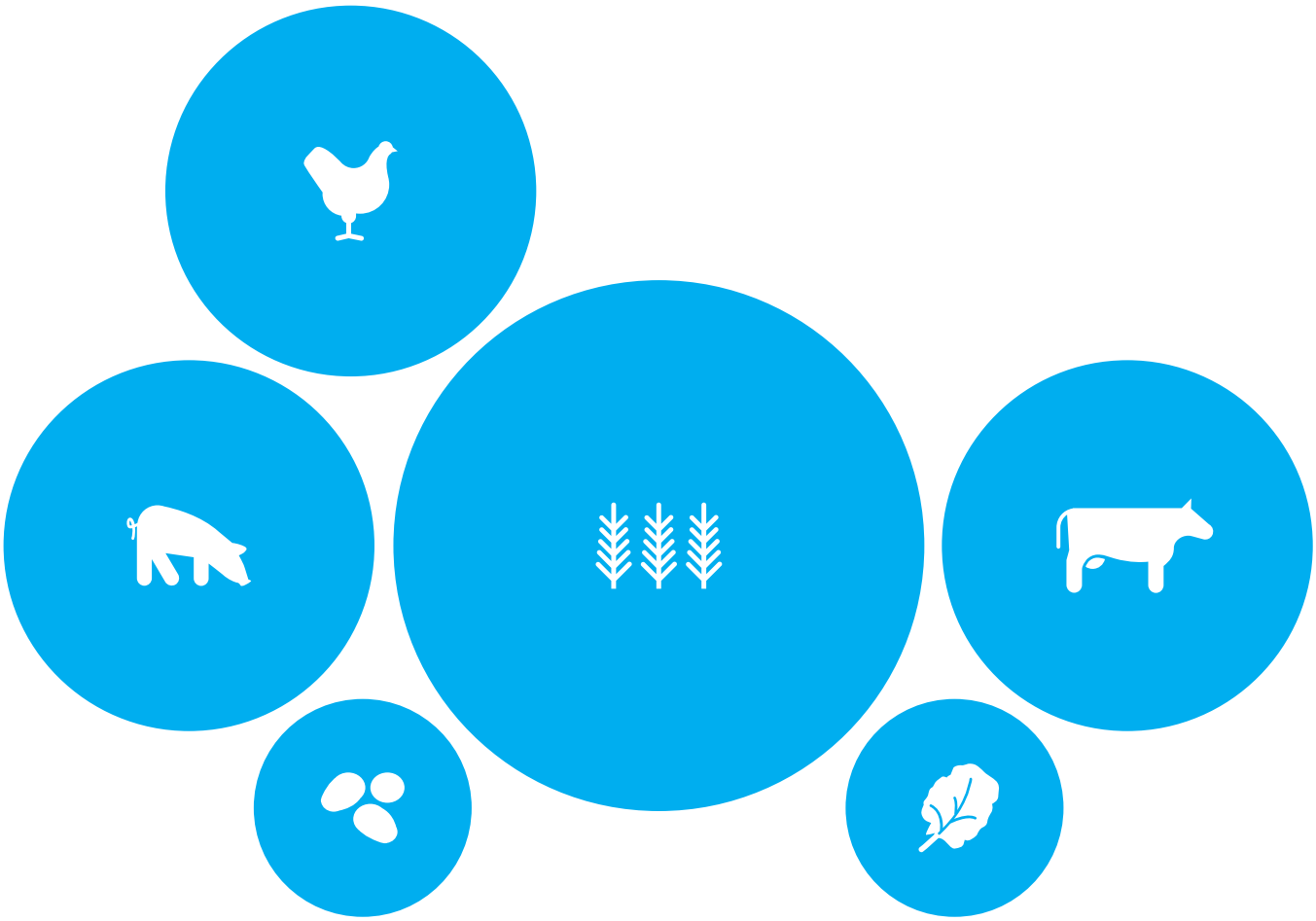

Cascadia Foodshed Financing Project

MARKET RESEARCH SYNTHESIS / June 2016

ecotrust

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Cascadia Foodshed
Financing Project

JPMorgan Chase & Co.

thread fund

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For more than twenty years, Ecotrust has converted $80 million in grants into more than $800 million in assets for local people, businesses, and organizations from Alaska to California. Ecotrust's many innovations include cofounding an environmental bank, starting the world's first ecosystem investment fund, creating programs in fisheries, forestry, food, farms, and social finance, and developing new tools to improve social, economic, and environmental decision-making. Ecotrust honors and supports the wisdom of Native and First Nation leadership in its work. Learn more at www.ecotrust.org

If our shared goal is to catalyze a strong, thriving regional food economy in the Pacific Northwest, what should we invest in?

