

Production & Processing Analysis Methodology

Summary

The project team sought to estimate the production base for grass-fed beef in Illinois. We performed desktop research to explore numerous federal, state, and private data sources. The project team assessed many datasets that provided different “views” of grass-based production in the state, so while no dataset here is comprehensive or shows precisely the scale of grass-based production, each adds context to the state and volume of grass-based production.

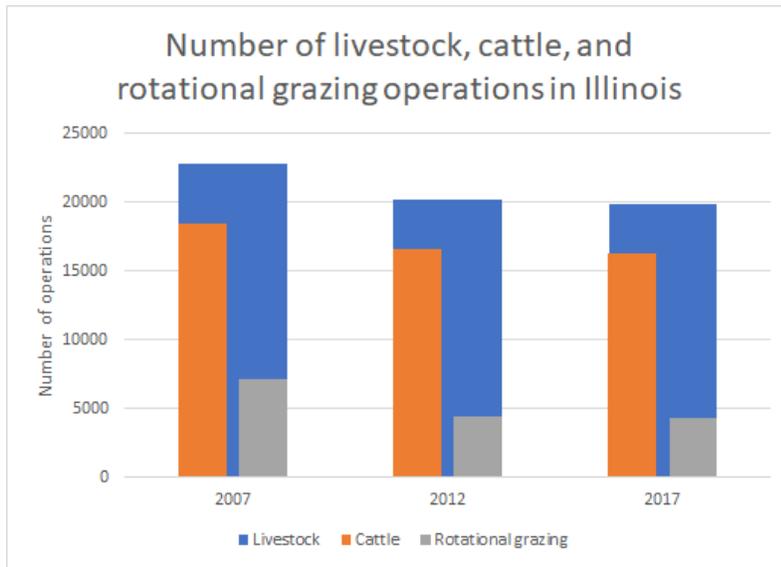
Key findings

- Livestock and grazing operations appear to be declining over time.
- Many grass finishers already producing in Illinois, particularly in direct marketing, and are present in all parts of the state.
- Production for grass-fed beef in Illinois may be around \$15M-27.5M or 4,500-8,200 beeves per year.
- More data on the state level (including better slaughter information and the share of grass-fed sales in Illinois) are needed to better understand grass-fed production volume.
- There are an estimated 16 USDA-inspected slaughter facilities and 44 state-inspected slaughter facilities who may serve grass-fed producers.

Production base

Data pulled from the USDA Census of Agriculture shows that there are more than 4000 rotational grazing operations in Illinois in 2017, some of which are likely raising species other than cattle and most are likely cow-calf operations. The number of livestock operations, cattle operations, and rotational grazing operations have declined over time (Figure 1).

Figure 1. Number of livestock, cattle, and rotational grazing operations in Illinois



Land cover change

Data was pulled for the state of Illinois from the National Land Cover Dataset 2016 and 2001 for comparison. A change analysis was performed in ArcGIS Pro between these two years. This dataset shows a marked decrease in hay/pasture acres from 2001 to 2016. The statewide change in cultivated cropland acres and hay/pasture acres between these two years are shown in Table 1.

Table 1. Grass cover change from 2001-2016

	Acreage change 2001-2016			
	Cultivated cropland	Hay/pasture	Grassland	Shrubland
All Illinois counties	-8,110	-202,488	-3,193	+9,942
	-0.03%	-11.5%		

Source: National Land Cover Dataset (NLCD)

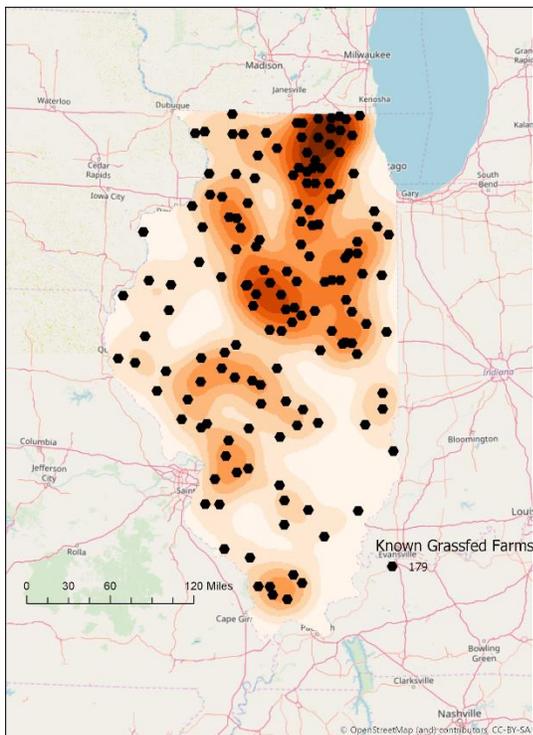
A limitation of this data is that grass cover (grasslands, hay/pasture, and shrubland) is notoriously difficult to classify. Combining all of these classifications together may eliminate some noise in between-class changes.

