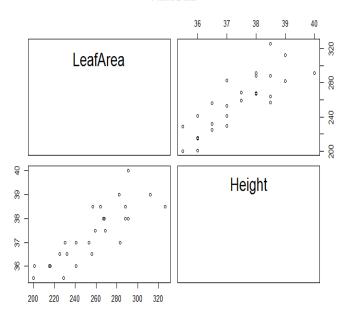
```
Handout #2
# R commands for multivariate data description and graphical calculation
Xmatrix <- c(1, 264, 38.5,
1, 200, 35.5,
1, 225, 36.5,
1, 268, 38,
1, 215, 36,
1, 241, 36,
1, 232, 36.5,
1, 256, 36.5,
1, 229, 35.5,
1, 288, 38.5,
1, 253, 37,
1, 288, 38,
1, 230, 37,
2, 283, 37,
2, 312, 39,
2, 291, 38,
2, 259, 37.5,
2, 216, 36,
2, 201, 36,
2, 267, 38,
2, 326, 38.5,
2, 241, 37,
2, 291, 40,
2, 269, 37.5,
2, 282, 39,
2, 257, 38.5)
X <- matrix(data = Xmatrix, ncol = 3, byrow = TRUE)</pre>
Xdata <- data.frame(Group = X[,1], LeafArea = X[,2], Height = X[,3])</pre>
# Calculate mean vector, variance-covariance matrix, and correlation matrix
summary(Xdata[,2:3])
cov(Xdata[,2:3])
cor(Xdata[,2:3])
# To use spm (ScatterPlotMatrix), must have "car" package installed
library(car)
# ?spm gives information about the spm command
#
?spm
# Basic Scatterplot Matrix
pairs(Xdata[,2:3],main=c("Plant Data"))
spm(Xdata[,2:3],diagonal=FALSE,smooth=FALSE,regLine=FALSE,main=c("Plant Data"))
# Add ellipses using standard method of calculation (robust=FALSE)
# Add boxplot to diagonal
spm(Xdata[,2:3],diagonal=list(method="boxplot"),smooth=FALSE,regLine=FALSE,ellipse=
list(levels=c(0.90), robust=FALSE, fill=FALSE), main=c("Plant Data"))
```

```
# R output
> summary(xdata[,2:3])
       LeafArea
                                   -
Height
 Min. :200.0
1st Qu.:230.5
Median :258.0
                            Min. :35.50
1st Qu.:36.50
Median :37.25
 Mean :257.1
3rd Qu.:282.8
                             Mean :37.37
3rd Qu.:38.38
            :326.0
                             Max. :40.00
 Max.
> cov(Xdata[,2:3])
LeafArea Height
LeafArea 1090.39385 33.050769
                   33.05077 1.451154
Height
> cor(Xdata[,2:3])
LeafArea
LeafArea Height
LeafArea 1.0000000 0.8308701
Height 0.8308701 1.0000000
```

## **Plant Data**



## **Plant Data**