This is the question that spurred the Cascadia Foodshed Financing Project and Ecotrust to research the opportunity for regional market viability in six food product categories, and to explore the potential for successful collective investment.

This research follows from Ecotrust's 2015 report, Oregon Food Infrastructure Gap Analysis (www.ecotrust.org/publication/regional-food-infrastructure), a 15-month study funded by Meyer Memorial Trust. That research explored the barriers and gaps preventing regional food economies from flourishing beyond direct market channels, like farmers' markets and farm subscription programs, to wholesale channels, such as retail grocery, regional restaurant, value-added manufacturing, and institutional foodservice.

The study identified a significant gap in the size and vitality of the region's "agriculture of the middle." Ag of the Middle (AOTM) is a conceptual framework that refers to mid-sized, locally-owned farms and ranches–those that are too big for farmers' markets, but too small for global commodity markets.

	Small	AOTM	Commodity
How big are they?	$	$$	$$$$$
Who are their customers?	Eaters	Restaurants Retailers Institutions Distributors	Processors Brokers Distributors
What's their region?	Local	Regional	Global
How diversified are they?	Very	Somewhat	Minimally
Where's the boss?	In the field	On-site	At HQ
Who owns the business?	Family	Family Co-op Partnership	Corporation
Who sets the price?	Producer	Negotiation (farmer/buyer together)	Market
Does the producer have an off-farm job?	Yes	No	No

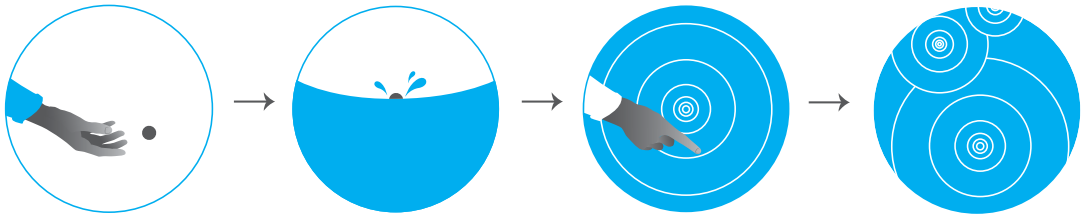
Ag of the Middle Framework (AOTM)

"Ag of the Middle" is a conceptual framework, not a set of hard and fast rules. Learn more at www.agofthemiddle.org.

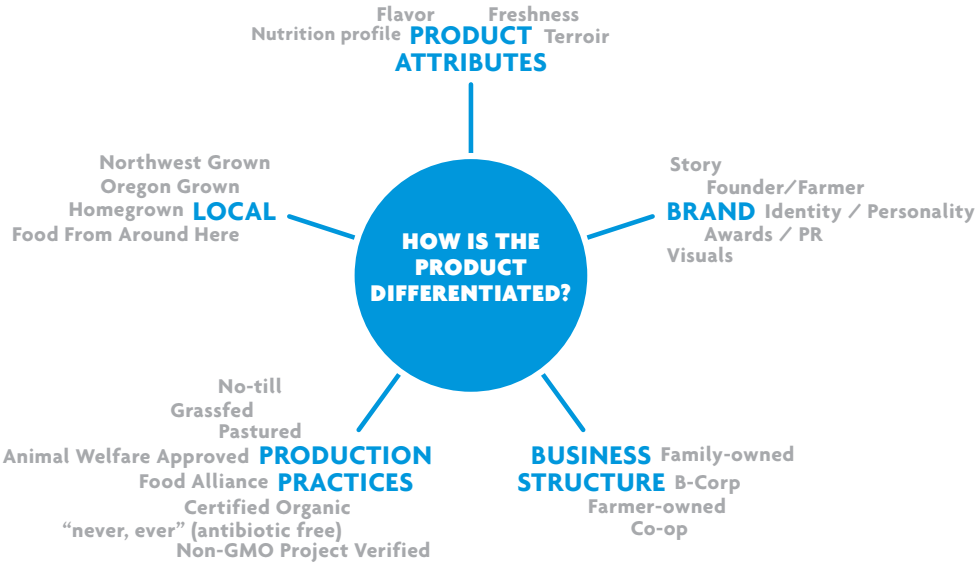
Ecotrust's research indicated that AOTM operations would be the ideal scale to support regional food economies because they have the capacity to provide a meaningful volume of product (whether independently or by aggregating with other small and midsized farms), offer more consistent product quality, availability and reliability, and meet the insurance and food safety regulatory requirements of larger supply chains. Plus, they tend to source local inputs and labor (thereby creating a meaningful economic multiplier effect), engage in restorative production practices, and actively participate in their communities. In other words, they tend to retain "local values" while offering wholesale volume.

