THE ECONOMICS OF REGIONAL MEAT
Presentation Outline

- Welcome
- NGFN Overview
- Introductions
- The Economics of Regional Meat
  - Chris Harmon
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  - Nicole Day
    Director of Programming, Communications, CADE
- A Few Questions and Answers
- Upcoming Opportunities, etc.
Economics of Regional Meat: Roadblocks and Solutions

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CADE’s mission is to increase the number and diversity of successful farm enterprises and related businesses in New York.
What are the Roadblocks to Regional Meat?

To understand the roadblocks to “Regional Meat”, we have to understand the difference between “Regional Meat” and “Industrial Meat”. Let’s begin by looking at what we mean by “Regional Meat”.

Unless otherwise noted, when we say “meat” we mean BEEF in this webinar presentation.

Photo by: Ulla Kjarval at Slope Farms, Delhi, NY
What we mean by “Regional Meat”

The Wallace Center defines “Good Food” as food that is **Fair**, **Healthy**, **Green** and **Affordable**. And when we talk about Regional Meat in this webinar we mean “Good Food” in that the meat is:

**Fair:**
- Where the animals were raised and slaughtered with **Fair** labor.
- Where the **farmer was returned a “Fair” value** for the product.

**Healthy:**
- Where the meat is **good for you** because it is high in Omega-3’s and low in Omega-6.
- Where the meat is **high in CLA’s** (Conjugated Linoleic Acid).
- Where the animals were only given **antibiotics** in the case of acute injury, not as a daily food additive.
- Where the animals only had their own naturally occurring **hormones**, not implants.

**Green:**
- Where the animals are raised on **pasture and forages**.
- Where if grain is given it is given in moderation with **free access to hay and pasture**.

**And Yes, Affordable:**
- By being **appropriately priced and transparent in its true cost** to the consumer and the public.
- Where no tax payer dollars have gone into **subsidies** to support its production.
- Where **rural communities are strengthened** by a local agricultural economy.

“Good Meat” comes from animals that have a “Good Life” and one bad day, and lets face it, all of us have that bad day!
What we mean by “Industrial Meat”

“Industrial Meat” is Bad Food where food is UnHealthy for you, environmentally damaging (Not Green), utilizes UnFair labor practices and squeezes the producers in the supply chains and is UnAffordable because it has numerous hidden costs that are not within the cost of food at the cash register!

“Industrial Meat” comes from…

- Animals NOT raised on grass & pasture after weaning and/or backgrounding.
- Animals finished in large feed lots.
- Animals given a growth hormone implant as calves.
- Animals fed 30 – 50 pounds of grain per day rather than grass and forages (they are ruminants!).
- Animals fed antibiotics regularly as part of their daily feed.
- Animals slaughtered in a facility that handles thousands of animals per day.
- Animals slaughtered in a facility that does not allow custom cutting for the individual carcass.
- Animals slaughtered in a facility by butchers who don’t break down the whole carcass but only are part of a disassembly line.

"The greatness of a nation and its moral progress can be judged by the way its animals are treated. “ Mohandas Ghandi
One of the Major Roadblocks to “Regional Meat” is the Unbalanced Price of Food in the U.S.

- Our food system is a **petroleum based system** (high yielding hybrid seeds that require large amounts of water, large amounts of fossil fuel based fertilizers and pesticides).
- Due to a fossil fuel based food system and the use of antibiotics, factory farms began to be developed, and we started down the path of becoming accustomed to paying a cheap market price for food.
- **Subsidized commodities** (i.e. a bushel of corn costs less than it does to produce) rather than appropriate subsidies (i.e. Health Care for Farmers, Apprenticeships, Farmer Training) furthered this road toward “cheap” food.
- **Confined Animal Feed Operations** (CAFO’s) produce “Inexpensive” cattle and ultimately “Inexpensive” meat products from **massive slaughterhouses** and processors that kill and process thousands of animals a day.

Just because our food is inexpensive doesn’t mean we don’t pay for it in other ways!
Hidden Costs ("externalities") within Our Cheap Food System

- Billions of dollars in **Health Care Costs** (Obesity, Type II Diabetes, Heart Disease, Hypertension, etc.).
- Antibiotic Resistant Bacteria - a.k.a. **Superbugs**.
- National foreign policy resulting in **foreign conflicts** to maintain the supply of oil and penetration into foreign markets.
- Billions of dollars in taxpayer funded **subsidies**.
- **Displaced farmers** here in the U.S. and throughout the world (a result of “Get Big or Get Out”, and Free Trade Agreements)
- **Greenhouse gas** emissions, industrial agriculture is the largest source of greenhouse gases, even larger than cars.
- **Contamination of water** bodies (Gulf of Mexico, Chesapeake Bay, etc.) through agricultural runoff of animal wastes, topsoil, fertilizers and pesticides.
- Our industrial food system uses **80% of the world’s fresh water**.
- **Loss of the World’s Agricultural Diversity:**
  - 86% of the 100’s of Apples that existed before 1900 are lost.
  - 5,000 varieties of Potatoes existed at one time but we grow a much smaller proportion of these.
  - The Philippines had over 2,000 varieties of rice, now they grow approx 4.
  - There are thousands of corn hybrids, but the U.S. typically only grows 6 varieties.
In the U.S. the “Industrial Meat” business has been reduced to specialized sectors. Calves are:

