# A Draft Report Analyzing Skagit County's Agro-Industrial Cluster

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# ANALYSIS OF SKAGIT COUNTY'S AGRO-INDUSTRIAL CLUSTER

## INTRODUCTION

Industry clusters were originally popularized by Michael Porter in his 1998 article "Clusters and the New Economics of Competition" that appeared in the *Harvard Business Review*. He defined clusters as "geographic concentrations of interconnected companies and institutions." Central to the clusters concept is the requirement that a critical mass, or concentration, of firms exist within a strictly defined geographic area. The current study was undertaken to identify and determine the characteristics of existing conditions in Skagit County's agro-industrial cluster.

Agriculture's status in Skagit County is mired in the forefront of many natural resource issues in Puget Sound, including those surrounding water rights, salmon recovery, land use development, environmental regulation, local tax bases and American Indian treaty rights. Each of the sides in each of these issues has had its proponents and opponents and has generated lots of documents purporting to demonstrate the correctness of each position. It was decided therefore that the current study should be based on factual descriptions obtained exclusively from published government census and other statistical documents. In addition, a sample of opinion from persons directly engaged in Skagit's agro-industrial cluster was conducted. The published statistical data together with the opinion sample constitute the empirical basis underlying the study's findings.

Study findings are presented in two parts. The first category consists of four sections which provide the report's context. Section 1 defines an agro-industrial economy and discusses what the terms mean and how they relate to Skagit's agricultural areas. Section 2 sees what can be learned from the relatively recent experience of an agricultural cluster in Pierce County's Puyallup Valley that hit its tipping point in the early 1970s and declined sharply thereafter. Section 3 reviews the technical literature about agro-industrial clusters. Finally, Section 4 presents statistics describing, comparing and contrasting the five counties (including Skagit) that lie on the eastern shore of Puget Sound.

The second part consists of Sections 5 through 9 and directly addresses Skagit County's agricultural economy. Section 5 uses U.S Census of Agriculture and Washington State Department of Agriculture data to present trends in acreage, crops, incomes, age, tenure and related descriptors for the period 1982 through 2011 for Skagit County's fruit, berry and vegetable growers, dairies and shellfish harvesters. The section also reviews the importance

of agro-tourism for the County's economy and – to the extent the data allow – describes organic as well as traditional agriculture.

Section 6 reports the responses expressed by 19 farm owners/operators in Skagit County who were interviewed (a list of all persons interviewed, both farm owners and operators as well as persons working in agricultural infrastructure activities and commercial operations that sell to, or buy from, farmers, can be found as an appendix to this report) . Responses were recorded on a structured interview form to ensure comparability (also provided in an appendix). Guarantees of confidentiality were given to all farmers interviewed, so Section 6 presents summary information (but no individual detail) about farmer's responses.

Sections 7 and 8 discuss Skagit's agricultural infrastructure and markets, respectively. These Sections contain both published statistical data and the results of a structured interview that was used to interview farm related businesses and service agencies/organizations. Section 9 contains a projection of Skagit's agro-industrial economy made by the authors under an assumption that current trends continue into the foreseeable future.

To make the study as accessible as possible for all readers, the sections in body of the report contain narratives and graphs that summarize the study's findings. The report's appendices contain more data heavy narrative, graphs, and tables for persons wanting more detail. Each section in the report's body has an appendix. Additional appendices include detailed data tables supporting the report's findings.

## Part 1: Context for the Analysis

### 1. Background & Purpose

The purpose of the "agro-industrial cluster" study is to identify the web of economic, social, personal and legal relationships (collectively called agriculture's *infrastructure*) that support – and are necessary for – a viable and sustainable agricultural sector in Skagit County. This includes, but is not necessarily limited to:

- The number of farms and characteristics of farmers,
- The amounts of farm acreage,
- Businesses that sell fertilizer and other supplies to farmers,
- Businesses that sell and service farm machinery and process, store and distribute farm products,
- Relationships between individual farmers and between farmers and businesses,
- Local educational and research institutions that support agriculture,
- Agricultural impacting federal, state and county regulatory systems.

The study focuses on Skagit County west of Sedro Woolley, east of Anacortes, north of the Snohomish County line, and south of the Whatcom County line. It contains approximately 90 percent of Skagit's agricultural acreage, and 100 percent of its Class 1 agricultural land.

Agro-industrial clusters are dynamic and the forces that can cause them to change include:

- New products being introduced and consumer preferences changing,
- Technology changing,
- The natural (i.e., physical and biological) environment changing.

The perspective underlying the current agro-industrial cluster study is that dynamic forces such as market demand shifts, technological and/or environmental changes will impact the agricultural industry and cause its crops and methods of production to change in the future, just as they have changed in the past.

To provide context and illustrate how quickly changes in a region's agricultural economy can change, we begin with a case study of agricultural change in the Puyallup Valley and then a review of relevant agro-industrial cluster literature. After which, a description of the Puget Sound Region's (PSR's) agriculture economy and the specifics of agriculture in the Skagit and Samish River basins of Skagit County is presented.

## 2. Puyallup Valley Agriculture: 1979-2012[1]

a) The Puyallup Valley

The Puyallup Valley area has, roughly, an upside down right triangular shape. The northwest point is where the Puyallup River crosses I-5 just west of Fife. The northeast corner is north of Sumner. The northern leg runs, generally, along the King/Pierce County line. The southern point is a short distance south of Orting. It takes in parts of Fife, Puyallup, Sumner and Orting. The area in 1979 comprised approximately 41.5 square miles (26,560 acres) of agricultural and urban land.

b) Valley Demographics.

Between the 30 year period, 1980 to 2010, the population of the four major cities within the study area more than doubled, increasing from 26,773 to 62,392, a gain of 35,619 residents. Some of the cities showed substantial "spurts" in growth, such as Fife between 1980 and 1990 (112%) and Orting between 1990 and 2010 (78.5% and 79.4%), due to rapid subdivision development and annexations.

This contrasts with the population growth in the entire Valley. In 1978 its population stood at 62,255, which included parts of Puyallup, Fife and Sumner and all of Orting. By 2010 the population of the area had increased to 153,038, an increase of 90,783 for an annual rate of 4.6%. The population outside the cities, and within the Valley, increased by 55,000. The Valley's increase in housing stock showed a similar trend.

Before the mid-1970's, employment growth in the Valley was minimal. It was mainly an agricultural area. But, due to the expansion at the Port of Tacoma and the limited supply of industrial land in South King County, significant quantities of agricultural land in the Fife and Sumner areas were converted to industrial uses, causing a dramatic increase in employment.

In conclusion, the demographics of the Puyallup Valley changed significantly over the last 30 years. Within this 41.5 square mile area some 91,000 people and 39,000 new housing units were added. A large part of this addition was been driven by the approximate 35,500 new jobs in the area.

1. See Appendix 1 for a detailed analysis of the Puyallup Valley's agro-industrial cluster.

c) Agricultural Change Over Time

*Pierce County*

As population, housing and employment increased in the county, the number of farms (especially commercial farms), acreage devoted to farming, and key crops (forage/hay, vegetables/berries and nursery stock) declined. Summarizing the trends:

- There was a dramatic decrease in the number of commercial farms, from 1609 to 98.
- The amount of land in farms decreased by nearly 70%, from 149,816 to 47,677 acres, a loss of 102 thousand acres.
- Between 1954 and 1974 the average farm size increased, from 41.5 acres to 56.0 acres, but has since decreased to 33.0 acres.

Cropland acreage showed similar declines:

- Forage/hay: 18,526 to 7,493 acres;
- Vegetables: 2,030 to 1,622 acres;
- Nursery stock: 1,269 to 879 acres.

Interestingly, the value of farm output sold, adjusted for inflation to 2007 dollars, remained quite constant:

- All farm products: $93.5 million to $83.4 million;
- Crops: $38.9 million to $32.3 million;
- Livestock: $54.7 million to $51.1 million.

To a substantial degree, Pierce County agriculture gave way to urbanization.

*Puyallup Valley*

Unfortunately, comprehensive statistics on Puyallup Valley agriculture over a similar time frame are not available. However, in 2003 the Washington State Department of Agriculture issued its first inventory of the amount of land within the state devoted to agriculture, and assuming an apples-to-apples process we can make some county to valley comparisons.[2]

- Forage/Hay acreage decreased between 2007 and 2011 in the county, consistent with the 1954 to 2007 decline. The acreage in the valley is about 10%

2. The Census of Agriculture uses a self-reporting census whereas the WSDA quantifies acreage "in the field."

of that in the county. This is reasonable as the livestock industry, principally dairy, has relocated.

- Vegetable acreage in the county increased between 2007 and 2011, driven mainly by the increase in the Puyallup Valley. The Valley is an important supplier of fresh product to the Puget Sound market.
- Nursery Stock declined slightly over the four year period and the county's acreage is principally in the Valley, again supplying the urban area. Here we find an agricultural land use that is complimentary with an expanding urban area.

Between 1977 and 2011 there was a general decline in many vegetable and berry crops. This seems to have been a transition from commercial to urban fresh market farming, a phenomenon documented by the decline in commercial acreage from 567 acres in 1974 to 98 acres in 2007. This is also consistent with the decline in farm size, larger farms being commercial and smaller farms supplying the local market rather than large processors. It is also consistent with the reported development of 1,027 acres for residential and industrial uses (primarily north of Orting and Sumner) and 790 acres for golf courses (north of Orting) between 2003 and 2011.

d) Infrastructure

Successful farming is dependent on sources of inputs (farm equipment sales and service; seed, fertilizer and pesticides) and sources to acquire outputs (processors and wholesale buyers).

- Farm Equipment. In 1969 there were 9 firms selling and/or servicing farm equipment from Seattle on the north to Enumclaw on the south, five in the Puyallup and Sumner vicinity. By 1979 the number had declined to four and in 2012 there were three.
- Fertilizer, Pesticides and Seed. In 1969 there were 5 dealers in the Tacoma and Renton area. In 1979 there were 6, today there is one.
- Processors. In 1969 there were 11 establishments processing a broad cross-section of vegetables. These were located in Kent, Sumner and Puyallup. By 1979 the number had declined to 4, today there are none.
- Wholesale Produce. In this category the trend has been the opposite, a steady increase. There were three in 1969, 4 in 1974, 5 in 1979 and today there are 18.

In summary, firms providing necessary farm inputs steadily decreased. This made farming more difficult (less selection, inconvenient) and expensive (higher prices, added transportation costs). Along with this came another loss, that of "field men." These are experts employed by private and public entities who farmers rely on for advice. In terms of acquiring farm outputs, there has been a complete transformation from major food processors to wholesalers who source fresh vegetables directly from the farmers.

There has been considerable urban encroachment into, and displacement of, agricultural activities in the Puyallup Valley.

d) Why the Change?

In 1979, when one took a close look at agriculture in the Puyallup Valley, it was obvious that change was occurring, and that the change would be detrimental to the viability of agriculture. The changing profitability of agricultural operations had significant implications for future agriculture in the Valley. This was due – in large part – to decreasing product to process. Numerous Valley farms did not produce adequate income to cover building and equipment amortization. Some did not provide an adequate owner/operator salary.

The casual observer driving through the Puyallup Valley in 1979 would get the impression agriculture was doing very well. However, upon close examination, it became clear that commercial agriculture was becoming less viable. The major factors negatively impacting agriculture were:

- Interstate 5 – local farmers indicated that agriculture's decline began with I-5's construction.
- The Port of Tacoma - the POT was a significant driving force behind the conversion of farmland for industrial purposes.
- Road infrastructure – substantial improvements to SR167, SR410 and River Road East occurred over the last 30 years, which encouraged the land conversion process.
- Land values - a complex and interesting phenomenon.
  - Thirty years ago the majority of the land in the Puyallup Valley was unzoned, making it easy to capture any increase in land values;
  - Urban pressure caused a rapid increase in values, especially near urban areas, industrial areas and transportation corridors;

Those selling faced a dilemma: (1) sell some of their land and reinvest in their agricultural operation, or (2) sell all of their land, retire and/or invest the proceeds elsewhere. For the vast majority of sellers the second option was chosen. This process changed radically when land use regulations were imposed in 1995.

e) County and City Policies

In the early 1980's Pierce County developed a Comprehensive Plan that was presented to county voters. It was rejected in 1985. The state passed the Urban Growth Management Act in 1990, the county and cities worked on establishing growth area boundaries, which

went into effect in March 1995. Between 1979 and 1995 (15½ years) Puyallup Valley agriculture was transformed:

- Puyallup and Fife annexed a large amount of agricultural land;
- Puyallup zoned the area north of the river industrial;
- Fife zoned all of its area residential, commercial and industrial;
- Sumner annexed the White River Valley land to its north and zoned the majority of it industrial with a small amount of residential leaving an area zoned for agriculture of about 100 acres.
- Acreage in vegetable and berry production dropped from 3,489 acres in 1977 to 800 acres in 2011, a loss of 2,689 acres or 77% of this cropland.
- The remaining non-urban land was zoned ARL (Agricultural Resource Land) or RF (Rural Farm).