Economic Multiplier Ripple Effect

According to research conducted by Ecotrust in the report *The Impact of Seven Cents*, updated in 2015, for each $1.00 spent on local food purchases a total of $2.00 of economic activity is generated in the local economy.



The research further showed that to be competitive, AOTM producers must differentiate. Simply marketing products as "local" is usually not enough to warrant a price premium sufficient to create financial viability. Differentiation may be achieved on multiple dimensions–product attributes (nutrition profile, flavor, terroir), ownership structure (co-op, family owned), production practices (certified organic, grass-finished, non-GMO), brand or story, and yes, "local."



However, having determined that investment is needed to develop a regional AOTM cohort offering differentiated products in order to spur strong regional food economies, the Gap Analysis study left many open questions. One significant to the issue of collective food system investment is: **"Which products or categories, if pursued at the regional level, offer potential market upside?"**

It is important to clarify that what we often refer to as "the food system" is actually a collection of relatively discrete industry sectors —produce, meat, poultry, dairy, grains, seafood, and so on—each with their own infrastructure and markets. Differentiated production often comes with higher costs and unique infrastructure needs, so assessment of financial market opportunity requires digging in at the sector level to determine where costs might be recouped and durable regional markets cultivated.

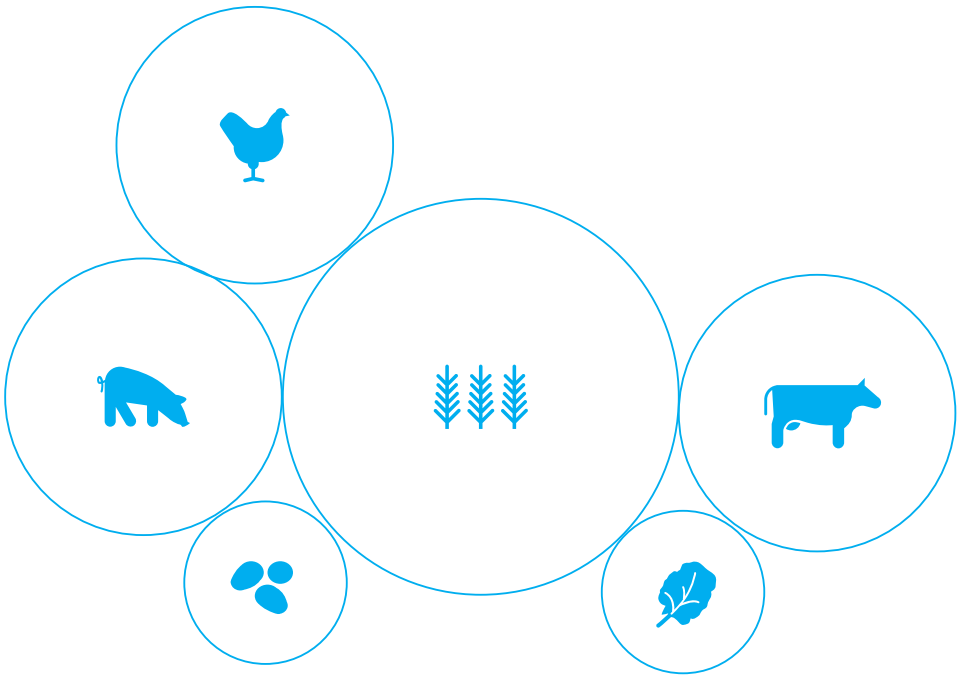
For example, would collective investment in the Pacific Northwest be best focused on expanding production of differentiated leafy greens and/or storage crops, in anticipation that climate change will ultimately shift California production north? Should we put wind behind the sails of the Western Washington innovators exploring wet-side wheat and grains? What is to be made of animal agriculture, such as poultry, pork, or beef, for which there continues to be significant demand and well established commodity markets, but very little local, differentiated supply (not to mention environmental and social concerns about ongoing meat consumption)?