- **Born** on Cow/Calf Operations throughout the country
  - Nurse for approximately 6 months.
- **Implanted** with a growth hormone device
- **Grow** on Cow/Calf Farm OR sold as weaned calves to a “backgrounder operation” until 600 or 700 lbs.
- **Shipped** to a feedlot where they are fed grain supplemented with antibiotics until market weight (1,000 - 1,400 lbs.)
- **Sent** to a slaughterhouse and killed.
  - The slaughterhouse may process them further into primals, subprimals or cuts for consumers.
  - Sides, primals and subprimals may be sold to other processors, butcher shops and supermarkets for further processing.
  - After a certain amount of processing at the slaughterhouse the meat is distributed through wholesalers and then to retail outlets.
The Beef Marketing Channel

Inputs
- Cattle Ranching & Farming
- Feedlots
- Live Cattle Imports

Feedlots
- Cattle Wholesalers
- Slaughtering
- Meat Processing
  - Meat Exports
  - Meat Wholesalers
  - Retail Grocery Stores

Restaurants & Other Food Service

Final Customer

SOURCE: MDA_mas_feedlot_feasibility_184592_7.pdf
What are the Roadblocks to Good “Regional Meat”? 

- The high cost to finance a beef operation and the lack of financing available for purchasing livestock.
- Access to land! Even with 3 million acres of fallow land in NYS, access can be a problem.
- Long winters (160 – 200 days of winter) in the Northern part of the country and the Northeast.
- Seasonality of Cattle production thus a “Feast and Famine” for local slaughterhouses in the late winter and for some in the summer months.
- Lack of “Liquid Markets” to move a bunch of animals at once unless sold through conventional auctions.
- Customers are not knowledgeable about cattle production and beef products in general.
- For Hogs and Chickens, that require more of a grain based diet, grain producers and feed mills are needed for economical production. NYS is a grain negative state, we import more grain than we grow. While Iowa or Oklahoma are grain positive.
- Poultry slaughter facilities are a roadblock in the Northeast. Far fewer plants exist than do large animals slaughterhouses. Easier to certify poultry slaughterhouses.
- Certified Organic slaughterhouses are lacking for large animals.
Are the Economics of Meat VERY Different from Produce?

Produce is more difficult:

• With produce, you need to look at the **economics of each variety of fruit or vegetable** and the numerous variables that effect each variety, even in just the production
  
  – pH
  – Fertility
  – Spacing
  – Length of growing season
  – Companion planting
  – Slope
  – Aspect
  – Water requirements
  – Succession planting times
  – Equipment needs for each
  – More!

• **There are many varieties of produce for each farm**, with meat you are looking at really one animal’s economics.

• Cost of beef differs from pork, like the cost of green beans differs from tomatoes.
Infrastructure for each Species also Varies for Meat Production!

- Cows, Hogs, Sheep, Goats and Poultry have to be **killed and processed**. Produce does not (although they do have to be cleaned and sorted, typically) unless you are creating “Value-Added Products”.

- To reach a level of economic sustainability **animal production requires more land than produce does**. But the land does not have to be as fertile as fruit and vegetable land.

- **Killing frosts** are much more of an issue for fruit and vegetable production. Animals get out of their **fencing** and the liability can be a factor. Vegetables and produce are subject to **genetic drift with GMO’s**.

- Both forms of production, once you reach a certain scale, require some steel in the field in the form of **tractors & forage making equipment** for winter feed although many livestock farmers buy-in their winter forages. Still requiring a tractor to move round bales or a lot of labor to feed square bales. Fruit and vegetables require a fair amount of machinery once you are in the ten acres and above scale.
Where Should One Concentrate their Efforts to most Effectively Pave the way towards “Regional Meat”?

- Conduct **feasibility studies** to determine if a lack of slaughterhouses is a true barrier, may just be a feast/famine seasonality issue.
- **Education of the farmer and slaughterhouse** is necessary for both to understand limitations of each and that each need the other for success.
- **Education of the consumer** is necessary to teach them why Regional Meat can be more “expensive” at the cash register than Industrial Meat, but also how their purchases, through economic multipliers benefit the regional and local economies.
- **Training the trainers, i.e. extension and land grant institutions**, on the opportunities available (huge unmet demand out of NYC, Boston etc. meanwhile there are 3 million acres of fallow land in NYS but not enough animals to meet the demand)
- Educating the educators that this **food movement is not a fad but an agricultural trend that will be around for years**.
- Educating the **service providers**, rural and urban, about their individual efforts to build regional food systems and **how they should come together** (e.g. NESAWG)
- **Development of Food Value Chains**, teaching the supply chain components (the producers, the processors, the distributors, the wholesalers, the retailers, and the consumers) of the **values of cooperation, collaboration and loyalty rather than competition**.
- Farmers need to learn their true costs of production!
Costs of Production

Range in Cost of Production Nationally: $300 - $940

- Most farmers have no idea of their production costs.

