

# ARE 231: SUPPLY AND DEMAND FOR AGRICULTURAL PRODUCTS

## 1<sup>ST</sup> HALF OF FALL 2020

The class is split in two halves. I will cover supply in the first five weeks and Tim will cover demand in the second five weeks.

**Instructor:** 9/30-11/2 Aaron Smith (adsmith@ucdavis.edu)  
Office Hours: Friday 11:00-12:00 or by appt.

**Class Website:** <https://canvas.ucdavis.edu/courses/472779>. Visit this site regularly for handouts as well as some occasional announcements.

**Course Outline:** The class emphasizes empirical work, but we will do some applied theory. We will start big and end small; the first topic will be global agricultural supply and the last will be farm-level supply.

**Lectures:** MW 12:10-2:00 on zoom. <https://ucdavis.zoom.us/j/92489607876>

**Computing:** You may use any software for the empirical work in the class. I will give you Stata and hopefully R code for you to use if you wish.

**Reading:** We will work through a set of academic papers. The main ones are listed later in this syllabus. The reading list may expand as we proceed. There is no textbook. You must also read and adhere to "Writing Tips for Ph.D. Students" by John Cochrane, which I have posted on the class website.

**Code of Conduct:** You are expected to uphold the UC Davis code of conduct, which is available at <http://sja.ucdavis.edu/files/cac.pdf>.

### **Assessment:**

***Reading Reactions (10%) Due: midnight before class***

Beginning Lecture 2, I will designate a paper or chapter that you are to read closely. I will assign a Canvas quiz for you to ask or answer questions about the paper.

***Blog-style article (40%) First Draft Due: 10/16 @ 5pm; Final Draft Due: 10/30 @ 5pm***

I post weekly articles [on my website](#) that are loosely related to agricultural data. The articles are 600-1000 words with 3-4 figures. Your assignment is to write one of these articles.

Rules: (i) the topic must be something to do with agricultural supply  
(ii) you may work with a co-author  
(iii) you must provide code to generate any graphs that you create  
(iv) you may include graphs created by others (e.g., from papers, data portals such as FAOSTAT or [my data apps](#).)

I will choose some of the articles to post on my website (if you agree).

***Blog review (10%) Due: 10/23 @ 5pm***

Review two blog articles by your classmates and offer comments.

***Paper (40%) Due: 11/6 @ 5pm***

You will write a five-page paper. I will give you some specific assignments to choose from. You will do some empirical analysis and write up your work as though you aim to publish it in an academic journal. You may write your papers with a co-author, but I expect them to be joint work. I may ask you to revise and re-submit your paper if there are significant improvements you could make.

Aaron Smith  
September 2020

**Course Outline:**

The reading list may expand as we proceed.

**1. *Global Supply***

Roberts, M.J., and W. Schlenker (2013) "Identifying Supply and Demand Elasticities of Agricultural Commodities: Implications for the US Ethanol Mandate," *American Economic Review* 103: 2265–2295.

Hendricks, N.P, J.P. Janzen, and A. Smith (2015) "Futures Prices in Supply Analysis: Are Instrumental Variables Necessary?" *American Journal of Agricultural Economics*, 97(1):22-39.

Scheinkman, J.A. and J. Schechtman (1983) "A Simple Competitive Model with Production and Storage," *Review of Economic Studies* 50 (3): 427–41.

**2. *Futures and Commodity Markets***

Wright, B.D. (2011) "The Economics of Grain Price Volatility," *Applied Economic Perspectives and Policy* 33(1): 32–58.

Williams, J.C. (2001) "Commodity Futures and Options" *Handbook of Agricultural Economics*, Ch 13.

Fishe, R.P.H and A. Smith (2019) "Do Speculators Drive Commodity Prices Away From Supply and Demand Fundamentals?" *Journal of Commodity Markets*,15: 100078.

Carter, C.A., G.C. Rausser, A. Smith (2011) "Commodity Booms and Busts" *Annual Review of Resource Economics* 3: 87-118.

**3. *Country or Market Supply***

Nerlove, M. (1956) "Estimates of Supply of Selected Agricultural Commodities," *Journal of Farm Economics*. 38:496- 509.

Nerlove, M. (1958) "Adaptive Expectations and Cobweb Phenomena," *Quarterly Journal of Economics*. 72:227-240.

Gardner, B.L. (1976) "Futures Prices in Supply Analysis," *American Journal of Agricultural Economics* 58: 81–84.

Nerlove, M. (1979) "The Dynamics of Supply: Retrospect and Prospect," *American Journal of Agricultural Economics*. 61:874-888.

Jarvis, L.S. (1974) "Cattle as Capital Goods and Ranchers as Portfolio Managers: An Application to the Argentine Cattle Sector," *Journal of Political Economy*, 82:489-520.

