

Berea College Farm: A Regional Model of Sustainable Agriculture?

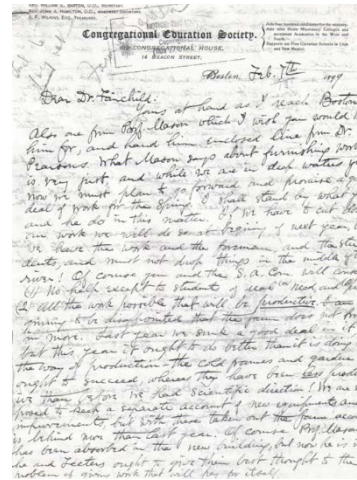
SEAN CLARK
BEREA COLLEGE
AGRICULTURE AND NATURAL RESOURCES

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Drainage Issues

1901 – Professor Silas Mason “insisted that what the uncompromising college land needed was drainage,” but President Frost felt that the cost was too great and that it must wait until the College could manufacture its own tile.





Berea College Farm



Aquaculture



Beef Cattle



Field Crops



Goats



Honey Bees



Horticulture



Pigs



Poultry

Goals of the Berea College Farm

- A **laboratory** to provide students with *practical learning experiences*.
- Enterprises as **models** of *sustainable agricultural production* in the region.

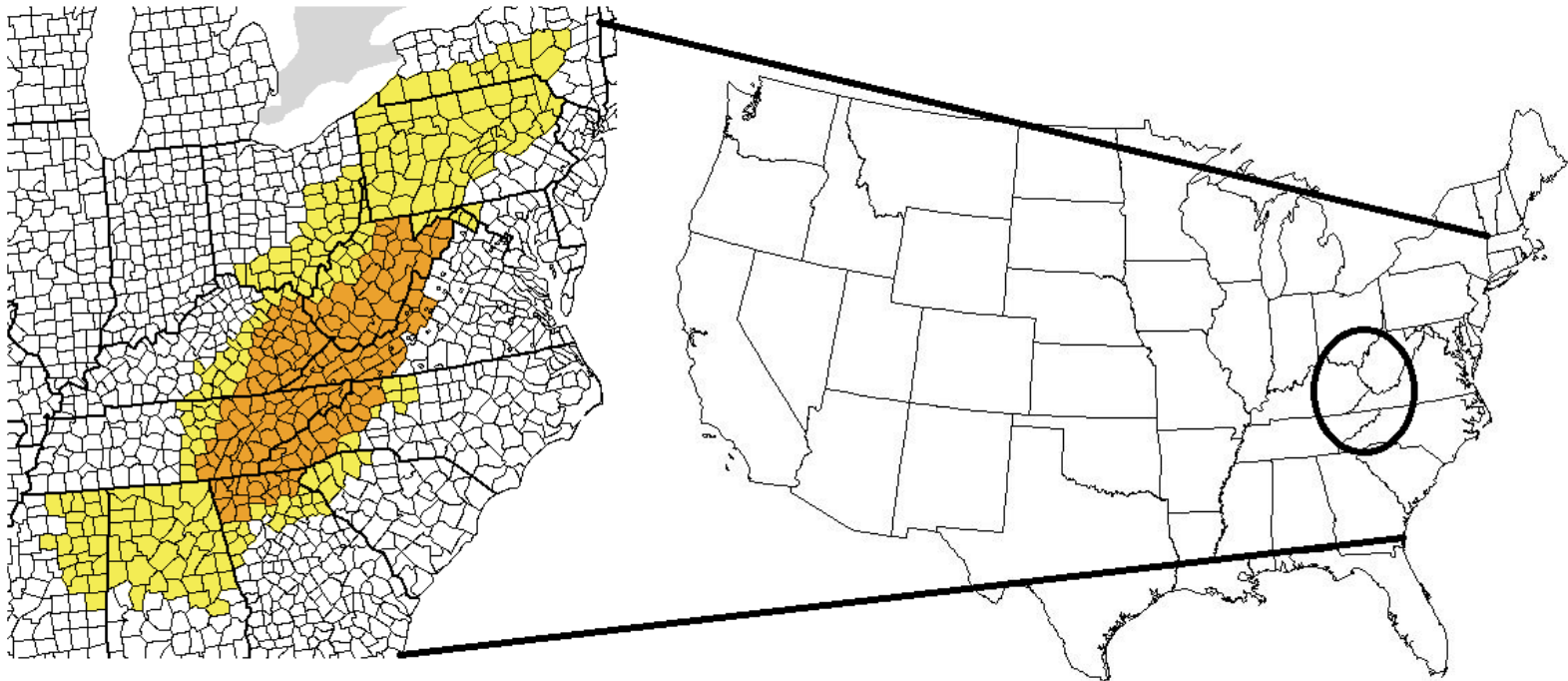


Goals of the Berea College Farm

Enterprises be **models** of *sustainable agricultural production* in the **region**.



Central Appalachian Region



(Source of national and county maps: Wiki Commons, Creative Commons.) (Data from Williams, J.A., *Appalachia: A History*, University of North Carolina Press, Chapel Hill, 2002; ARC (Appalachian Regional Commission). *Subregions of Appalachia*. ARC. http://www.arc.gov/research/MapsofAppalachia.asp?MAP_ID=31. 2009.)