- **Cost of production depends upon numerous variables** including: the length of the growing season for grass; is it a cow/calf operation where the farmer is selling calves in the auction; are you purchasing weaned calves and grazing them through just the growing season (good opportunity here for farmers in the Northeast but dependent on liquid markets); are you finishing the cattle; are you selling live animals; are you selling cuts of meat; are you selling animals by the side or quarter, or are you selling individual cuts of meat; are your markets to the end consumer or are they to an intermediary such as an auction house; what is your overhead; are you paying a mortgage or is your land all paid for and you just pay taxes; are you buying in forages for the winter or cutting your own; how much are the forages in your region; what is the cost of your equipment; what is the cost of diesel; are you making round bales or square bales; are you making dry round bales or wrapped baleage; what breeds are you raising; what are the genetics; are they matched to your environment, geography and production methods.

- **Costs of production vary across the country, across states, across regions, and from farm-to-farm depending upon these variables.**
  - In parts of the south farmers can graze almost year round, while in the north (Minnesota) and in the Northeast (New York) farmers face 120 – 200 days of winter feeding depending on production methods. Here in the Northeast most farmers plan for 160-200 days of winter feeding.

- Cow/calf operations typically are selling their animals in **live auctions where there is the least amount of return on investment.** Maybe the farmer breaks even or pockets less than a hundred dollars per animal.

- To be viable, you have to determine through good record keeping, over several years, your total costs of production.
Cost of Production Example

“Jim Larsen (name changed for confidentiality) is a typical Thousand Hills producer. He operates a 200-acre farm near Cannon Falls and markets 25 purebred Black Angus steers and heifers in a typical year, selling about half of these to Thousand Hills and the rest as halves and quarters to direct market customers. He uses rotational grazing, though he also makes hay available year round. Larsen estimates his costs for pasture ownership and management and for hay to be between $900 and $1,000 per head. With estimated revenue of $1,138 from Thousand Hills and $1,463 from direct market sales, Larsen’s margin over feed costs is between $138 and $563. Again, this is well above the $45 return over direct expenses received by beef finishers in 2009 who sold into commodity markets.”

Source: Comparing the Structure, Size and Performance of Local and Mainstream Food Supply Chains
Yield from a 708 lb. Carcass – Belted Galloway owned by Chris Harmon & Processed at Steiners Packing in Otego, New York

<table>
<thead>
<tr>
<th>Product</th>
<th>Weight</th>
<th>Percentage</th>
<th>Price/lb</th>
<th>Total</th>
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<tbody>
<tr>
<td>Organ Meats (Liver, Heart, Tongue, Oxtail)</td>
<td>16.43 lbs</td>
<td></td>
<td>$4.00/lb</td>
<td>$65.72</td>
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<tr>
<td>Soup Bones</td>
<td>27.00 lbs (7 bags)</td>
<td></td>
<td>$1.50/lb</td>
<td>$40.50</td>
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<tr>
<td>Stew Meat (boneless)</td>
<td>7.92 lbs (5 pkgs)</td>
<td>2%</td>
<td>$6.00/lb</td>
<td>$47.52</td>
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<tr>
<td>Shank Meat</td>
<td>19.88 lbs (10 pkgs)</td>
<td>5%</td>
<td>$4.50/lb</td>
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<tr>
<td>Short Ribs</td>
<td>26.22 lbs (10 pkgs)</td>
<td>6.6%</td>
<td>$4.50/lb</td>
<td>$117.99</td>
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<tr>
<td>Ground Beef</td>
<td>124.87 lbs (115 chubs)</td>
<td>31.6%</td>
<td>$5.00/lb</td>
<td>$624.35</td>
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<tr>
<td>London Broil (Top Round)</td>
<td>18.60 lbs (8 pieces)</td>
<td>4.7%</td>
<td>$7.00/lb</td>
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<td>Chuck Roast</td>
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<td>$217.84</td>
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<td>Shoulder Roasts (boneless)</td>
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<td>3.12%</td>
<td>$6.00/lb</td>
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<td>Sirloin Tip Roasts</td>
<td>14.50 lbs (4 pieces)</td>
<td>3.67%</td>
<td>$8.00/lb</td>
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<tr>
<td>Bottom Round Roasts</td>
<td>19.04 lbs (6 pieces)</td>
<td>4.82%</td>
<td>$7.00/lb</td>
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<tr>
<td>Eye Round Roasts</td>
<td>7.80 lbs (2 pieces)</td>
<td>1.97%</td>
<td>$7.50/lb</td>
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<td>Brisket</td>
<td>12.70 lbs (4 pieces)</td>
<td>3.21%</td>
<td>$7.00/lb</td>
<td>$88.90</td>
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<tr>
<td>Flank Steaks</td>
<td>2.39 lbs (2 pieces)</td>
<td>.006%</td>
<td>$9.00/lb</td>
<td>$21.51</td>
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<tr>
<td>Rib Steaks (bone in, 1 ½” thick)</td>
<td>23.16 lbs (16 pieces)</td>
<td>5.86%</td>
<td>$14.00/lb</td>
<td>$324.24</td>
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<tr>
<td>Sirloin Steaks (1” thick)</td>
<td>29.21 lbs (14 pieces)</td>
<td>7.39%</td>
<td>$10.00/lb</td>
<td>$292.10</td>
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<tr>
<td>T-Bone Steaks (1 ½” thick)</td>
<td>11.15 lbs (9 pieces)</td>
<td>2.82%</td>
<td>$16.00/lb</td>
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<tr>
<td>Porterhouse Steaks (1 ½” thick)</td>
<td>16.68 lbs (10 pieces)</td>
<td>4.22%</td>
<td>$17.00/lb</td>
<td>$283.56</td>
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<tr>
<td></td>
<td></td>
<td>99.23%</td>
<td></td>
<td>$2,904.17</td>
</tr>
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</table>