To better answer the above questions for six product categories—leafy greens, storage crops, small grains, chicken, pork, and beef —we selected a specific differentiated product (or set of products) and compared production at an approximated AOTM scale to the established conventional model. Our primary interest was in assessing the costs of production to determine where efficiencies in the alternative model could be harvested to glean market upside, with collective regional investment in the category. In other words, which food categories had the most potential for financial return on investment in regional market development?

Investment

It should be noted, while financial opportunity was the primary interest of this research, the members of the Cascadia Foodshed Financing Project include foundations, nonprofits, and individual investors keen to facilitate the development of a regional food system in the Pacific Northwest that is nutritious, equitable, restorative, and delicious, in addition to being financially prosperous for all supply chain participants. “Investment” in this research therefore refers to the collective investment of time, energy, and resources by members, potentially provided in the form of equity, program or mission-related investments or loans, credit enhancements such as guarantees, grants, or other support.

Investor summaries and research narratives, including relevant data and sources, are provided for each product category. The original Food Infrastructure Gap Analysis executive summary (in both English and Spanish) and full report are also available, including overview chapters for each of the same six product categories. All materials will be available at both www.cascadiafoodshed.org and www.ecotrust.org



Which food categories had most potential for financial return on investment in regional market development?

No-till wheat and rotational grains seem investment-ready; the protein categories, led by beef and chicken, appear promising; less opportunity for regional scale development in greens or storage crops.

Leafy Greens & Storage Crops

With regard to the specific question about which product categories warrant collective investment, it was relatively clear that neither leafy greens nor storage crops present obvious opportunity for market-oriented private investment. Although very successful as part of diversified mixed vegetable operations at the farmers’ market scale on the west side, and in the case of storage crops, at the commodity scale on the east side, there seems little profitable capital investment opportunity at the category level in the differentiated AOTM space,

even as the climate warms. Significant market expansion or systemic transformation of either of these sectors within the Pacific Northwest is unlikely in the short to medium term.

However, there may be a disruptive innovation opportunity in the leafy greens category, in the form of urban indoor, hydroponic agriculture and related technology innovation. Such opportunity is likely to be tightly focused on a high-margin product like micro-greens or herbs, rather than engendering a system-level shift. There may also be potential for market intervention in greens by enhancing supply chain coordination between small-to medium-scale organic diversified vegetable producers and retailers, including pre-harvest crop planning and multi-year contracting. The business feasibility and profitability of such a service has yet to be tested.

Protein

The three protein categories, beef, poultry, and pork, all offer the potential for successful regional market development in differentiated alternative production models. In our study of grass-finished, pasture-pen, and hoop-house product, we saw a significant need to consider risks and build collective commitment to long-term regional collaboration. In the case of grass-finished beef, the regional market is on a trajectory of continued growth, but requires regional market integration and supply chain management, as well as an effort to raise consumer awareness and comfort. Regarding poultry, a regional supply ecosystem may be viable if producers can collectively create frameworks that facilitate reduced costs in feed, on-farm labor, and processing for all. In the case of pork, there exist opportunities for individual producers to scale up. However, satisfying a significant proportion of regional demand would entail substantially rebuilding the regional industry, which is unlikely, but not impossible.