Farmers whose land was zoned ARL or RF were faced with a dramatic loss of the land's market value. To address it Pierce County has adopted a Transfer of Development Rights (TDR) program. In addition, there has been a significant transition in the nature of land ownership in the valley, from farmers to investors/speculators.

f) Summary

In 1979 there were indications that agriculture in the Puyallup Valley was slowly deteriorating. The agricultural infrastructure was in decline, gross farm income was declining and operating costs were increasing.

In the 1980's the demand for industrial land was increasing causing land values to increase and the highest and best use of land to change, mainly to industrial. Many farmers took advantage of land market conditions and sold their farms fearing that they would eventually face land use controls (zoning) and asset depreciation.

By the mid-1990's agriculture was at a precipice. Cities annexed large amounts of agricultural land, which were subsequently zoned industrial and residential. The Valley's agro-industrial cluster's critical mass was fractured. What remains today are a few highly specialized large scale agricultural operations (bulbs, vegetable consolidation) and some struggling farm-to-market operations.

## 3. Literature Review[3]

Industry clusters were first hypothesized by Michael Porter in 1990 and then popularized by him in his 1998 article "Clusters and the New Economics of Competition" that appeared in the *Harvard Business Review*. He defined clusters as "geographic concentrations of interconnected companies and institutions." Central to the clusters concept is the requirement that a critical mass, or concentration, of firms exist within a strictly defined geographic area.

While the concept of a cluster of interconnected companies and institutions was made popular by Porter, the idea that there was a critical mass needed for the economic viability of agriculture was proposed as early as 1974 by Pritam Dhillon and Donn Derr who used different agricultural production scenarios (i.e., various mixes of crop, dairy and poultry production) to estimate the farm size necessary to minimize production costs in the Philadelphia-New York-Boston corridor. In 2001, Tom Daniels and Mark Lapping updated the Dhillon and Derr study and proposed a critical mass threshold necessary to minimize costs of at least 100,000 acres, and/or $50 million in agricultural sales

Lori Lynch and Janet Carpenter tested for the presence of a critical mass for agricultural production in six Mid-Atlantic States over the 50 year period 1949 to 1997. They found "that as the net returns to agriculture decrease in a county, the county will lose farmland at a faster rate" and that farmland loss occurred when (a) the profitability of the farm sector decreased, (b) farmers and farm families could earn more off the farm than on, or (c) the demand – and thus price – for land for residential or commercial uses increased. However, eighty percent of the farmland studied by Lynch and Carpenter was removed from farming during the first half of the study period, and the post-1974 years raise questions about whether decreased agricultural profitability was sufficient to explain farmland loss.

A 2003 study by Benjamin Rashford, David Lewis, Rose Evonuk and Bruce Weber of farming in Oregon's Willamette Valley reported that "In order to effectively preserve farmland, policy makers need to fully understand the interrelationships within rural agricultural communities" and that there is a "revolving circle of interdependence [that] raises the issue of a critical mass in agriculture… [involving both] 1) dependencies between farms; and 2) dependencies on local agricultural services."

Rashford, Lewis, Evonuk and Weber's hypothesis is that what causes an agro-industrial cluster to collapse is a threshold beyond which farmers no longer have the ability to substitute between crops when markets change or substitute among suppliers when one leaves the industry. They found that different critical thresholds exist for different crops and different patterns of geographic agglomeration.

3. See Appendix 2 for a more detailed literature review and a listing of references cited.

Duncan Hilchey, a consultant to New York State while it was working to preserve its agricultural industry, defined a formal agricultural industry cluster (AIC) as “a group of farms and/or allied food and agricultural enterprises, individuals, organizations, and agencies who work together on shared interests and toward a common good.” Working with a similar definition, Stephan Goetz and Martin Shields found, “Industry clusters have become an increasingly important concept in economic development research and practice”.

Evidence of the importance policy makers assign to AICs is the three year northeast states study of small farm industry clusters, funded by the USDA and hosted by the Northeast Regional Center for Rural Development (in partnership with six state universities), to identify how clusters support long-term farm viability and community sustainability. Similarly, Colorado State University and the Colorado Department of Agriculture teamed-up in 2012 to begin a study of the state’s agricultural clusters including the mapping of the “economic relationships among sectors tied to farm and ranch production.”[4]

At the international level, an “Occasional Paper” by Eva Gàlvez-Nogales issued by the United Nations’ Food & Agricultural Organization (UN/FAO) states: “promoting ACs [agricultural clusters] is one of the strategies identified by the FAO to support agribusiness and agro-industrial development. ACs are being increasingly recognized as an efficient way to develop and stabilize agriculture…and improve the competitiveness of agribusiness, particularly small- and medium-scale companies”.

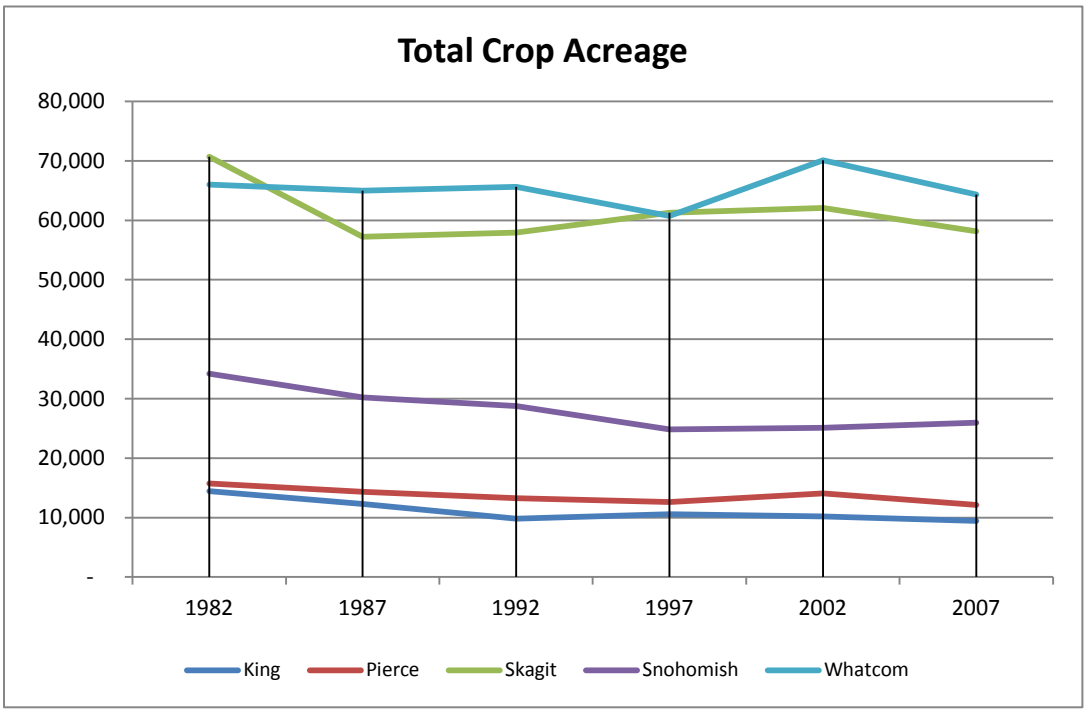
In summary, there appears to be fairly widespread agreement that economies of scale and scope are real in agricultural production and lead to agglomerations of market responsive producers. The precise way in which scale and scope economies work appears to depend on multiple unique local conditions and is a complex interaction of farm production techniques, supporting infrastructure and markets for farm products.

4. Findings from the Colorado study are not yet available.

## 4. Agriculture in the Puget Sound Region[5]

Skagit County, along with Pierce, King, Snohomish and Whatcom Counties, borders the Westside of Puget Sound. Pierce, King and Snohomish are within the Tacoma and Seattle Metropolitan Statistical Areas while Skagit and Whatcom are more rural. Figure 1 shows how total crop acreage has changed in each of the four counties in the Puget Sound Region (PSR) over the 25 year period, 1982 through 2007.

Figure 1




Several patterns immediately stand out.

- Skagit and Whatcom Counties have about five times the number of crop acres as King and Pierce Counties and about twice the number as Snohomish County.
- The trend line of crop acres in Whatcom County was virtually flat over the entire 25 year period while it declined in each of the other four counties.
- Pierce County's crop acreage trend line declined fastest among the five PSR counties, averaging a loss of about 1,700 acres every five years. Skagit County had the next fastest decline in crop acreage, averaging a loss of about 1,300 acres every five years.
- Almost all of the crop acreage losses in Skagit County occurred between 1982 and 1987, after which it had a slightly increasing trend of about 100 acres a year.

5. See Appendix 3 for a more technical discussion of agriculture in the Puget Sound Region

Figure 2

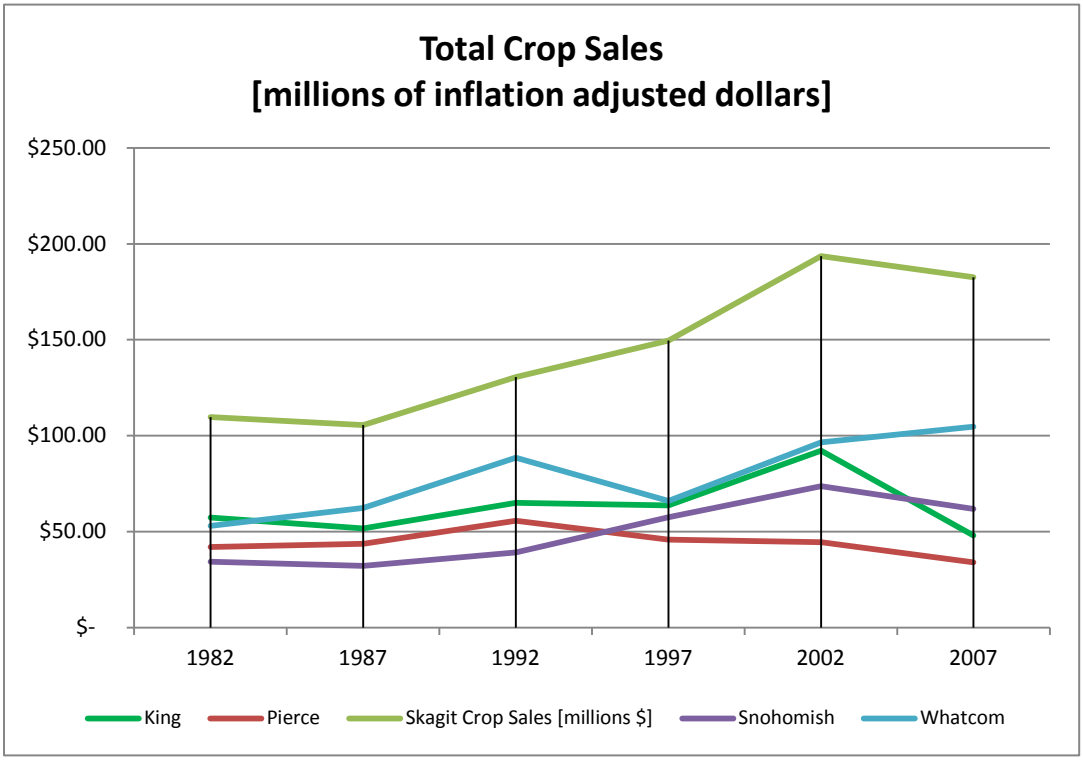



Figure 5 shows total crop sales in each of the PSR's five counties, expressed in inflation adjusted 2012 dollars. It reveals a set of patterns and trends quite different than those seen for crop acreage.