438.31 lbs saleable products

(394.88 lbs not counting organ meats & soup bones)

438.31 lbs. (saleable products)

$2,904.17 if all products sold at Farmers’ Market
Yield from a 708 lb. Carcass – Belted Galloway owned by Chris Harmon & Processed at Steiners Packing in Otego, New York

- A 708 lb carcass yields 394.88 lbs of meat (no soup bones, no organ meats) = 55.77% yield

- Paid $60 for the kill and $.79/lb for cryovacking the packages
  Total processing cost $619.32 (708 x $.79 = $559.32 + $60 = $619.32)

- Paid $60 for the kill and $.54/lb for butcher paper wrapping the packages
  Total processing cost $442.32 (708 x $.54 = $382.32 + $60 = $442.32)

- Hauling of animal to the slaughterhouse = $40.00

- These are Farmers’ Market prices and to sell a whole beefer took about two weeks of farmers’ markets – Three markets/week, (6 hours, 3.5 hours, and 3 hours = 12.5 hours + 6 hours for set up and take down (2 hours/market) = 18.5 hours @ $15.00/hour = $277.50 x 2 = $555.00

- Round trip travel to markets from farm (26 miles, 160 miles, 180 miles = 366 miles x .50/mile (fuel, wear and tear on my vehicle) = $183 + my travel time (1 hour, 3 hours, 4 hours = 8 hours x $15.00/hour = $120 so $183 + $120 = $303 x 2 = $606

Total costs for hauling and processing = $619.32 + $40 = $659.32
Total costs for selling in farmers’ markets over two weeks = $606
Total costs for processing and marketing = $1,265.32
Total cost for producing the steer over two years = $900
Total costs for production, processing and marketing = $2,165.32
TOTAL NET PROFIT = $2,904.17 - $2,165.32 = $738.85

Assumptions: All meat will be sold at two weeks of farmers’ markets (3 markets)
Selling this Animal as a Whole Animal, or by the Side or Quarter in New York

The customer in my case also pays for the slaughter and processing fee. Most of the time they will pick up the product at the slaughterhouse unless the customer lives downstate. Another option is to have a distributor drop the meat at the customers residence or business for a flat freight rate. I sell beefers for $2.50/lb hanging weight for my customers (individuals, CSA’s, restaurants, etc)

708 lb carcass x 2.50/lb = $1,770
Production costs and hauling cost to processor = $940
Customer pays for processing ($619.32 cryovac) and necessary freighting ($100) = $719.32
Customer pays for processing ($442.32 paper) and necessary freighting ($100) = $542.32
plus my charge of $1,770.
So the customer pays a total of $2,489.32 ($1,770 + $619.32 + $100) cryovac
$2,489.32/438.31 lbs = $5.68/lb for cryovacked packaging
Or the customer pays a total of $2,312.32 ($1,770 + $442.32 + $100) paper
$2,312.32/438.31lbs = $5.27/lb for butcher paper packaging
TOTAL NET PROFIT = $1,770 - $940 = $830

Without going to the markets & the travel I make almost $100 more on my net profit!
Let’s Look at the Customer Point of View

- If they bought a beefer by purchasing all of the products at the Farmers’ Market they would pay $2,904.17.

- $2,904.17 / 438.31 lbs = $6.62/lb is what the customer pays per lb at Farmers’ Market.

- $2,489.32 / 438.31 lbs = $5.67/lb is what the customer pays per lb for whole carcass.

- So if the customer buys a half or a whole carcass in cryovac packaging they save $.95/lb. (If the customer buys a half or a whole carcass in butcher paper they save $1.35/lb!) And these farmers’ market prices are very conservative from when I used to sell in markets (2007). Many farmers prices are now $6.00 - $7.00/lb for ground beef.

- For me to make a decent living of $40,000/year I would need to sell 48 beefers per year via by the side or whole animal.

- For me to make a decent living of $40,000/year via farmers’ markets I would need to sell 54 beefers per year and spend a lot more time doing it. Considering that most farmers’ markets in the Northeast have a 26 week season and if it takes me two weeks to sell an entire beefer at the three markets I attended, I would only be able to sell 13 beefers/year. So, I would need to attend at least 12 markets per week to do this or find better markets, probably downstate.
Do We Need More Slaughterhouses?

It Depends!

- Animal production in most places is **seasonal**, particularly here in the Northeast. Many farmers feel we **DO** need more slaughterhouses because when they want access to a slaughterhouse they are typically full. Many farmers in NYS have to reserve slots six months to a year in advance.

- Many **slaughterhouse owners feel we don’t**, depending upon where you are located in the country, and what we really need is to be able to spread out the slaughtering and processing over the year, rather than all at once in the fall. This is a production issue. Some plants are operating at less than 30% capacity.

