

TO: Bill Vetter, Pierce County Council Performance Audit Committee
Clark Worth, Barney & Worth Inc.

FROM: Globalwise Inc.

CC: ARL Project Team

DATE: May 16, 2016

SUBJECT: A Fresh Look at Pierce County Agriculture
Technical Memorandum #1 – Analysis of Pierce County’s Agriculture Sector

Introduction

A multi-disciplinary team led by Barney & Worth, Inc. is taking *A Fresh Look at Pierce County Agriculture*. Members of the team bring extensive agricultural, scientific, legal, and economic expertise to the project.

The Washington State Growth Management Act (GMA) requires counties to designate Agricultural Resource Lands (ARL), which “have long-term significance for the commercial production of food or other agricultural products”. Pierce County places a high priority on protecting commercially viable agricultural lands, and has established these criteria for ARL parcels:

- Located in rural area of County (outside UGA)
- Five acres or greater
- Contain at least 50% “prime farmland” soils
- Grass/legume production yield of 3.5 tons per acre or greater
- 50% of abutting parcels larger than 1 acre
- Landowner may request the designation

The consultant team is analyzing the current condition of Pierce County’s agriculture sector and evaluating the effectiveness of the County’s zoning regulations for protecting agricultural lands. The County’s current ARL criteria will be revisited, with consideration given to alternatives. A series of technical memoranda are being prepared to illuminate different aspects of farmland protections.

This technical memorandum reviews current conditions facing Pierce County agriculture. The analysis is intended to inform the project team and policymakers of basic factors that influence decisions that farmers and ranchers make regarding the location and type of agricultural activities they pursue. This memorandum also looks at what influences new and beginning farmers and ranchers to enter this sector, and some of the main underlying causes of declining opportunities to profitably operate a farm or ranch.

Highlights

The key highlights of this analysis:

- There are approximately 48,000 to 50,000 acres of actively farmed land in Pierce County. The long-term trend of declining land in agricultural use continues. Over the last decade large, established operations have been disappearing. The new farms that tend to be much smaller are insufficient in number and size to replace the lost acreage of larger farms and urbanization.
- Some of the best farmland – Puyallup Valley land with very deep and fertile soil – continues to face pressure for conversion. In the last decade, a counter trend has been the purchase/transfer of development rights on working valley farms as a means of permanent protection against conversion to another use.
- The county is very diverse in agricultural activity; areas outside of the Puyallup Valley are also very productive for agricultural uses.
- In addition to urban pressure, farmland has been idled by economic factors where some farmers, especially some of the very small farmers, find that net income is insufficient to continue. Transition of land from a “farming generation” to the next generation is also a factor in farmland going out of production.
- A key factor of support for Pierce County farms is the trend toward greater consumer demand for local food. For the smaller farmers who rely on local markets, it is vital local market outlets continue to expand.
- There is a strong partnership of local government with non-profits and other supporters of agriculture who are working to ensure farmers get support to keep viable farms in the county.
- ARL zoning is an important tool for identifying agricultural land. Strong zoning helps buffer agriculture from conflicting land uses.

Dynamics of Farming

Environmental conditions combine with evolving technology and management skills to define the changing face of agriculture. Nature provides climate, soils, topography, and biotic factors that together form production possibilities. Technology adoption and improved management are modifiers that allow productivity advances over time.

Food crops often dominate the conversation on agriculture in Pierce County. Yet among local commercial enterprises, wholesale and retail plant nurseries comprise a large proportion of overall

agricultural income.¹ Christmas tree production is also an important segment of the agricultural sector. These two categories are prominent because the environmental conditions favor the production of many economically important, non-food crops. Several large growers have a long history of production in the county and they are competitive with nurseries and tree farms across western Washington and Oregon.

Food crop agriculture has also long been part of the county's economic base, but it has been in long-term decline. In 1954 there were about 150,000 acres of farmland in the county. Sixty years later, less than one-third of that total remains. Since World War II, population growth and urbanization have had major, negative impacts on agriculture. Land used for residential, commercial and industrial purposes and for roads, schools and other infrastructure needs have withdrawn land from agriculture at an accelerating pace. Factory and service jobs attracted workers with better pay than farm work.

In the 1950s and 1960s, the production of fruits and vegetables for nearby markets (i.e., "truck crop" farming) was dominant. These farms were labor intensive, but family members supplied much of the labor. Hired farm labor became increasingly difficult to attract since farmers typically could not offer wages comparable to jobs in Tacoma and other urban areas. These conditions established a pattern for food crop agriculture in most parts of the county where farms were small in size. The exception was in the very fertile Puyallup Valley where successful farms expanded and specialized in crops such as raspberries, rhubarb, daffodils and certain vegetable crops. The dominant crop types have changed substantially over the decades due to changing markets and other factors. For half a century daffodils were a major Puyallup Valley crop, but by the 1990s this crop was nearly gone due to prime valley land being converted, and other regions becoming more competitive (e.g., Skagit Valley). Rhubarb and raspberry production have followed a similar downward trend.

Dairy production, a major livestock enterprise in the mid-1900s had similar conditions to truck crop farming. Families typically operated the dairy as a small part-time business with the main source of income from off-farm jobs. Beef cattle production has remained fairly steady in the more rural parts of the county and egg production has been steadily increasing.

Land in Agriculture

The amount of farmland in the county is subject to a wide range of estimates. These differences are explained by the various ways to determine land use and possibly even definitions of farmland including pasture and ranch land. Three estimates are explained here and summarized in Table 1.

The Pierce County Assessor tracks the land use of all parcels appraised and also designates parcels in "current use" agriculture under the Open Space Taxation Act. The latest records show 1,392 parcels in agricultural use totaling 25,526 acres.

The U.S. Department of Agriculture (USDA) conducts a national survey of farmers every five years (i.e., Census of Agriculture) which provides important statistical data including the number of farms, acres of

¹ See Pierce County Agriculture Strategic Plan Task 2: Quantitative / Qualitative Assessment, page 4.

farmland and market value of agricultural production in the U.S. by county. In the 2012 Census of Agriculture, Pierce County had 1,478 farms managing a total of 49,483 acres. These figures include any person selling more than \$1,000 of agricultural products per year, so the coverage is very wide. There were 129 farms and ranches with gross sales of over \$20,000.

