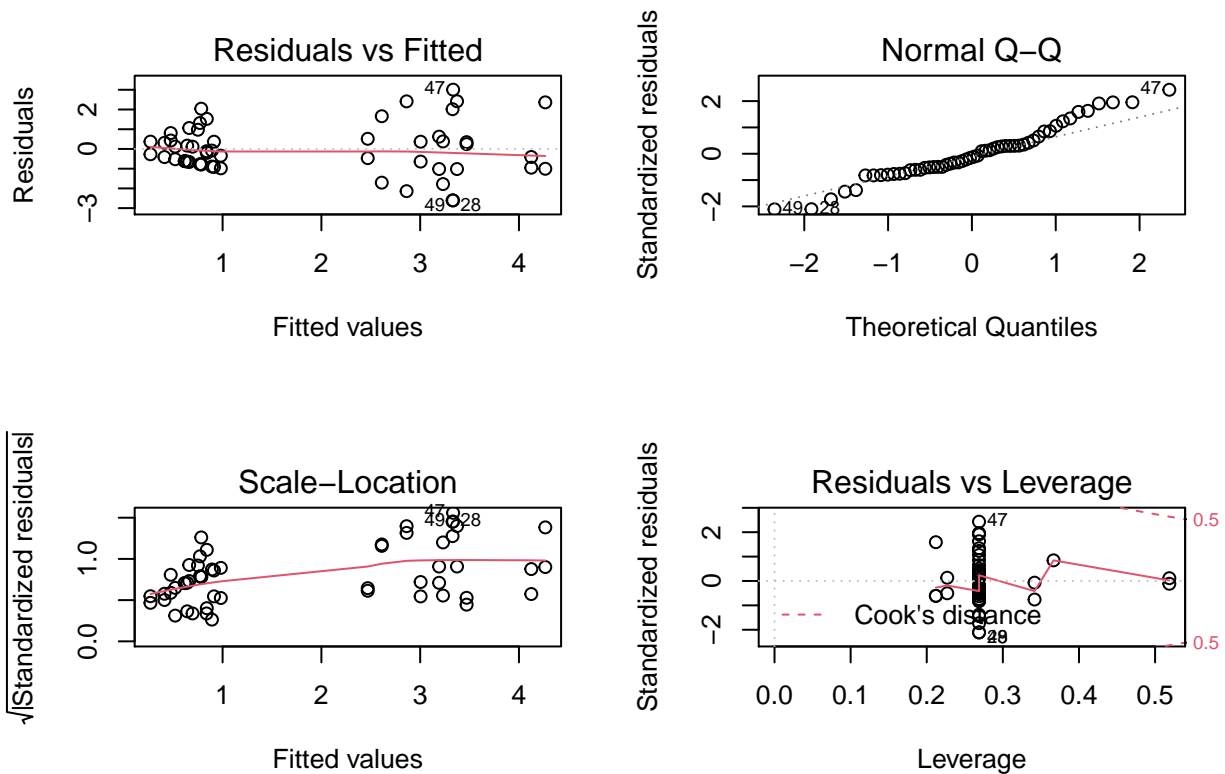
```
## as.factor(plot_dat$SoilType)KT          1.7379      1.6400      1.060
##                                         Pr(>|t|)
## (Intercept)                          0.143
## as.factor(plot_dat$Harvested)Yes        0.686
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.799
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 0.428
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.046 *
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.155
## as.factor(plot_dat$SoilType)BL, CHL      0.895
## as.factor(plot_dat$SoilType)CL          0.736
## as.factor(plot_dat$SoilType)CL, KK       0.405
## as.factor(plot_dat$SoilType)CT          0.769
## as.factor(plot_dat$SoilType)EK          0.457
## as.factor(plot_dat$SoilType)EL, CHL     0.020 *
## as.factor(plot_dat$SoilType)KK          0.831
## as.factor(plot_dat$SoilType)KK, BT      0.245
## as.factor(plot_dat$SoilType)KT          0.296
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.64 on 39 degrees of freedom
## Multiple R-squared:  0.3846, Adjusted R-squared:  0.1637
## F-statistic: 1.741 on 14 and 39 DF, p-value: 0.0863
```

```
plot_dat$BA_adult2.m2.ha.[plot_dat$BA_adult2.m2.ha. == 0] <- 10^-7
mod_group_BA_2_log = lm(log(plot_dat$BA_adult2.m2.ha.) ~ as.factor(plot_dat$Harvested) +
                        as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                        as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_BA_2_log)
```



group 3:

```
mod_group_BA_3 = lm(plot_dat$BA_adult3.m2.ha. ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_BA_3)
```

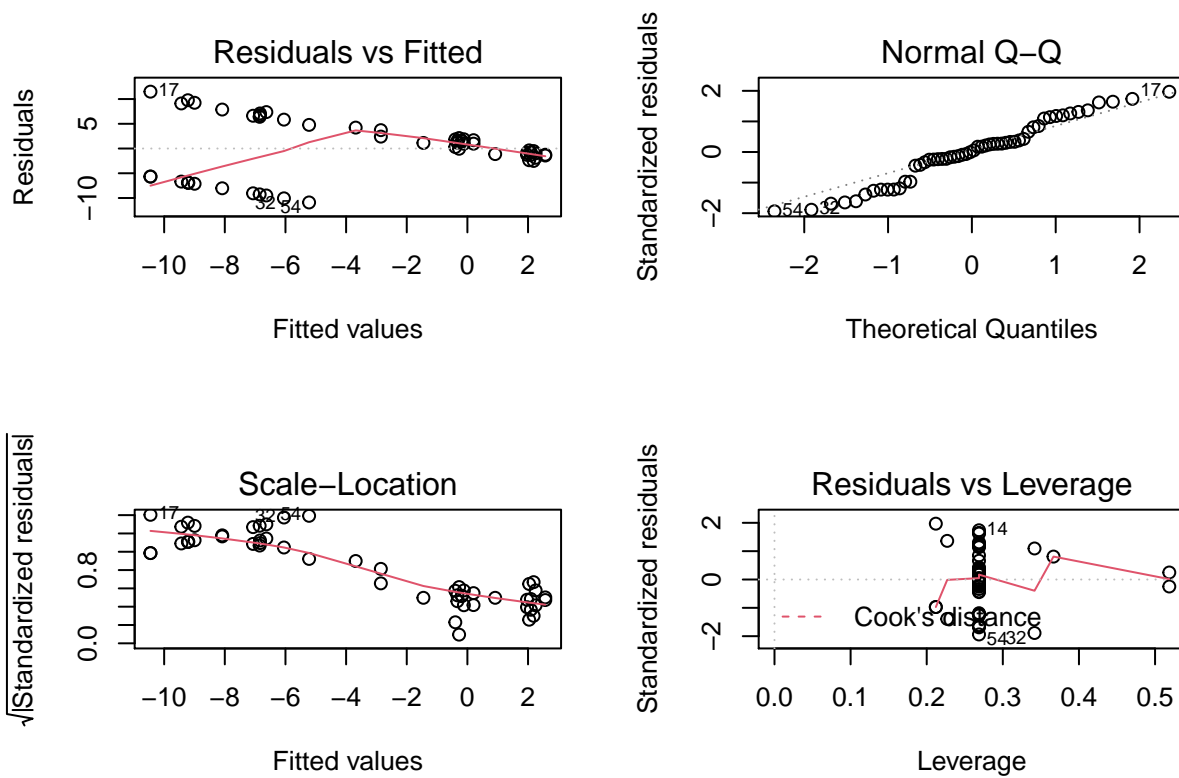


```
summary(mod_group_BA_3)
```

```
##
## Call:
## lm(formula = plot_dat$BA_adult3.m2.ha. ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.6106 -0.7805 -0.1573  0.4933  3.0053
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)      3.97080    1.26758   3.133
## as.factor(plot_dat$Harvested)Yes      -0.14192    0.39544  -0.359
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No    -5.33132    1.77069  -3.011
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes     0.06942    1.02231   0.068
## as.factor(plot_dat$Forest.sAge..years.)10 to 15    -5.22501    1.61641  -3.232
## as.factor(plot_dat$Forest.sAge..years.)16 to 30    -3.05808    1.02231  -2.991
## as.factor(plot_dat$SoilType)BL, CHL       1.97743    1.44576   1.368
## as.factor(plot_dat$SoilType)CL          2.35141    1.02231   2.300
## as.factor(plot_dat$SoilType)CL, KK       4.73346    1.44576   3.274
## as.factor(plot_dat$SoilType)CT        -0.57034    1.02231  -0.558
## as.factor(plot_dat$SoilType)EK        -0.09015    1.10618  -0.081
## as.factor(plot_dat$SoilType)EL, CHL      1.62910    1.02231   1.594
## as.factor(plot_dat$SoilType)KK          2.02246    1.02231   1.978
## as.factor(plot_dat$SoilType)KK, BT       1.96850    1.58425   1.243
```