- **In some cases we do** need more slaughterhouses. There are **many barren areas** where farmers have to drive hundreds of miles to access a slaughterhouse or wait months for a reservation. Particularly closer to urban areas and in remote rural areas there is a need. **We definitely lack Certified Organic Slaughterhouses!**

- **Case Study: New York state**
  If we make use of the 3 million acres of fallow land as we develop our regional food system, **YES** we will need more slaughterhouses. Even if we put 10% of this land back into production (300,000 acres) at 2 acres for producing one animal that is an additional 150,000 cattle. We want to keep the slaughtering and processing of these animals here in NY for job creation and economic development. Even “Large” facilities that can handle 5,000 head/year we will need 30 more slaughterhouses.
What are some of the Factors that Contribute to a Successful Slaughterhouse?

- Conduct a **feasibility study**! Know the market, know the regional supply of animals and the growth potential.
- Have a **good business plan** and a solid pro forma so you can plan your growth and know your capacity.
- Don’t be intimidated by HACCP! Be **proactive with your HACCP process**, not reactive. Don’t look at the USDA as the enemy, work with them and they will work with you.
- **Site selection** is very important. For access for your customers and distributors, but also for your septic system if not on a sewer system.
- Most successful slaughterhouses are family run businesses. The family has been butchering for many years if not generations. They know what they are getting into. Many farmer developed slaughterhouses fail after a couple of years.
- Most want to **train their own workers and then keep them** for many years.
- **Efficiency is all related to product flow**. Layout has to be setup so you never go backwards and with good separation between areas.
- **Height!** You need to have good height (20’ in kill floor 14’ in cooler at min.) in your plant if you are going to kill cattle. This is the drawback of most mobile plants. You need height for the kill floor and height for the hot box and coolers so you can hang carcasses. If you have to quarter carcasses you have cut your capacity in half and with each quartering you create more waste. Can lose up to a whole steak.
- **The size of your hotbox and coolers** is very important. These are based off of how may workers you can have comfortably and efficiently on your kill floor. Every other area, the holding pens, the kill floor, the processing room and the freezer is based off of how many animals you can kill and chill in one day and how many you can hang in your cooler. Cooler should be three times capacity of hotbox.
What are some of the Factors that Contribute to a Successful Slaughterhouse?....(continued)

- Need well designed holding pens to ensure safety for your workers and the animals.
- Rails must be 3’ apart for beef, 4’ off the walls. Processing room should be long and linear with trough drains, easier to clean. Need grease trap in smokehouse drains.
- Having a scalder will make you more efficient. 2 workers, with a scalder can kill and prepare 20 hogs in 4 hours. 2 workers skinning hogs can only do 15 hogs in 4 hours. Heavier hanging weight, plus you have the feet, ears, snout, tail available for sale. Less waste. $27,000 price tag.
- Having a hide puller will speed up the kill floor, keep the carcass cleaner and should return a higher value for the hide.
- Want sanitizers within quick reach, don’t want people wandering around.
- Customer Service is key! Farmers talk, and they will talk up a good facility and talk down a bad one.
- Butchers must have good cutting skills. For processing efficiency and for your reputation. Having a steak that is 1” that tapers to ¾” will lose you customers.
- Consistent customers year round! This also depends on your customers markets, but is also depends on your customer service. Everybody, even experienced butchers, make mistakes. What matters is how you rectify those mistakes. Be Honest!
- Need a separate office for USDA inspector with their own bathroom. Need dry goods storage and need a break room for employees.
- Beware of Used Equipment! Lysteria could be lurking! Lots more, but you get the idea.
Variable Kill Charges and CWF Charges at Slaughterhouses in NYS

- Kill rates for beef range from $50 - $90 here in New York. (Interesting to note that some facilities in the US don’t charge a kill fee. They only charge for the processing.)
- Kill rates for hogs skinned range from $30 - $50 and scalded with the skin left on range from $40 - $50. Some plants charge up to $90 for large Sows, some charge an additional $10 for smaller roaster size and some make no differentiation.
- Kill rates for lambs and sheep vary considerably from $30 kill and $.75/lb processing, while some just charge a flat fee ranging from $60 - $85 with additional costs for animals over 60 lbs hanging weight, typically sheep.
- Cut Wrap and Freeze (CWF) depends on butcher paper wrapping or cryovacking. One company charges $.54/lb for butcher paper wrapping while another charges $.50/lb. Several companies only cryovac and charge from $.55/lb to $.85/lb. Most companies have this rate for beef and for pork although one company charges $.65/lb for beef and $.59/lb for pork.
- Some slaughterhouses increase their CWF charge by $.05/lb for mixed quarters.
- Some slaughterhouses charge a fee of $2.50/day for aging beyond seven to ten days.
- Some slaughterhouses charge the regular cwf charge for cutting into primals or subprimals while some give you a break and charge less. One facility charges $100 to break down into primals.

