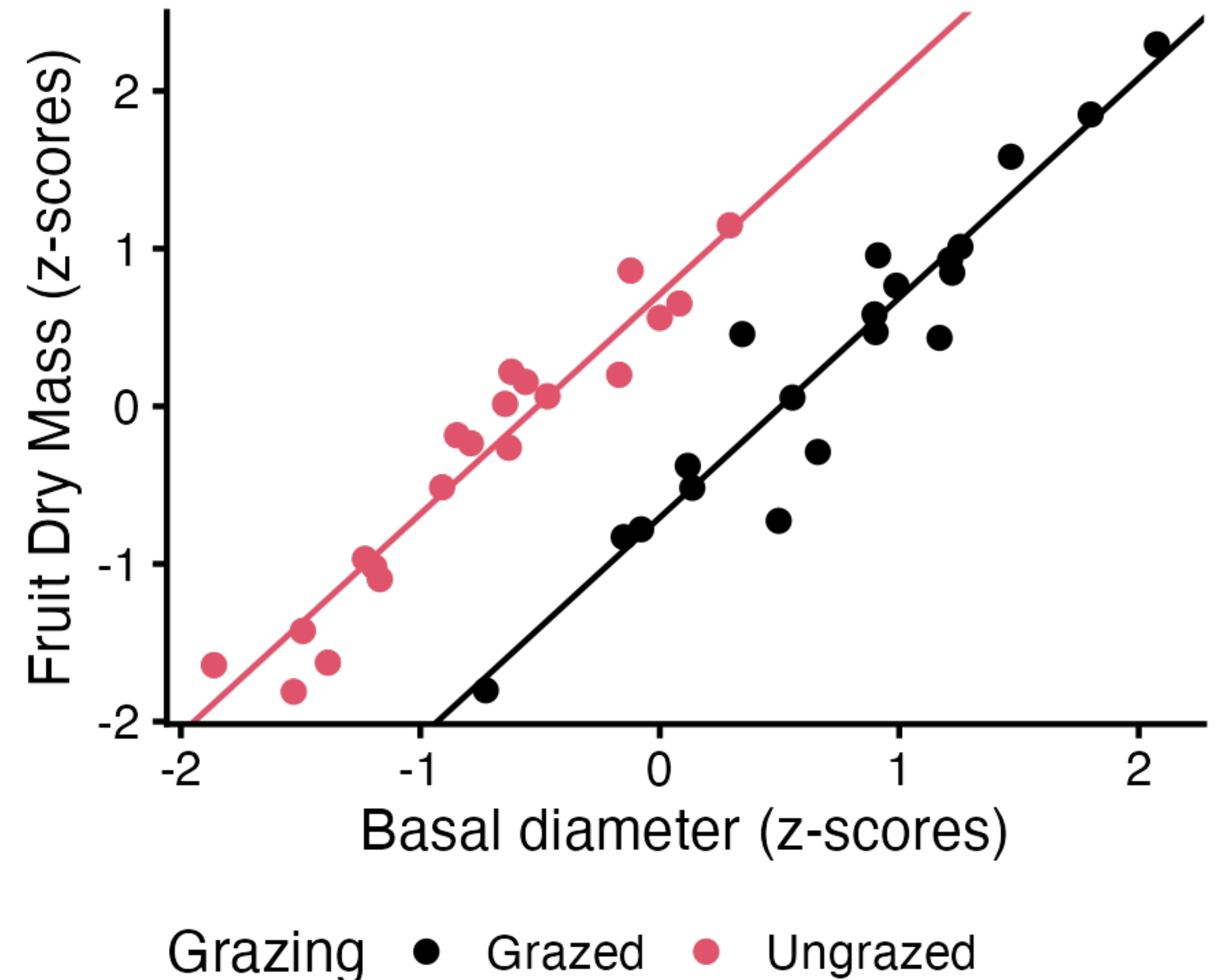


# Why do the coefficients change?

## Multiple regression as control

- Coefficients are comparisons, and adding predictors to a regression has the same effect as **stratifying** the data
- The objective of adding more predictors to a linear model is to compare **like-to-like**:
  1. What is the difference between treatments for plants of the same initial size?
  2. What is the effect of initial size given a particular treatment?



# Using simulations to understand multiple regression

- Simulations are a powerful tool to understand how these models behave
- **Use them liberally! Use them often!**
- Ask:
  - What is the data generating process of system?
  - What model represents this process?
- Simulate data under this model, try to fit the data

- Example:
  - **Question:** What is the effect of toxin exposure on the size of individuals in a population?
  - Age affects both toxin exposure and size

