

Lender Analysis

*An independent analysis of recent
market and infrastructure reports
related to the Pacific Northwest's
regional food economy*

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Cascadia Foodshed
Financing Project



Lender Analysis

Mark Bowman, June 2016

Since 1990 Mark has worked as a loan officer and analyst in WA, OR, and CA with a focus on agriculture, food systems, fiber, and fisheries. Mark was asked to write an analysis of the Ecotrust research from the point of view of a lender.

The Cascade Foodshed Financing Project coordinator requested a review of the six food categories as presented in the narratives. The scope of the work includes:

- Review the research narratives with an emphasis on production cost accuracy
- Compare narratives to Oregon Food Infrastructure Gap Analysis
- Identify potential linkages and gaps for investors
- List industry issues, business configuration, and entrepreneur expertise that investors should consider
- Outline what an investment portfolio should look like.

The following provides an opportunity summary of my analysis, a brief description of the potential structure for an aligned investment portfolio, and reviews for each of the six food categories. Each category is broken into two sections: 1) Important notes from the research narratives that are pertinent to potential investment opportunities; 2) Opportunities for investment derived from the strategy paper and my experiential knowledge of financing and food systems in the Pacific NW.

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For further information about the Cascadia Foodshed Financing Project, visit cascadiafoodshed.org

Summary

The investment opportunities as presented in the six food categories are:

High opportunity

- Small grains – diverse crop choices and growth in organics
- Storage crops – diverse crop choices and moderate growth in organics
- Leafy greens – new market model for industry

Moderate opportunity

- Pasture poultry – Consumption growth, especially in organics but high barriers

Minimal opportunity

- Hoop house pork – Organic consumption growth but many external barriers to production and processing
- Grass fed beef – Declining consumption and external barriers to production and processing

Investment Portfolio

An investment portfolio that focused on the crop opportunities would reflect a high concentration of lending with some debt guaranty and equity opportunities thrown in for good measure.

Debt financing would be (75%-80% of portfolio):

- Annual operating loans for expansion of farming to AOTM
- Permanent working capital for conversion to organic
- Term loans for equipment expansion
- Long-term loans for cooperative development and infrastructure like storage facilities, milling and pressing facilities, and land purchase.

Other investments would be (20%-25% of portfolio):

- Debt guaranty that allows leverage of traditional debt
- Equipment/facility ownership with lease to own model for tenants
- Equity partnerships along the vertical food chain (mills, cooperatives, value-add facilities) that need patient capital with pro-rata share of profits.

Investment Analysis: Wheat and Small grains

Important notes from wheat and small grains research narrative

- Growth in small grains, legumes, oils.
- Several rotation crops including chickpea, lentils, and canola, markets are already well developed. For other rotation crops including amaranth, sorghum, and millet, markets are still relatively thin, but growing.
- Up to thirty separate crops that can function in rotation with wheat in the Pacific Northwest.
- Dryland small grains requires 720-2,200 acres to be AOTM. This acreage requirement represent the top 15% of WA. growers in acreage size.
- Research on the wide diversity of rotation crops that can grow in the Pacific Northwest has, historically, taken a back seat to a near-exclusive focus on wheat. Breeding of rotation crops that are adapted to the diverse agro-climatic zones in this region and can tolerate drought, pests and diseases, and a wide variety of weather conditions, has not been a priority of agricultural research.
- Processing and marketing infrastructure in this region has not historically been oriented towards rotation crops. The potential for rotation crops becoming profitable in themselves is relatively recent; historically, the entire reason for growing legumes and oilseeds was to boost wheat yields.
- Rotation crops are becoming profitable in themselves. Chickpeas are a particularly important illustrative case. The market outlook for legumes, oilseeds, and other rotation crops appears bright.
- High cost of drilling machinery requires large acreages to justify expense.
- Look at organic. In 2014, 82 farms with 10,528 acres averaging 128/acre/farm.

Opportunities for Investment

Over-arching thought

The small grains narrative focus is on no-till wheat and not organic wheat. Organic wheat plays such a small space that it is less attractive. One would argue that since organic wheat is such a small space and organic is a growing segment of food across America, that the idea of organic as an over-arching term of identification for consumers is important. In the long-run organics makes more sense than a harvesting technique call no-till.

