Solution

# Multiple Linear Regression

H0: Soil moisture content, depth of seed, amount of fertilizer, and outside air temperature at planting do not affect soybean crop yield.

Ha: Soil moisture content. depth of seed, amount of fertilizer and outside air temperature influence the soybean crop yield.

If doing a check of each item individually, depth of seed, amount of fertilizer and outside air temperature are all correlated to crop yield. However, the soil moisture content is not.

Soil moisture content Pearson = -.056 P Value = .73

Depth of seed Pearson = .976 P Value = 0

Amount of fertilizer Pearson = .314 P Value = .048

Outside air temperature at planting Pearson = .970 P Value = 0

However, when doing a multiple linear regression, the amount of fertilizer is no longer significant.

Minitab results: P Value for each term and regression equation are shown below. The residuals for this equation are not normal – but are highly skewed. If the soil moisture content term is dropped from the equation, the residuals look much better. Dropping the amount of fertilizer adds a minor improvement to the residuals.