Known grass-fed farms

Data was compiled from lists of known grass-based farms, including the Organic Integrity Database (organic certification requires grazing seasons of at least 120 days per year), American Grassfed Association-certified, USDA Agricultural Marketing Service list of direct-to-consumer farms, self-registered lists of direct-to-consumer farms (EatWild, Local Harvest, Buy Fresh Buy Local Central Illinois, Perennial Map), lists of sourced farms from branded programs (Organic Valley, others where available) and grocery stores (Green Top Grocery, Food Fantasies), and farms known to project partners through previous work or project interviews. This list will be updated as more data becomes available.

Compiling and deduplicating farms from these lists resulted in a list of 179 grass-based beef or bison farms and 24 grass-based dairy farms. A hotspot map was developed with the grass-based beef farms to aid in visualization, shown below in Figure 2. A limitation of this combined dataset may be that it over-represents direct-to-consumer farms, which have a clear incentive to list themselves in online directories to attract customers.

Figure 2. Known Grass-fed Beef Finishing Operations



Estimating the current number of grass-finished beefs

Method 1: Using cattle sales (excluding between farms in-state) and grass-fed share of market to estimate grass-fed production

This method uses the total live weight of animals sold that were not between-farm sales. This number may be a good proxy for finished animals since most sales between farms would not constitute finished animals. This estimate may also be an over-estimate for finished animals since there may be other sales between farms and non-farm businesses which are not finished animals. No data was reported for the better variable, live weight of cattle slaughtered in Illinois, in 2017. In the future, the project team hopes to estimate based on this number if it is reported in the Census of Agriculture.

First, the total live weight is multiplied by the percent of estimated product that has a grass-fed claim. This share of grass-fed is then divided by 1,200 lbs to estimate the approximate number of animals.

491,980,000 lbs live weight was sold (excluding between farms in-state) in IL in 2017
x 2% of product by weight estimated as grass-fed or associated claim ([National Cattlemen's Association 2018](#))
= 9,839,600 lbs live weight or about 8,200 beefs of 1,200 lbs each

Then, the estimate grass-fed live weight is multiplied by 40% to convert to processed weight, and multiplied by \$7/lb sale price to estimate the total market value.

x 40% processed weight conversion ([SDSU Extension, 2018](#); % of dry processed beef to live weight)
= 3,935,840 lbs processed weight
x \$7/lb ([USDA AMS 2019](#); December 2019 average \$/lb for whole animal retail)
= \$27,550,880 estimated market value

Method 2: Using known grass-fed/finishing farms to estimate grass-fed production

This method uses the estimated number of grass-finishing farms to estimate grass-fed production. This estimate may be an under-estimate since the number of grass-finishing farms may not fully capture those selling into branded programs and wholesale markets.

First, the total number of identified grass-finishers is multiplied by the median number of cattle that grass-finishers reported finishing in a year in a national survey. Then, the number of cattle is converted to live weight assuming an averaged finished weight of 1,200 lbs.