American Farmland Trust retained a GIS contractor to analyze farmland in Pierce and other South Puget Sound counties in 2014. This effort focused on identifying actively farmed land. Sources of data include Washington State Department of Agriculture (WSDA) field-level crop data, USDA CropScape data and parcel-level data produced by Pierce County. The data was mapped in a Geographic Information System (GIS), and several steps were taken to correct the datasets for forested land, high elevation steep ground, and residential property of less than two acres. Further “ground-truthing” corrections were made using aerial photography and a review by knowledgeable local experts. The result was an estimate of 49,645 acres of farmland, nearly identical to the USDA Census of Agriculture figure.

Table 1
Estimates of Pierce County Farmland Acreage & Parcels
By Alternative Sources

Source	Agricultural Acreage Estimate	Number of Parcels
Pierce County Assessor’s Tax Records	25,526	1,392
USDA Census of Agriculture (2012)	49,483	1,478*
American Farmland Trust/Core GIS	49,645**	4,226

* Stated as farms, not property parcels

** This is the final acreage estimate

Sources: Assessor’s records are from the Pierce County Assessor’s Office, derived from the ATR Parcel geodatabase as of April 27, 2016; U.S. Department of Agriculture 2012 Census for Pierce County and Core GIS, 2014.

The acreage in Agricultural Resource Land (ARL) zoning is not directly comparable to these farmland estimates because ARL zoning reflects land suitability for agriculture and not land in agricultural production. For example, in some instances open land not producing crops or livestock that meets the zoning criteria is qualified as ARL land; other parcels in active farming are often not designated ARL.

In the 2004 Comprehensive Plan update, Pierce County updated the ARL designation criteria to the current definition. At that time, the County designated 31,000 acres as ARL land. After the discovery of technical errors in its mapping delineation, the County estimated that only 12,000 acres meet these ARL zoning criteria. In the last decade, a great deal of community discussion has taken place over the proper

designation of ARL lands. Additionally, GMA requires that counties do a periodic review and update of their agricultural land resource designation if necessary to ensure compliance with the Act.

Factors Influencing Farmland Conversion

Many factors influence the shift in land use from agriculture to other purposes. Among these are:

- Increasing demand for other land uses (e.g., residential land use) leading to increased land values
- Low profit margins for many forms of farming and ranching, particularly small operations and those in ownership transition
- Limited access to capital, credit and lending expertise
- Government regulations and policies
- Limited access to local or regional agricultural infrastructure and services

Pierce County has analyzed its capacity to accommodate future demand for new residential development. The county indicates that almost 30,000 new housing units will be needed in the unincorporated urban areas – those lands that are not rural or resource land and not in a city or town – from 2010 to 2030 to achieve the 2030 Target.² If population growth forecasts are accurate, planners expect this growth to be accommodated without converting existing ARL land. History, however, demonstrates that conversion of farmland fulfills part of the requirement in part because some land in agricultural use is not protected through ARL designation. Also ARL land can be up-zoned when Urban Growth Areas (UGA) are expanded. The greatest concentrations of ARL land are between Puyallup and Tacoma, as well as the Orting area, and between Bonney Lake and Buckley. Farmland is also lost for other commercial and industrial uses, as well as for the construction of roads, schools and other public infrastructure.

Low or negative income from farming also contributes to farmland loss. This was illustrated in a 2006 analysis, which considered finance costs for farm real estate loans along with expected farm income.³ Since farmers cannot justify paying as much for land as developers, the pressure for conversion remains high.⁴ Bank loans are often unattainable for farms and farmland. As a result, the transition of farmland to new owners and even heirs is difficult. This has led to efforts by land trusts, the County and other government agencies and other nonprofits or NGOs to intercede by purchasing land, removing development rights via conservation easements and reselling the land to farmers. This activity is relatively new in Pierce County and addresses land market realities.

Government regulations also have an impact on the viability of farming. A prime example is surface water drainage regulation in the Clear Creek Basin of the Puyallup Valley. Farmers need drainage to protect their crops and livestock activities. Land development and the subsequent need for greater flood control measures in the floodplain are sometimes at cross purposes with the needs of farmers. In some

² Pierce County Buildable Lands Report, Table 7 page 152.

³ Pierce County Agriculture Strategic Plan: Task 6 Entry Barriers for Farmers, pages 2-3.

⁴ See a later section of this report on the large disparity between land values for development and agriculture.

cases protection of fish and wildlife habitat also conflict with the needs of farmers. The Pierce County Surface Water Management agency is actively engaging farmers with the other interested parties in the basin to seek solutions over ditch maintenance, building in the floodplain, levee placement and other elements of water management. Farmers in this basin have organized to clarify their priority needs. If these concerns are addressed the economic viability of the area's remaining farmers can be enhanced. Similar drainage management issues are found elsewhere in the Puyallup Valley.

Farmland Protection Actions

Long term protection of productive farmland requires a range of well implemented strategies and policy tools. Primarily these tools include agricultural zoning such as agricultural production overlay districts and removal of development rights from farmland.

Agricultural Zoning

County agricultural zoning within the framework of county comprehensive planning and the mandate of GMA is a primary way to direct development away from farmland. GMA creates a substantial hurdle to farmland loss by requiring that land designated within an agricultural zone be shown to no longer be devoted to agriculture nor have long-term significance for commercial production before it is de-designated and allowed for another use. However, pressure to expand UGA boundaries is threatening the agricultural land base. Much of the difficulty is in determining what farmland is most valuable and in need of the greatest protection. Also, because of the economic difficulties of farming in western Washington, some land that appears to be well-suited to agriculture is underutilized or perhaps not even in agricultural production. This leads to the question: what is the best way to identify farmland for zoning – an important policy question before Pierce County at this time.

Purchase and Transfer of Development Rights on Agricultural Land

Other policy measures beyond ARL zoning are in place in Pierce County to protect farmland. The main way to preserve farmland is to purchase and/or transfer the development rights on the most threatened working farmland. While very costly and sometimes complex to accomplish, this is a proven approach and is recognized as necessary in the county.

Pierce County works closely with partners including land trusts, state and federal funding sources and landowners to either directly purchase and remove development rights on farmland or allow for a market exchange that transfers development rights from farmland to land owners who want added density in cities where high density development is allowed. This effort has been ongoing for nearly a decade and continues to gather strength.