- So, at one facility the overall costs for a 708 lb steer are $80 kill and $.75/lb for cwf = $531.00
- Another at $50 kill and $.85/lb for cwf = $651.80
- Another at $90 kill and $.80/lb for cwf = $656.40
- Another at $50 kill and $.55/lb for cwf = $439.40 (this facility adjusts its rates, these will go up)
HACCP – Hazard Analysis And Critical Control Points (HACCP)

“The key thing that any ag community understands is that the principles of HACCP are the same for any operator. Some will misconstrue that to say there are "one size fits all" regulations, which there are not. Regardless of how animals are raised, the same food safety principles and laws do (and need to) apply.”  Chris Raines – Penn State

“There are generic HACCP plans floating around all over the place and people try to adapt them to fit their business but don't really understand what's being done and why. This also happens in the case of hired consultants, who come in, take over the entire HACCP plan development process, and leave. The operator is left with no understanding of what he or she has been given. When it comes time to change something, whether it is due to a process change or a regulatory change, they do not understand how to do it. The pro would be: You can look at it go get an idea of what you need to develop. The con is: You have to understand the details of why/how it was done in order to update it. Often, people are very intimidated to do this, but my observation is that if they really want to do it, they can. Usually operators who opt for the generic-type plans aren't "HACCP minded" ... they operate daily in opposition to USDA instead of working with them. Believe it or not, most inspectors are willing to work with the processors if the processor is welcoming about it.”  Chris Raines – Penn State.
Hazard Analysis and Critical Control Point (HACCP)

The **Hazard Analysis and Critical Control Point (HACCP)** system is a management system focused on prevention of problems in order to assure the production of food products that are safe to consume. The HACCP system was developed originally by The Pillsbury Company, NASA and the US Army Natick Laboratories to provide a system to produce safe foods for use in the space program. As designed, HACCP was a preventive and systematic approach to food safety (Scott & Stevenson, 2006).

HACCP is a systematic approach to the identification, evaluation, and control of food safety hazards based on the following seven principles:

- **Principle 1:** Conduct a hazard analysis
  The process of collecting & evaluating information on hazards associated with the food under consideration to decide which are significant and must be addressed in the HACCP plan.

- **Principle 2:** Determine the critical control points (CCP’s)
  A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

- **Principle 3:** Establish Critical Limits
  Any step at which biological, chemical or physical factors can be controlled.

- **Principle 4:** Establish Monitoring Procedures
  To conduct a planned sequence of observations or measurements to access whether a CCP is under control and to produce an accurate record for future use in verification.

- **Principle 5:** Establish Corrective Actions
  Procedures followed when a deviation occurs.

- **Principle 6:** Establish Verification Procedures
  Those activities, other than monitoring, that determine the validity of the HACCP plan and that the system is operating according to the plan.

- **Principle 7:** Establish Record-Keeping & Documentation Procedures
  A summary of the hazard analysis, designated HACCP team, flow diagrams, and outline of the HACCP plan, supporting documentation and log records that are generated during the daily operation of the plan.

HACCP – Hazard Analysis And Critical Control Points (HACCP) Links:

USDA Food Safety and Inspection Service
www.fsis.usda.gov/

FSIS Help Online
http://Askfsis.custhelp.com

Niche Meat Processor Assistance Network (NMPAN)
www.nichemeatprocessing.org.

American Association of Meat Processors
http://aamp.com

Penn State College of Agricultural Sciences
http://extension.psu.edu/food-safety
http://foodscience.psu.edu/workshops/food-safety-and-sanitation

Center for Meat Process Validation
http://www.meathaccp.wisc.edu/

Food and Drug Administration – HACCP
www.fda.gov/.../hazardanalysiscriticalcontrolpointshaccp/default.htm

Center for Agricultural Development & Entrepreneurship – HACCP Guidance
www.cadefarms.org
Mobile Slaughter/Processing Units

- These are not Mobile Processing Units (MPU), but rather these are Mobile Slaughter Units (MSU’s). Every MPU we have looked at, including the Island Grown Farmer Cooperative (IGFC) in San Juan County, WA and the LILA MPU is actually a MSU.

- After the animals are killed, gutted and skinned they are shipped to a USDA Processing facility for breakdown of the carcass.

- All MPU’s, or MSU’s require the bricks and mortar of a USDA processor. Especially for hanging and aging carcasses.

- In some cases carcasses could be cut into primals and cryovacked in an MPU, or even broken down into subprimals, but you still need to age the beef, even for seven to ten days. MPU’s have a hotbox to cool down the hot carcass after slaughter, but the cost of hanging a carcass for aging in this would be expensive. The Glynwood Center’s system has a refrigerated truck to haul carcasses to a USDA processor, but again, the cost of aging a carcass in this would also be expensive.
Pros of Mobile Slaughterhouse Units

- In some areas, like Lopez Island, or the affluent Hudson Valley, developing complete slaughterhouses is prohibitive. Either there aren’t enough animals, or there is a NIMBY attitude. In these cases, MSU’s may be the only option available.

- For areas with many 20-C licensed facilities MSU’s are very useful. A 20-C license allows the license holder, often restaurants, grocery stores, and farms, to further process, or fabricate, stamped carcasses, halves, quarters and boxed meats. In many cases these 20-C licensed facilities have the capacity to age a few carcasses.

- MSU’s work very well with smaller animals like hogs, lambs and sheep, goats, and smaller cattle.
Cons of Mobile Slaughterhouse Units (MSU’s)

- **Through put!** The real issue for slaughterhouses is how many animals can you put through the facility in a given day. MSU’s are limited in the amount of through put the unit can do in a given day.