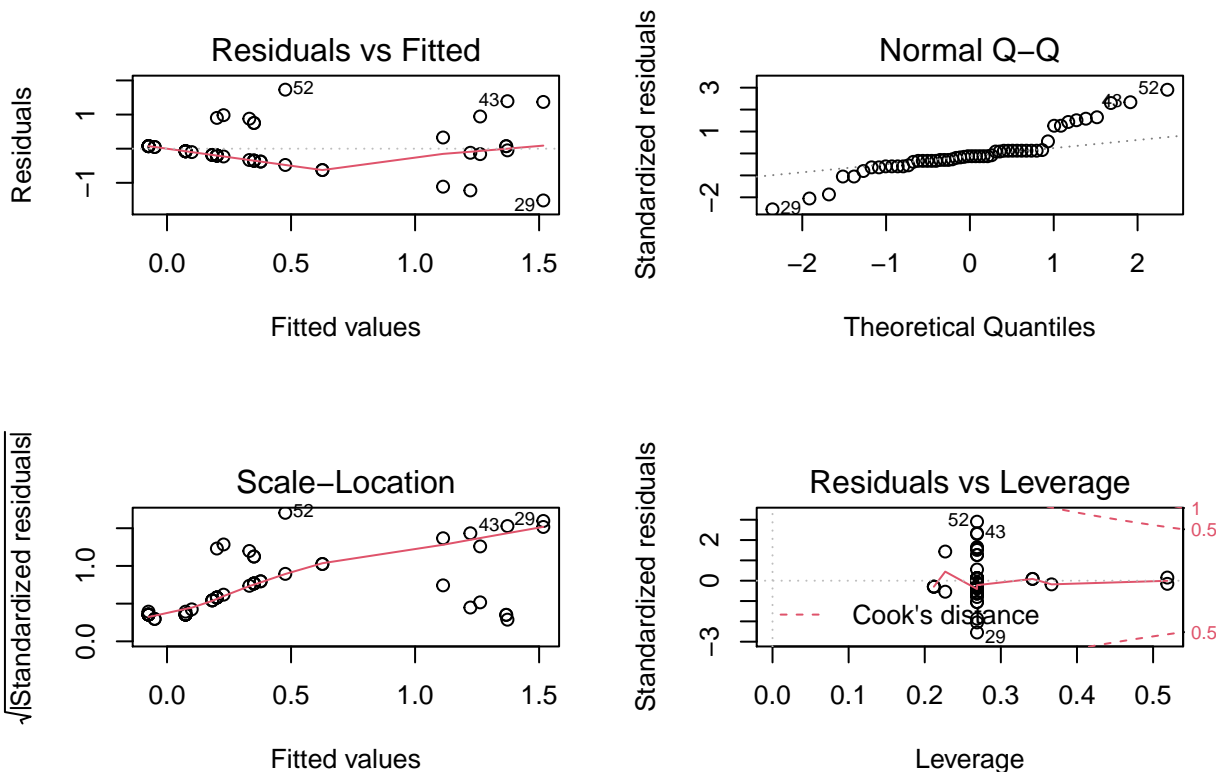
```
## as.factor(plot_dat$SoilType)KT          0.22639      1.44576    0.157
##                                         Pr(>|t|)
## (Intercept)                            0.00328 **
## as.factor(plot_dat$Harvested)Yes        0.72161
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.00455 **
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 0.94621
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.00250 **
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.00480 **
## as.factor(plot_dat$SoilType)BL, CHL      0.17922
## as.factor(plot_dat$SoilType)CL          0.02688 *
## as.factor(plot_dat$SoilType)CL, KK      0.00223 **
## as.factor(plot_dat$SoilType)CT          0.58010
## as.factor(plot_dat$SoilType)EK          0.93546
## as.factor(plot_dat$SoilType)EL, CHL     0.11911
## as.factor(plot_dat$SoilType)KK          0.05499 .
## as.factor(plot_dat$SoilType)KK, BT      0.22146
## as.factor(plot_dat$SoilType)KT          0.87638
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.446 on 39 degrees of freedom
## Multiple R-squared:  0.5418, Adjusted R-squared:  0.3774
## F-statistic: 3.295 on 14 and 39 DF, p-value: 0.001637
```

```
plot_dat$BA_adult3.m2.ha.[plot_dat$BA_adult3.m2.ha. == 0] <- 10^-7
mod_group_BA_3_log = lm(log(plot_dat$BA_adult3.m2.ha.) ~ as.factor(plot_dat$Harvested) +
                        as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                        as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_BA_3_log)
```

group 4:

```
mod_group_BA_4 = lm(plot_dat$BA_adult4.m2.ha. ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_BA_4)
```