The most common approach to date in the county is the outright purchase of development rights. Using this approach, conservation easements are recorded with the property title that strictly prohibits future development of these lands. As long as the conservation easements are enforced, the land is protected in perpetuity. Pierce County has limited local public funding available to be matched with other government and private funding. PCC Farmland Trust and Forterra are two land trusts dedicated to land conservancy and are key partners with the County. In addition the agricultural community is involved in a long range strategy to identify and target threatened farmland areas.

In 2007 Pierce County adopted legislation that established a transferable development rights (TDR) program. However, purchase of development rights (PDR) was the first focus when the TDR program became operational in 2011-2012.

An element of the TDR program allows for private party exchange of development rights, facilitated by the county to certify the rights for exchange and oversee placement of the conservation easements. The exchange occurs between farmland owners in sending areas who sell these rights to buyers in receiving areas that want additional density beyond what zoning allows. However, until recently, the recession has constrained real estate development and reduced developer purchase interest. The County has also been working to reduce the complexity of rules governing the TDR program. The revived real estate market is showing positive signs that private party TDR is becoming more feasible.

To date the Pierce County PDR/TDR program and partner land trusts have protected approximately 550 acres of prime agricultural land. Approximately 100 additional acres have been secured by PCC Farmland Trust without the County TDR/PDR program but with Conservation Futures funding. The land trusts and the County expect an additional 500 acres will be secured by the end of 2017.

The county/land trust/agricultural community partnership is also working to secure major additional funding to expand this program. One important source of support is the Washington Department of Ecology's Floodplains by Design program. A consortium of agricultural interests and the county was successful in securing \$500,000 of funding for agricultural easements through this program in the 2015 State Capital Budget. This funding will likely soon result in high priority farmland protection in the Puyallup Valley. Land trusts report that this tool could be a very important for protecting water basin areas near Puyallup and Orting.

A long-term goal calls for 6,000 farmland acres to be voluntarily protected over the next 10 years via removal of development rights.⁵ This would greatly strengthen farmland protection. Pierce County would be joining its neighbors, as Thurston County has protected nearly 2,695 acres and King County has protected nearly 13,200 acres of farmland through agricultural easements.⁶

Other Support Programs for Agriculture

Pierce County has a very active set of farmer assistance programs. These programs include technical assistance to encourage and support farmers in adopting conservation and new product practices and helping new farmers establish their businesses. There are also programs to help farmers with product processing and market development.

⁵ Pierce County Farmland Conservation Committee, Shared Conservation Strategy Document, October 2015, page 3.

⁶ See Thurston Regional Planning Council document "Farmland Zero Net Loss: Setting the Stage", at <http://www.trpc.org/DocumentCenter/View/2289> and King County's Farmland Preservation Program webpage at <http://www.kingcounty.gov/depts/dnrp/wlr/sections-programs/rural-regional-services-section/agriculture-program/farmland-preservation-program.aspx>

Technical Assistance

Educational opportunities for farmers are offered by many organizations. Recent workshops have included these topics: on-farm drainage and crop selection, manure management to protect water quality, farm-to-table markets, agritourism and developing successful farm internships. There are also on-going training opportunities for beginning farmers through WSU and the Puyallup Research Center.

The Agriculture Community of Interest (AgCOI) is an active leadership group that addresses farmer needs and issues to improve farm viability. AgCOI has created a farm liaison position to help inform the agricultural community. This position is coordinated with WSU Extension, Pierce Conservation District, three agencies of Pierce County government (Pierce County Agriculture Program, Surface Water Management and the Health Department) and the local office of the National Resource Conservation Service (NRCS, USDA). This position will provide a central information exchange for members of the farming community and direct them to the appropriate agencies. The goal is to actively identify problems and proactively support existing farms while also encouraging new farmers.

Technical assistance programs of agencies such as the NRCS and Pierce Conservation District have proven to be vital for Pierce County farmers. NRCS programs available to Pierce County farmers are quite comprehensive.⁷ Three broad finance assistance program areas are in place to: 1) Construct or improve water management or irrigation structures; 2) Improve resource conditions such as soil quality, water quality, water quantity, and energy; and 3) Implement conservation practices, or activities such as conservation planning that address natural resource concerns.

The third program area is called the Environmental Quality Incentives Program (EQIP). EQIP includes the “high tunnel” initiative which is a popular cost sharing program with vegetable and nursery plant growers in Pierce County. High tunnel systems are covered structures with polyethylene, polycarbonate, plastic, or fabrics that protect crops from sun, wind, excessive rainfall, or cold, to extend the growing season in an environmentally safe manner. These systems can enable farmers to improve soil and water quality while increasing production and meeting extended season market demand compared to open field production.

Product Processing Assistance

Pierce Conservation District leases its Mobile Meat Processing Unit (MMPU) to Puget Sound Processing, LLC. The MMPU is a tractor/trailer that goes to local farms and ranches to process beef, sheep, hogs and goats into meat products with USDA inspection. This unit serves all of Pierce County and is available to five other nearby counties. Animal carcasses are trucked to a cut and wrap facility in the area for further processing. With USDA inspection, these meat products can be sold to any customer including restaurants, at farmers markets and retail food markets. Annual sales exceed \$200,000 from this system with Pierce County livestock operators being the main beneficiary.

⁷ NRCS program descriptions for Washington farmers are available at <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/wa/programs/financial/?cid=stelprdb1143060>

The Conservation District also rents a poultry processing unit to farmers. This unit is an affordable way to efficiently process poultry. The system is used mainly for chickens but can also process ducks and turkeys. This equipment is an important support for small and medium size poultry operations.

Market Support

The AgCOI is also focused on strengthening markets for locally grown food. A USDA grant has been secured to produce videos to inform consumers about each of Pierce County's farmers markets. A video is also planned for customers on food assistance programs on how to shop at markets.

The agricultural community is also aware of the value of festivals and other agricultural-themed community events (e.g., lavender festival, garlic festival) held in different parts of the county. These events are growing in attendance and are increasing awareness of urban neighbors to the presence and value of local farmers and their products.

These community events are also recognized as good venues to promote agri-tourism businesses. Farmers have expressed the desire for assistance with online marketing of their products and services to urban residents. It is recognized that the market is not merely Pierce County but extends to the greater Puget Sound region.

