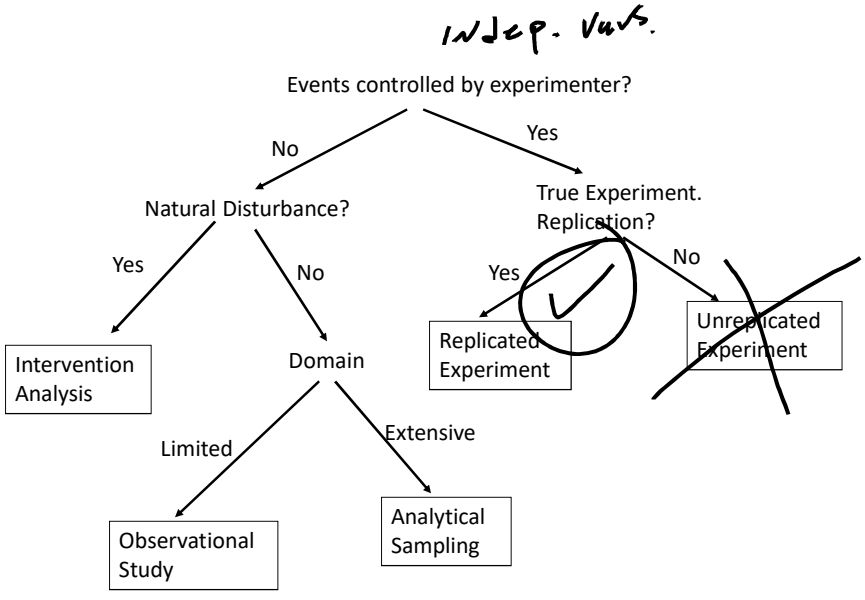
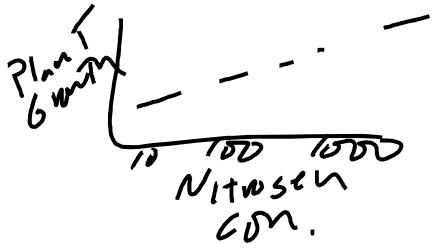
Tools in Ecology

- Mesocosm vs. Field Experiment
- Experimental Approach
  - Reductionism
  - Experimental Deign in Ecology
    - Define variables BEFORE the study
      - Dependent
      - Independent
      - Extraneous
    - Types of variables
      - Categorical
      - Discrete
      - Continuous
    - State your hypotheses and how you will test them
    - Properties of hypothesis, scientific method



Validity

- **Internal** – strength in the cause-effect relationship between dependent variable(s) and independent variables.
- **External** – strength of the link between your conclusions and the question or hypothesis you're asking about the natural population. How generalisable are your conclusions?



Threats to Validity

- **Question** – does concentration of nutrient "x" control productivity?
- **Field Experiments**
  - Measure nutrient x and plant size in various environments
  - Measure nutrient x and number of new leaves produced
  - Measure nutrient x and increase in plant biomass in various environments
- **Lab Experiments**
  - Measure growth in pots with different levels of x

Objectives and Questions

- Objective - collect data on population demographics to estimate density/abundance, age structure and growth.
- Question(s) ?