While there are additional issues unique to each protein category to be explored in the relevant chapters, it is worth highlighting that the challenges identified in the development of regional pastured poultry are consistent across all proteins. The chicken, pork and beef categories are highly dependent on sources, availability, and costs of three primary components: feed, labor and processing. Those are all areas ripe for pre-market development by foundations, nonprofits, and policymakers.

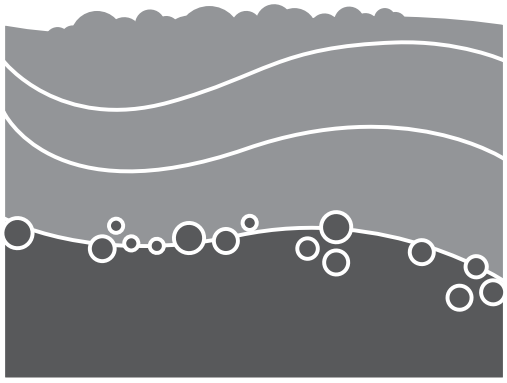
Small Grains & No-Till Wheat

One clear winner to emerge from the research as a category with regional market opportunity, as well as environmental and social benefit, is small grains, specifically no-till wheat and rotational cropping. No-till (also called direct seeding) refers to drilling wheat seeds directly into the soil following the previous crop. This practice differs dramatically from both conventional and organic wheat production, which both till (turn over) the soil before each planting, releasing soil carbon and creating the conditions for erosion.

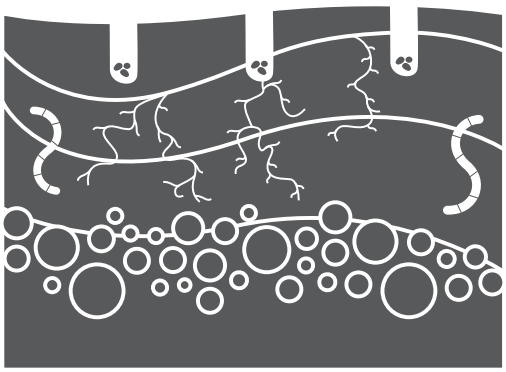
The difference between tilled and non-tilled soil

Tillage refers to the loosening up of the soil before planting in order to remove weeds that would otherwise be competing for nutrients in the soil, and to disrupt the regular cycles of their ongoing growth. However, the loss of underground root systems degrades soil quality over time. The soil becomes increasingly dry and thin, making it harder to hold both its structure and water, and therefore very vulnerable to erosion. Loss of underground root systems destroys habitat for vital micronutrients.

No-till soil leaves the existing root system undisturbed when planting, by drilling seeds directly into the soil, which allows for more natural restoration of nutrients. This method facilitates water retention better than tilled soil, allowing plants to take advantage of precious rainwater, and creates robust habitat for micronutrients over time. The primary disadvantages to no-till is that it takes at least 3-5 years to build soil structure, and makes use (albeit at much lower levels than conventional production) of chemical inputs to manage weeds.



Tilled Soil



Non-tilled Soil

No-till wheat production is most successful when rotating other grains such as barley and oats, legumes such as chickpea, oilseeds such as canola, and cover crops such as clover, in concert with wheat, rather than simply letting land lie fallow to recover. Some of the rotation crops, such as chickpeas, are profitable in themselves and have expanding markets. Others, such as the cover crops, are not marketable but may in some cases be used as pasture for grazing animals.

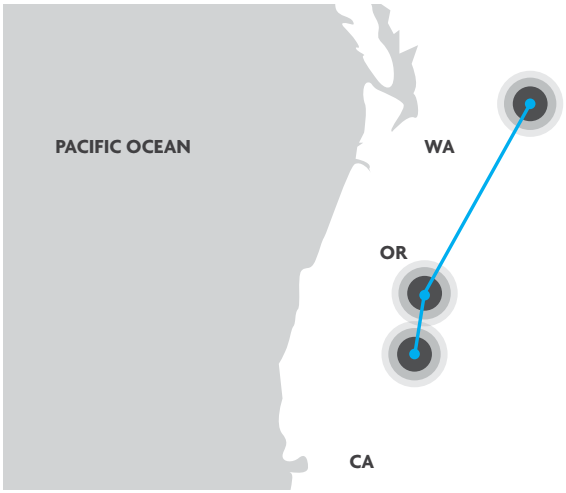
Although still reliant to some degree on herbicides and synthetic fertilizers, no-till and rotational cropping have been shown to build soil health, reduce erosion and nutrient runoff, and sequester soil organic carbon. Innovation in the pelletizing of organic compost for use by direct-seed drills could lay a path toward organic/no-till convergence.