Commercial Versus Non-Commercial Agriculture

The Washington Growth Management Act calls for ARL zoning designation to protect resource lands with long-term commercial significance for agricultural production.⁸ In that regard, it is important to consider what constitutes a commercial agricultural producer.

At its most basic level, farmers who sell crops or livestock beyond their own consumption are commercial producers. Yet merely selling their products does not necessarily yield a farmer enough income to maintain their business. In the 2005 study, Globalwise used \$20,000 as the minimum amount of gross annual farm income to qualify.⁹ Considering inflation, this estimate would be equivalent to \$23,600 in 2016.

Since net farm income is considerably lower after deducting expenses this estimate allows for part-time farmers and those who earn income from off-farm jobs. In fact research in Pierce County has shown that most of the county's farmers are small scale producers and most often supplement their livelihood with earnings from a job off the farm.

Another reason for using a relatively low income threshold for commercial producers is that farmers often start as small-scale businesses and expand over time like start-up businesses in other economic sectors.

Commercial production in the range of \$20,000 also allows inclusion of operators with very small acreage. An intensively managed greenhouse of less than one acre can easily exceed \$60,000 - \$70,000

⁸ Washington Administrative Code 365-190-050-310c

⁹ Pierce County Agriculture Strategic Plan Task 2: Quantitative / Qualitative Assessment, page 2.

gross income. An open field of fresh vegetable crops can reasonably exceed annual sales of \$25,000 on less than two acres.

USDA’s 2012 Census of Agriculture reports that Pierce County has 129 farms with sales of \$20,000 or more. This figure compares to 197 farms with that same range of sales in 2002, which demonstrates a 34 percent decrease in this class of farms from 2002 to 2012. By comparison for the total U.S., farms with \$20,000 or more in gross income increased from 2002 to 2012 by 15 percent.

Agricultural Production Areas

Pierce County is a large and geographically diverse area and the agricultural activity of the area is also diverse. In our previous work conducted in 2005, the county was divided into six agricultural sub-areas.¹⁰ These areas were defined by review of ARL zoning, parcels enrolled in the Current Use agricultural tax program, as well as the dominant types of agricultural activity observed in each sub-area.

The resulting six areas are:

1. Puyallup Valley (includes Orting)
2. Anderson Island / Nisqually Delta
3. Bonnie Lake - Buckley Plateau / Carbonado
4. Central County
5. Peninsula
6. Roy / Eatonville

These six subareas are summarized in Table 2.

Table 2
Overview of Agricultural Subareas in Pierce County

Sub-Area	Predominant Agricultural Activities	Trend in Agricultural Production	Issues Related to Agricultural Land Use
Puyallup Valley (Includes Orting Valley)	Intensive row crops, on the county’s most fertile crop producing soil. More intensive livestock and crop production appearing in Orting.	Puyallup Valley declining slightly due to tremendous land demand for non-ag use. Orting is stabilizing.	Conflicts with non-ag use and land conversion pressure due to tremendous non-ag land demand.
Anderson Island/Nisqually Delta	Small acreage part time vegetable and fruit farming. Some livestock production.	The smallest ag sub-area. Stable level of ag activity.	Desirable for Puget Sound homes and rural residential. Mostly forested.
Bonnie Lake - Buckley Plateau / Carbonado	Small to medium size farms. Can produce	Diversified food crop production. Medium	Residential growth pressure on many

¹⁰ Pierce County Agriculture Strategic Plan Task 2: Quantitative / Qualitative Assessment, pages 14-15.

	most crops grown in the county.	size considering other sub-areas.	farms.
Central County	Dominated by livestock production. Higher elevations limit warm season vegetable and fruit crops	Agricultural land base in slow decline.	Outward urban expansion and growth in rural area causing conversion pressure.
Peninsula	Small acreage vegetable and fruit farming. Some livestock production.	Expansion of small acreage diversified crop and livestock farming.	Highly desirable for rural small acreage home and farm activity
Roy / Eatonville	Dominated by poultry and beef production.	Stable production base.	Very rural area. Most land is forested. Some open land suited for productive grazing and specialty crops.

Much of Tacoma and University Place are not included in any of the subareas, and McNeil Island is also excluded because of its use, ownership and history. Other urban areas are included because they are surrounded by or have within them significant agricultural activity. Most of the forest lands surrounding Mt. Rainier are excluded.

The location of suitable crop production is dependent on many factors, including: soils, timing and extent of rainfall, slope, aspect (in relation to the sun) and elevation which impacts the amount of heat units available.

Although microclimates can affect crop production over relatively small areas, the key factor influencing crop selection between different production areas of Pierce County is soil characteristics. The valley near Puyallup and Orting is dominated by soils like Orting, Puyallup, and Sultan series loams. These are rich, silty loams that are highly productive. These have National Commodity Crop Productivity Index (NCCPI) ratings ranging from 0.6 to 0.9 (the closer to 1.0 the more productive the soil type).¹¹ The dominant soils on the bench overlooking the valley in Central County near Graham are of the Kapowsin, Everett, and Spanaway series with NCCPI ratings ranging from 0.3 to 0.4.

There are small pockets in Central County and Roy/Eatonville of highly productive soils. These areas are better suited to livestock grazing, poultry rearing, timber production, or the production of other commodities not reliant on particular soil types (e.g., nursery plants, mushrooms). In addition to the differences in environmental conditions across the county, there are differences in the pressure to withdraw land from agriculture for urbanization.

¹¹ See User Guide for the National Commodity Crop Productivity Index (NCCPI), Version 2.0, 2012

Agricultural Producers

The 2007 and 2012 Census of Agriculture for Pierce County provide a useful overview of agricultural trends and conditions.¹² Census data shows that all livestock and products from livestock such as eggs and meat combine to become the largest category of agricultural production in the county. In 2007 this category totaled \$51.1 million in sales and rose to \$67.0 million in 2012. Because there are only a few large operations, non-disclosure limits the sales breakout for cattle, eggs, and other subcategories.

It is hard to track changes in the land base devoted to commercial cattle production because many rural land owners have small herds and they easily move in or out of this enterprise. Others with less than five to ten head would not meet the threshold as commercial producers. The larger cattle operations are mainly cow/calf ranches and are holding steady. The growth in livestock product sales tracked by the census data in recent years is accounted for mainly by increased egg production. There is also growth in poultry meat production throughout parts of the county on small diversified farms and some expansion in goat milk production for both fluid milk and goat cheese.