Additionally, any other rotational crop that is planted along with no-till is then considered non-organic, losing that opportunity to capture organic markets. The focus should be on conversion to organic, so all the crops in a rotation can benefit from the potential up-side.

Organic production

The investment space is helping AOTM producers switch from no-till traditional to no or low-till organic. Converting non-organic to organic production on the same land requires a 2-3 year transition period, where the producer uses organic practices, but has to sell crops at non-organic prices. Debt to cover the operating losses during the conversion time, then terming the debt out after the organic conversion is complete is a space for investors to engage.

One issue is that grain farmers will go through the conversion process on owned land, not leased land (unless the lease terms are for many years to recoup the conversion). The farmer wants to insure they have access to the leased land for many years if they are going to transition to organic and bear that cost.

Growing of lesser known rotational crops

With about 30 crops that could fit into a wheat crop rotation, there is opportunity to assist existing farmers find niche markets for minor grains, legumes, and oil rotation crops. For minor grains, is it a direct-to-market approach or having a relationship with a specialty miller that makes multi-grain crackers, breads, etc. For legumes it could be a high-end, alternative flour product or specialty beans for restaurants. The oilseeds could be a pressing and bottling facility producing high-end oils for specialty markets.

Financing requirements would center on permanent working capital for product development and marketing or capital financing for equipment.

These opportunities do not require large monetary commitments, but there is risk around:

- identifying the right minor crop for the farmer's micro-climate
- finding and securing specialty equipment and processing relationships
- entering a niche market or growing a new market.

A farmer owned coop for legumes or oilseed

Legumes and oilseeds are important rotational crops for wheat. The goal is to raise these rotational crops for their own market viability and not just as a soil supplement for wheat. These crops need the vertical integration support afforded wheat, as referenced by the Shepherd's Grain model.

Investment in a small cooperative would look like:

- Several smaller to AOTM producers team together to organize a coop centered around shared equipment, or storage, and/or marketing.
- Finance a pressing/milling facility and specialized planting/harvesting equipment.
- Capital needs for this type of financing could easily be \$1-3M.

- Infrastructure amortizations 7-15 years; equipment amortizations 3-7 years; initial marketing as permanent working capital amortization 3-5 year.
- This appears to be the most reasonable place for capital investment that the existing lending space would be least likely to participate. Farm Credit Service and Farm Service Agency do engage in financing at this level. If farmers already have strong lending relationships then their primary lender may want to engage in this lending space. It is an opportunity for a lender to expand their portfolio with a proven customer.

Outcomes

- Increase crop diversity in the Pacific NW; to support soil fertility and increase consumer choice.
- Improve environmental stewardship and consumer health through increased acres in organic production.
- Increase farming family income and assets through growth in acres, production diversity, vertical integration, and market penetration.
- Increase consumer choice.

Investment Analysis: Storage crops

Important notes from research narrative

Organic potatoes

- Long rotations – Long-term planning, lots of rotational crops
- In the Pacific Northwest, the recommended potato rotation lasts four to seven years, and includes the following crops: Year 1-Row crops (Carrots); 2-5-Alfalfa; Year 6-Row Crops (corn); Year 7-Grain
- Typical cover crops in a potato rotation include legumes, sudan-grass, and mustards.
- Organic potato yields are 2/3's of total average yields.
- Value of potato crop has risen by 50% since 2004, while acres remain steady.
- Value of organic potato crop has risen by 3x since 2008, while acres have doubled.
- Organic acres in OR and WA represent 1% of total acres harvested.
- There is a 20-70% price premium for organic potatoes over total average market price.
- Organic market penetration 2.7%
- Retail organic = \$1.49, conventional = .61c

- Pacific NW organic retail = \$9.3M, farmgate = \$2.6M. Pacific NW traditional retail = \$142M, farmgate = \$40M
- NW organic consumption/person = .9 lbs, traditional = 34.8 lbs
- Lack of appropriate scaled machinery (planting, harvesting, storage) plays a role in declining acreage associated with AOTM. High labor on small scale vs. mechanized efficiency on large scale production.