Farm Resource Regions

Basin and Range

- Largest share of nonfamily farms, smallest share of U.S. cropland.
- 4% of farms, 4% of value of production, 4% of cropland.
- Cattle, wheat, and sorghum farms.

Fruitful Rim

- Largest share of large and very large family farms and nonfamily farms.
- 10% of farms, 22% of production value, 8% of cropland.
- Fruit, vegetable, nursery, and cotton farms.

Northern Great Plains

- Largest farms and smallest population.
- 5% of farms, 6% of production value, 17% of cropland.
- Wheat, cattle, sheep farms.

Heartland

- Most farms (22%), highest value of production (23%), and most cropland (27%).
- Cash grain and cattle farms.

Northern Crescent

- Most populous region.
- 15% of farms, 15% of value of production, 9% of cropland.
- Dairy, general crop, and cash grain farms.

Eastern Uplands

- Most small farms of any region.
- 15% of farms, 5% of production value, and 6% of cropland.
- Part-time cattle, tobacco, and poultry farms.

Southern Seaboard

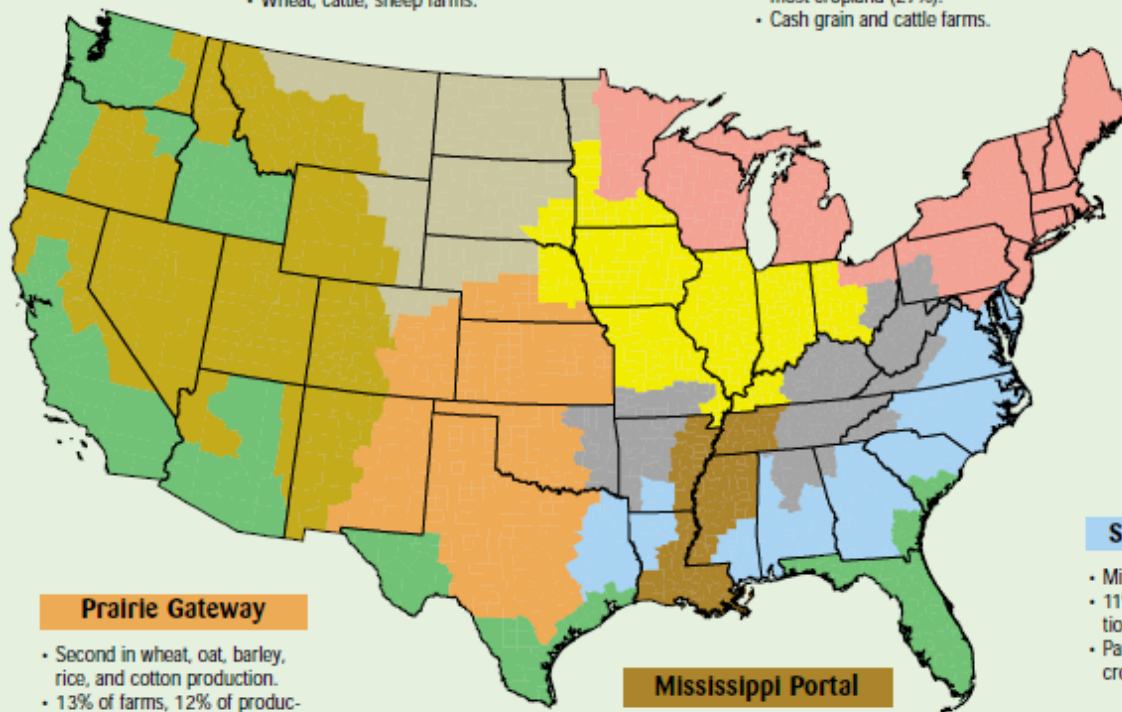
- Mix of small and larger farms.
- 11% of farms, 9% of production value, 6% of cropland.
- Part-time cattle, general field crop, and poultry farms.

Prairie Gateway

- Second in wheat, oat, barley, rice, and cotton production.
- 13% of farms, 12% of production value, 17% of cropland.
- Cattle, wheat, sorghum, cotton, and rice farms.

Mississippi Portal

- Higher proportions of both small and larger farms than elsewhere.
- 5% of farms, 4% of value, 5% of cropland.
- Cotton, rice, poultry, and hog farms.



Central Appalachian Region

Percent of people living below the poverty level (\$22,811 for a family of two adults and two children in 2011).