After livestock, the next largest component of agriculture is nursery and greenhouse production which includes all ornamental plants, floriculture and sod. This category's value of sales totaled \$18.6 million in 2007 and declined to \$14.7 million in 2012. Part of this decline is attributed to the loss of land near Puyallup that previously was in flower production. Also the deep recession that occurred from 2007 to 2009 was a factor in the reported sector-wide sales decline. However in the last five years the nursery industry has rebounded with steady to increasing production of ornamental plants grown in greenhouses and open fields.

The latest trends in vegetable and fruit crops are hard to track through census data because of non-disclosure issues. Discussion with key local farmers and those who follow conditions in agriculture report these important recent trends:

- Rhubarb demand has reversed and several larger farms are growing this perennial crop. The Puyallup Valley has ideal soil and climate for rhubarb and while current production is far below the peak historical production its rebound is positive for the economic health of several farmers.
- Acreage in pumpkins is increasing. This crop is especially appealing for growers who have u-pick customers and it has become a fall tradition for many Pierce County residents to visit farms. Conventional growers are also growing pumpkins for retail distribution.
- Cucumbers, broccoli, salad greens and other fresh vegetable crops are holding steady in recent years. Both larger growers and smaller diversified crop farmers are producing these crops.
- Among berry crops, blueberries are gaining acreage and raspberry acreage is growing slightly. Strawberry production appears to be steady.

¹² 2007 and 2012 Census of Agriculture Profile for Pierce County Washington. See at https://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Washington/cp53053.pdf and https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Washington/cp53053.pdf

With regard to organic agricultural production, there are signs of growth. In 2014, there were 16 agricultural producers farming 1,726 acres of certified organic farmland in Pierce County.¹³ From 2006 to 2014, organically certified acreage increased by 459%, and the number of organic producers increased by 129%. Still, there is lots of room for future growth, as Pierce County is ranked 6th for organic acreage out of the western Washington counties, surpassed by both King and Thurston Counties.

Census data also reports on the size of agricultural operations by sales and acreage. At the level of sales at \$10,000 and above, the 2002 to 2012 comparison shows the following trends:

- For sales of \$10,000 to \$24,999 an increase from 115 to 151 farms (+31%)
- For sales of \$25,000 to \$49,999 a decrease from 51 to 42 farms (-17%)
- For sales of \$50,000 to \$99,999 a decrease from 38 to 26 farms (-32%)
- For sales of \$100,000 and above a decrease from 88 to 45 farms (-49%)

The decline in farms is significant in the larger farm sizes. The census does not permit a deeper look at what types of farms went out of production though it is reasonable to assume the recession of 2007 to 2009 hit the nursery industry particularly hard. However this decline also points to the difficulty of farming in Pierce County’s “urban shadow.”

Demographics and Willingness to Purchase Local Food

In 2015 there were 830,120 people residing in Pierce County.¹⁴ From 2010 to 2015 the population growth rate is estimated at just less than one percent annually. Both the incorporated and unincorporated portions of the county have steadily grown since the 2010 census, with the unincorporated area growing at a slightly faster pace. Those estimates are shown in Table 3.

Table 3
Population of Pierce County, April 1 Estimates, 2010 - 2015

Jurisdiction	2010 Population Census	2011 Population Estimate	2012 Population Estimate	2013 Population Estimate	2014 Population Estimate	2015 Population Estimate	2010-2015 % Annual Growth
Pierce County	795,225	802,150	808,200	814,500	821,300	830,120	0.86%
Unincorporated Pierce County	366,738	372,110	375,955	378,495	381,970	386,050	1.03%
Incorporated Pierce County	428,487	430,040	432,245	436,005	439,330	444,070	0.72%

Source: State of Washington, Office of Financial Management, Forecasting and Research Division.

¹³ Certified Organic Acreage and Sales in Washington 2006-2014, page 11.

¹⁴ As estimated by the State of Washington, Office of Financial Management, Forecasting and Research Division, for the purposes of allocating certain state revenues.

As of 2015, the median household income in Pierce County was \$57,238, which was virtually the same as the Washington state average.¹⁵ Average household size is slightly larger in Pierce County than the statewide average.

Consumer Behavior and Attitudes

The increasing population and changing consumer attitudes in the county are positive toward the outlook for demand for locally grown foods. The USDA recently summarized relevant findings from a nationally representative U.S. Grocery Shopper Trends Survey, conducted by a supermarket industry association.¹⁶ Key findings:

- Over 80 percent of surveyed shoppers reported purchasing local foods occasionally, with 9 percent reporting purchasing local foods whenever possible¹⁷
- Top reasons cited for buying locally grown foods: freshness (83 percent), supporting the local economy (68 percent) and taste (56 percent).
- Concern over the environmental impact of transporting food was cited by 27 percent of respondents.

Restaurants, especially at the top-end, are reporting locally sourced foods to be a “hot trend”. The latest annual National Restaurant Association survey of chefs shows that three of the four top restaurant food trends relate to local food: locally sourced meats and seafood (80% of responding chefs noted this as a hot trend), locally grown produce (77%), and hyper-local sourcing (77%).¹⁸

Willingness-to-pay (WTP) studies use a variety of techniques to estimate the premium that consumers will pay for a given attribute and also shed light on what is driving consumer WTP for local food. The relationship between WTP and distance is inconsistent across studies, with some studies finding rural consumers being more price conscious than urban consumers, possibly because of geographic proximity to alternative direct-market farm sources. However, a key finding of the USDA report on Local and Regional Food Systems is that WTP for “local” was higher than for the other attributes.

In another study conducted in Michigan, over half of respondents (61 percent) stated they had visited a farmers market in the past year, averaging four visits in the most recent calendar month.¹⁹ The factors with the highest importance for shopping at farmers markets were food quality, safety from food borne illness, and ability to support local farms. In that study, almost half (49 percent) of respondents defined locally-grown foods as those grown in-state, while about 18 percent each defined local as grown in region or within 100 miles from home. People who were white and had higher incomes generally placed

¹⁵ Bureau of Economic Analysis personal income data as report by the Washington State Office of Financial Management at <http://www.ofm.wa.gov/economy/hhinc/medinc.pdf>.

¹⁶ Trends in U.S. Local and Regional Food Systems, AP-068, U.S. Department of Agriculture, Economic Research Service, January 2015.