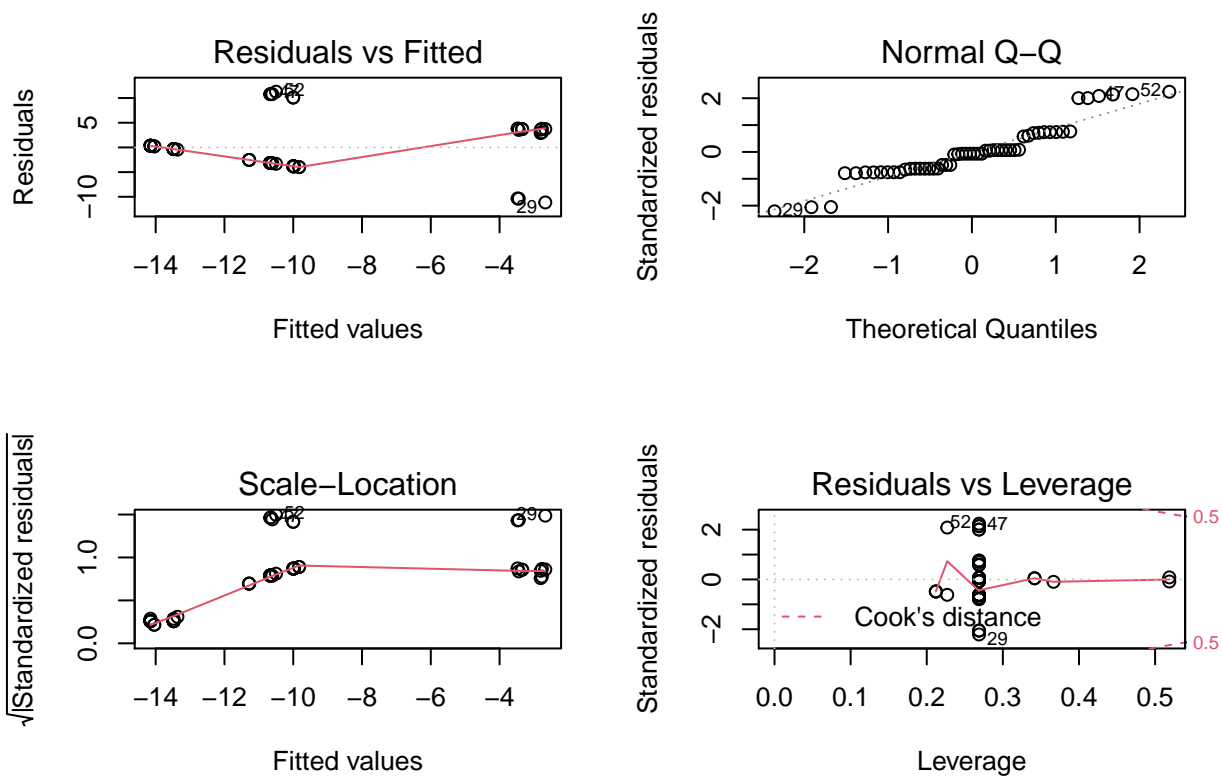


```
summary(mod_group_BA_4)
```

```
##
## Call:
## lm(formula = plot_dat$BA_adult4.m2.ha. ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.51687 -0.22120 -0.07475  0.07475  1.72950
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)      1.643e+00  6.107e-01   2.691
## as.factor(plot_dat$Harvested)Yes      1.495e-01  1.905e-01   0.785
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No -1.442e+00  8.531e-01 -1.690
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes  2.758e-01  4.925e-01  0.560
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 -1.718e+00  7.788e-01 -2.206
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 -1.442e+00  4.925e-01 -2.928
## as.factor(plot_dat$SoilType)BL, CHL      9.254e-16  6.965e-01  0.000
## as.factor(plot_dat$SoilType)CL      -2.489e-01  4.925e-01 -0.505
## as.factor(plot_dat$SoilType)CL, KK      1.022e+00  6.965e-01  1.467
## as.factor(plot_dat$SoilType)CT      -5.516e-01  4.925e-01 -1.120
## as.factor(plot_dat$SoilType)EK      -5.267e-01  5.329e-01 -0.988
## as.factor(plot_dat$SoilType)EL, CHL      -5.516e-01  4.925e-01 -1.120
## as.factor(plot_dat$SoilType)KK      -2.758e-01  4.925e-01 -0.560
## as.factor(plot_dat$SoilType)KK, BT      -1.869e-02  7.633e-01 -0.024
```

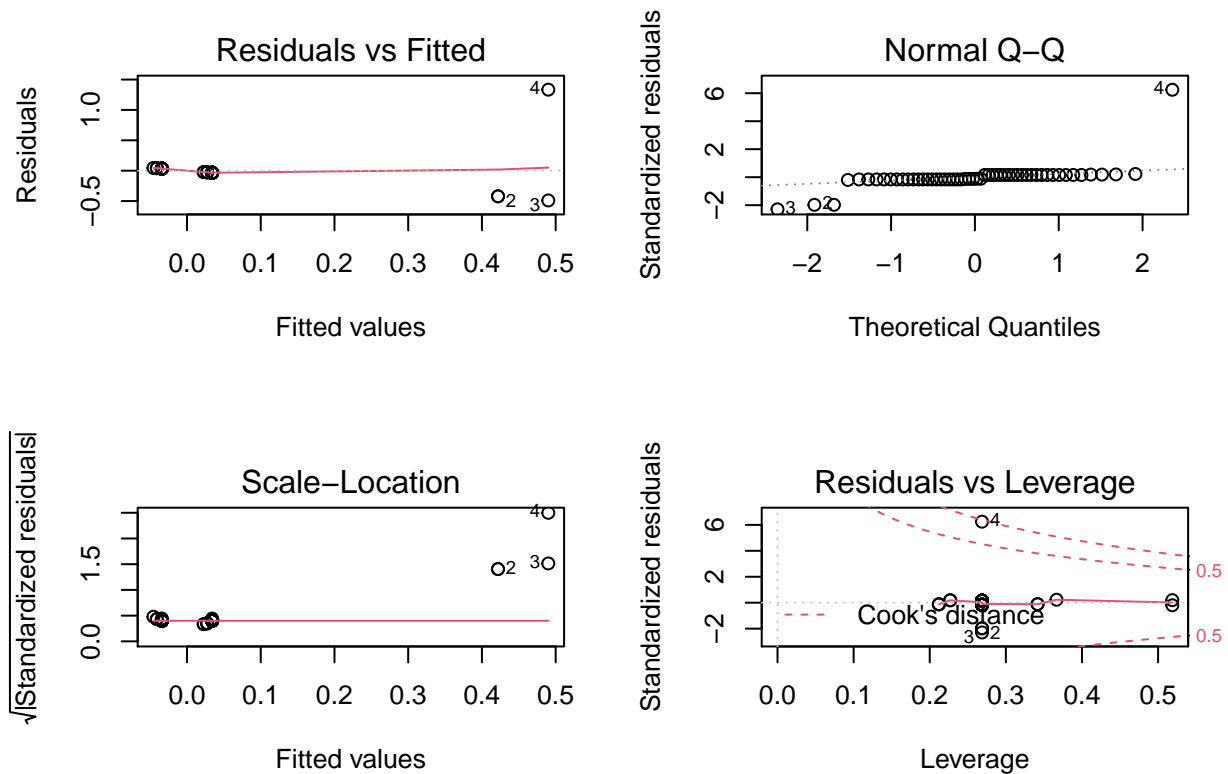
```
## as.factor(plot_dat$SoilType)KT          -8.061e-01  6.965e-01  -1.157
##                                         Pr(>|t|)
## (Intercept)                            0.01045 *
## as.factor(plot_dat$Harvested)Yes        0.43734
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No  0.09892 .
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes  0.57872
## as.factor(plot_dat$Forest.sAge..years.)10 to 15  0.03335 *
## as.factor(plot_dat$Forest.sAge..years.)16 to 30  0.00567 **
## as.factor(plot_dat$SoilType)BL, CHL        1.00000
## as.factor(plot_dat$SoilType)CL            0.61616
## as.factor(plot_dat$SoilType)CL, KK        0.15038
## as.factor(plot_dat$SoilType)CT            0.26961
## as.factor(plot_dat$SoilType)EK            0.32913
## as.factor(plot_dat$SoilType)EL, CHL        0.26961
## as.factor(plot_dat$SoilType)KK            0.57872
## as.factor(plot_dat$SoilType)KK, BT        0.98058
## as.factor(plot_dat$SoilType)KT            0.25419
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6965 on 39 degrees of freedom
## Multiple R-squared:  0.4151, Adjusted R-squared:  0.2052
## F-statistic: 1.977 on 14 and 39 DF, p-value: 0.04717

plot_dat$BA_adult4.m2.ha.[plot_dat$BA_adult4.m2.ha. == 0] <- 0.000001
mod_group_BA_4_log = lm(log(plot_dat$BA_adult4.m2.ha.) ~ as.factor(plot_dat$Harvested) +
                        as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
                        as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_BA_4_log)
```