- They are fairly **expensive**. Not only are you purchasing the MSU, but in some cases there is also a trailer for the USDA office and the showers and break room. There is the refrigerated truck that transports the carcasses to the processing facility, and there is an offal truck to remove the animals innards. In some cases, as on Lopez Island, the offal can be composted on the farm they are visiting.

- Depending upon the model they also require a **concrete or asphalt pad** to set up to be level as well as electric, water and tanks for waste water. The cost of developing one of these pads can run **$35,000 - $45,000**.

- They are **not necessarily mobile**! Except for the IGFC model, most of these do not travel from farm to farm where the animal is slaughtered on the farm. (Note: in the case of poultry mobile units they are mobile slaughter and mobile processors. The unit does travel to the farm and the killing and processing are done on the farm.

- In the case we are familiar with the animals are hauled to a “docking station” where the MSU has been set up. There the animals are aggregated, killed, and the carcasses are hauled to a processing plant.
MONTHLY INCOME STATEMENT:

Product Mix: This includes the following animals for slaughter: Beef (~1200 lbs.); Hogs (~500 lbs.); % Sold ¼’s & ½’s;

Revenue-Kill:
- Beef: Units; Kill; Hide; Offal/Rendering = Total Revenue
- Hog: Units; Kill; Hide; Offal/Rendering = Total Revenue
- Other Small Ruminants

Calculate Total Kill Revenue

Processing:
- Beef: Units Processed for Fee; Dressed Weight; Processed Fee/lb. = Total Beef
- Hogs: Units Processed for Fee; Dressed Weight; % Smoked; % Sausage; % Sliced; Processing Fee/lb.; Sausage Fee/lb.; Smoked Fee/lb.; Sliced Fee/lb. = Total Hog

Calculate Total Processing Revenue

Cost of Good Sold (Kill): Direct Labor; Plant Overhead (Utilities Processing/Cooling) = Total Cost of Goods Sold – Kill (GM*)

Cost of Good Sold (Processed): Direct Material/Supplies; Rendering/Septic; Direct Labor; Direct Labor Maintenance; Plant Overhead (Utilities Processing/Cooling, Repairs) = Total Cost of Goods Sold – Processed (GM*)

Calculate Total Gross Margin

General and Administrative: Includes Payroll and Overhead Costs (i.e. Accounting/Audit, Advertising, Bank Fees, Rent Expense, Vehicle, Office Expense, Telephone, Travel, Internet, Property Tax, Interest, Depreciation, etc.)

Total Expenses

Other Income/Expenses

Net Income

Cash Flow: Net Income; Depreciation; Loan Principal; Investment; Increase in AP, Increase in AR

Net Cash Flow

*GM = Gross Margin

BALANCE SHEET FOR SLAUGHTERHOUSE:

Current Assets + Fixed Assets = Total Assets

Current Liabilities = Accounts Payable + Long Term Liabilities

Total Owners Equity = Paid in Capital + Retained Earnings

Total Liabilities and Owner’s Equity
### OVERHEAD COSTS OF BEEF SLAUGHTER AND DE-BONING IN A SMALL PLANT (variable costs)

<table>
<thead>
<tr>
<th>Plant Efficiency, hd/Manhours (Slaughtering/Boning)* .94</th>
<th>.94</th>
<th>.94</th>
<th>.75</th>
<th>.75</th>
<th>.75</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Plant Operators</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Head/Week</td>
<td>30</td>
<td>45</td>
<td>60</td>
<td>24</td>
<td>36</td>
</tr>
<tr>
<td>Head/Year</td>
<td>1500</td>
<td>2250</td>
<td>3000</td>
<td>1200</td>
<td>1800</td>
</tr>
</tbody>
</table>

#### Payroll

<table>
<thead>
<tr>
<th></th>
<th>Avg pay/operator, $</th>
<th>40000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total payroll, $</td>
<td>80000</td>
<td>120000</td>
</tr>
<tr>
<td>Workman’s Comp Ins.</td>
<td>5600</td>
<td>8400</td>
</tr>
<tr>
<td>Medical Insurance</td>
<td>4000</td>
<td>6000</td>
</tr>
<tr>
<td>401K</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Payroll +</td>
<td>89600</td>
<td>134400</td>
</tr>
<tr>
<td>TOTAL PAYROLL +/hd</td>
<td>59.73</td>
<td>59.73</td>
</tr>
</tbody>
</table>

#### Var. Cost Items

<table>
<thead>
<tr>
<th></th>
<th>$/hd</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utilities</strong></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>5.00</td>
</tr>
<tr>
<td>Propane</td>
<td>1.00</td>
</tr>
<tr>
<td>Water</td>
<td>1.50</td>
</tr>
<tr>
<td>Waste Water</td>
<td>0.00</td>
</tr>
<tr>
<td>BOD &amp; TSS</td>
<td>0.50</td>
</tr>
<tr>
<td>Rendering pickup</td>
<td>0.00</td>
</tr>
<tr>
<td>Total Utilities</td>
<td>8.75</td>
</tr>
<tr>
<td><strong>Packaging</strong></td>
<td></td>
</tr>
<tr>
<td>Boxes</td>
<td>3.50</td>
</tr>
<tr>
<td>Vacuum Bags</td>
<td>4.00</td>
</tr>
<tr>
<td>Labels</td>
<td>0.35</td>
</tr>
<tr>
<td>Total Packaging</td>
<td>7.85</td>
</tr>
<tr>
<td><strong>Repairs &amp; Maintenance</strong></td>
<td>3.50</td>
</tr>
<tr>
<td><strong>TOTAL VARIABLE COSTS, $/hd</strong></td>
<td>20.10</td>
</tr>
</tbody>
</table>