¹⁷ Food Marketing Institute, 2011

¹⁸ National Restaurant Association, What’s Hot 2016 Culinary Forecast

¹⁹ David Conner, Kathryn Colasanti, R. Brent Ross and Susan B. Smalley, Locally Grown Foods and Farmers Markets: Consumer Attitudes and Behaviors, Sustainability 2010, 2, 742-756

lower importance on factors associated with value and convenience factors, while Latinos and those working part time were more likely to value these factors. Latinos were also more likely to value certain local-specialty attributes like hormone-free animal products and access to information about how food was produced.

Older research by Washington State University that was conducted in western Washington had several conclusions that indicate local foods are of greater importance to the region's consumers. These findings were reported in the earlier analysis for Pierce County but are briefly summarized below:²⁰

- Grocery stores dominate over every other venue for the consumer shopping trips
- Discount stores are the second highest preferred place to shop after grocery stores in both King and Skagit Counties
- In King County, farmers markets are the third most preferred place to shop (after grocery and discount stores).
- Having local/close access to growers is correlated to the frequency of purchases directly from farmers.
- Skagit and King Counties have almost identical percentages (about 16 percent) of their residents reporting that they frequently shop at farmers markets.
- Between 28 and 40 percent of consumers, when asked what factors impact their food shopping, say that local or in-state grown foods have importance.

These results suggest that consumers in Pierce County have a strong tendency to shop at many different types of food outlets, but primarily purchase at grocery stores. Consumers show interest in knowing the source of their foods and have a wide range of preferences: including characteristics that favor local sources, such as freshness, taste, and nutritional value. Many consumers also prefer shopping where they can buy directly from farmers at farm stands or at farmers markets. It appears that for local food sales to grow significantly local farmers need to continue to broaden their distribution channels to include options such as retail food stores, restaurants, and perhaps home delivery.

Market Channels for Pierce County Producers

Local direct market sales are one of the primary market channels for smaller farms. Since Tacoma is a large and growing metropolitan area, this is a natural market area for several reasons:

- 1) Consumers who value local production are often willing to pay a premium over conventional, non-local food – especially in reference to fresh vegetables and fruits;
- 2) Farmers who sell locally can often avoid middlemen and transportation costs, thereby garnering more income; and
- 3) As consumer loyalty rises and sales are repeated, often the cost of marketing decreases.

Even the largest farms in Pierce County – which are not large by standards of American agriculture – are primarily selling in Washington and neighboring states. This allows them to avoid competition against

²⁰ See Pierce County Agriculture Strategic Plan Task 2: Quantitative / Qualitative Assessment, page 10-11.

the large and more specialized U.S. (and global) farms that are very low cost producers. The largest plant nurseries are the exception because their volume of production is large enough to supply a larger geographic area than the Pacific Northwest.

Being smaller scale, Pierce County growers are higher cost producers and can often realize higher prices but there are very practical limits on the prices charged and resulting net profit. The profit squeeze on growers was a major point of farmer commentary in the 2015 survey conducted in Pierce County when growers indicated that financial issues were their greatest challenge.

The Tacoma metro area has matured and established many outlets for local food and nursery plants. Recently recounted in more detail in a 2013 report, this evolution has created a diverse set of market channels for growers. Also, growers benefit from relatively good access to Seattle and other Puget Sound region markets.

Wholesale & Direct Large Volume Distribution

The larger farms in Pierce County seek sales outlets beyond the county, but often on the west coast. These growers are primarily producing fresh vegetables and fruits, eggs, nursery plants or Christmas trees. To reach regional markets these farms utilize wholesalers and brokers. Some have their own in-house sales team. Some also operate their own delivery trucks made feasible with frequency and size of orders. However, wholesale and direct large volume delivery is limited to a very small number of growers.

Several specialty food wholesalers serve retailers, restaurants and other food outlets in the Puget Sound area.

Farmers Markets and Roadside Stands

Most small and medium size farmers focus on direct consumer sales and seek other market outlets within the greater Puget Sound region. The size of the greater Tacoma metropolitan area makes it the most accessible market for many growers. Many small scale farmers initiate their direct marketing with farmers markets. Pierce County has 17 farmers markets in 2016 compared to just eight in 2013. Some small farms argue that there are now more than enough farmers markets and that the emphasis should be on making existing markets more profitable rather than developing additional markets. Furthermore, the Seattle metro area has approximately 30 farmers markets which extend the opportunities for Pierce County growers.

The number of local farmers markets has grown along with the popularity of local, fresh food, as well as “farm processed” food, flowers, and nursery plants. According to data reported by Pierce County, farmers markets in the county had sales of \$894,000 in 2014. In comparison to the 2012 estimate that total county farm level sales were \$91 million, farmers markets account for just less than one percent of total farm sales.

Roadside stands are another seasonal marketing outlet used by some farms. Historically, berry and vegetable crops in the Puyallup Valley were sold at farm stands. The popularity of fall purchases centering on pumpkins, squash and root crops are other examples of the value of this outlet. Many farms and nurseries have robust, profitable fall sales seasons. Some farms and plant nurseries also have agri-tourism activities such as corn mazes and hayrides to attract visitors and boost their income.

Community Supported Agriculture (CSA)

Growers in Pierce County have continued to expand their markets with sales to subscribers who buy weekly or bi-weekly fresh foods at farms and pick-up points, with 32 farms in the county currently selling CSA shares.²¹ In 2006 the Globalwise estimate of Pierce County's CSA annual food sales was \$200,000 to \$250,000. This estimate has likely increased significantly over the last decade and is likely to continue its growth trend in the near future.

Restaurants and Food Service

Independent, mid- and upper-end (fine dining) restaurants are expanding in the Tacoma area, offering growers more sales opportunities. However, the opportunities come with challenges that do not fit the operations of many growers. For example, a major upscale hotel restaurant could require a large supply of organic greens to serve at a 500 plate convention meal one week and then not order again for several weeks. This variability can easily be handled by a food service wholesaler but not by a grower. Also, delivery of small quantities to an independent restaurant can be prohibitively expensive for a single grower. This situation could improve if a food hub were established (discussed elsewhere).

Beef and other livestock producers are in perhaps a better position to grow their sales to restaurants than fruit or vegetable growers. Meat, eggs and other animal products are higher value and with the availability of local meat processing and USDA inspection a grower can meet a purchaser's product quality and food safety specifications.