	Percent living below poverty level	
State	Appalachian	Non-Appalachian
North Carolina	16.9	15.9
Ohio	16.7	14.3
Kentucky	24.8	15.6
Virginia	18.1	9.9
Tennessee	17.5	16.4
West Virginia	17.5	
United States		14.3

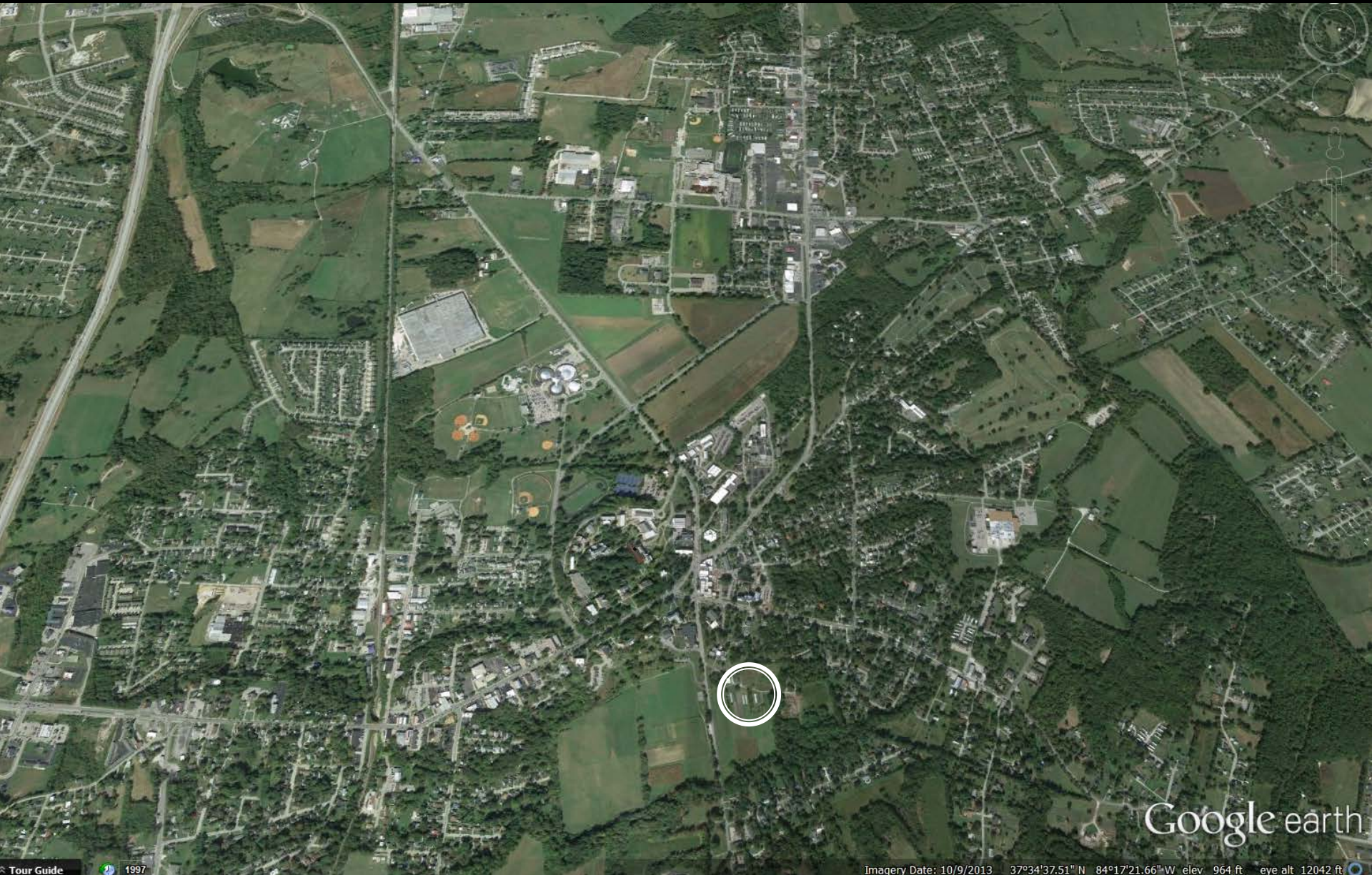
Three overarching initiatives to improve sustainability (2009-11)

- 
1. Expansion organic crop production
 2. Transition to outdoor hog production and grass-finishing beef cattle
 3. Shift toward local marketing and sales