- Crop sales in four of the five PSR counties had a positive time trend, with only King County's 25 year trend being negative.
- Skagit's crop sales had the strongest upward time trend among the 5 counties, adding about $3.0-$4.0 million of inflation adjusted sales annually over the entire period.
- Over the entire 25 year period, inflation adjusted crop sales in Skagit grew at about twice the rate of those in Whatcom and averaged about 80 percent higher value – indicating that crop sales per acre in Skagit were substantially higher than those in its northern neighbor.

Taking the two above graphs together, Skagit County has one of, if not the, strongest agricultural economies among the five counties on the west side of Puget Sound. Only Whatcom County has
about the same number of acres in crop cultivation and it produces substantially less in the way of (inflation adjusted) crop sales.

## Summary of Part 1

The purpose of the "agro-industrial cluster" study was to identify the web of economic, social, personal and legal relationships (collectively called agriculture's *infrastructure*) that support – and are necessary for – a viable and sustainable agricultural sector in Skagit County. It began with a case study of the Puyallup Valley, Pierce County, agro-industrial cluster that flourished in the 1960s and 70s but then declined precipitously in the 1980s.

In 1979 agriculture in the Puyallup Valley appeared to be flourishing, but there were indications that it was slowly deteriorating. Agriculture's infrastructure was declining, gross farm income was declining and operating costs were increasing. The demand for industrial land increased causing land values to increase. Many farmers took advantage of land market conditions and sold their farms. By the mid-1990's agriculture was at a precipice. Cities annexed large amounts of agricultural land, and zoned them industrial and residential. The Valley's agro-industrial cluster's critical mass was fractured. What remains today are a few highly specialized, large scale agricultural operations (bulbs, vegetable consolidation) and some struggling farm-to-market operations.

There appears to be fairly widespread agreement in the technical literature that economies of scale and scope are real in agricultural production and lead to agglomerations of market responsive producers. The precise way in which scale and scope economies work appears to depend on multiple unique local conditions and is a complex interaction of farm production, supporting infrastructure and markets for farm products. But, as seen from Puyallup Valley's experience, the interaction of the factors supporting these clusters can decline to a point that the cluster losses its viability.

Skagit County, on the other hand, currently has a strong and viable agro-industrial cluster. Based on acreage under cultivation and crop sales, it has one of, if not the, strongest agricultural economies among the five counties on the west side of Puget Sound. Only Whatcom County has about the same number of acres in crop cultivation and it produces substantially less in the way of (inflation adjusted) crop sales.

## Part 2: Skagit's Agro-industrial Cluster

### 5. SKAGIT COUNTY'S AGRICULTURAL ECONOMY[6]

Skagit County's total land area is approximately 1,721 square miles, (1.108 million acres). In 2007, the county's total land in farms reported by the Census was 0.109 million acres – or about 10 percent of the county's total land area – and about 0.089 million acres were zoned "Agriculture: Natural Resource Land" – about 8.0 percent.[7]

a. Number of Acres, Farms and Sales

Skagit County's total farm acreage dropped by 18,650 acres (17 percent) during the decade 1982 through 1992. Between 1992 and 2007 however, reported farm acreage increased more than 18,560 acres and reached a level of 108,540 acres – virtually unchanged over the entire 25-year period 1982 through 2007.

Most of the total farm acreage lost between the 1982 and 1992 was in cropland, which declined by about 14,930 acres (17.5 percent), and then by an additional 650 acres (1.0 percent) during the 15-years from 1992 to 2007. The growth of total farmland between 1992 and 2007 was largely attributable to added acres classified as woodland (3,200 acres), permanent pasture/rangeland (7,220 acres), and land in buildings (8,820 acres).

The decline in harvested farm acres over the 25-year period was more than off-set by a better than doubling of sales per acre. As a result, the value of inflation adjusted total crop sales went up by two-thirds to reach $182.7 million in 2007

Over the 25-year period, 1982 through 2007, the total number of *harvested* acres trended downward due to a sharp decline of about 13,500 acres between 1982 and 1987 – after which it remained relatively constant. Harvested crop acreage per farm fluctuated narrowly around an average of about 115 acres between 1982 and 2002 but dropped to 91 acres in 2007.

Inflation adjusted sales *per farm* almost doubled between 1982 and 2002 but declined by about 20 percent between 2002 and 2007. As will be discussed later, the productivity changes implied by these changes are related to either the scale or scope of farms, new technologies, new crops, or the opening up of new markets.

6. See Appendix 4 for a more technical discussion of Skagit County's agriculture economy
7. The Census defines total land in farms to include (a) cropland, (b) woodland, (c) permanent pasture/rangeland, and (d) land in buildings

b. Crops

Crop data reveal the divergence in growth among different crop categories. Grains (wheat, barley, oats) declined in both the number of acres harvested and farms between 1982 and 2007. The majority of the declines were in barley and occurred between 1982 and 1987 when barley acreage declined by over 50 percent and barley farms declined by over a third. Potatoes, on the other hand, increased by over five times between 1982 and 2002 before declining slightly between 2002 and 2007. The number of potato farms grew by almost four times between 1982 and 2007, with most of the growth occurring in the final decade of the period. Other vegetable crops declined by two-thirds in acreage and one-third in the number of farms.

Berry production almost doubled its number of acres between 1982 and 2007 while the number of berry farms almost tripled. The number of acres and farms producing nursery and greenhouse crops dropped sharply between 1982 and 1987 and then grew steadily until 2002 after which it declined slightly between 2002 and 2007. The Census groups (a) seed crops with hay, (b) forage and silage crops and (c) the entire category were relatively stable in both acres and number of farms between 1982 and 2007.

Inflation adjusted crop sales between 1982 and 2007 followed the same trends observed for acreage and the number of farms. Unlike the acreage and farm data however, impressive gains in sales occurred for Skagit's major crops over the entire period.

Seed crops are an important component of Skagit County's agricultural economy and more detailed information on seed crop acreage (although not number of farms or sales) is available through the Washington State Department of Agriculture (WSDA).[8] WSDA's survey years are different than the Census of Agriculture's years but are close enough to provide insight into recent seed acreage trends.

The major seed crops in Skagit County are spinach and beets, which together account for just under three-quarters of all seed acreage. The fastest growth of seed acreage however has been in the growing of ryegrass seed while both spinach and beet seed acreage declined.

While specific estimates of seed crop values are not available from either the Census or the WSDA, the value of production per acre is widely known to be high. Consequently, the economic contribution of seed crops to Skagit's agricultural sector is significant. Based on the sales data for the years 1982 through 1997, when seed crops were included in the *Vegetables, seed corn and melon* category but potatoes were not, it

8 WSDA conducts a field inventory and GIS mapping of crop acreage in Skagit County every 3-years.

seems reasonable that seed crops contribute in the order of $20 million annually in sales.

Another important crop in Skagit County is the growing of tulip and other bulbs. The Census puts this activity in the category "bulbs, rhizomes, and tubers" and the reported acreage harvested was just under 1,400 acres in 2007.

The agricultural land use data, available from WSDA's GIS-based inventory, reveal some interesting trends that have occurred during the seven year period 2005 through 2011. Total agricultural acres inventoried increased from 53,000 in 2005 to 70,800 in 2011. Several trends stand out:

- Although Skagit's agricultural economy encompasses a large variety of crops, most agricultural acreage is concentrated in just a few activities. Potatoes, hay and grass, pasture land, field corn and shellfish account for just over two-thirds of the agricultural acreage inventoried by WSDA in 2011. Of these land uses, only potatoes, field corn and shellfish are primarily harvested for market with the rest being rotational crops.
- Seed crops, berries and bulbs are high in income and sales yet they account for a relatively small amount of the land used in agriculture – less than 10 percent of the total land inventoried by WSDA.
- Among vegetable crops, peas accounted for almost 3,500 acres in 2005 but were virtually gone (11 acres) in 2011.
- There were a total of about 700 acres in wildlife feed (including habitat restoration) areas plus CRP/Conservation (including USDA erosion and stream shading) areas in 2011 that used to be in farm production. There were about 270 acres in housing and/or commercial development that used to be in farm production.

A more finely detailed listing of agricultural land uses in Skagit County reported by WSDA is contained in the appendices.

c. Trends in Farm Size

During the decade 1997 through 2007, there was a sharp increase in the number of Skagit farms with annual sales of less than $10,000. The number of farms with sales between $10,000 and $49,000 grew very slowly while farms with sales over $50,000 declined between 2002 and 2007 after rising slowly during the prior 15 years.

Measured in terms of acreage, a somewhat different pattern emerges. The number of farms with less than 10 acres fluctuated very little between 1982 and 2002 and then increased sharply during the next five years. Farms of 10 through 179 acres rose

sharply between 1982 and 1987, declined very moderately between 1987 and 1997, and then rose sharply again between 1997 and 2007.

Figure 3

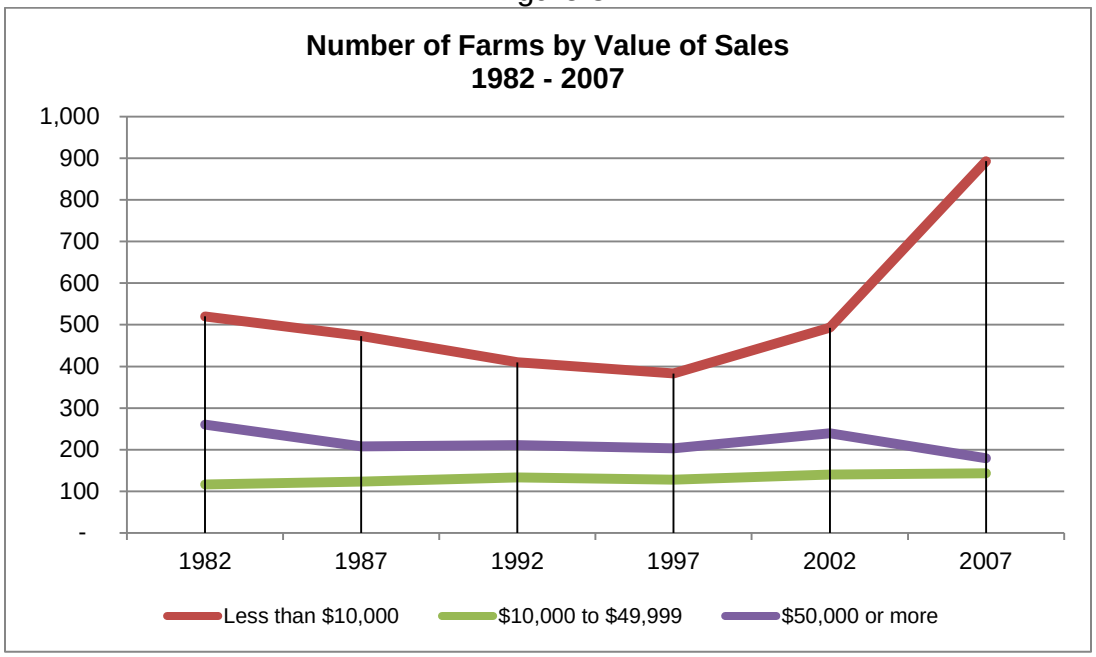
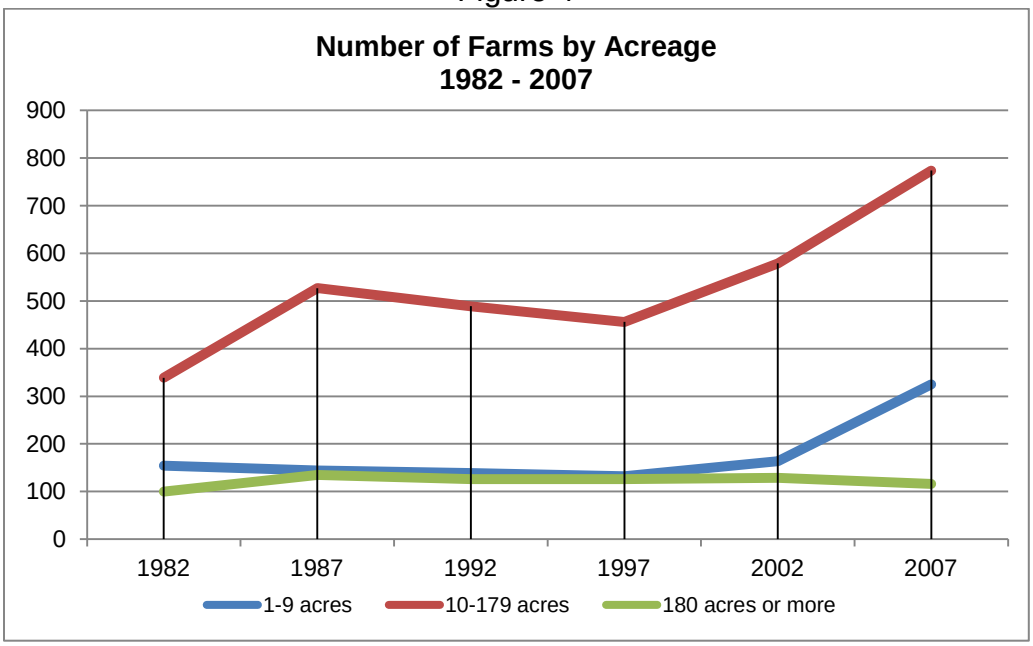