group 5:

```
mod_group_BA_5 = lm(plot_dat$BA_adult5.m2.ha. ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
par(mfrow = c(2,2))
plot(mod_group_BA_5)
```



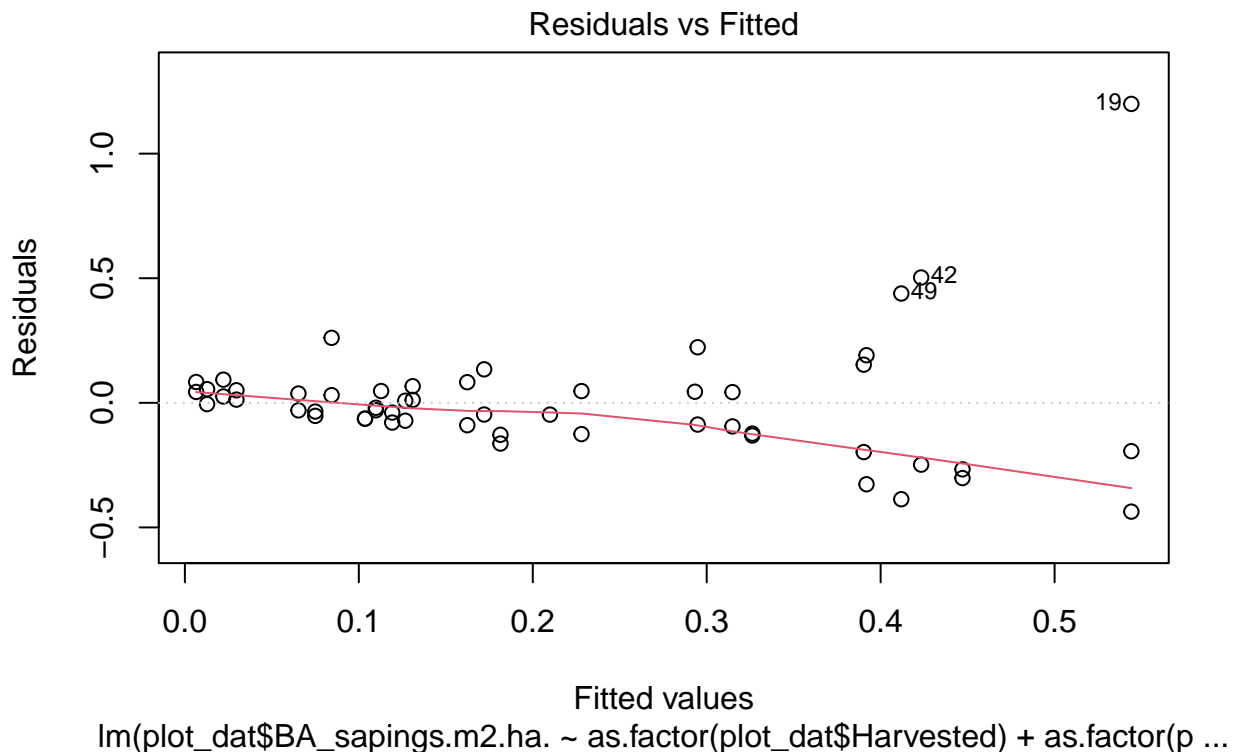
```
summary(mod_group_BA_5)
```

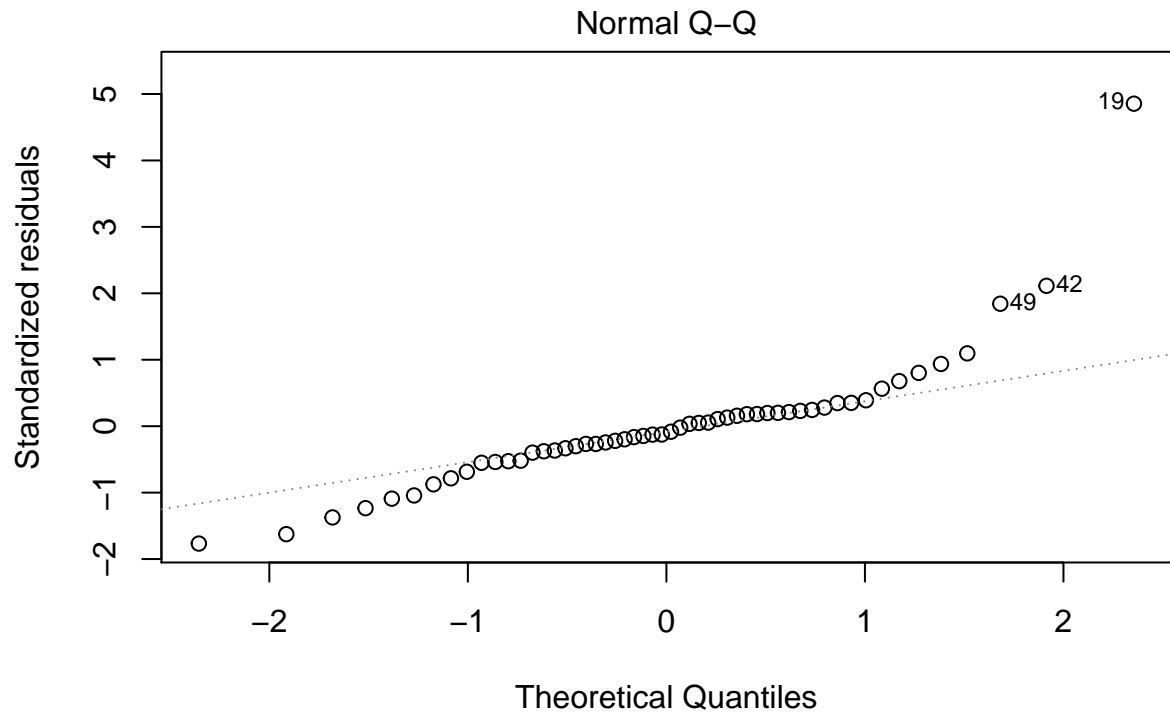
```
##
## Call:
## lm(formula = plot_dat$BA_adult5.m2.ha. ~ as.factor(plot_dat$Harvested) +
##     as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##     as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.49001 -0.03411 -0.02501  0.03411  1.33359
##
## Coefficients:
##
##              Estimate Std. Error t value
## (Intercept)      3.411e-02  2.189e-01   0.156
## as.factor(plot_dat$Harvested)Yes -6.821e-02  6.830e-02  -0.999
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No -4.559e-01  3.058e-01  -1.491
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes -3.940e-16  1.766e-01   0.000
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 -4.559e-01  2.792e-01  -1.633
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 -1.785e-16  1.766e-01   0.000
## as.factor(plot_dat$SoilType)BL, CHL      4.559e-01  2.497e-01   1.826
## as.factor(plot_dat$SoilType)CL          -3.072e-16  1.766e-01   0.000
## as.factor(plot_dat$SoilType)CL, KK      4.559e-01  2.497e-01   1.826
## as.factor(plot_dat$SoilType)CT          -4.583e-16  1.766e-01   0.000
## as.factor(plot_dat$SoilType)EK          -1.137e-02  