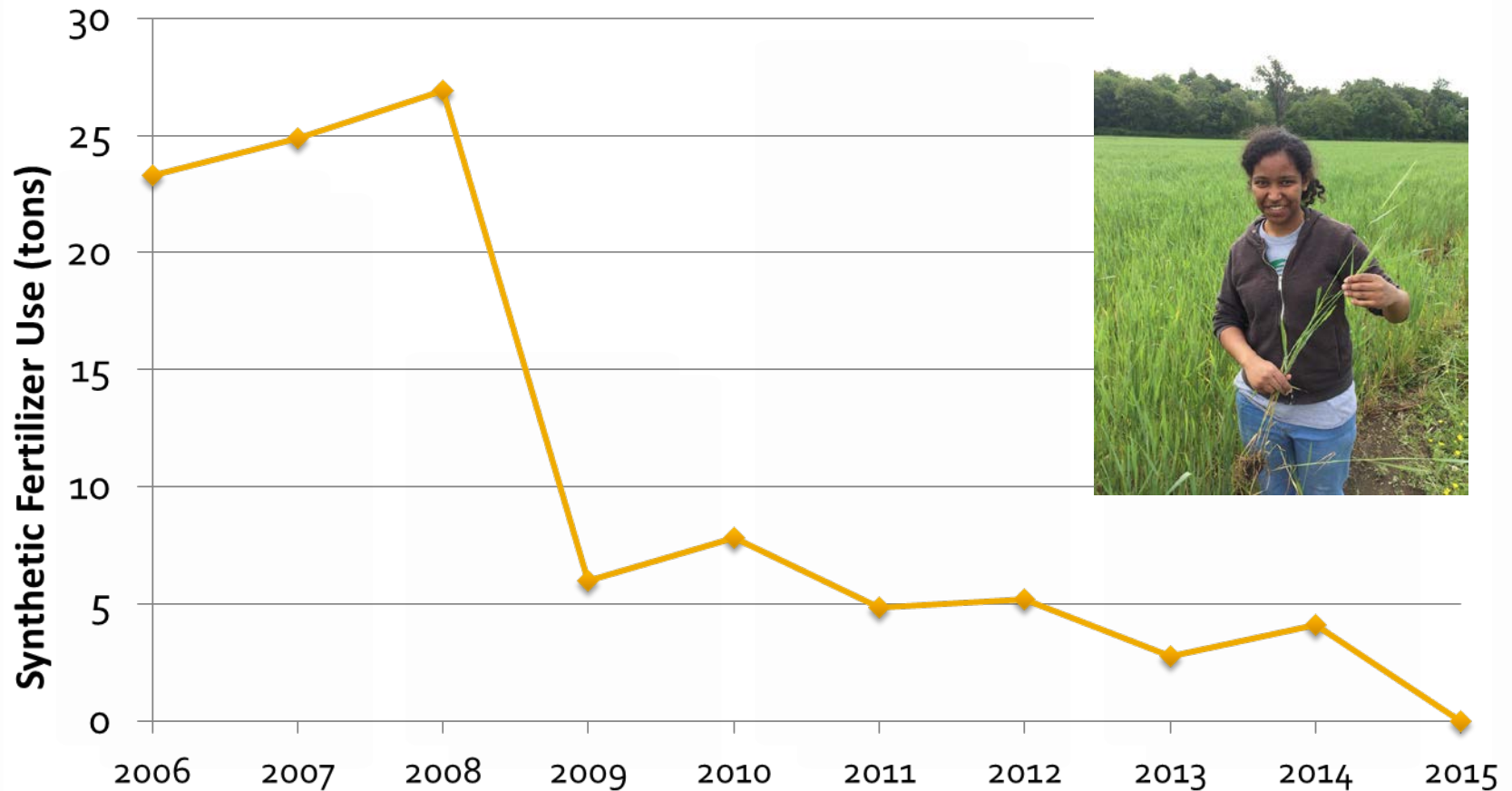
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BC Farm Synthetic Fertilizer Use



Tale of Two Hog Farms



Hog Farm A

- Maximizes production for sales to commodity markets
- Indoor confinement
- High capital investment
- Purchased feed
- Sub-therapeutic antibiotic use



Hog Farm B

- Outdoor/pasture-based
- Lower capital costs
- Therapeutic antibiotic use
- Responds to consumer values other than lowest-cost food (animal welfare, no antibiotics)