Figure 4



d. Farm Operator Characteristics

Skagit farms are primarily owner operated. Only 11 percent of *farms* were operated by renters in 1982 and that percentage shrunk to five percent in 2007. The distribution of agricultural *acreage* by ownership shows that the percentage of renters went down from 15 to 11 percent between 1982 and 2002 and then rose to 14 percent in 2007. In other words, in 2007 five percent of farms were operated by renters but those farms accounted for 14 percent of all agricultural acreage.

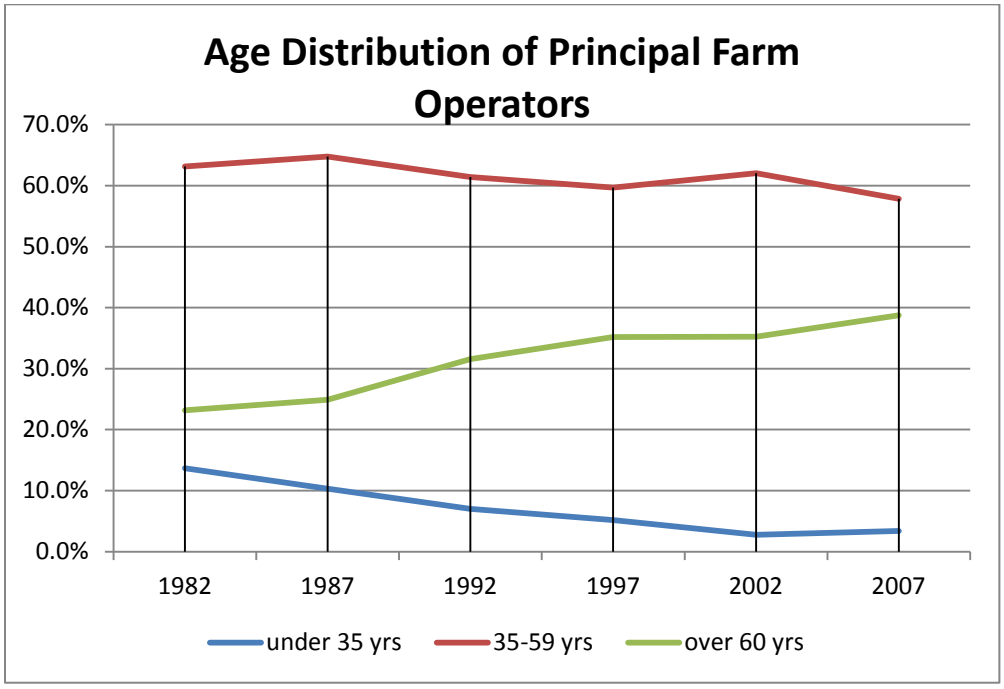
The percent of farm operators who were female rose from seven to 23 percent over the 25-year period 1982 through 2007 while the percent of crop acreage under their direction rose from two percent to nine percent. As reported in the 2007 Agricultural Census, farms operated by females were smaller than the average size farm in the County, but one out of five Skagit farms had a female primary operator, There are no indications that the trend toward greater gender parity among primary agricultural operators will slow down in the future.

The number of operators whose primary occupation was farming went from 49 percent during the 1980s to 52 percent during the 1990s. Since then, the percent of primary operators listing farming as their primary occupation rose to 60 percent in 2002 and then fell dramatically to 39 percent in 2007. A similar pattern was reported for primary place of work. The percentage of operators who said they worked exclusively on the farm went from forty percent in the 1980s, to 45 percent in the 1990s, then up to 51 percent in 2002 and back down to 33 percent in 2007. The percent of operators reporting that they lived on the farm they operated however remained stable at around 85 percent throughout the 25-year period.

The percent of operators who lived and worked on their present farms for 10 years or more went up from about 60 percent to 68 percent between 1982 and 1992, and has remained relatively stable since then ranging between a high of 71 percent in 2002 and a low of 68 percent in1992.

Over the 25-year period, the average age of primary farm operators went up steadily from 50 years in 1982 to 56 years in 2007. The change in average age among farm operators came from a decline among operators under 35 years of age – which went from from 14 percent in 1982 to just three percent in 2007. At the same time, the percentage of operators over 60 years of age went from 23 percent to 37 percent. Farm operators between the ages of 35 and 59 years fluctuated very slightly – averaging about 62 percent of all farm operators and fluctuating by no more than three percentage points during any Census between 1982 and 2007.

Figure 5




e) Livestock & Livestock Products Farms

The inflation adjusted sales of livestock and livestock products exhibited a strong downward trend.

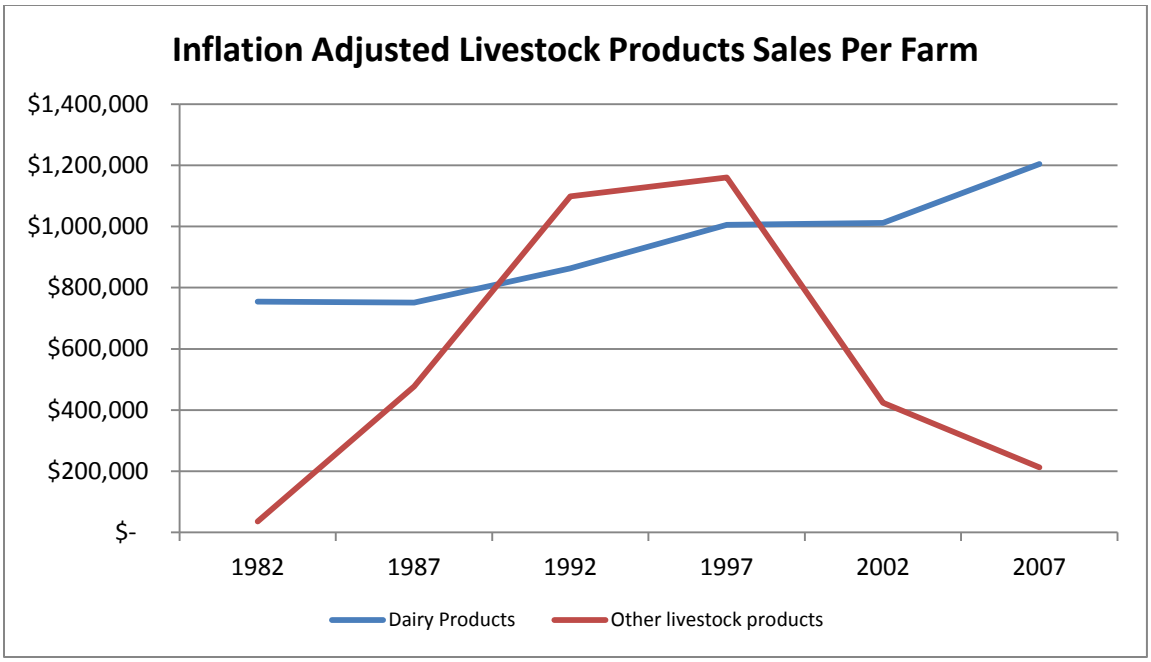
- Dairy products sales fell from $105.6 million in 1982 to $62.6 million in 2007 – a decline of 41 percent over the 25 year period.
- Poultry and poultry products sales almost doubled between 1987 and 1992 going from $14.7 to $28.6 million, but declined thereafter down to $12.8 million in 2007. Over the 20 year period 1987 through 2007, poultry and poultry products sales declined by 13 percent.
- The sale of cattle, calf, hog, pig, sheep & lamb products declined from $23.7 million in 1982 to $11.7 million in 2007 – a decline of 51 percent. Over 80 percent of the sales decline occurred during the 10 year period 1997 through 2007.

Dairy farms declined from 140 farms in 1982 to 52 farms in 2007 (a 63 percent decline) – and interviews with knowledgeable persons in the County indicate that the number of farms will likely be below 30 when the 2012 Census data is released. With the number of dairy farms falling at a faster rate than inflation, sales per farm went up by 60 percent, rising from $750 thousand in 1982 to $1.2 million in 2007.

Within the dairy segment, however, the performance of organic and traditional dairies was very different. Organic dairies are all members of an organic milk distribution cooperative that has been able to use its market dominance to maintain stable retail prices. Organic dairies consequently have earned a good return on production, and have used their revenues to grow larger, more integrated, and more technologically sophisticated. Traditional dairies on the other hand have faced highly volatile retail prices as well as market pressures to grow and become vertically integrated, and each time there is a major downturn in milk prices, marginal producers are driven out of business. The net result has been a significant decline in the number of traditional dairy farms but not in the number of dairy cows.

Sales of poultry and poultry products fell by more than half over the 15 year period 1992 through 2007, while at the same time the number of poultry producing farms went up by almost five times, rising from 27 in 1992 to 125 in 2007. With declining sales and a rapid growth in the number of poultry farms, average sales per farm dropped from about $1.0 million in 1992 to barely a $100 thousand in 2007. It appears that the production of poultry and poultry products in Skagit County shifted from larger farms selling into commercial markets to smaller farms – including organic operators – who sell primarily into direct consumer markets in the multi-county Seattle Metropolitan Area. The exception to this pattern is the growth of one large firm that produces organic, free range chicken products and sells them throughout the Pacific Northwest.

The sale of cattle, calf, hog, pig, sheep and lamb products declined slightly between 1982 and 1997 and then declined by almost half over the next five years, before stabilizing in 2007. The number of farms selling cattle, calf, hog, pig, sheep and lamb products declined from 662 in 1982 to 381 in 2007, before growing back up to 481 farms in 2007. The big drop in the number livestock farms between 1982 and 1997 more than made up for a slight decline in sales per farm. The per farm sales of $24,000 in 2007 were the lowest per farm sales level reported by the Census in 25 years. Again, several different factors seemed to be at work, notably hog, pig, sheep and lamb producers (as well as some producers of exotic livestock such as llamas) appear to be small operators – often organic – who sell directly to consumers, and the number of these small producers is rising.




f. Agro-Tourism

Farm based tourism in Skagit County takes several forms. The most well-known is the annual Skagit Valley Tulip Festival which occurs in April of each year. The Festival attracts national attention and about a quarter of its visitors come from out of state or out of country. Estimates of attendance and direct expenditures generated by the Festival vary widely. The Festival's most recent estimate puts attendance at over 1.0 million but The *Everett Herald* in 2008 estimated visitor attendance at 350,000 while *Travel & Leisure* in 2003 estimated attendance at 500,000. Dean Runyan Associates prepared a *Skagit Valley Tulip Festival: Economic Impacts and Visitor Profile* report for the Washington State Department of Community, Trade and Economic Development in 2000 and estimated the Festival's total attendance that year at 351,700 and its visitor attendance (i.e., attendees residing outside Skagit County) at 288,400.