Rosen, S., K.M. Murphy and J.A. Scheinkman (1994), "Cattle Cycles," *Journal of Political Economy*, 102:468-492.

#### 4. *Climate Change*

- Schlenker, W. and M.J. Roberts (2009) "Nonlinear temperature effects indicate severe damages to U.S. crop yields under climate change," *Proceedings of the National Academy of Sciences* 106 (37): 15594–98.
- Mendelsohn, R., W.D. Nordhaus, and D. Shaw (1994) "The Impact of Global Warming on Agriculture: A Ricardian Analysis," *American Economic Review* 84:753–771.
- Schlenker, W., W.M. Hanemann, and A.C. Fisher (2006) "The Impact of Global Warming on U.S. Agriculture: An Econometric Analysis of Optimal Growing Conditions." *Review of Economics and Statistics* 88:113–125.
- Hendricks, N.P. (2018) "Potential Benefits from Innovations to Reduce Heat and Water Stress in Agriculture," *Journal of the Association of Environmental and Resource Economists* 5(3): 545-576.
- Ortiz-Bobea, A. (2019) "The Role of Nonfarm Influences in Ricardian Estimates of Climate Change Impacts on U.S. Agriculture," *American Journal of Agricultural Economics*. forthcoming.
- Deschênes, O., and M. Greenstone (2007) "The Economic Impacts of Climate Change: Evidence from Agricultural Output and Random Fluctuations in Weather," *American Economic Review* 97:354–385.
- Fisher, A., M. Hanemann, M. Roberts, and W. Schlenker (2012) "The economic impacts of climate change: evidence from agricultural output and random fluctuations in weather: comment," *American Economic Review* 102:3749–3760.
- Deschênes, O., and M. Greenstone (2012) "The Economic Impacts of Climate Change: Evidence from Agricultural Output and Random Fluctuations in Weather: Reply," *American Economic Review* 102:3761–3773.

#### 5. *Farm Supply*

##### *Risk and Insurance*

- Feder, G., R.E. Just and A. Schmitz (1980) "Futures Markets and the Theory of the Firm Under Price Uncertainty," *Quarterly Journal of Economics*, 94(2): 317-328.
- Sandmo, A. (1971) "On the Theory of the Competitive Firm Under Price Uncertainty," *American Economic Review*, 61:65-73.
- Yu, J. Smith, A.; and Sumner, D. A (2018) "Effects of Crop Insurance Premium Subsidies on Crop Acreage," *American Journal of Agricultural Economics*, 100(1): 91–114.

##### *Rotation*

- Hennessy, D.A. (2006) "On Monoculture and the Structure of Crop Rotations," *American Journal of Agricultural Economics*, 88:900–914.

Livingston, M., M.J. Roberts, and Y. Zhang (2015) "Optimal Sequential Plantings of Corn and Soybeans Under Price Uncertainty." *American Journal of Agricultural Economics* 97(3):855-878.

*Satellite Data*

Hendricks, N.P, A. Smith, and D. Sumner (2015) "Crop Supply Dynamics and the Illusion of Partial Adjustment," *American Journal of Agricultural Economics*, 96(5): 1469-1491.

Hendricks, N. P; Sinnathamby, S.; Douglas-Mankin, K.; Smith, A.; Sumner, D. A; and Earnhart, D. H "The Environmental Effects of Crop Price Increases: Nitrogen Losses in the US Corn Belt" *Journal of Environmental Economics and Management* 68(3): 507–526.

Lark, T.J., R.M. Mueller, D.M. Johnson and H.K. Gibbs (2017) "Measuring land-use and land-cover change using the U.S. department of agriculture's cropland data layer: Cautions and recommendations" *International Journal of Applied Earth Observation and Geoinformation* 62: 224-235.

Lark, T.J., S.A. Spawn, M. Bougie and H.K. Gibbs (2020) "Cropland expansion in the United States produces marginal yields at high costs to wildlife" *Nature Communications* 11: 4295

**ARE 231: FALL 2020 CALENDAR**

	MON	TUE	WED	THUR	FRI	
S E P T			30 <u>Lecture 1</u> Intro	1	2	WEEK 0
O C T	5 <u>Lecture 2</u> Storage and commodity markets	6	7 <u>Lecture 3</u> Estimating global ag supply (and demand) elasticities	8	9	WEEK 1
O C T	12 <u>Lecture 4</u> US crop supply	13	14 <u>Lecture 5</u> Climate Change	15	16 Blog draft due	WEEK 2
O C T	19 <u>Lecture 6</u> Climate Change	20	21 <u>Lecture 7</u> Risk and insurance	22	23 Blog review due	WEEK 3
O C T	26 <u>Lecture 8</u> Rotation	27	28 <u>Lecture 9</u> Field-level supply	29	30 Blog article due	WEEK 4
N O V	2 <u>Lecture 10</u> Field-level supply				Paper due	WEEK 5