Thoughts

- On the westside of WA. (smaller acreage) - focus on minor varieties of potatoes?
- Large corporate organics on the eastside – focus on major varieties?
- Is fresh organic potato consumption focused on minor varieties or major varieties like Russets?
- Do people that eat organic potatoes eat Russets?
- GMO Russet potatoes begin production (“USDA Approves Modified Potatoes”. NY Times, Nov 7, 2014).

Onions

- 3-4 year rotations
- Rotational crops for onions include sugar beets, carrots, corn, cereals, potatoes, wheat, peas, beans.
- Organic yields/acre are close to total yields/acre
- Organic onion production in NW is stagnant
- Onions for processing has increased, while fresh market decreased.
- Organic acres is less than 1% of total acres in WA and OR.
- Onion prices show no trend but high volatility from year to year.
- Organic onion price premiums are small and may be insufficient to cover increased production costs.
- Organic market penetration 7.6%
- Organic retail price = \$1.42, traditional = \$1.02
- Pacific NW organic retail = \$14.7M, farmgate = \$6.3M. Pacific NW traditional retail = \$132M, farmgate = \$57M
- NW organic consumption/person = 1.4 lbs, traditional = 17.2 lbs

Carrots

- One year rotations
- Oats, corn silage, potatoes, and alfalfa are rotational crops for carrots
- Carrots commonly follow potatoes as a rotational crop
- NW carrots focus on processed market not fresh market.
- Organic yields are 80-90% of total market yields/acre
- Organic carrot revenue has more than doubled since 2008, even though acres harvested declined by 2/3's.
- Organic revenue/acre = \$7,300 vs traditional revenue/acre = \$2,500
- Organic market penetration 14%
- Organic retail price = \$1.49, traditional = 69c
- Pacific NW organic retail = \$14.4M, farmgate = \$4.9M. Pacific NW traditional retail = \$48M, farmgate = \$16M
- NW organic consumption/person = 1.1 lbs, traditional = 6.9 lbs

AOTM \$250-500k gross revenue

Organic assumption

Acres to meet AOTM

Potatoes = 56-112 acres

Onions = 32-65 acres

Carrots = 41-81 acres

Increased acreage and farm consolidation caused by increased cost/acre on one side and the growing popularity of direct-to consumer marketing arrangements such as community-supported agriculture (CSA) and farmers' markets on the other side.

Results in:

1. Increase in the number of farms cultivating at the smallest scale range;
2. Increase in the acreage being cultivated at the largest scale range;
3. Decline in both the number of producers and acreage being cultivated at the scale most closely associated with AOTM.

Rotational crops are key. What is the economic value of the rotational crops? Not just use rotational crops as a crop fertility input for potatoes.

Opportunities for Investment

Organic storage crop producers

- Organic storage crops grown for the processing market to meet increasing demand for organic frozen and processed foods.
- Growing and processing differentiated varieties of storage crops, such as multi-colored carrots, multi-colored and fingerlings potatoes, and non-storage onions including Walla Walla, Vidalia, and scallions / green onions.

What type of person would be in need of financing as a storage crop producer?

- Someone who already has experience in storage crops (and grains, alfalfa, and legumes)
- Someone who farmed with a family but is branching out on their own (relative, foreman)
- Would need at least 100 acres to purchase/lease to be AOTM
- Would need to purchase or access to planting and harvesting equipment for potatoes, onions, and carrots (also may need equipment for alfalfa, corn, grains, legumes as they are rotational crops with potatoes).
- What makes this so difficult to finance is;
 1. the breadth of knowledge required by the producer for many crops in the farming rotation;
 2. the diversity of equipment necessary to manage all the rotational crops;
 3. the lack of small scale storage for diversified products;
 4. the minimum acres of irrigated land required to be successful for AOTM;
 5. the amount of annual operating capital necessary (100 acres x \$2,250/acre = \$225,000 minimum).
- This capital space is usually filled by banks with agricultural lending departments, Farm Credit Services and Farm Service Agency. It is not a unique niche that lenders wouldn't finance a properly structured applicant.
- Where an applicant's weak point may be is finding adequate collateral to get an operating loan on leased land or a guaranty to support a financing request for equipment or land.

