

AGEC 622
01_intro Exercises
Due before the beginning of class 02

- Complete the exercises in the provided notebook “01_exercises_LASTNAME_FIRSTNAME.xlsx”.
- **Rename your file, replacing “LASTNAME_FIRSTNAME” with your actual names.**
- If there is more than one question, note that each will have its own tab in the workbook.
- **Work vertically down the sheet** within your notebook. Separate the individual parts of the question(s) (a, b, c, . . .) using dividing rows like the blue example dividers in the file.
- Submit this homework by emailing your xlsx file to henry@tamu.edu, **with the subject “AGEC 622 exercises 01”**.

1) Question 1

- a) **Plot the soybean yield.** Plot the soybean yield over time with a simple line graph.
- b) **Soybean yield trend regression.** Regress the soybean yield on the year variable using the “Multiple Regression” tool. Select the options to plot “Residuals” and “Observed & Predicted”
- c) **Soybean yield deterministic forecasts.** Calculate conditional mean forecasts for the soybean yield for 2019, 2020, and 2021.
- d) **Stochastic forecasts.** Assuming the random component of the soybean yield is normally distributed, simulate the soybean yield for 2019 through 2021. After you run the simulation, rename the output sheet from “SimData” to “SimData Q1d”
- e) **PDF.** Plot a probability density function for the simulated yield for 2021.
- f) **Quadratic trend forecasts.** Repeat steps b) through d) using a model with both a $YEAR$ variable and a $YEAR^2$ variable on the right hand side:

$$YIELD_t = \beta_0 + \beta_1 YEAR_t + \beta_2 YEAR_t^2 + e_t$$

- g) **Interpret.** State which model you think is better and support your statement.