Another wide range of estimates exists with respect to the direct expenditure's generated by the Festival. The Dean Runyan study estimated total direct expenditures at $14.0 million. EcoNorthwest in 2010 estimated total direct expenditure at "Skagit Agricultural Festivals and Events" at $19.0 million. An *Economic Impact Assessment* of the Festival in 2012 by the International Festivals & Events Association (IFEA) stated, "the event generated $206.97 in direct spending for each visitor that attended Skagit Valley Tulip Festival in 2012". Multiplying IFEA's per visitor expenditure times the number of visitors identified by Dean Runyan in 2000 gives a total direct expenditure

estimate of $59.7 million. To identify the rough size of the direct expenditure ballpark within which various estimates can be evaluated, TLA/BMA obtained Skagit County's quarterly retail sales for 2010, 2011 and 2012 as reported by the Washington State Department of Revenue (DOR). We calculated a trend line between the first and third quarters and subtracted the trended estimate from actual second quarter sales. The procedure produced an estimate of direct expenditures made in Skagit County by Festival visitors in the range of $3.5 million to $5.0 million.

DOR's tax-based sales estimates allow the estimation of the relative importance of agro-tourism for different places in Skagit County. Since Tulip Festival sites are located in Unincorporated Skagit Country, it was not surprising that the biggest relative impacts occur there. More surprising was the relatively large direct sales impacts occurring in Mount Vernon and miniscule impacts occurring in Burlington.

In addition to the Tulip Festival, the Skagit Harvest Festival and the Skagit County Fair also attract thousands of visitors each year. In 2003, a Skagit County Planning study estimated the direct expenditures generated by these events at $1.3 million and attendance at about 56,000. Within the context of other county fairs in western Washington however, Skagit's County Fair and Harvest Festival are relatively modest events.

Ducks Unlimited is actively working with farmers to promote the use of farmland by duck hunters. The EcoNorthwest study estimated annual direct expenditures by hunters in Skagit County at $1.5 million in 2010. The same study estimated that "Wildlife Watching" annually generated $26.0 million, but this estimate appears unreasonably high and further study seems warranted.

Other aspects of farm based tourism in Skagit County include roadside stands selling fresh produce to visitors, organic-based tourism being promoted by several organic farmers in the Skagit valley, and the ambiance associated with driving along scenic farm roads to reach historic La Connor.

Although estimates of the number of persons attracted to visit Skagit County by farm-based tourism and their direct expenditures vary widely, even taking the low end from the range of estimates revels that thousands of visitor days and millions of dollars a year are generated by agro-tourism.

## 6. Interviews with Skagit County Farmers[9]

A total of 19 interviews were conducted with farmers. Two were with organic dairy farmers, two with traditional dairy farmers, three with seed farmers (one organic, two traditional), four with potato farmers, 2 with bulb farmers, 1 with a berry farmer and three with vegetable farmers (one organic, one traditional and one part organic/part traditional).

- The average size of the farms involved in the interviews was 1,450 acres, and their range went from a low of 120 acres to a high of 6,000 acres.
- Half the farms both owned and rented/leased land while the other half owned all the land they farmed.
- Full time employment among the interviewed farmers averaged 50 workers per farm. Part time (including harvest) workers averaged 190 – with a seasonal peak of 1,700 on one farm.

Farmers interviewed were asked about major markets where they sold product, and – depending on the type farm – a variety of markets were identified. Organic dairies had their product processed at Darigold plants in Seattle or Portland and marketed by Organic Valley Cooperative (headquartered in Lafarge, WI). Organic vegetable farms generally sold their product to the Mount Vernon Cooperative or directly to consumers at farmers market and food stands. One organic grower reported selling one of his products (leeks) to retailers throughout the U.S.

Traditional vegetable farmers generally sold their product at high end, niche markets located across the PSR or directly to consumers. Seed farms sold their products to seed companies located locally, such as Christianson, D&D or Vikima.

Most potato farms were vertically integrated and grew, processed, packed and sold their product. Skagit's high quality red and yellow potatoes have national name recognition and traditionally have sold well in west coast U.S. and Canadian retail chain stores and wholesalers. The new high tech rail facility at Wallula in eastern Washington benefited local potato growers by opening up east coast markets. A few growers reported selling small amounts in foreign markets.

Berries were sold fresh in Washington, Oregon and California through both retail chains and at consumer direct outlets. Processed and/or frozen berries were exported to Japan. A small amount of bulbs and flowers were sold locally to tourists but the majority of product was sold to either west coast retail chain stores or wholesalers.

When asked where they obtained most of their equipment and supplies, the overwhelming majority of farms said they used local dealers, although a few bought some particular service

9. See Appendix 8 for a more technical discussion of Skagit's agricultural infrastructure

or supply from companies located in Whatcom County. Vertically integrated farms that did their own packing obtained boxes from companies located in either Seattle or Portland. Some larger farm operators reported using the agricultural divisions of large banks located outside Skagit County for financing.

Interviewed farmers were asked to assess Skagit's strengths as an agricultural area. Their responses converged on several key factors. Central to their responses were Skagit's soil and climate. The soil's high glacial clay content makes it very fertile (although it needs irrigation) while Skagit's coastal marine climate provides cool, long, growing days. Among other strengths, the most frequently identified were:

- An excellent infrastructure of drainage, dike and irrigation districts that – under current state law – are special purpose districts that own the water they generate.
- Passionate and forward looking farmers who have a long term commitment to sustainable agriculture in Skagit County (most have family succession plans), and know how to work cooperatively.
- Access to local farm machinery dealers who are available when problems occur that require immediate attention. Several farmers said that availability of service representatives was more important than getting their machinery and equipment at the lowest price.
- Widespread support for agriculture. Skagit's residents/voters want agriculture to remain healthy resulting in county land use regulations that support agriculture and a county Agriculture Advisory Board made up of farmers who advise local government on farm issues.
- WSU's Northwestern Washington Research Center in Mount Vernon provides excellent technical support as well as doing agricultural research that benefits the entire farm economy.
- Lots of small organic farmers and lots of young persons trying to get into sustainable farming.

When asked to assess Skagit's major weaknesses and/or threats as a sustainable agricultural economy, most farmers identified the two biggest issues as (a) over-regulation by state and federal governments and (b) water rights issues (particularly the ability to move water around to where it's needed). Other weaknesses/threats identified included:

- The rising costs of farm land and inputs are limiting entry into farming for young people.
- The average age of the existing farm population is rising.
- The encroachment onto farm lands from urban development, habitat/ conservation set-asides, and Indian fisheries' concerns threaten agriculture's economic viability.

- Consolidation of outlets for farm equipment and supplies can cause costs of farm operations to rise and threaten the agricultural economy's viability.
- Distance from eastern markets forces growers to specialize in high-end, niche crops and limits what they can produce and successfully market.
- The competition for water among farmers, Indians and environmentalists often appears to take place within a "win at any price" culture that precludes the ability to achieve collaborative solutions.
- Seed crops, potatoes, some berries and other high value crops deplete the soil and require extensive and often lengthy rotation, but farmers are lucky to break even on the rotation crops they currently use.
- Skagit needs a storage and shipping (trucking) coop to support organic sales and an organic processing plant to provide washing and packaging for small farmers. If such facilities don't develop, organic crop farming will not be able to reach its market potential,

## 7. Skagit's Agricultural Infrastructure[10]

a) Infrastructure Provided by Private Suppliers

The number of suppliers of input and output services was inventoried over a twenty year period (1993 – 2013) using data from the Skagit Valley's Yellow Pages, the Polk Directory and interviews. These sources indicate:

- Farm Equipment. Between 1993 and today the number of dealers ranged between four and seven. There was no upward or downward trend. Interviews with equipment dealers indicated this sector was and remains financially healthy.
- Fertilizer. The number of dealers in this sector was also essentially flat. There was a decline between 1993 and 2003; but there were two new entrants to the market since then, bringing the number of dealers up to seven. Interviews also indicated this sector is healthy.
- Wholesale Produce Fruit and Vegetables. Between 1993 and 2003 this sector experienced substantial growth, from 4 to 10 establishments. More recently there has been a slight decline to a current number of 8.
- Wholesale Potatoes. This sector has shown steady increases for the last two decades, from none in 1993 to a current level of 9. This reflects the expansion of potato acreage, the increasing sophistication and business acumen of those producing potatoes, and the vertical integration this industry has undergone in the Skagit Valley.
- Retail Fruit and Vegetables. This sector includes operations such as roadside stands and CSA's (Community Supported Agriculture). Its trend has been consistently upward, from 2 firms in 1993 to a current number of 9.
- Processors. The 1993 to 2013 trend has been flat with two processors exiting the market (National Frozen Foods and Source International) and two entering (Small Planet and Sakuma Brothers).

Overall, the agricultural infrastructure demonstrated a progressive increase. Despite the loss of the processing plants, the overall private sector agricultural infrastructure has increased at a healthy rate.

To gage the attitudes of business providing agricultural infrastructure in Skagit County, we interviewed 8 private employers. Their perceptions of Skagit's agro-industrial cluster

10. See Appendix 8 for a more technical discussion of Skagit's agricultural infrastructure

were generally positive and emphasized the County's soil and water, maritime climate, community and government support, proximity to the Seattle and Vancouver, B.C., metropolitan markets and the special purpose dike districts.

The weaknesses and/or threats to the farming community they identified were various "issues" with Native American organizations and the state's Department of Fish and Game, environmental regulation, and a weakness in marketing crops and publicizing Skagit County as the agricultural focus of western Washington.

b) Infrastructure Provided by the Public Sector

A major part of Skagit County's agricultural infrastructure is its 20 drainage, dike and irrigation (D&D) districts that own and operate 435 miles of drainage channels, 160 miles of dikes and levees, and 135 tide gates. Western Washington Agricultural Association staff estimate 60,000 acres of farmland in the delta areas are served by the districts and an estimated 35,000-40,000 acres of farmland would go under water if the D&D districts were abandoned.

D&D districts are so-called *Special Purpose Districts*, and each district's commissioners are elected by its own landowners. Each district's budget and work program is approved by its commissioners, submitted for approval to the County Commissioners, and paid for by property taxes levied on its own property owners.

As defined under Titles 85 and 86 of WA RCWs – which define *Special Purpose Districts* – water developed by D&D districts belongs to them and they can sell it to farmers for irrigation.[11] The importance of the D&D districts stems from both the composition of the delta's soil and the close-to-surface location of Skagit's water table, and it makes the D&D's one of the keys to agriculture's sustainability in the county.

Another major part of Skagit's public sector agricultural infrastructure is the WSU Agricultural Research Center. (WSU/ARC). It provides both basic research into agricultural production and also addresses specific problems Skagit growers may encounter. WSU used to operate ARC's in both Pierce County and Skagit County but – in a sign of both Skagit's strength and Pierce's weaknesses – the two were combined into a single western Washington facility located in Skagit County. WSU/ARC's research has been particularly important in supporting the seed and crop growing sectors of the county's agricultural economy and it recently added a livestock specialist staff position.

A third important public institution supporting Skagit agriculture is WSU's County Extension Office which provides services to both the economy's agricultural and natural

11. This is the only exception to Washington State's ownership and management functions over water rights

resources sectors. In particular, the Extension Office supports Skagit's unique annual seed *pining* event, which developed because of seed growing's unique isolation requirements for maintaining the quality of the seeds. Every year, seed company representatives and seed growers come together at the WSU/ARC where the Extension Office presides over an annual allocation of different parcels that meet the seed sector's requirements among seed growers and companies.

Additionally, Skagit contains a large variety of agriculture oriented non-profit organizations that are an important part of the infrastructure supporting agriculture.

c) Public sector rules & regulations

Local Government Rules and Regulation

Skagit County's current Comprehensive Plan was adopted in September 2007. Its purpose is to guide various land use decisions for the next 20 years. The Introduction of the plan provides an indication of how important agriculture is to the county.