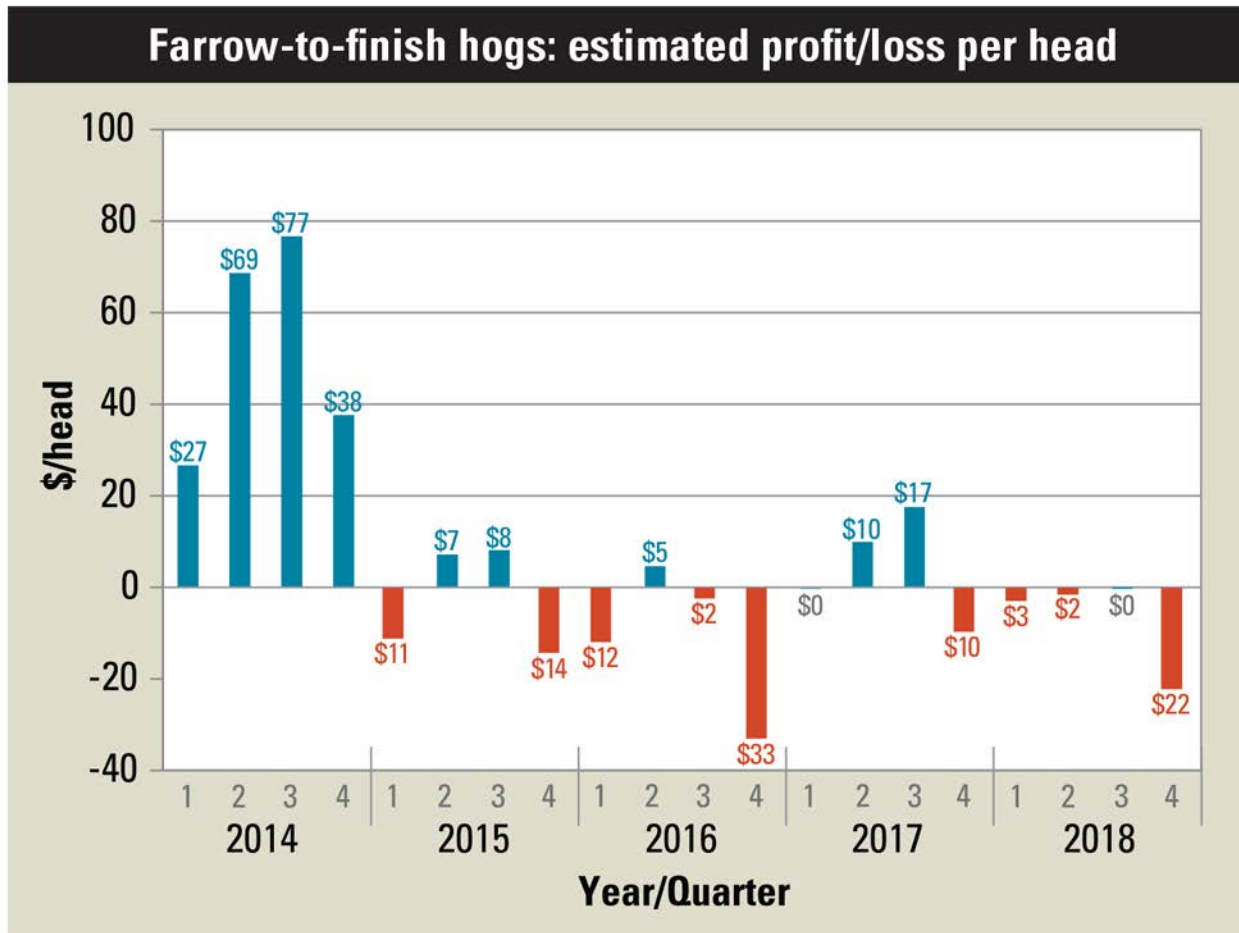


Tale of two hog farms



	CAFO (2005-09)	Outdoor (2011-14)
No. pigs produced / yr	455	254
Cost per pig	\$142	\$242
Gross returns per pig	\$143	\$298
Return to labor, land, mgt.	\$1.11	\$55.84
Antibiotics in feed	Yes	No
Tail docking	Yes	No
Waste lagoon	Yes	No
Capital infrastructure	High cost	Low cost
Labor/time demands	Lower	Higher