1.911e-01  -0.060
## as.factor(plot_dat$SoilType)EL, CHL     -1.990e-16  1.766e-01   0.000
## as.factor(plot_dat$SoilType)KK          4.559e-01  1.766e-01   2.582
## as.factor(plot_dat$SoilType)KK, BT      4.491e-01  2.736e-01   1.641
```

```
## as.factor(plot_dat$SoilType)KT -4.996e-16 2.497e-01 0.000
## Pr(>|t|)
## (Intercept) 0.8770
## as.factor(plot_dat$Harvested)Yes 0.3241
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.1441
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 1.0000
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.1105
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 1.0000
## as.factor(plot_dat$SoilType)BL, CHL 0.0756 .
## as.factor(plot_dat$SoilType)CL 1.0000
## as.factor(plot_dat$SoilType)CL, KK 0.0756 .
## as.factor(plot_dat$SoilType)CT 1.0000
## as.factor(plot_dat$SoilType)EK 0.9529
## as.factor(plot_dat$SoilType)EL, CHL 1.0000
## as.factor(plot_dat$SoilType)KK 0.0137 *
## as.factor(plot_dat$SoilType)KK, BT 0.1088
## as.factor(plot_dat$SoilType)KT 1.0000
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2497 on 39 degrees of freedom
## Multiple R-squared: 0.2549, Adjusted R-squared: -0.01256
## F-statistic: 0.953 on 14 and 39 DF, p-value: 0.5151
```

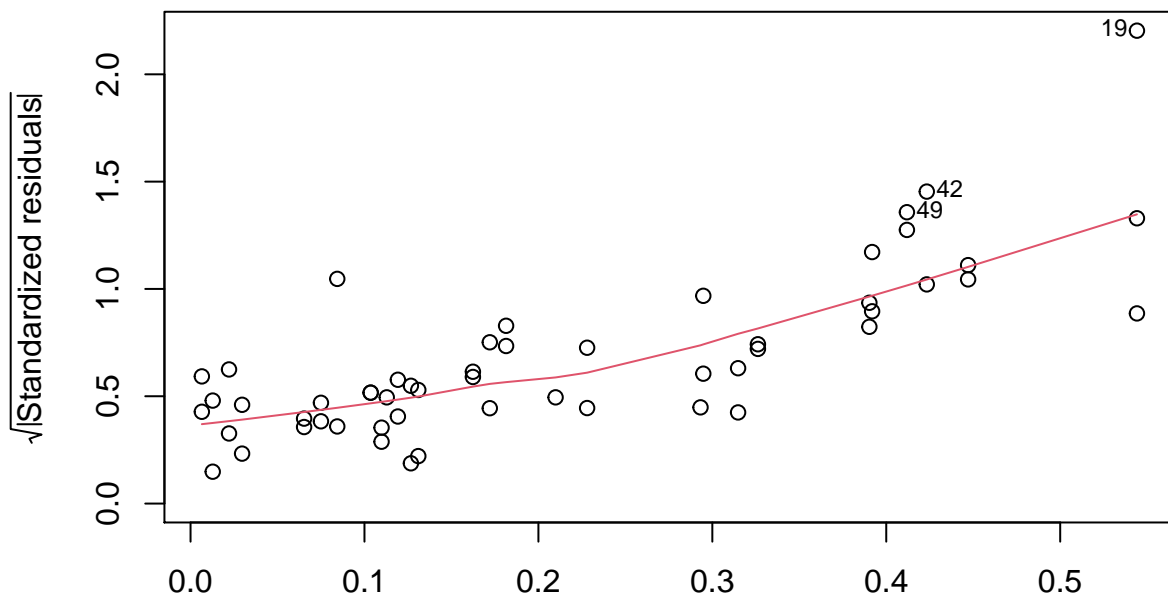
saplings:

```
mod_group_BA_sap = lm(plot_dat$BA_sapings.m2.ha. ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
plot(mod_group_BA_sap)
```