> "Agriculture is the dominant factor in Skagit County's economy and community character. Farming and ranching have been an important part of the community's heritage since early settlement in the 1800's. The Skagit Valley is regarded as one of the most fertile valleys in the world, producing major commodities, specialty crops, and vegetable seeds and flowers with unique market niches."[12]

Federal Rules and Regulations

In addition to federal and state environmental regulations, labor issues were of particular importance to farmers. In general, existing labor and immigration regulations appeared to many farmers to be difficult to work with and needed to be overhauled.

12. Skagit County Comprehensive Plan, chapter 1, page 1.

## 8. Agricultural Markets[13]

There is no single, dominant market for agricultural products grown in Skagit County. Different crops, different types of production and different technologies combine to separate markets into different segments. Local, national and international markets exist for both traditionally grown and organic farm products, while seed crops sell into a distinct national and international submarket. Changes in transportation often bring with them new market opportunities.

a) Local markets

Several different types of local markets exist for Skagit's agricultural products. Both organic and traditional dairy farmers ship their product to Darigold facilities in King or Whatcom counties for processing. Because organic dairies sell through a national marketing cooperative that limits entry in accordance with effective market demand, the pressure for growth is absent and they are able to maintain operations at smaller size farms.

Local retail chains such as Costco or Hagen's purchase potatoes and vegetables from local producers. This market has been growing as an "eat local" attitude on the part of consumers has been getting stronger. In a similar manner, organic restaurants in the PSR have become a market for organic food produced by Skagit farmers.

The direct sale of agricultural products to consumers occurs in several submarkets.

- Neighborhood farmer's markets in Everett, Seattle, Tacoma and other regional cities where farmers can rent stalls and sell their products. These outlets are particularly popular for the sale of organic farm products.
- Roadside stands in Skagit County where farmers sell their products directly to consumers.
- On-farm markets operated by growers selling their own products. Such on-farm markets are also particularly popular for the sale of organic farm products.
- Organic food stores in the county that buy produce directly from farmers during harvest season – with at least one such outlet buying as much as 60 percent of the produce it sells from local organic farmers.
- Draper Valley Farms distributes its organic chicken products throughout Washington and the northern half of Oregon.

13. See Appendix 11 for a more technical discussion of Skagit's agricultural markets

b) National markets

The major crop produced in Skagit County and sold nationally is potatoes – sold all over the west coast and parts of the mid-west and east coast. Skagit red potatoes are a niche crop and are nationally known – primarily because of their beautiful color – and they command a prime price. Local growers sell to regional and national retail food chains as well as to distributers. The larger growers are vertically integrated and employ year-round sales staffs while smaller growers often work through commercial distribution channels.

Berry growing in Skagit County produces a superior crop that is sold successfully throughout the western United States.

Tulips, tulip bulbs and cut flowers are nationally distributed (particularly in western states) and local growers sell directly, through catalogue sales and to large retail chains.

Fifty percent of the U.S. supply of parsley, cabbage, and parsnip seed and 90 to 100 percent of the U.S. supply of Chinese kale, Chinese cabbage, Chinese mustard, and Brussels sprout seed are also grown in Skagit County.

c) International markets

Significant foreign export sales are made by potato farmers – primarily to Canada – and by farmers producing frozen berries which go to Asian markets.

Although not definitively documented, it is widely believed that Skagit County is a major producer of cabbage, table beet, and spinach seed for the world. About half of the world's beet and Brussels Sprout seed are grown in the Valley. The seeds grown in Skagit County are distributed worldwide by the seed companies.

## Summary of Part 2

Skagit County's total farm acreage dropped by 18,650 acres during the decade 1982 through 1992 but increased more than 18,560 acres between 1992 and 2007. Over the entire 25-year period 1982 through 2007, it was virtually unchanged.

Crop acreage however lost 15,580 acres between the 1982 and 2007. The growth of total farmland between 1992 and 2007 was largely attributable to added acres classified as woodland (3,200 acres), permanent pasture/rangeland (7,220 acres), and land in buildings (8,820 acres).

Harvested farm acres declined over the 25-year period but the decline was more than off-set by a better than doubling of sales per acre. As a result, the value of inflation adjusted total crop sales went up by two-thirds to reach $182.7 million in 2007.

Although Skagit's agricultural economy encompasses a large variety of crops, most agricultural acreage is concentrated in potatoes, hay and grass, pasture land, field corn and shellfish, which account for just over two-thirds of the agricultural acreage inventoried by WSDA in 2011. Of these land uses, only potatoes, field corn and shellfish are primarily harvested for market with the rest being rotational crops.

During the decade 1997 through 2007, there was a sharp increase in the number of Skagit farms with annual sales of less than $10,000. The number of farms with sales between $10,000 and $49,000 grew very slowly while farms with sales over $50,000 declined between 2002 and 2007. Measured in terms of acreage, a different pattern emerges. The number farms with between 10 acres and 179 acres rose between 1997 and 2007 while the number of farms over 180 declined.

Skagit farms are primarily owner operated. Only 11 percent of farms were operated by renters in 1982 and that percentage shrunk to five percent in 2007.

The percent of farm operators who were female rose from seven to 23 percent over the 25-year period 1982 through 2007 while the percent of crop acreage under their direction rose from two percent to nine percent.

The average age of farm operators went up steadily from 50 years in 1982 to 56 years in 2007.

The inflation adjusted sales of livestock and livestock products exhibited a strong downward trend. Dairy farms declined from 140 farms in 1982 to 52 farms in 2007. However the number of dairy farms fell at a faster rate than inflation and sales per farm went up from $750 thousand in 1982 to $1.2 million in 2007.

The performance of organic and traditional dairies was very different. Organic dairies sold their product through a national marketing cooperative, earned a good return on production, and used their revenues to grow larger, more integrated, and more technologically sophisticated. Traditional dairies faced highly volatile retail prices, and each time there was a major downturn in milk prices, marginal producers were driven out of business.

A total of 19 interviews were conducted with Skagit County farmers who were asked to assess Skagit's strengths as an agricultural area. Their responses converged on Skagit's soil and coastal marine climate that provides cool, long, growing days. When asked to assess Skagit's major weaknesses, most farmers identified the two biggest issues as (a) over-regulation by state and federal governments and (b) water rights issues (particularly the ability to move water around to where it's needed).

Overall, the infrastructure of Skagit's agricultural cluster demonstrated a progressive increase. Despite the loss of processing plants, private sector agricultural infrastructure increased at a healthy rate.

The weaknesses and threats to the farming community identified by businesses that provide infrastructure services or goods to Skagit farmers were: various "issues" with Native American organizations and the state's Department of Fish and Game, environmental regulation, and a weakness in marketing crops and publicizing Skagit County as the agricultural focus of western Washington.

A major part of Skagit County's agricultural infrastructure is its 20 drainage, dike and irrigation (D&D) districts that own and operate 435 miles of drainage channels, 160 miles of dikes and levees, and 135 tide gates. Western Washington Agricultural Association staff estimate 60,000 acres of farmland in the delta areas are served by the districts and an estimated 35,000-40,000 acres of farmland would go under water if the D&D districts were abandoned.

Another major part of Skagit's public sector agricultural infrastructure is the WSU Agricultural Research Center. (WSU/ARC). It provides both basic research into agricultural production and addresses specific problems Skagit growers may encounter.

A third important public institution supporting Skagit agriculture is WSU's County Extension Office which provides services to both the economy's agricultural and natural resources sectors. Additionally, Skagit contains a large variety of agriculture oriented non-profit organizations that are an important part of the infrastructure supporting agriculture.

There is no single, dominant market for agricultural products grown in Skagit County. Different crops, different types of production and different technologies combine to separate markets into different segments. Local, national and international markets exist for both traditionally

grown and organic farm products, while seed crops sell into a distinct national and international submarket. Changes in transportation often bring with them new market opportunities.

## Part 3: Projections and Conclusions

### 9. Projection of Current Trends

a) Major Influences

The four major forces that will influence the future viability of agriculture in Skagit County are: demographics, economics, technology and government regulation/permitting.

I. Demographics

Skagit County's population was reported by the Census in 2010 as 116,900. Over the 50 year period 1960 through 2010, it grew by an average of about 1,300 persons (or 1.6 percent) compounded annually.

If Skagit's historical trend is projected forward, the county's population would be 134,560 in 2020 and 158,640 in 2030. The population projection contained in the *Envision Skagit* study done by the County Planning Department projects Skagit's population to be 135,760 in 2020 and 156,500 in 2030.

The U.S. Census reports that Skagit's persons per household averaged 2.54 between 2008 and 2012 and households per housing unit was 1.13 over the same period. If these ratios stay the same, there will be about 39,600 additional persons, 15,600 additional households and 17,700 additional housing units in Skagit County in the year 2030. This is an increase of just over one-third in the number of housing units in Skagit County over the next 20 years. It can only come from (a) conversion of existing farm, or other open space, land into residential uses, or (b) higher densities in Skagit's cities and towns.

II. Economics

The major economic force acting on Skagit's agricultural economy will be the growth of non-agricultural wage and salary employment.

Skagit County's peak employment level was reached in 2007, just before the recession. Relative to Washington State, Skagit County entered the recession early, experienced a greater decline and took longer to see a recovering labor market. As of 2012, Skagit County was still lagging the state and the nation in its recovery. It will take time to rebuild the economy, and the local outlook points to a "slow yet steady" recovery.[14]

Such a slow steady recovery should not generate important industrial or commercial development pressures to convert farm land. At the same time, current trends imply

14. This paragraph is adapted from *Skagit County Profile*, Washington State Employment Security Department, 2013.

that most of Skagit's non-agricultural longer term job growth will occur in the service sector; and both private and public (mostly local school) jobs tend to concentrate in urbanized locations. There should be little pressure for agricultural land conversion generated by the growth of service jobs.

## III. Technology

Technology has influenced agricultural production in several import ways. Mechanization has brought GIS controlled tractors and robotic dairies to the production process. Transportation technology has opened up new markets through refrigeration, containerization and airfreight. Communication systems have changed direct marketing and the internet linked control of on-farm systems (e.g., irrigation)

There are lots of different lists on which gurus list technology changes that have most influenced agriculture over the past decade; and while there is disagreement about what technologies to include, agreement is widespread that agriculture's technology has changed significantly – and will continue to change in the future.

## IV. Government Regulation/Permitting

Government regulation and permitting – at the local, state, and federal levels – impact almost every aspect of farming in Skagit County.

Local government is the key non-market influence on how land is used in Skagit County. The county has a strong transfer of development rights (TRD) program supported by revenues from the conservation futures tax (CFT) authorized under Skagit's Farmland Legacy Program that is used to acquire the development rights of strategically located farmland. The County Assessor taxes farmland on the basis of its *current use* as distinguished from the highest *economic use* standard that's applied to non-agricultural lands. Overall, the American Farmland Trust (AFT) awarded Skagit County a score of 102 points out of a maximum of 136 for its protection of agriculture. There appears to be widespread voter support for maintaining the viability of agriculture activity in the county, and it is likely that this trend toward local protection of farmland will continue.

State government's most important agricultural impact is its determining the amount and distribution of water available for agricultural production.

b) Major Trends

I. Traditional Agriculture

Historical and current data reveals an interesting transformation in "traditional" agriculture in Skagit County[15]. Historically, agriculture made up a significant part of the five county – Pierce County to Whatcom County – PSR gross domestic product. Today, the only counties with significant agricultural economic bases are Whatcom and Skagit counties, each with similar cropland acreages. Only Skagit's continues to grow at a healthy rate, with agricultural sales about twice that of Whatcom.

Skagit Valley agriculture, sandwiched between Vancouver B.C. on the north and the Seattle Metropolitan Area on the south and bisected by the Skagit River is a unique agricultural area. It's traditional agricultural base is specialized, complex, diversified, and an intense user of land.

In contrast to the more industrial and extensive land-use practices in Eastern Washington, for example, Skagit's red and yellow thin skinned potatoes are grown on relatively small farms where the farmer may pass over the land 10-12 times from land preparation through planting. A type of cultivation that requires very specialized harvesting equipment to insure there is no damage to the thin potato skins.

II. Organic Agriculture

Organic agriculture is relatively new addition to the mix of Skagit's agricultural activity. It is still small, but growing rapidly and takes several different forms. Unfortunately, organic agriculture is sufficiently new that it has not been incorporated into most statistical data bases, and the following is based mostly on interviews conducted as part of this study.

