Commercial Citrus or a Really Big Backyard:
Small Citrus Growers and their Effects on Citrus Pest Populations

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Motivation:
The majority of California citrus growers manage less than 15 acres of citrus.

Research Questions:
- How do pest presence and pest management decisions differ between large and small growers?
- Does a clear size cutoff exist between large and small? And if so, what is this cutoff?
- If small growers less actively manage their farms, how does this affect growers who do actively manage their farms?

Methods:
- Using data from the 2010 survey of citrus growers:
  - Estimate probit models for pest presence and chemical control, controlling for grower and farm characteristics and surrounding pest presence and treatment.
  - Vary division between large and small growers.
  - Separately estimate pest presence for large growers, controlling for the presence of inactive small growers.

Results:

**Pest Presence**
- Increasing the percent of surrounding citrus that has reported red scale present increases the probability that grower \( i \) reports red scale present by 37-58%.
- No size threshold detected.
- Graduate degree, and obtaining income from other growers or chemical suppliers are associated with a decreased likelihood of reporting pest present.

**Pest Treatment**
- As the percent of surrounding citrus acreage treated for red scale increases, small growers are less likely to treat for it, relative to large growers.
- True for divisions at 5, 10, 15, and 20 acres.
- As the percent of household income derived from citrus increases, growers are more likely to treat.
- Female growers are less likely to apply chemical controls than male growers while Asian growers are more likely to apply chemical controls than white growers.

**Externalities**
- Results are forthcoming