

# Students assess capacity of college farm to supply dining hall at Berea College

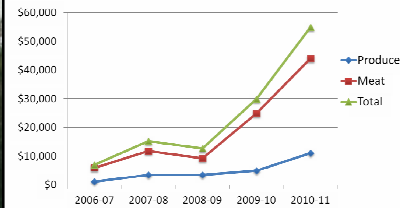
## Is producing 25% of the food an achievable goal?

Sean Clark  
Berea College

### BACKGROUND

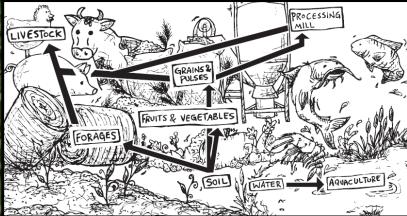
Berea College has the oldest continuously operating student farm in the US. During its 140-year history the farm has served to provide students with employment, generate income, and produce food for campus. It recently began collaborating with the dining hall after decades without any significant interaction and produces about 6% of the food consumed by students based on economic value (\$60,000 of the \$1 million food budget).

Value of food sold to dining hall since 2006 07



### PROJECT

Students in a section of the introductory course in Agriculture and Natural Resources (ANR 100) carried out a project to address the question: How much food could the College Farm supply to the dining hall today? Answering this question is more than trivial – it's necessary for setting realistic goals and developing workable plans as the College and its dining hall operator, Sodexo, Inc., collaborate to increase the amounts of locally-produced foods available to students. The farm is already highly diversified, with horticulture, field crops, and livestock enterprises, but this project was aimed at assessing the capacity of the farm to produce 25% of food consumed, even if that meant some changes to the farm.

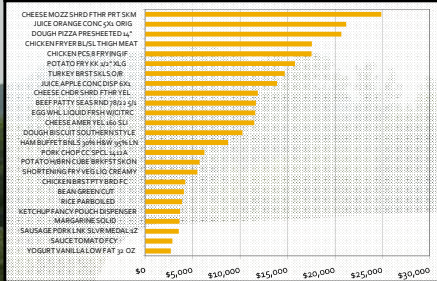


### RESEARCH TEAM

Student team members included: Jessie Lewis, Amanda Benitez, Benjamin Timby, Dallas Cook, Jonas Hollon, Grace Wintermyer, Lesley Sneed, Sean McCoy, Philip Burnham, Sean Hacker, and Kyle Watkins. Terrell Holder served as a consultant, using his model to assess the farm's land resources: Holder, T.H. 2011. A Model-Based Determination of Human Carrying Capacity in Kentucky's Ecoregions. Kentucky State University, MS Capstone Project.

### FOOD CONSUMPTION

Student food consumption was examined based on economic value (\$), energy content (kcal), and weight. Gathering information on what students consumed was accomplished in two ways. First, purchasing records were obtained, sorted, and tabulated to identify the most commonly consumed foods (or "low hanging fruit"). Based on expenditures, the top 25 items consumed are shown below. Only a few were being produced on the farm (ground beef, pork, potatoes, and green beans) or had the potential to be produced (chicken, turkey).



### ESTIMATING LAND REQUIREMENTS

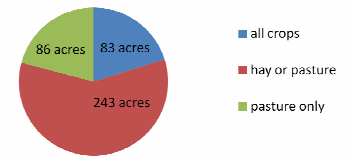
Students in the course also kept food diaries. Food with multiple ingredients were broken down into their fundamental ingredients using the USDA nutritional database. The data were consolidated, averaged, and extrapolated to 1600 students over a single academic year. Once the totals were estimated, students used values from the literature as well as the farm's yield records to determine how much land would be required to feasibly grow the most common foodstuffs consumed. Practical aspects and requirements for post-harvest processing were considered.

Food	Estimated annual total consumption (g/year)	Production per acre of farmland (g/acre)	Acres needed to produce the total
Wheat	25,157,329	1,360,500	18
Potato	11,390,167	9,080,000	1
EGG	11,253,667	913,000	12
Lettuce	10,639,417	5,822,550	2
Dry beans	7,706,942	681,000	11
Pork	6,761,806	556,906	12
Chicken	5,816,417	971,124	6
Green beans	5,221,125	2,041,166	3
Beef	4,625,833	182,938	25
Corn	4,257,283	2,923,760	1
Catfish	2,813,417	680,400	4
Strawberry	637,000	3,401,942	<1
Blueberry	186,550	7,000,000	<1
Total	96,466,951		97

### LAND RESOURCES

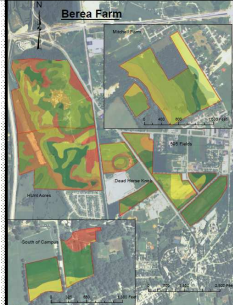
After visiting all areas of the farm, students used the web soil survey to determine available acreages and make an initial assessment of land suitability for different uses. A more detailed analysis of land suitability was performed using a model developed by Holder (2011) which factored in land capability classification, farmland classification, physiographic description, and flooding frequency. It classified land as being suitable for either: 1) all crops; 2) hay and pasture; or 3) pasture only. See the results below.

412 of the farm's 549 acres are available for crop and livestock production



### RESOURCES VS. REQUIREMENTS

Only 83 of the 412 available acres (20%) were classified as being suitable for all crops. The remainder was deemed appropriate only for hay and/or pasture. In fact, the farm is mostly composed of pastureland to support the farm's cattle operation. Most of the 83 acres of "all crops" land is used to grow field corn for the farm's hog operation. Only 10-15 acres of land is currently being used to produce crops for direct human consumption (vegetables, fruits, grains, and pulses). Based on the analysis, the farm has ample land for pasture and hay but is deficient in land for annual crops.



### ACHIEVABLE ?

The farm is well endowed with grazing and hay land but lacks land for annual crops. Using the economic metric, it is possible to reach the 25% goal. With all available "all crops" land and 18% of hay and pastureland, 30% of the food could come the farm. But when food weight or energy are used, reaching the goal seems unlikely without dramatic shifts in the farm's enterprises or in menu offerings and student food preferences and/or choices.

Product group	Weight (grams)	Energy (kcal)	Economic value (\$)	Farmland requirement - all crop acres	Farmland requirement - hay and pasture
Fruits and vegetables	10%	3%	9%	12%	-
Livestock products	5%	8%	20%	81%	18%
Grains and Pulses	1%	1%	1%	6%	-
Totals	16%	12%	30%	99%	18%