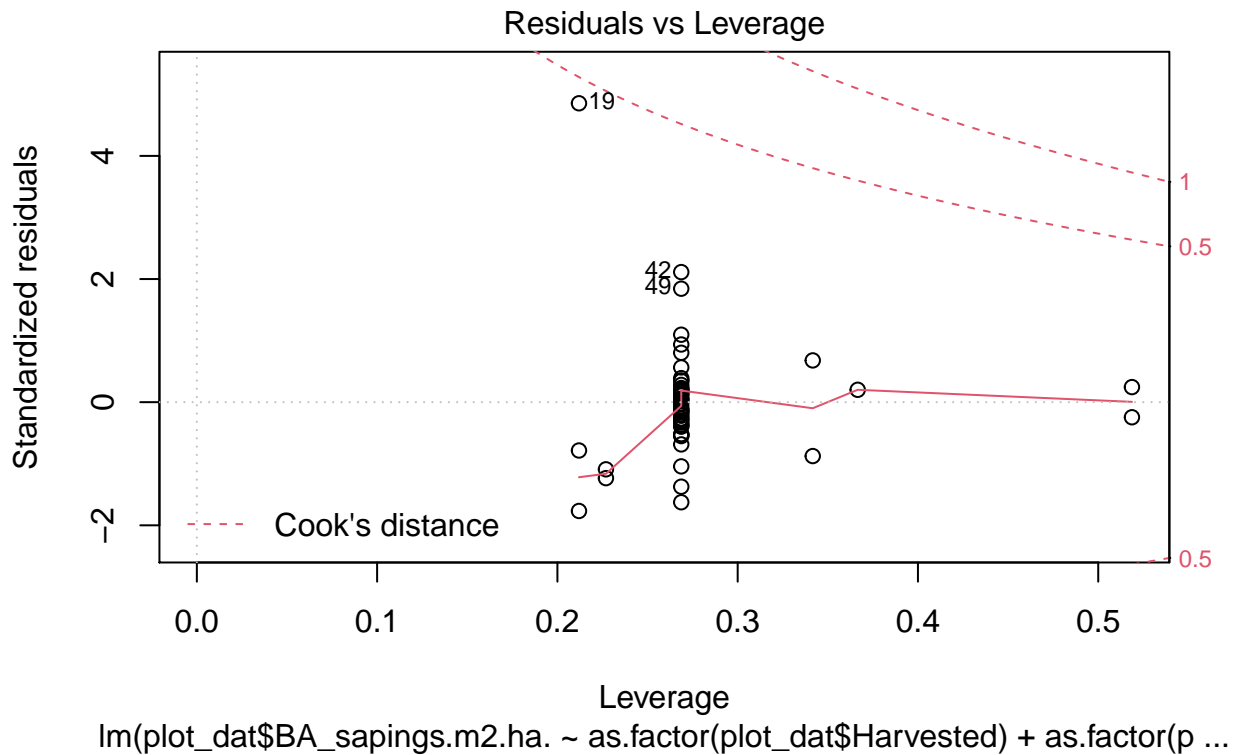




$\text{lm}(\text{plot_dat}\$BA_sapings.m2.ha. \sim \text{as.factor}(\text{plot_dat}\$Harvested) + \text{as.factor}(p \dots)$
 Scale-Location



$\text{lm}(\text{plot_dat}\$BA_sapings.m2.ha. \sim \text{as.factor}(\text{plot_dat}\$Harvested) + \text{as.factor}(p \dots)$