Coordinated Supply

The Pacific Northwest has a great diversity of micro-climates, which support both a diversity of crops and staggered seasonality. If production was coordinated across the region to fulfill large-scale regional demand, several product categories could be timed to provide consistent availability (a key concern for large scale buyers) despite the seasonality of most alternative production systems.

For example, grass-finished beef is a seasonal product in the Northwest, but by coordinating production starting in far northern California and southern Oregon up to northeastern Washington, fresh

supply could theoretically be provided for about 10 months of the year. (Which is not to say that frozen beef isn't perfectly delicious when properly handled, and a much easier solution to fulfill demand in the near to mid-term, but chefs and retailers still prefer fresh.)



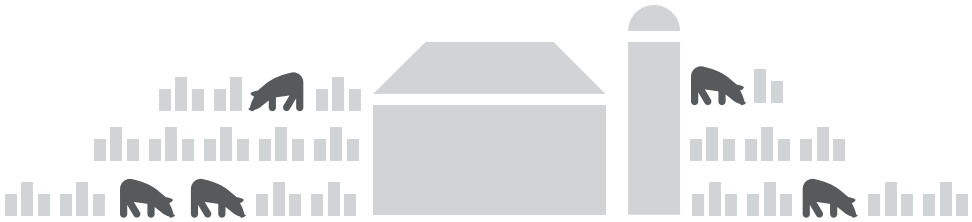
Coordinated regional production could provide year-round supply

Beginning in Northern California and moving north over the course of the season could facilitate fresh regional beef availability up to 10 months of the year.

The challenges of such regional integration are not insignificant—farmers and ranchers are remarkably independent, cultural barriers abound, and it is unclear who would play the role of coordinator. Embracing such complexity would be an enormous mind-shift, but does present the scaffolding of a robust regional food system.

Animal grazing has been shown to significantly improve soil health.

An interesting follow-on exploration would be in integrating small grain and beef production.



Rotational Grazing

The idea of integrating grazing and crop production for the shared benefit of both the animal agriculture and crop sectors is a relatively new one in modern agriculture. The east side is particularly specialized in its production because it is home to much of the region's commodity agriculture, and would benefit from enhanced crop rotations, potentially including the integration of animal grazing, which has been shown to significantly improve soil health. This land stewardship thesis is currently being tested by Farmland LP. What if Burgerville or a regional institution like Bon Appetit Management Company were to help broker a conversation between entities such as Shepherd's Grain (buns) and Season's Peak beef (burgers) to integrate their soil stewardship way upstream?

Regional supply ecosystem coordination requires committed, long-term collaborators. Shifting production practices or expanding production significantly requires confidence on the part of the producer that the new or additional products will be sold. Buyers willing to engage in long-term crop coordination and forward contracting will be vital to creating confidence in new frameworks, and in stimulating large scale investment and behavior change.

As the CFFP considers launching a food investment fund potentially focused on coordinating regional food infrastructure or supporting the development of ag of the middle producers, we recommend prioritizing developing committed markets as a prerequisite step in any fund. Buyers must be willing to commit a portion of their spend on regional products generally, and to specific purchases with identified producers, before infrastructure or supply are actually needed.

Ecotrust is currently engaged in several projects, including the convening of a peer-to-peer network of institutional foodservice directors in the Northwest (www.food-hub.org/nwfba), and in a real-estate development project in Portland devoted to long-term collaboration on food system reform issues (www.ecotrust.org/redd), that will continue to spawn relevant experimentation focused on building long-term collaborations and supply chain coordination.

For additional information or insight into this research, please contact Amanda Oborne at Ecotrust, aoborne@ecotrust.org.