Equipment and infrastructure needs for small producer growth into AOTM

- Storage facilities and specialized planting/harvesting equipment.

- But again this space could be filled by the already known lenders above plus equipment dealers. This space is actually easier to fill by the lenders above than financing a new farmer.

Shared equipment, storage facilities, and marketing for a producer oriented cooperative

- Several smaller to AOTM producers team together to organize a coop centered around shared equipment, or storage, and/or marketing
- Finance storage facilities and specialized planting/harvesting equipment.
- Capital needs for this type of financing could be \$2-5M.
- This appears to be the most reasonable place for capital investment that the existing lending space would be least likely to participate.

Outcomes

- Same as small grains

Investment Analysis: Leafy greens

Important notes from research narrative

- Distribution distance from field to table is an issue
- One carton contains 24 heads 900 cartons/acre for conventional and 650 cartons for organic
- Organic cost/head is 34 cents. Non-organic cost 24 cents/head
- Total per capita consumption of leaf and romaine lettuce (conventional plus organic) was 10.6 lbs. in 2013
- The average weight of a head of leaf lettuce is estimated by the USDA as 0.83 lbs.
- Per capital consumption of lettuce is 12.77 heads
- Row crop - 650 cartons of organic lettuce/acre x 24 heads/carton x 2 crops/year = 31,200 heads/acre.
- Hydroponic - 1000 heads/wk x 48 weeks = 48,000 heads/year/52' shipping container (Mark Bowman, Hydroponic financing).

Opportunities for Investment

The leafy green investment opportunity paper magnifies the small size of lettuce growers in the Pacific NW. The opportunity to find organic lettuce in the marketplace is not difficult and if consumer desire to find local is important, then many communities have lettuce at local organic grocery stores, farmer's markets, CSA's, etc.

The paper also lays out the future of leafy greens, which points toward hydroponic growing methods. *Disclosure: Mark Bowman is involved with hydroponic financing. He has provided some of his primary research below.*

- A 40' hydroponic shipping container can produce 500+ heads of lettuce/wk
- A 52' hydroponic shipping container can produce up to 1000 heads of lettuce/wk
- 500 heads x 48 weeks = 24,000 heads. This would meet the need of 1,880 people annually and 1,000 heads/wk would meet the need of 3,760 people annually.

The benefits of moving towards hydroponic include:

- Hydroponic containers are close to end consumer in urban areas, reducing transportation cost and product mark-up.
- Product gets to end consumer quicker, thus retaining nutritional content and freshness.
- No need for crop rotation.
- Farmland can be utilized for other crops.
- Hydroponic systems recirculate water reducing usage and runoff.
- Fertilizers are kept to a minimum.
- Pesticides are not necessary due to closed system.
- Herbicides and tillage are not necessary.
- Farm equipment is not required.
- Harvesting is easier.
- Reduction of food borne illnesses.
- Improved crop management.
- Reduced labor.
- Lettuce grows faster in ideal conditions.

Hydroponic system cost:

- Property infrastructure - \$30,000-50,000 one time cost
- Turn-key shipping container - \$65,000-100,000 ea.
- Operating cost for 52' system - 36-50 cents/hd.(Variable and fixed cost. Not including debt or owner draw. Depending on scale of operation).

The major issue in financing a hydroponic lettuce grower is the value of a specialized shipping container in a forced liquidation sale. A shipping container full of (Home Depot and hand manufactured specialty) parts is worth very little. So the lender has little in primary collateral value.

Investment models could look like:

- Direct loan to farmer who has large down payment.
- Shared equity investment with farmer and pro-rata return on profitability.
- Investor owns the infrastructure with lease to own back to the farmer.

People who appear to venture into hydroponic farming, are not typical farms, but rather food system oriented individuals who see a shift in the food system model.

Outcomes of investment in hydroponics

- Healthier and safer food.
- Reduction of resource use.
- Creation of new farming model.