Estimated 179 grass-fed/finishing beef operations (FLO project data)

x 25 cattle per finisher per year (median, Stone Barns report from survey of grass finishers)
= 4,475 cattle finished
x 1,200 lb finished animal
= 5,370,000 lb live weight

Then, the estimate grass-fed live weight is multiplied by 40% to convert to processed weight, and multiplied by \$7/lb sale price to estimate the total market value.

x 40% processed weight conversion
= 2,148,000 lbs processed weight
x \$7/lb ([USDA AMS 2019](#))
= \$15,036,000 in estimated grass-fed beef sales

USDA-inspected slaughter facilities

The list of USDA-inspected slaughter facilities and reported demographic information (including species, number of employees, and number of head slaughtered) was downloaded from USDA Food Safety Inspection Service in June 2019. Through discussions with slaughter and processing experts including at University of Illinois Extension and the Niche Meat Processors Assistance Network, facilities that slaughter less than 10,000 head of all species, including at least some beef, were selected as possible grass-fed processors. Facilities meeting these criteria in other states but within 50 miles of the state line were also included. 16 slaughter facilities meeting these criteria in Illinois were identified, with an additional 19 in neighboring states.

State-inspected slaughter facilities

The list of state slaughter facilities was downloaded from the Illinois Department of Agriculture's Meat and Poultry Inspection website in June 2019. Entities which slaughter red meat were selected. 44 slaughter facilities meeting these criteria were identified.

Branded programs

Table 2. Known Grass-fed Beef Branded Programs

Big Picture Beef
Carman Ranch
Eel River
Hawthorn River
Jones Creek
VG Beef
Winecup/Jame Roger
Applegate
Bartels
Crystal River Meats
Dakota Beef
JBS Grass Run
Joyce Farm
Maple Hill Creamery
Organic Prairie
Organic Valley
Panorama Meats
Pasture One
Stonyfield Farm
Strauss
Taylor Creek Farm
Teton Waters
Thousand Hills Cattle Co
US Wellness Meat
Walden Local
Yellowstone Grassfed Beef
Wallace Farms

Desktop research was conducted on a compiled list of about 30 known grass-fed beef and dairy branded programs (Table 2). After eliminating companies that, according to their website, did not work with producers from Illinois, about 16 were contacted via email. These companies were asked if A), they worked with any producers located in Illinois and B), would they be willing to share their anonymized data, preferably zip codes of their producers.

To date, 7 branded programs have responded to the inquiries:

Three programs said were not willing to release any information about their producers. Follow up emails were sent asking for just a number of producers they work with and have had no response.

Two programs said they do not work with any producers in IL.

One program, US Wellness Meats said that one member lives in Virginia, IL and produces ~ 3 loads per year, and they purchase a few grass fed lambs from a producer in Simpson, IL.

One program said they only get directly involved with the finishers so it is possible that one of them may have sourced feeder calves from somebody in Illinois but they were not aware.

References

USDA National Agricultural Statistics Service (NASS). (2017).

https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_US_State_Level/

Cheung, R., & McMahon, P. (2017). *Back to Grass: The Market Potential for U.S. Grassfed Beef*. Retrieved from https://www.stonebarnscenter.org/wp-content/uploads/2017/10/Grassfed_Full_v2.pdf

National Cattlemen's Association. (2018). Beef Options at Retail.

<https://www.beefitswhatsfordinner.com/retail/sales-data-shopper-insights/options-at-retail>

Map and data sources

- American Grassfed Association (<https://www.americangrassfed.org/aga-membership/producer-members/>)
- Buy Fresh Buy Local Central Illinois (<http://www.buyfreshbuylocalcentralillinois.org/>)
- Crate Free Illinois (<https://cratefreeil.org/>)
- EatWild (<http://www.eatwild.com/products/index.html>)
- Illinois Department of Agriculture Meat & Poultry Brokers & Licensees Look-up (<https://www2.illinois.gov/sites/agr/Animals/meat-inspection/Pages/broker-licensee-look-up.aspx>)
- Local Harvest (<https://www.localharvest.org/>)
- National Land Cover Database (<https://www.mrlc.gov/national-land-cover-database-nlcd-2016>)
- Perennial Map (<https://www.perennialmap.org/>)
- USDA Food Safety and Inspection Service Meat and Poultry Inspection Directory (<https://www.fsis.usda.gov/wps/portal/fsis/topics/inspection/mpi-directory>)
- USDA National Agricultural Statistics Service (<https://www.nass.usda.gov/>)
- USDA Natural Resources Conservation Service Illinois Case Studies (<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/il/technical/landuse/pasture/?cid=nrcseprd1310059>)
- USDA Organic Integrity Database (<https://organic.ams.usda.gov/integrity/>)