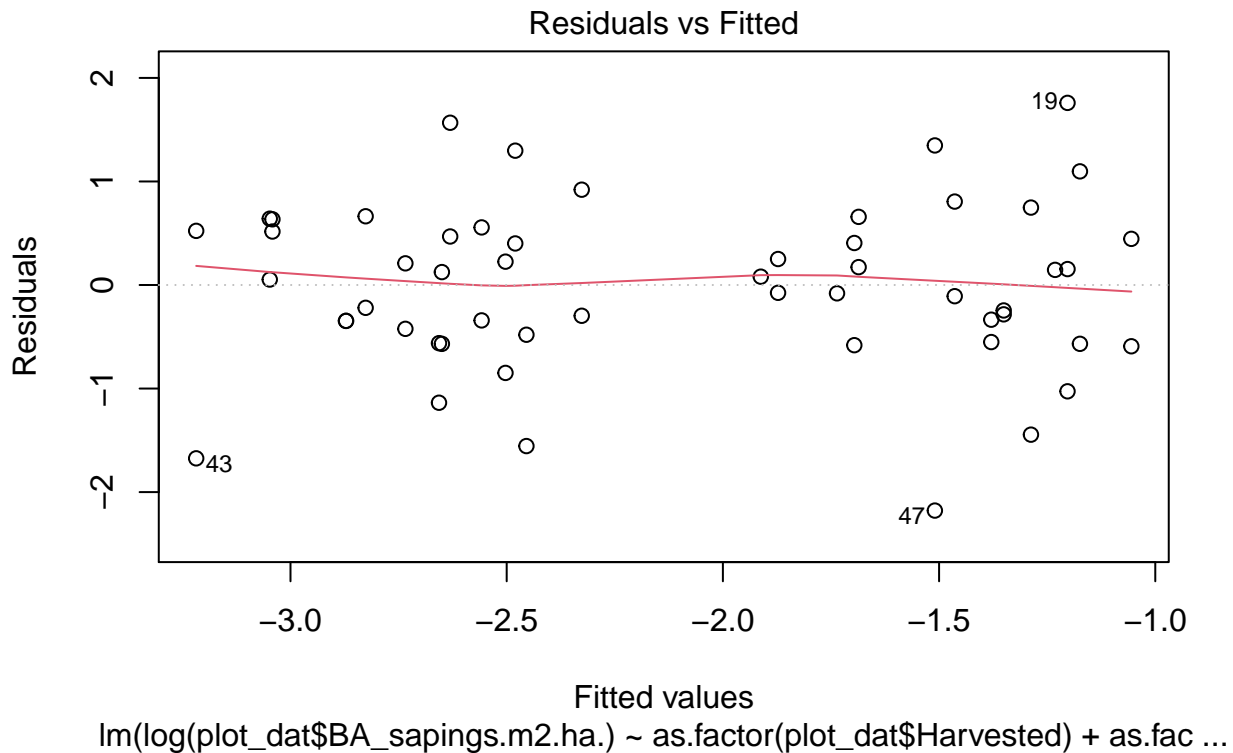
```
summary(mod_group_BA_sap)
```

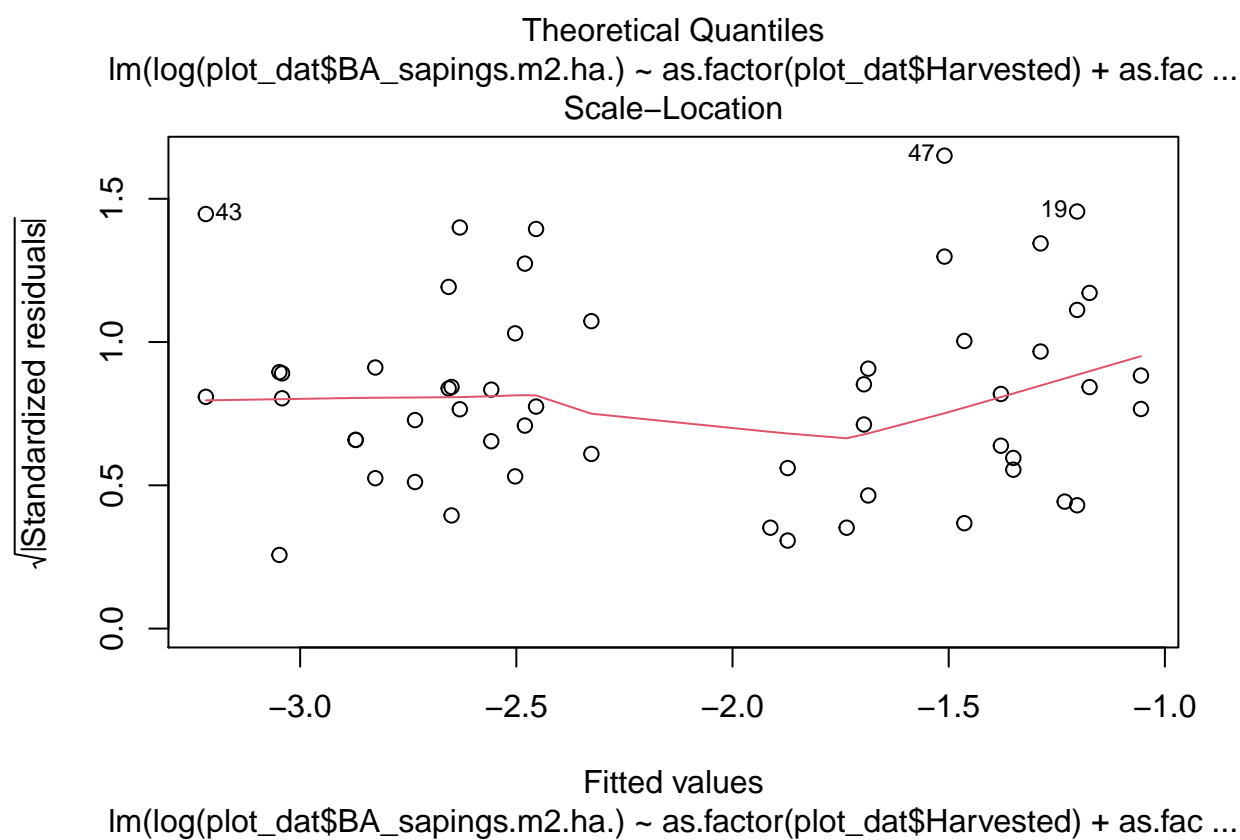
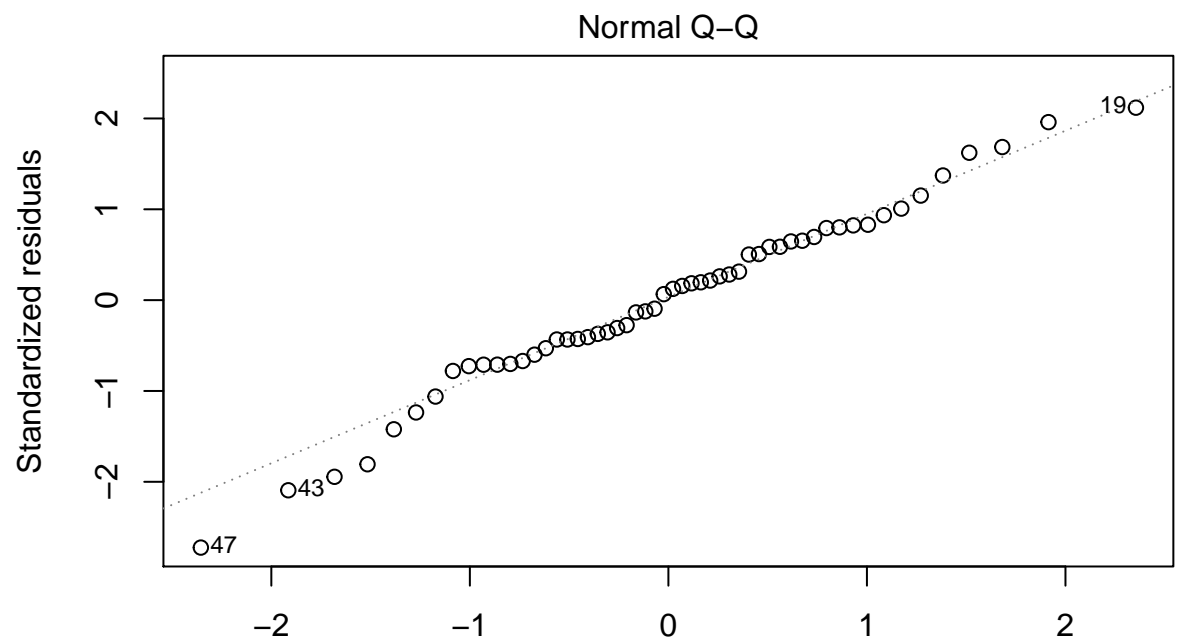
```
##
## Call:
## lm(formula = plot_dat$BA_sapings.m2.ha. ~ as.factor(plot_dat$Harvested) +
##      as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##      as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.43657 -0.09346 -0.02477  0.04963  1.19941
##
## Coefficients:
##                                Estimate Std. Error t value
## (Intercept)                   0.35481    0.24402   1.454
## as.factor(plot_dat$Harvested)Yes -0.09707    0.07613  -1.275
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No -0.10772    0.34087  -0.316
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes -0.19527    0.19680  -0.992
## as.factor(plot_dat$Forest.sAge..years.)10 to 15  0.11601    0.31117   0.373
## as.factor(plot_dat$Forest.sAge..years.)16 to 30  0.06848    0.19680   0.348
## as.factor(plot_dat$SoilType)BL, CHL            -0.12038    0.27832  -0.433
## as.factor(plot_dat$SoilType)CL                  0.18386    0.19680   0.934
## as.factor(plot_dat$SoilType)CL, KK              -0.13727    0.27832  -0.493
## as.factor(plot_dat$SoilType)CT                  -0.05597    0.19680  -0.284
## as.factor(plot_dat$SoilType)EK                   0.16226    0.21295   0.762
## as.factor(plot_dat$SoilType)EL, CHL              0.16385    0.19680   0.833
## as.factor(plot_dat$SoilType)KK                  -0.06566    0.19680  -0.334
## as.factor(plot_dat$SoilType)KK, BT               0.26858    0.30498   0.881
## as.factor(plot_dat$SoilType)KT                  -0.04034    0.27832  -0.145
```