* Assumes all slaughter occurs in first 2 days of the week, de-boning in the last days of week.
## OVERHEAD COSTS OF BEEF SLAUGHTER AND DE-BONING IN A SMALL PLANT (fixed/total costs)

<table>
<thead>
<tr>
<th>Plant Efficiency, hd/manhours (Slaughtering/Boning)* .94</th>
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<th>.94</th>
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<th>.75</th>
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<td>36</td>
</tr>
<tr>
<td>Head/Year</td>
<td>1500</td>
<td>2250</td>
<td>3000</td>
<td>1200</td>
<td>1800</td>
</tr>
</tbody>
</table>

### Fixed Cost Items

<table>
<thead>
<tr>
<th>Insurance</th>
<th>$/yr.</th>
<th>$/hd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property</td>
<td>8400</td>
<td>14.53</td>
</tr>
<tr>
<td>Crime</td>
<td>400</td>
<td>6.67</td>
</tr>
<tr>
<td>Refrigeration/Boiler</td>
<td>3000</td>
<td>5.00</td>
</tr>
<tr>
<td>General Liability/Recall</td>
<td>10000</td>
<td>16.67</td>
</tr>
<tr>
<td>Vehicles</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Insurance</td>
<td>21800</td>
<td>14.53</td>
</tr>
</tbody>
</table>

| Training & Education | 2000 | 3.33 |
| Laboratory Testing   | 5000 | 8.33 |
| Pest Control         | 4536 | 7.56 |
| Accounting & Audits  | 10000| 16.67|
| Legal Fees           | 0     | 0     |
| FSIS Overtime        | 7000  | 11.67|
| USDA Grading         | 7000  | 11.67|
| Outside Services     | 0     | 0     |
| Total Services       | 35,536| 56.22|

| Supplies          | 70,000| 116.67 |
| Property Taxes    | 20,000| 33.33  |
| Total Supplies    | 77,000| 129.96 |

### Total Fixed Cost / hd, $/hd

|                      | 56.22 | 65.02 | 48.77 | 122.78 | 81.27 | 60.96 |

### Total Overhead Costs W/O Depr. & Debt

|                      | 157.36| 144.85| 128.60| 202.61| 161.10| 140.79|

### Depreciation

|                      | 34.89 | 31.00 | 29.00 | 43.61 | 38.61 | 38.76 |

### Debt Service, P&I ($300,000 @ 7.5%) 44,000

|                      | 29.33 | 19.56 | 14.67 | 36.67 | 24.44 | 18.33 |

### Total Overhead Costs

|                      | 221.58| 195.41| 172.27| 282.89| 224.30| 195.46|

### Notes

* Plant Efficiency is calculated as (Slaughtering/Boning) * .94.
Resources and Links:


Marketing Beef for Small-Scale Producers, Arion Thiboumery, Mike Lorentz
http://www.extension.org/mediawiki/files/0/00/Marketing_Beef_for_Small-Scale_Producers.pdf

Where’s the Local Beef? Rebuilding Small-Scale Meat Processing Infrastructure
http://www.foodandwaterwatch.org/tools-and-resources/wheres-the-local-beef/

A Resource Guide to: Direct Marketing Livestock & Poultry, Martha Goodsell, Dr. Tatiana Stanton w/ contributions from Jim McLaughlin and Audrey Reith
http://www.smallfarms.cornell.edu/pages/projects/workteams/LP/livestock.cfm

Green Grass, Green Jobs: Increasing Livestock Production on Underutilized Grasslands in NYS
http://www.smallfarms.cornell.edu/pages/projects/workteams/GU/grasslands.cfm

NY Meat Plant Analysis (Upper Hudson-Lower Mohawk Valley Region – Feasibility Study)

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**Chris Raines**, Assistant Professor of Meat Science and Technology at Penn State University for his general insights on Livestock Production and his detailed knowledge of HACCP (Hazard Analysis and Critical Control Points). [http://www.das.psu.edu/directory/crr11](http://www.das.psu.edu/directory/crr11); [http://agsci.psu.edu/](http://agsci.psu.edu/)

**Amy Sipes** of John’s Custom Meats, Smiths Grove, Kentucky for her insights on beef production, slaughterhouses and processing. [http://www.johnscustommeats.com/](http://www.johnscustommeats.com/)

**Kathleen Harris** of NELPSC, the Northeast Livestock Processing Service Company, for her insights on distribution, slaughterhouses and processing. [http://nelpsc.com/](http://nelpsc.com/)

**Arion Thiboumery** of Lorents Meats and Iowa State University for his insights on slaughterhouses and processing in Minnesota, and to **Arion Thiboumery** and **Mike Lorentz** of Lorentz Meats for their resource *Marketing Beef for Small-Scale Producers*. [https://www.extension.iastate.edu/store/](https://www.extension.iastate.edu/store/) and [http://www.lorentzmeats.com/](http://www.lorentzmeats.com/)

Thank you from CADE!