Retailers

Food retailers are eager to show community support by buying local products. Tacoma area food stores provide moderate-to-good market outlets for local organic growers. The main independent retailers in the Tacoma area and the Tacoma Food Coop are particularly good outlets for local growers. In some cases farmers must go through specialty food wholesalers to access stores, which often excludes smaller growers who cannot meet volume requirements.

A food hub aggregation system could help more growers, especially smaller growers, to access retail markets. However, in a recent survey many growers indicated they are not interested in joint marketing efforts because they have current outlets or they have unique products with an accepted brand. Their reluctance to participate in a food hub might be due to their specialized products or small scale of operation. That same survey noted however that vegetable and fruit growers acknowledge that some needs such as pre-washing and packing could be more efficiently done with an aggregation operation which might also assist with marketing.²²

A much different response to the need for aggregation was found in a 2015 study of vegetable and fruit growers in Thurston, Mason and Lewis counties.²³ This study shows that a majority of responding farmers (64%) would consider aggregating and/or jointly marketing their agricultural products with

²¹ See <http://www.localharvest.org/search.jsp?ty=6>

²² Agriculture Infrastructure: Pierce County 2015, pages 28-29.

²³ Farm-to-Market Trends: A Case Study of the South Puget Sound, page 10.

other farms in order to access markets. That study also indicates a strong need for cold storage and other types of infrastructure.

Food Delivery Services

Pierce County currently has at least one farm that successfully integrated farm production with a food delivery business supplying Tacoma area residents with fresh foods. The delivery service draws food products from the company's farm as well as a regional network of farms. Growers in the county have this opportunity to expand their reach to the local food buyer.

Value Added Products

Growers who want to diversify their product offerings may also utilize on-farm processing. A traditional favorite is jam and preserves from local fruits such as raspberries, strawberries and blueberries. Other items include pickles and other fermented products, honey, condiments, bakery goods, potted plants and other similar items.

The county is also experiencing growing interest in meat production and processing. The Mobile Meat Processing Unit described earlier is encouraging beef, sheep hog and goat production. Likewise the poultry processing unit assists poultry producers with their processing requirements.

Apart from on-farm food processing and meat processing, Pierce County has almost no traditional food processing opportunities. While a few food processing companies are located in the County, they do not purchased locally grown foods. Nalley's food processing facility closed in 2011 which marked the last centralized food plant in the Tacoma area that purchased locally and regionally produced farm products for processing.

Land Use and Land Market Prices

Like many counties with urban and rural components, Pierce County has several distinct markets for land. Land that is zoned for urban development in areas well-served by urban services is in very high demand for housing and commercial development. However, a different land market exists in the rural areas of the County where zoning regulations limit development potential and where overall demand is much lower.

According to real estate brokers ARL land in Pierce County sells for roughly \$15,000 per acre, with this market what can be referred to as "gentleman's farms". Typically these are parcels of roughly 15 to 20 acres where a property owner might keep a few head of cattle or sheep or perhaps horses. These property owners are not "commercial farmers" in the traditional sense, but previously urban dwellers seeking a rural residence and lifestyle. Depending on the property size and location, such parcels might sell for as high as \$20,000 per acre with a view, or as low as \$12,000 per acre, which is still generally not affordable to most farmers.

The exception to the "gentleman's farm" market is when there is listing of a large parcel of land, the most likely buyers at full market value are land trusts that focus on for high-quality farmland which can also include parcels with wetlands and habitat areas.

In terms of leasing agricultural land, lease rates are typically low and often intended to address weed control rather than cash flow for property owners. Sometimes owners of available lands will lease to adjacent farmers for very little per acre per year, rather than allowing the land to simply remain idle.

Land designated rural commercial can go for a significantly higher price, up to \$100,000 per acre, though a parcel might stay on the market for as long as 10 or 15 years. It is typical for property owners to consider such long periods between more highly productive uses when amortizing the likely cost of a property.

Many farmers who might have inherited land or are otherwise land owners are interested in maintaining the option to sell their land in the future. Perhaps there are no family members to carry on the farming operations when the current generation is ready to retire from farming. In some cases, farmland represents a significant share of a farmer's total assets and so the family wishes to sell for the highest value for their "retirement plan".

Summary & Conclusions

From the Puyallup Valley to the more rural reaches, urban encroachment in Pierce County has had a profound effect on local agriculture. Land values rise as new housing and other development pushes outward from the cities, resulting in losses of important farmland and the many social and environmental benefits that they provide. This challenge is compounded by changing agricultural markets, succession planning and transitioning operations to the next generation, and losses of agricultural infrastructure and services, which together pose a major hurdle to local farmers and ranchers. In spite of this, local agriculture continues to attract new farmers, but they tend to operate on smaller acreages and many are not producing sufficient net income to justify their enterprises. Yet from within this group, will come many of the next generation of farmers that will succeed and grow.

The county's and greater region's large and growing population is eager to purchase high-quality, locally-produced food, as well as to connect with the land through agri-tourism or recreating in rural areas. Many operators of small and medium sized farms and ranches have capitalized on these trends and expanded their local sales. Farmers markets are highly visible, and they have expanded in number and size over the past decade. Other market outlets have become increasingly important to local farmers and ranchers, from local restaurants and grocery stores, to CSA programs, farm stands, and food service providers. There is a need to further strengthen the connection between local farmers to these local markets so that greater economic value is captured by farmers.

There are two primary sets of agricultural producers in the Pierce County. The core of larger, long-established farms include remaining fruit and vegetable growers in the Puyallup Valley, cattle and calf operations in the more rural parts of the county, poultry and egg producers, as well as nurseries and Christmas tree operations. These producers tend to specialize in particular markets and production practices, and require particular types of equipment, infrastructure and services. These well established businesses often own and lease large amounts of land and have a network of large regional or even national market outlets.

The second set of agricultural producers operate smaller acreages, rely on local markets, are fairly diversified in their products, are typically younger in age, and are often relatively new to the county. These farms often range from 10 to 30 acres, and some operate on even smaller acreages. These producers tend to grow fresh food crops, and sometimes poultry and small livestock, and market their products much more locally than the larger growers. They are relying on better access to and growth in local markets to allow for further expansion. Between farmers markets, CSA sales, roadside stands, as well as sales to local restaurants, grocery stores and food service providers, local demand is vital to their success and is growing. Some of these farms offer agri-tourism activities including u-cut flowers, pumpkin patches, farm stays, farm camps for children, wedding venues, hayrides and other complementary activities to generate added income.