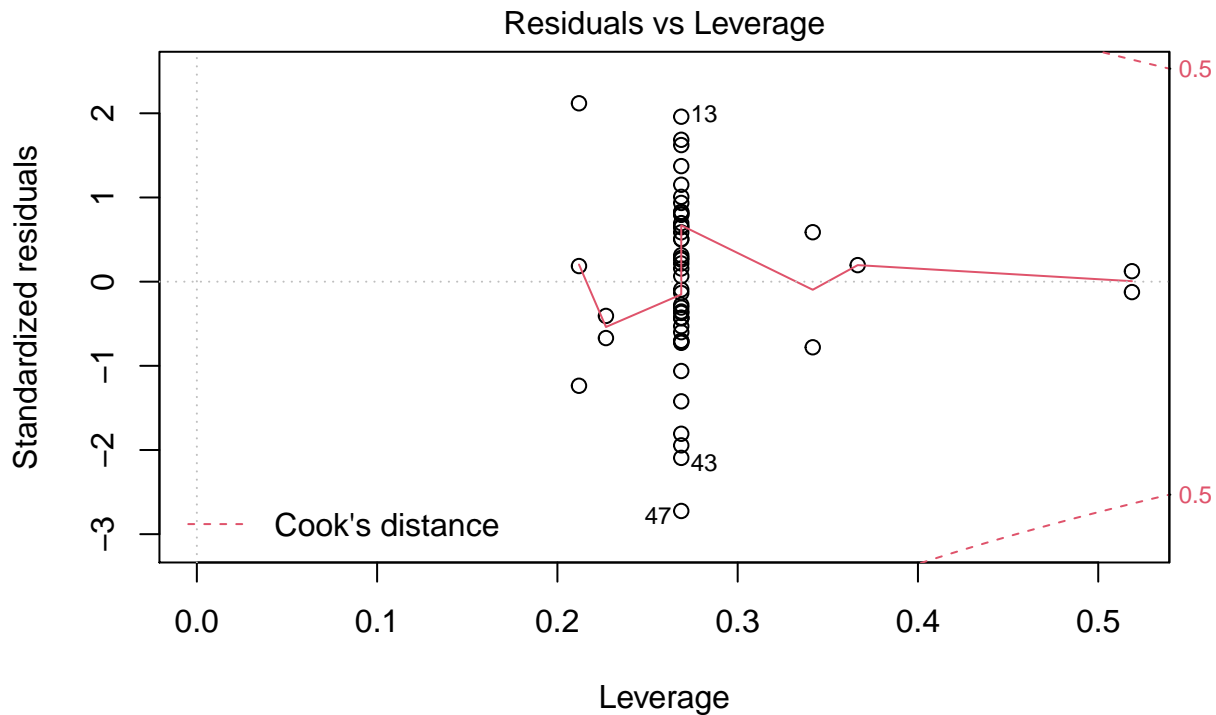


```
##                                     Pr(>|t|)
## (Intercept)                        0.154
## as.factor(plot_dat$Harvested)Yes    0.210
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.754
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 0.327
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.711
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.730
## as.factor(plot_dat$SoilType)BL, CHL 0.668
## as.factor(plot_dat$SoilType)CL      0.356
## as.factor(plot_dat$SoilType)CL, KK  0.625
## as.factor(plot_dat$SoilType)CT      0.778
## as.factor(plot_dat$SoilType)EK      0.451
## as.factor(plot_dat$SoilType)EL, CHL 0.410
## as.factor(plot_dat$SoilType)KK      0.740
## as.factor(plot_dat$SoilType)KK, BT  0.384
## as.factor(plot_dat$SoilType)KT      0.886
##
## Residual standard error: 0.2783 on 39 degrees of freedom
## Multiple R-squared:  0.3059, Adjusted R-squared:  0.0568
## F-statistic: 1.228 on 14 and 39 DF,  p-value: 0.2953
```

```
mod_group_BA_sap_log = lm(log(plot_dat$BA_sapings.m2.ha.) ~ as.factor(plot_dat$Harvested) +
  as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
  as.factor(plot_dat$SoilType), data = plot_dat)
plot(mod_group_BA_sap_log)
```







lm(log(plot_dat\$BA_sapings.m2.ha.) ~ as.factor(plot_dat\$Harvested) + as.fac ...

```
summary(mod_group_BA_sap_log)
```

```
##
## Call:
## lm(formula = log(plot_dat$BA_sapings.m2.ha.) ~ as.factor(plot_dat$Harvested) +
##   as.factor(plot_dat$Milpa.has.it.been.milpa.) + as.factor(plot_dat$Forest.sAge..years.) +
##   as.factor(plot_dat$SoilType), data = plot_dat)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.1785 -0.4659  0.0666  0.5215  1.7589
##
## Coefficients:
##              Estimate Std. Error t value
## (Intercept)      -1.56562    0.81990  -1.910
## as.factor(plot_dat$Harvested)Yes      -0.17633    0.25578  -0.689
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No    -0.25835    1.14532  -0.226
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes   -0.52182    0.66125  -0.789
## as.factor(plot_dat$Forest.sAge..years.)10 to 15    0.98179    1.04553   0.939
## as.factor(plot_dat$Forest.sAge..years.)16 to 30    0.39138    0.66125   0.592
## as.factor(plot_dat$SoilType)BL, CHL      -0.73398    0.93515  -0.785
## as.factor(plot_dat$SoilType)CL           0.18629    0.66125   0.282
## as.factor(plot_dat$SoilType)CL, KK      -1.21780    0.93515  -1.302
## as.factor(plot_dat$SoilType)CT          -0.78415    0.66125  -1.186
## as.factor(plot_dat$SoilType)EK           0.64068    0.71550   0.895
## as.factor(plot_dat$SoilType)EL, CHL       0.40854    0.66125   0.618
## as.factor(plot_dat$SoilType)KK          -0.63041    0.66125  -0.953
## as.factor(plot_dat$SoilType)KK, BT      -0.09734    1.02473  -0.095
## as.factor(plot_dat$SoilType)KT          -0.56241    0.93515  -0.601
```

```

##                                Pr(>|t|)
## (Intercept)                    0.0636 .
## as.factor(plot_dat$Harvested)Yes 0.4947
## as.factor(plot_dat$Milpa.has.it.been.milpa.)No 0.8227
## as.factor(plot_dat$Milpa.has.it.been.milpa.)Yes 0.4348
## as.factor(plot_dat$Forest.sAge..years.)10 to 15 0.3535
## as.factor(plot_dat$Forest.sAge..years.)16 to 30 0.5573
## as.factor(plot_dat$SoilType)BL, CHL 0.4373
## as.factor(plot_dat$SoilType)CL 0.7796
## as.factor(plot_dat$SoilType)CL, KK 0.2005
## as.factor(plot_dat$SoilType)CT 0.2429
## as.factor(plot_dat$SoilType)EK 0.3761
## as.factor(plot_dat$SoilType)EL, CHL 0.5403
## as.factor(plot_dat$SoilType)KK 0.3463
## as.factor(plot_dat$SoilType)KK, BT 0.9248
## as.factor(plot_dat$SoilType)KT 0.5510
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9352 on 39 degrees of freedom
## Multiple R-squared:  0.4258, Adjusted R-squared:  0.2196
## F-statistic: 2.066 on 14 and 39 DF,  p-value: 0.03754

```