Tale of two hog farms



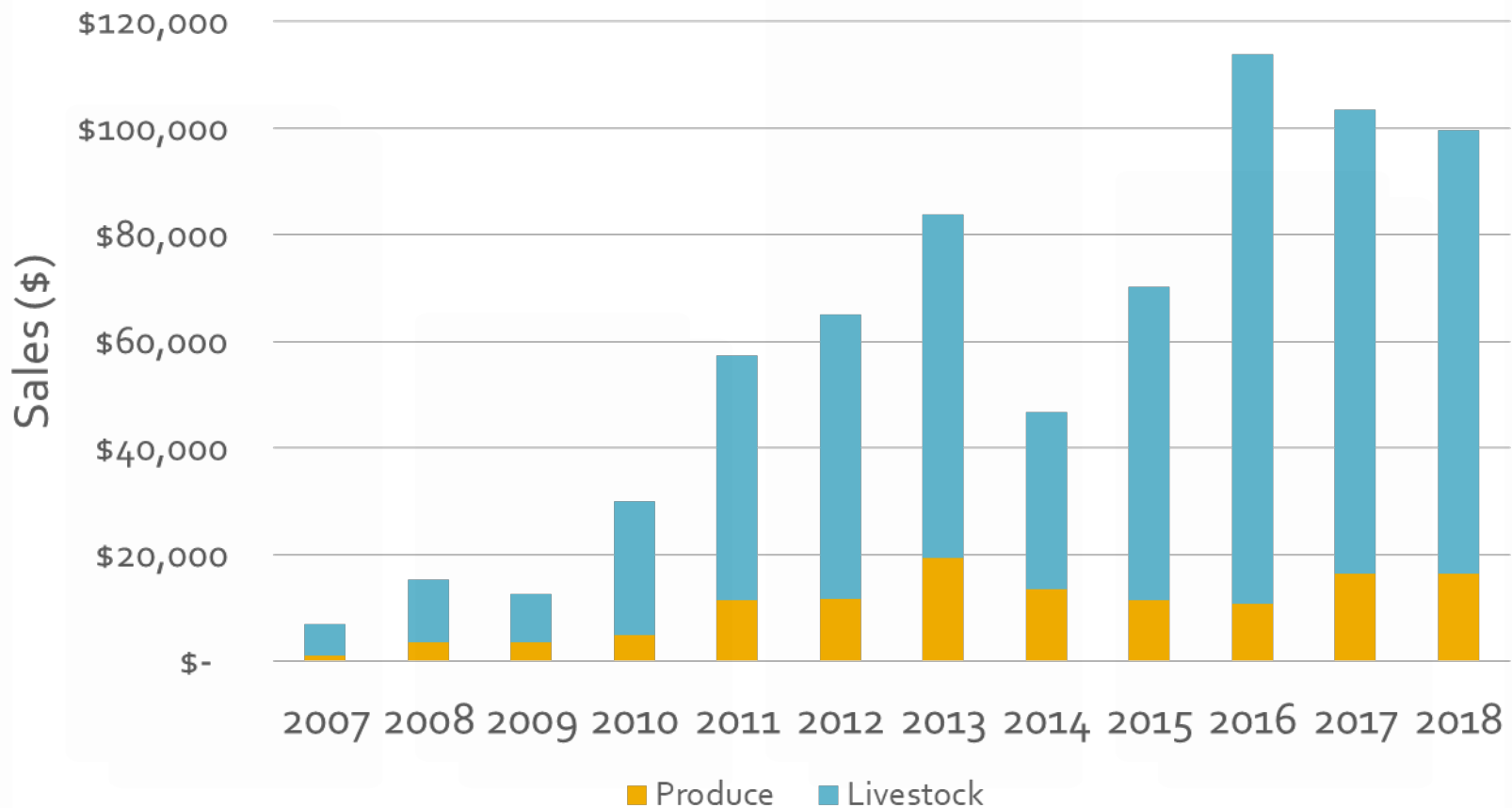
Source: Purdue University

Tale of two hog farms



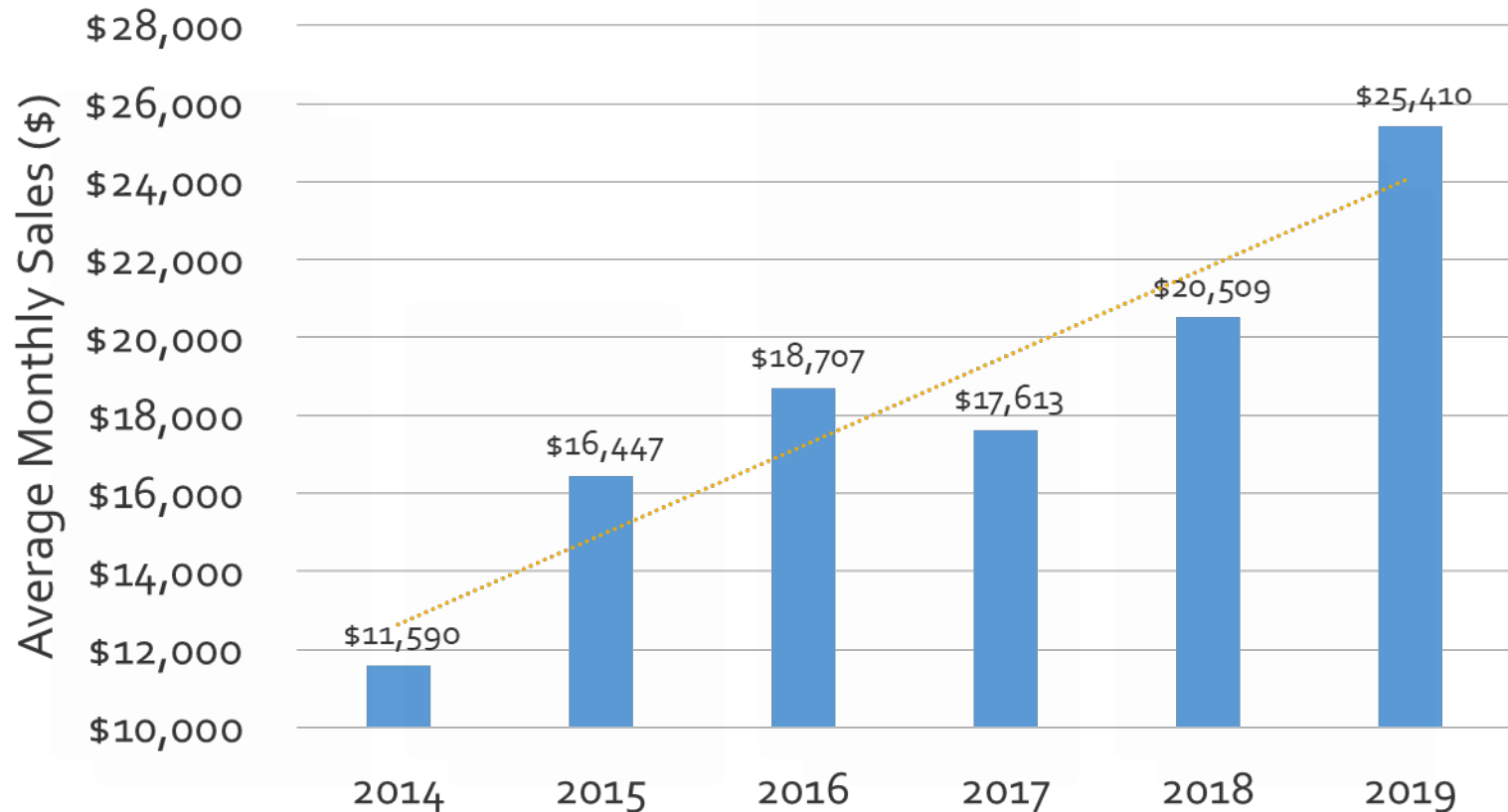
Local Marketing & Sales

College Farm Sales to Dining Services



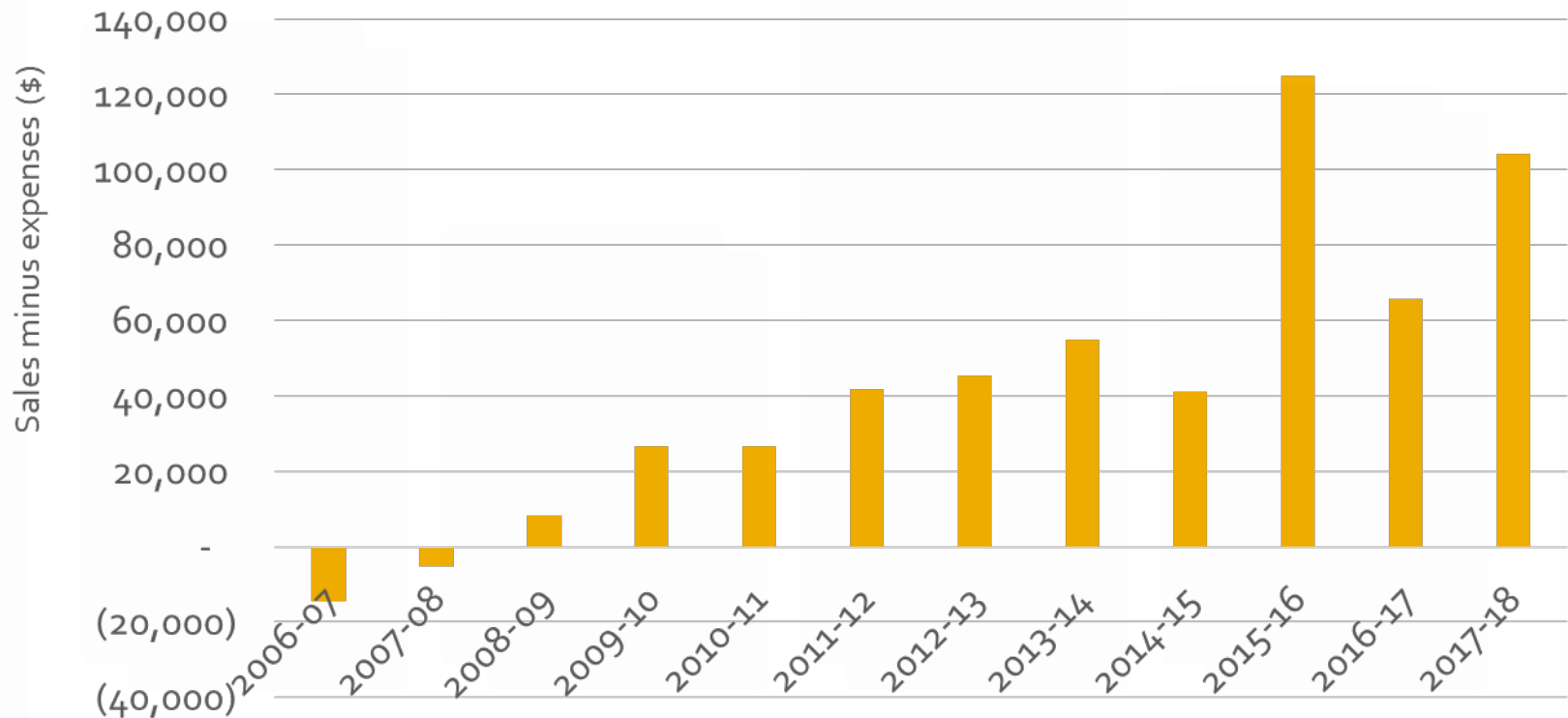
Local Marketing & Sales

Farm Store Monthly Average Sales



Local Marketing & Sales

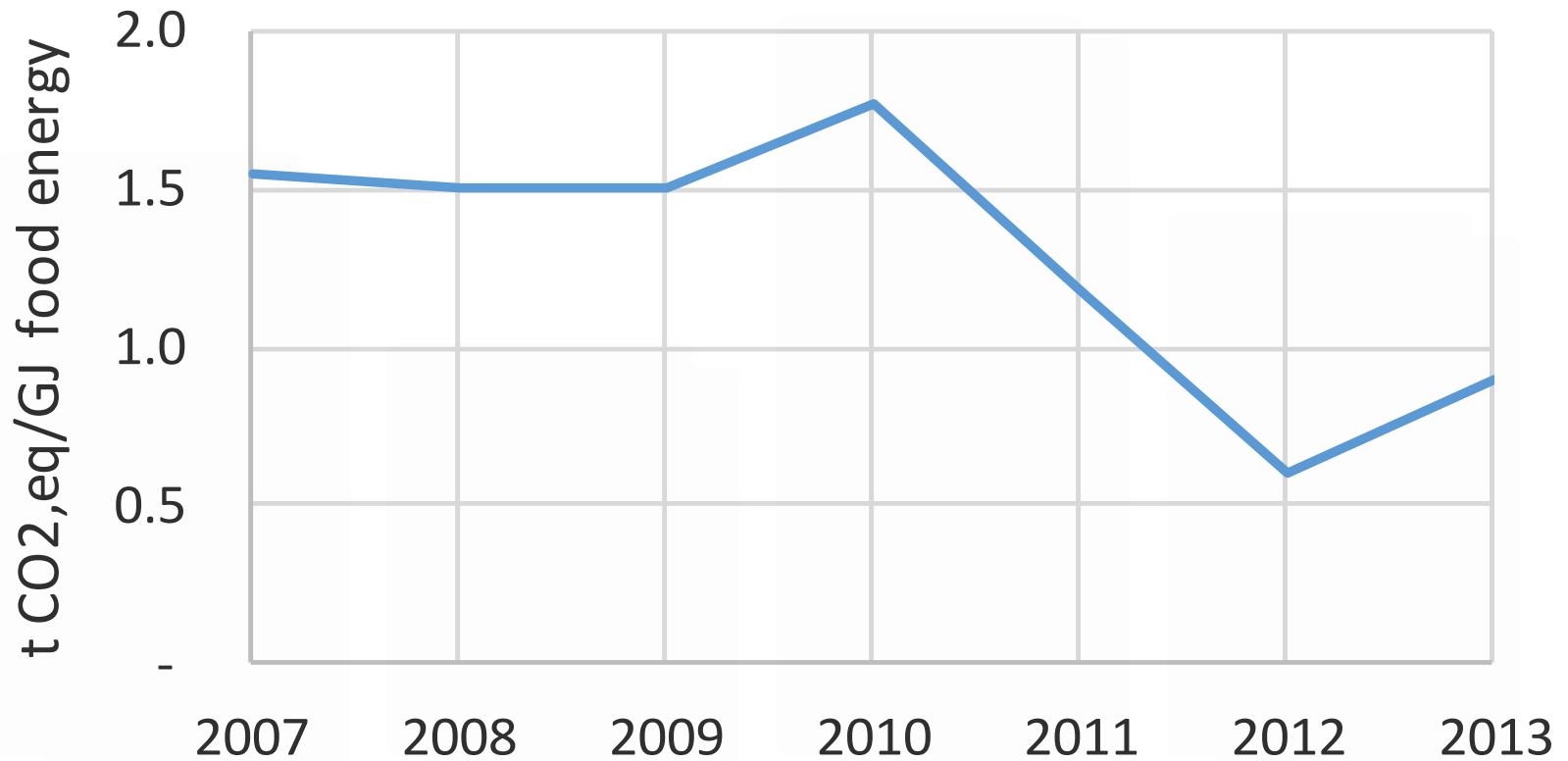
Whole-Farm Sales Minus Operating Expenses
(includes Farm Store)



Analyzing farm performance

Measurements	Units	Description
Inputs		
Diesel fuel	L	Fuel for tractors, combine, and truck
Biodiesel	L	Alternative fuel for tractors and combine generated from used vegetable oil
Gasoline	L	Fuel for rototillers and vans for transporting student workers
Electricity	kWh	Used in all buildings