There are a few larger growers of organic vegetables, fruits and/or berries but most production occurs in smaller farms, often by younger persons who got into organic production for ethical as much as economic reasons. Organic crops raised in Skagit County are mainly destined for local and regional green markets. One local producer sells his product nation-wide, but he is the exception. The market for locally produced, organic foods is expected to grow in the coming decade and should create a strong demand for output from this part of Skagit's agricultural economy.

Organic dairy's distribution of their product through a national marketing co-operative is likely to continue into the foreseeable future. It makes existing, technically progressive,

15. Traditional is distinguished from "new age" agriculture such as organic dairies, organic free range non-GMO poultry, fresh vegetable production and greenhouse operations.

organic dairies very viable but also will put an upper limit on the number and size of organic dairies in the county.

The growing of organic seed will likely grow somewhat in parallel to the growth of the entire organic agriculture sector. Because of the isolation required for organic seed growing, the rate of growth will likely be less that the equivalent rate in the production of organic crops.

Overall, the trend of organic agricultural products is strong. As one interviewee said, "people in the Northwest want high quality fresh food and they are willing to pay for it." If this trend continues to be strong in the future, organic agriculture could become a significant component of Skagit's total farm economy.

## III. Urbanization/Urban Encroachment

### Population and Employment Pressure.

Skagit County is "sandwiched" in between two rapidly growing metropolitan areas. Eighty one miles to the north is Vancouver, B.C. with a 2012 population of nearly 2.1 million. Sixty two miles to the south is the Seattle Metropolitan area with a 2012 population of some 3.6 million. Therefore, about 5.7 million people are "squeezing" Skagit County's land base.

For Skagit's agriculture this "squeezing" effect is both a blessing and curse. On the blessing side it provides a huge market for agricultural goods and agro-tourism. On the curse side it increases the demand for urban land uses (both residential and commercial), increases levels of traffic, and leads to the impenetrable paving of open space land.

### Permitting.

We counted the number of permits granted for built and manufactured homes within areas zoned Ag-NRL during the past five years. There were 48, or an average of about ten per year. Eight were in very close proximity to Mt. Vernon and nine were immediately east of the airport within the Skagit Golf and Country Club. Six were a short distance south of the Hickox Rd./I-5 interchange. The remaining 25 (some five/year on average) were scattered throughout the Ag-NRL area. This is minor conversion of agricultural land in comparison to what happened in other PSR counties.

### Land Values.

In 2009 Mundy/Lane conducted a study for the Skagitonians to Preserve Farmland, the City of Burlington and Skagit County entitled "Demand For and Value Of Density (Heritage) Credits." As a part of that study an exhaustive analysis of agricultural land

market and economic values was conducted. Multiple independent methods were used to arrive at both sets of values. The agricultural land value conclusions were: economic value - $3,500/acre; and market value - $12,250/acre. A difference of $8,750 – or 3.5 times.

From a profit maximization point of view, this is a significant financial incentive to convert land – particularly for farmers who want to retire and where there is no family succession plan. The major reasons this conversion isn't taking place appears to be the commitment of many farmers to the maintaining the viability of agriculture in Skagit County, rigorously enforced zoning and the public support in Skagit County for retaining a strong agricultural economy.

## IV. Labor/Immigration

Labor issues were of particular importance to farmers. In general they felt a more manageable and liberal immigration policy would help.

## V. Habitat Restoration & Conservation

Habitat restoration impacts can be positive or negative for agriculture. Positive impact habitat restoration occurs when farmers earn income by leasing lands that are put into some form of habitat, most often for shore birds. Negative impact habitat restoration occurs when farmland is purchased for habitat restoration and permanently removed from agricultural production. Both types of habitat restoration are occurring, but no reliable data is available that quantifies by how much.

However as discussed above, WSDA inventoried total farm acreage in Skagit County in 2005, 2008 and 2011. Included in the inventory was acreage that had been in agricultural production but was no longer. The net change reported by WSDA between 2005 and 2008 was a decline in land used for habitat restoration/conservation – with at least part of the reason being the completion of habitat leases and the return of the land to agricultural activity.

Between 2008 and 2011, 278 acres were taken out of agricultural production. By way of comparison, there were fewer acres taken out of production for housing or other development between 2008 and 2011 than there were for habitat and conservation purposes.

There is no hard data on how much land was leased and how much sold but the current trend is for habitat/conservation pressures to be as great as pressures by developers for the conversion of farmland over the coming decades.

## 10. Concluding Remarks

The purpose of the "agro-industrial cluster" analysis was to identify the web of economic, social, personal and regulatory relationships (collectively called agriculture's *infrastructure*) that support – and are necessary for – a viable and sustainable agricultural economy in Skagit County. This section addresses some overall conclusions we reached during study. To provide structure to our comments, they are organized in the form of a SWOT (strengths, weaknesses, opportunities, threats) analysis.

Strengths

There are numerous strengths Skagit Valley offers the agricultural community. Foremost are three things provided by nature; excellent soils, a moderate climate and plenty of water. Others are a product of local human activity including the collegiality among farmers and those who support the farming community, the excellent agricultural infrastructure (both inputs and outputs) and the support provided by the local community.

Agriculture in general, and in the Skagit Valley in particular, has and is adopting and adapting to technological advances. Tractors with GPS and robotic diaries are two examples.

The Skagit Valley is internationally renowned for its seed production.

When comparing the agricultural infrastructure in the Skagit Valley today with the infrastructure in the Puyallup Valley in the late 1970's there were many similarities and differences. Similarities included a decline in processors, urban pressures and healthy input services. There was one striking dissimilarity – land use controls. It was the lack of land use controls coupled with the passage of the Growth Management Act that "brought down" the Puyallup Valley agricultural economy. In contrast, Skagit has tough land use controls that are enforced and a community that is bent on preserving Skagit Valley's agriculture.

Interviews with a cross section of persons in the agricultural community indicates that they want to preserve agriculture in the Skagit Valley. There are currently three ways that this is currently being accomplished: first, by funding the acquisition of development rights through a real estate tax levy; second, by zoning land Ag-NRL and Rural Reserve and making it difficult to build residences in these areas; and third, assessing agricultural land at its "use value" rather than "market value" which results in the tax burden on agricultural land being about 70% less than it otherwise would be.

*Sustainable agriculture* means an "integrated system of plant and animal production practices having a site-specific application that will over the long-term satisfy human food and fiber needs, enhance environmental quality and the natural resource base upon which

the agriculture economy depends, make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls. Using this definition, it seems that Skagit County farmers are doing a pretty good job of practicing sustainable agriculture.

Finally, the demand for organic, locally produced agricultural products has been growing (the so-called "locavor" movement). The Pacific Northwest corridor from Vancouver, B.C. to Seattle has a population that appears to be both strongly inclined toward locally produced agricultural products and willing to pay the price premium they command. Even for non-organic produce, the demand for locally produced agricultural products is growing. There is every reason to expect the demand for Skagit County's agricultural output to remain strong in the foreseeable future.

Weaknesses

The costs of agricultural production in Skagit County are high compared to other areas of Washington and this forces growers to specialize in high-end, niche crops. Without the relative price inflexibility of such market niches, local growers would be at a competitive disadvantage – locally, regionally and nationally.

The high cost of farm inputs in Skagit County (especially land, lagoon management, spraying and energy costs) are limiting entry into farming for young people while the average age of the existing farm population is rising.

Seed crops, potatoes, some berries and other high value crops deplete the soil and require extensive and often lengthy rotation. This is a drain on profitability since farmers are lucky to break even on the rotation crops they currently use.

In the Skagit Valley there are three cities (Mt. Vernon, Burlington and LaConnor) in the Agriculture-NRL zoned area. Any geographic expansion of these cities through annexation of adjacent lands would result in a loss of agricultural land.

Many farmers are multigenerational and have succession plans, but others do not and plan on selling their farms on retirement. Given the interrelated nature of the Skagit Valley farming community, the introduction of too many new farming families at the same time could disrupt the working relationships fundamental to Skagit's agricultural community.

There does not currently exist an efficient, low cost method of farm to market movement for vegetables, fruits and berries. The new rail terminal at Wallula, Walla Walla County, in Eastern Washington has opened up the potential for shipping Skagit produce to east coast markets by refrigerated rail rather than truck. This should reduce the cost of shipping fresh agricultural products to eastern markets. However other transportation needs, such as improved rail access to Conway, need attention.

## Opportunities

Organic farming is a small but growing part of agriculture in Skagit County but most persons we interviewed showed little appreciation for the potential contribution of organics to agriculture's viability in Skagit County. Providing a storage and shipping (trucking) facility – possibly a coop – to support organic sales would help organic farmers reach their potential. So would an organic processing plant to provide washing and packaging for small farmers.

Increased organic agriculture in the Skagit and Samish Basins will reduce the use of chemicals and reduce concerns about possible adverse environmental impacts from agriculture.

The WSU Agricultural Research Center is working on developing seed crop varieties that will require fewer years of rotation between harvests. This would be the same as adding acreage to Skagit's agricultural land base, both in terms of the quantity and value of seed production.

## Threats

Three threats appear to be most prevalent in the minds of growers: over-regulation, water rights and labor. Over-regulation issues primarily relate to state and federal governments' application of environmental regulations. Water rights issues mainly relate to the ability of farmers to move water around to where it's needed. Labor issues primarily apply to the fed's e-verify requirements.

Environmental threats mostly involve the regulation and control over land uses and appear to represent a shift from the sustainable use and conservation paradigm which prevailed during most of the 20$^{th}$ century to a new paradigm whose emphases is on restoration of pre-white contact physical and biological conditions. This shift is viewed by many farmers as a threat.

Water threats relate mostly to two issues: (1) salmon recovery and (2) irrigation. Salmon recovery issues stem from the interaction of the Endangered Species Act (ESA) and Indian treaty rights, as established by the "Bolt Decision". The Federal government considers the tide gates operated by Skagit's Drainage Districts to be a barrier to salmon spawning and also want lands immediately adjacent to bodies of water to be free of chemical fertilizers and restricted from cattle grazing to prevent coliform pollution. Particularly for small farmers, the 50-foot no-cattle buffer for all salmon related waterways threatens their economic viability.

While these threats can lend themselves to mediated solutions, many farmers feel that the aggressive assertion of treaty rights by the Swinomish Tribe under the Bolt Decision and

aggressive assertion of the new environmental paradigm polarizes these issues and leads to a “winner take all” culture.

Other threats worth mentioning are: (a) consolidation of outlets for farm equipment and supplies can cause costs of farm operations to rise and threaten the viability of Skagit’s agricultural economy and (b) seed crops, potatoes, some berries and other high value crops deplete the soil and require extensive, often lengthy rotation, that puts downward pressure on farm profits since  farmers are lucky to break even on the rotation crops they currently use.

## Summary of Part 3

In summary, Skagit has a viable agricultural economy but one that faces many challenges. They can be addressed with public policies that will sustain agriculture in the years to come. If ignored however, agriculture's threats could first constrain and then diminish its future potential.

# *Appendix 1*

# *Detailed Analysis of Puyallup Valley Agriculture: 1997 – 2012*

*Puyallup Valley*

Unfortunately, comprehensive statistics on Puyallup Valley agriculture over a similar time frame are not available. However, prior to 2003 the Washington State Department of Agriculture began a program and in 2003 issued its first inventory of the amount of land within the state devoted to agriculture. The inventory has been conducted by department employee Perry Beale using a GIS system and producing "pivot" tables showing, on a county by county basis, for every 3rd year, the amount of land devoted to various types of agricultural, and ex-agricultural, uses. Therefore, assuming an apples-to-apples process we can make some county to valley comparisons.[16] Table 6 (County and Puyallup Valley Crop Acreages) shows the relationship between forage/hay, vegetables and nursery stock for 2007 and 2011.

- Forage/Hay acreage decreased between 2007 and 2011 in the county, consistent with the 1954 to 2007 decline. The acreage in the valley is about 10% of that in the county. This is reasonable as the livestock industry, principally dairy, has relocated.
- Vegetable acreage in the county increased between 2007 and 2011, driven mainly by the increase in the Puyallup Valley. The Valley is an important supplier of fresh product to the Puget Sound market.
- Nursery Stock declined slightly over the four year period and the county's acreage is principally in the valley, again supplying the urban area. Here we find certain agricultural land uses that are complimentary with urban land uses thriving and/or expanding.