Investment Analysis: Pasture Poultry

Important notes from research narrative

- AOTM produce a very small portion of the total value of the U.S. poultry industry: adding together the value of all the categories between 2,000 and 199,999 birds yields 3.72% of the value of the industry.
- Farms defined at AOTM are almost nonexistent in Oregon and Washington. Farms in the size class ranges from 2,000 - 199,999 birds total 1.2% of all farms and produce 2.4% of all broilers sold.

- The small farm sector is more important in the Pacific Northwest than in the country as a whole: small farms with less than 2,000 birds are numerous (93.5% of all farms). However, these farms produce a very small proportion (0.1%) of the total number of birds sold. The largest farms, those raising more than 500,000 birds/year, constitute less than 4% of the number of farms but produce more than 80% of the total number of birds raised in the region
- AOTM rule of thumb may prove too low for poultry production, as poultry requires greater investment in infrastructure than other sectors of agriculture and the margins may be lower, especially at smaller scales of production.
- A producer processing more than 20,000 chickens in a year must do so in a USDA licensed facility. Those producing fewer than 20,000 may operate under a state license, which is significantly less expensive.
- The primary cost factor that makes pastured poultry more expensive to produce is the cost of feed

Opportunities for Investment

Typically, pasture poultry farmers are diversified farmers, growing other crops and livestock. So pasture poultry fits into the existing cropping and livestock rotation.

The primary investment opportunity is in existing small-scale poultry operations to support growth to at least 15,000 birds per year harvested, with a focus on increasing margins. This could include investments in infrastructure such as additional pasture pens, brooding houses or small scale feed-milling equipment.

The investment here is not large and usually constitutes infrastructure and equipment financing with terms of 5-15 years.

Outcomes

- Increase farmer diversity by adding pasture poultry to farming mix
- Increase availability of locally grown and potentially organic poultry

Investment Analysis: Hoop House Pork

Important notes from research narrative

- A good rule of thumb for the minimum farm size necessary to reach AOTM is 1,100 market hogs ($\$78.65 * 2.85 * 1,100 = \$246,567$). Gross income from 1,100 hogs is slightly less than \$250,000.

- An operation with 1,100 hogs would be in the top 0.2% of the size distribution of farms in the Pacific Northwest. Clearly, if Pork of the Middle is to become significant in the Northwest, some scaling-up needs to be done.
- The reasons for the rise of concentrated hog production are many
 1. but the availability of cheap feed due to low commodity prices,
 2. weak environmental regulations on manure management,
 3. economies of scale in production and processing,
 4. mergers and acquisitions at the meatpacker/processor level,
 5. and the Justice Department's failures to enforce antitrust laws against meatpackers are all forces moving the industry in this direction.
- The national trend at the producer level has been dramatic. In 1992, 30% of all U.S. hogs were raised on farms with more than 2,000 animals; by 2007, 95% of hogs were raised on farms this large
- Though the Northwest pork industry has declined overall, the sales of certified organic hogs has increased.
- Developing a regional pork industry sufficient to meet market demand will require that producers adopt ecologically responsible, as well as economical, methods of hog raising that are also price-competitive in regional markets. Since this possibility is remote, the development of branded, differentiated pork products at price premiums that consumers are willing to pay seems to be a more viable strategy.
- Feed comprises up to 75% of total production costs in farrow-to-finish systems.
- Feed cost is made up of two components: price per pound and conversion efficiency. Feed conversion efficiency is usually expressed as the pounds of feed necessary for each pound of live weight gain. It can range from 3 to 5 pounds of feed for every pound of live weight gain. Considering that each pig grows to 250-300 lbs. over less than 7 months, feed conversion efficiency matters tremendously for hog raisers' production costs. Cold climates, wasteful feeding systems, poorly balanced nutrition, and unhealthy pigs can all reduce feed efficiency.
- Efficient feed conversion is gained through feeding systems optimized for low wastage and nutritional balance, temperate or warm climates, and healthy pigs.

Opportunities for Investment

The investment opportunity for pork in the Pacific NW is not bright for any potential producer, let alone AOTM. There are too many external factors that would need to align to make pork and possibly poultry successful.

In order for consumers to pay a price premium for locally and humanely raised pork, the

producer would have production costs higher than the mid-west competitors, due to lack of facility efficiency and the lack of volume through-put.