Animal agriculture, which includes poultry and eggs, beef cattle, dairying, and the production of other types of livestock, accounts for about three-quarters of the total market value of Pierce County's agricultural products. Almost five times as much cropland is used for feed and forage production in support of animal agriculture as for vegetable and fruit production. Ranking second in economic importance is the nursery, greenhouse, and floriculture sector, which accounts for about 60 percent of the market value of all crops in the county. Both of these sectors are distributed throughout the county. Ranking third is the fruit and vegetable sector.

Many of the farm and ranch operators are part-time and rely on off-farm income. This is particularly necessary for the smaller producers, who report they have very little net income after expenses. The high price of land for farming in the urban fringe is a main reason that agriculture for some is a lifestyle choice and not an economic endeavor. These producers may not have paid much attention to soil type, or the degree of separation of their farm from other nearby conflicting land uses. It is therefore not surprising that agricultural zoning, which classifies land according to designation parameters that specify the most suitable land to farm, does not always correlate with the location of current farming activity.

Compounding the difficulty of characterizing agriculture is the geographic diversity of Pierce County. There are six distinct production regions within the county, and the types and scope of agriculture activity varies widely among them.

Adoption of new technologies, production practices, and crop types and varieties has offered a boost to some farmers. Farmers are able to extend the season for producing high-value fruit and vegetable crops by using fabric or plastic row covers, or unlit and unheated hoop houses. For example, lettuce and Asian greens can be grown throughout the winter using hoop houses. Fresh-market tomatoes will produce earlier in the season when grown inside hoop houses or powered greenhouses, and they can be grown in aboveground poly bags. These two examples demonstrate that farm income can be derived throughout the year under a wider range of soil and climatic conditions. Also, new crop types or varieties allow farmers to improve their competitive edge and be more profitable on smaller acreages. For instance, a popular new Brassica crop on the market called Broccolini[®], or baby broccoli, may be harvested three to five times in a season depending on growing conditions, versus three times for broccoli. Thus, a farmer producing Broccolini[®] for local markets can make more money per unit of land as compared with broccoli.

Incentive-based programs, particularly the purchase of development rights and conservation easements, have been key to permanently protecting some of the most important farmland in the county, and action is underway to continue and expand these programs. Local and state government, land trusts and other partners are making strategic decisions to prioritize conservation investments based on each site's conservation attributes. This will slow but not entirely stop the trend of farmland loss. Other support programs are also important in improving the competitiveness of local farms and ranches. For instance, the Conservation District's mobile meat processing and poultry processing units have allowed producers to better access local markets. Washington State University Extension's Cultivating Success course and a range of agricultural workshops have been preparing new and beginning farmers and helping experienced farmers capitalize on new markets or reduce their production costs. It is vitally important that Pierce County and its partners recognize that a range of non-regulatory, incentives are also needed to enhance the zoning tool.

The latest USDA Census of Agriculture and independent efforts to identify actively farmed land both detect about 50,000 acres within the county. The agricultural current use assessment shows identifies about half of that acreage. Still, all of these figures indicate that there is a large amount of agricultural resource land in Pierce County. It is very timely and appropriate to review the delineation criteria for what constitutes ARL zone land in the current Pierce County Comprehensive Plan Update.

Bibliography

Core GIS, Puget Sound Agricultural Lands Mapping Sources and Methods for American Farmland Trust, March 20, 2014.

Kirby, E. and Granatstein, D., Certified organic acreage and sales in Washington State: 2006-2014, Organic Trends series, Center for Sustaining Agriculture and Natural Resources, Washington State University, Wenatchee, WA. 16 pp., 2015, http://csanr.wsu.edu/pages/Organic_Statistics.

Globalwise, Pierce County Agriculture Strategic Plan Task 2: Quantitative / Qualitative Assessment, December 28, 2005.

Globalwise, Pierce County Agriculture Strategic Plan: Task 6 Entry Barriers for Farmers, December 2005.

Low, Sarah A., Aaron Adalja, Elizabeth Beaulieu, Nigel Key, Steve Martinez, Alex Melton, Agnes Perez, Katherine Ralston, Hayden Stewart, Shellye Suttles, Stephen Vogel, and Becca B.R. Jablonski. Trends in U.S. Local and Regional Food Systems, AP-068, U.S. Department of Agriculture, Economic Research Service, January 2015.

Globalwise, Puyallup Valley Farmland: Metrics and Economic Analysis for Organic and Sustainable Agriculture in the Orting Study Area, for PCC Farmland Trust and the Trust for Public Land, February 25, 2013.

King County's Farmland Preservation Program webpage, see <http://www.kingcounty.gov/depts/dnrp/wlr/sections-programs/rural-regional-services-section/agriculture-program/farmland-preservation-program.aspx>.

National Restaurant Association, What's Hot 2016 Culinary Forecast, see <http://www.restaurant.org/Downloads/PDFs/News-Research/WhatsHot2016>.

Patzek, Lucas; Sarah Rocker, and Jessica R. Goldberger, Produce Farm-to-Market Trends: A Case Study of South Puget Sound, Washington State University Extension Publication EM094E, 2015.

Pierce County Farmland Conservation Committee, Shared Conservation Strategy Document, October 2015.

Pierce County Planning and Land Services, Pierce County Buildable Lands Report, June 30, 2014.

Thurston Regional Planning Council document, Farmland Zero Net Loss: Setting the Stage, at <http://www.trpc.org/DocumentCenter/View/2289>.

U.S. Department of Agriculture, Economic Research Service, Trends in U.S. Local and Regional Food Systems, AP-068, January 2015.

U.S. Department of Agriculture, National Agricultural Statistics Service, Census of Agriculture – County summaries for Pierce County, 2002, 2007 and 2012. See at <http://www.agcensus.usda.gov>.

U.S. Department of Agriculture, Natural Resources Conservation Service, User Guide for the National Commodity Crop Productivity Index (NCCPI), Version 2.0, 2012.

Washington State University, Evergreen State College, Pierce Conservation District, Pierce County Agriculture Program and Pierce County Agriculture Roundtable, Agriculture Infrastructure Study, Pierce County 2015.