Natural gas	m ³	Heat for confinement hog houses and greenhouse
Nitrogen (N)	kg	Fertilizer, mainly for corn production
Phosphate (P ₂ O ₅)	kg	Fertilizer
Potassium (K ₂ O)	kg	Fertilizer
Lime (CaCO ₃)	kg	Soil amendment for pH
Herbicides (a.i.)	kg	Plant biocides, mainly for corn production
Seed	kg	Grain crops, horticultural crops, cover crops and forage crops
Hay	kg	Harvested and baled forage crops for ruminant livestock
Soybean meal	kg	Protein source for hog ration
Water	m ³	Livestock consumption and irrigation
Wood	kg	Dead trees from farm and campus burned to heat greenhouse as an alternative to natural gas
Outputs		
Vegetables + fruits	kg	Horticultural crops sold (+ value-added products)
Goat	kg	Live weight and meat sold
Pigs	kg	Live weight and meat sold
Cattle	kg	Live weight and meat sold
Chicken	kg	Live weight and meat sold
Eggs	kg	Weight sold
Hay	kg	Weight sold
Corn grain	kg	Weight sold

BC Farm GHG Emissions





BIODYNAMIC

CO-GRAZING

PASTURED

GRASS-FINISHED

LABOR

ORGANIC

FREE-RANGE

ANTIBIOTICS

VEGETARIANISM

ECONOMY OF SCALE

LOCAL

FAIR TRADE

ARTISANAL

NATIVE

CSA

PEAK OIL

RAW

HERBICIDES

SUBSIDIZED

GMO

REGULATIONS

FOOD SAFETY

HEIRLOOM

BIOFUELS

FOOD COSTS

VALUE-ADDED

WATER

CONSOLIDATION

GLOBALISM

RESILIENCE

CLIMATE CHANGE

LAND-USE ORDINANCES

PRECISION FARMING

FOOD VALUE CHAINS

“Eating is an agricultural act.”



Berea College Farm Store

→   bereacollegefarmstore.com



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Foods of the Berea College Farm,
Kentucky & the Appalachian Region



Come visit!