The alternative for Pacific NW pork producers is to raise organic pigs. The problem with this method is first there is a lack of highly convertible feed stock (corn and soybeans) in the NW. Secondly, as we have seen in the Small Grains analysis, the number of organic acres dedicated to grains is minimal. Organic feedstock from NW grains is probably not the first sales choice for organic grain producers. Hog producers, who place 75% of their variable cost as feed in a conventional system, would not be able to sell pork in the market place at a high enough premium to offset the high cost of local, organic feed, even if it did exist.

Finally, the sheer lack of USDA meat processors in the Pacific NW also prohibits the growth model. Having witnessed small, humanely raised, locally grown, and sometimes organic pork sold in the Pacific NW, the meat price point is too high for most consumers to make the leap to this product, leaving the producer as a local, small scale, niche farmer that also sell pork to a select few as one of multiple product lines.

The investment opportunity lies at either end of the vertical food chain:

1. The investment in organic small grains in the Pacific NW
2. The investment in medium sized USDA meat processing facilities for all large animals (beef, hogs, sheep, goats, etc.). A USDA meat processing facility requires at least 6 beef equivalents/day to cover operating costs and 8-9 beef equivalents/day to cover operating costs and debt service (Mark Bowman, Meat processing financing).

Investment Analysis: Grass-fed Beef

Important notes from research narrative

- Beef now ranked 2nd heading toward 3rd most consumed meat in US behind chicken and soon pork (“Per Capita Consumption of Poultry and Livestock”. National Chicken Council, April 13, 2016)
- High price of beef. Grass-fed cost is 20% higher than feed-lot beef.
- Slow conversion rate for grass-fed at 1.5-1.75 lbs/day.
- Lack of available irrigated pasture
- Beef price \$3.32 in 2002, \$6.29 in 2015
- Average herd size: 40 head
- Average producer age: 58.3

- Lbs of consumption/yr of (“Per Capita Consumption of Poultry and Livestock”. National Chicken Council, April 13, 2016)
1. US Beef 54.3#(down),
 2. Pork 50.4#(steady),
 3. chicken 92.1#(up),
 4. Turkey 16.5#(steady)
- Grass fed beef has 2 outlets.
 1. Direct to consumer - Direct to consumer (custom slaughter), low volumes (but producers are small anyway)
 2. Wholesale - most cattlemen are not marketers
 - Taste of grain finished to grass finished
 - Ground beef is largest consumption of all beef products. Lowest price point, but biggest margin difference between conventional and grass-fed.
 - OR has 14 USDA slaughter facilities
 - WA has 11 packers. 9 or less available to independent farmers.
 - Lack of meat cutters. A good meat cutter can make \$25/hr (Mark Bowman, Meat processing financing).
 - Regulatory pressure on processing facilities, especially in WA.

Opportunities for Investment

Beef is a loved, but declining meat choice in the United States. Due to high beef prices, low conversion rates, lack of adequate grass-land, lack of processors, the sheer scale necessary to be AOTM, and other competitively priced meat choices, cattle production will continue to decline in popularity.

AOTM does not apply to beef. Cattle operators average 40-50 head. It would take 169 head to reach \$250k in revenue (minimum point for AOTM). That would put the operator in the top 2% of cattle producers in the Pacific NW.

The number of irrigated pasture acres required to raise cattle in a competitive environment would put the operator in rivalry with other farmers requiring irrigated acres for their crops. These other farmers grow higher value crops and are willing to pay more for irrigated acreage.

The combined pressure of state regulators and environmentalists discourages the growth of meat production in the State of Washington. The burden placed on livestock operations,

especially beef, from the WA. St. Dept of Ecology is profound and increasing. Water quality, reintroduction of predator species, protection of wildlife, and regulations on meat processors, make it discouraging to run a beef operation of any scale.

The investment opportunity lies at either end of the vertical food chain:

- The investment in new water systems and irrigated pasture on previously un-irrigated lands
- The investment in independently owned, medium sized USDA meat processing facilities for all large animals (beef, hogs, sheep, goats, etc.)