Table 7 ( Puyallup Valley Vegetable/Berry Production) shows a general decline between 1977 and 2011 in many vegetable and berry crops. This seems to be a transition from commercial to urban fresh market farming, a phenomena noted in Table 5 (Pierce County Agriculture) where the acreage classified as "commercial" declined from 567 acres in 1974 to 98 acres in 2007. This table is also consistent with the decline in farm size, larger farms being commercial, and smaller farms supplying the local market rather than large processors.

In Beale's more recent inventory work he has also included lands that have been converted from farmland to urban land. In the Puyallup Valley 1,027 acres have developed for residential and industrial uses (primarily north of Orting and Sumner) and 790 acres into golf courses (north of Orting) between 2003 and 2011.

16. The Census of Agriculture uses a self-reporting census whereas the Beale process quantifies acreage "in the field."

Table 6
County and Puyallup Valley Crop Acreages

| | Pierce County | Pierce County | Puyallup Valley |
|---|---|---|---|
| | 2007 | 2011 | 2011 |
| Forage/Hay | 7,493 | 3918 | 320 |
| Vegetables | 1622 | 2239 | 1897 |
| Nursery Stock | 879 | 760 | 676 |

SOURCE: *TLA and BMA, from U.S. Census data, various years*

Table 7
Puyallup Valley Vegetable/Berry Production

| | Acreage | | Percent Change |
|---|---|---|---|
| Crop | 1977 | 2011 | |
| Rhubarb | 450.0 | 300.3 | -33.3% |
| Raspberry | 516.0 | 165.9 | -67.8% |
| Blueberry | 130.0 | 36 | -72.3% |
| Sweet Corn | 1,800.0 | 95.4 | -94.7% |
| Celery | 60.0 | 0 | -100.0% |
| Lettuce | 63.0 | 1.2 | -98.1% |
| Carrots | 20.0 | 0 | -100.0% |
| Snap Beans | 2.0 | 148.3 | 7315.0% |
| Cucumbers | 448.0 | 52.8 | -88.2% |
| Total | 3,489.0 | 799.9 | -77.1% |

SOURCE: *TLA and BMA, from U.S. Census & WSDA data*

g) Infrastructure

Successful farming is dependent on sources of inputs (farm equipment sales and service; seed, fertilizer and pesticides) and sources to acquire outputs (processors and wholesale buyers). Table 8 (Agricultural Infrastructure, Puyallup Valley) inventories the firms in those four categories for the period between 1969 and 2012. Key findings are:

- Farm Equipment. In 1969 there were 9 firms selling and/or servicing farm equipment from Seattle on the north to Enumclaw on the south, five in the Puyallup

and Sumner vicinity. By 1979 the number had declined to four and in the 2012 inventory there were three.

- Fertilizer, Pesticides and Seed. In 1969 there were 5 dealers in the Tacoma and Renton area. In 1979 there were 6; today there is one.
- Processors. In 1969 there were 11 establishments processing a broad cross-section of vegetables. These were located in Kent, Sumner and Puyallup. By 1979 the number had declined to 4, today there are none.
- Wholesale Produce. In this category the trend has been the opposite, a steady increase. There were three in 1969, 4 in 1974, 5 in 1979 and today there are 18.

In summary, firms providing necessary farm inputs have been steadily decreasing. This makes farming more difficult (less selection, inconvenient) and expensive (higher prices, added transportation costs). Along with this has come another loss, that of “field men.” These are experts employed by private entities (fertilizer, seed, pesticides) and public entities (county extension agents) who farmers rely on for advice. In terms of acquiring farm outputs, there has been a complete transformation from major food processors (Stokeley Van Camp, Delgety) to wholesalers who source fresh vegetables directly from the farmers.

The above narrative with its tables and statistics suggests there has been considerable urban encroachment into and displacement of agricultural activities in the Puyallup Valley. Seeing what has occurred is also helpful. Therefore, what follows are several aerial photographs of the valley, then and now. Figure 1 through 3 (Sumner and North Aerials. 1979 & 2012 and Orting Valley Aerials, 1979 & 2012).

## Table 8 Agricultural Infrastructure Puyallup Valley

| Farm Equipment | | | | | |
|---|---|---|---|---|---|
| **Name** | **Location** | **1969** | **1974** | **1979** | **2012** |
| Rock Bay Equpipment Co. | Puyallup | ✖ | ✖ | ✖ | |
| Enumclaw Tractor and Equipment Co. | Sumner | ✖ | ✖ | ✖ | |
| Enumclaw Tractor and Equipment Co. | Enumclaw | ✖ | ✖ | | |
| Kemp Shredder Sales | Federal Way | ✖ | ✖ | | |
| Puyallup Tractors Inc. | Puyallup | ✖ | ✖ | | |
| Evergreen Equipment Co. | Puyallup | ✖ | ✖ | | |
| Smith Tractor and Equipment Co. | Tacoma | ✖ | ✖ | | |
| Rainier Tractor and Equipment | Puyallup | ✖ | | | |
| International Harvester Sales and Service | Seattle | ✖ | | | |
| Buck & Son Tractor Co. | Fife | | | ✖ | |
| Farwest Farm Systems | Tacoma | | | ✖ | |
| Summit View Trucks and Equipment | Tacoma | | ✖ | | |
| Jennings Equipment | Puyallup | | | | ✖ |
| Washington Tractor | Sumner | | | | ✖ |
| Brim Tractor Company | Sumner | | | | ✖ |
| **Total** | | 9 | 7 | 4 | 3 |
| **Fertilizers (Wholesale Dealers)** | | | | | |
| **Name** | **Location** | **1969** | **1974** | **1979** | **2012** |
| Nu Life Fertilizers | Tacoma | ✖ | ✖ | ✖ | |
| Agricultural Dealers Supply | Tacoma | ✖ | ✖ | ✖ | |
| Pacific Argo Company | Renton | ✖ | ✖ | ✖ | |
| Stauffer Chemical Co. | Tacoma | ✖ | ✖ | ✖ | |
| Alaska Fish Fertilizer Inc. | Renton | | ✖ | ✖ | |
| Smith A R & Co. Inc. | Renton | ✖ | ✖ | | |
| Nutek Corp. | Tacoma | | | ✖ | |
| Bay Zinc Co. | Tacoma | | ✖ | | |
| Agrivestment, Ltd. | Tacoma | | | | ✖ |
| **Total** | | 5 | 7 | 6 | 1 |

*Source: TLA & BMA*

Figure 2 (a)  Orting Valley Aerial, 1979


Figure 2 B  Orting Valley Aerial, 2012

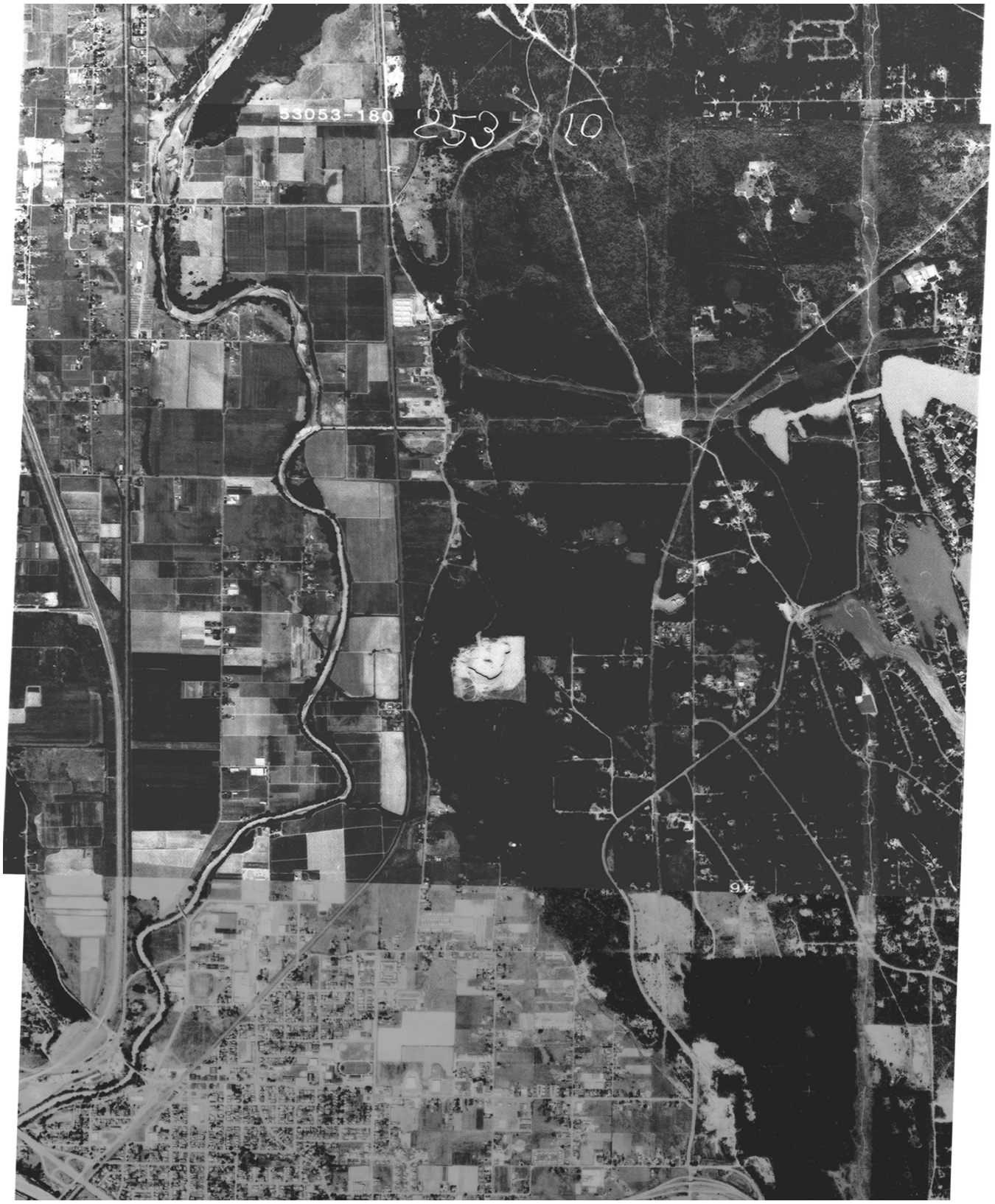



Figure 3A  Sumner and North  Aerial. 1979


Figure 3B Sumner and North Aerial 2012

E) Why the Change?

In 1979, when one took a close look at agriculture in the Puyallup Valley, it was becoming obvious that change was occurring. And, the change would be detrimental to the viability of agriculture there. This was BM&A's conclusion in August, 1979: "The pressure of urbanization is presently being felt in the Puyallup Valley, more in some ways (increased land values, decomposing agricultural infrastructure, etc.) than in others (commercial and residential land use changes). Some agricultural operations appear to be quite profitable; raspberry, dairy, rhubarb and blueberries. Others are marginal and are "making it" only on appreciating land values; bulbs and flowers and vegetables. Strawberry operations appear to be unprofitable.

The changing profitability of agricultural operations had significant implications for future agriculture in the Valley. For example, marginal costs of the Valley's two remaining processors, Delgety and Valley Pack, were very close to (and could well have been equal to or greater than) marginal revenues. This was due – in large part – to decreasing product to process. Numerous Valley farms did not produce adequate income to cover building and equipment amortization. Some did not provide an adequate owner/operator salary. The majority of the analyses used to measure profitability suggested that Puyallup Valley agricultural operations would tend to become less, rather than more, profitable.

To the casual observer, for example driving through the Puyallup Valley in 1979, one would get the impression agriculture was doing very well economically and financially. However, upon close examination, by doing in-depth interviews with farmers, doing a pro forma financial analysis of their operation quantifying the change in the number of firms supplying goods and services to and acquiring goods from farmers over the 1969 -1979 decade, one would conclude that commercial agriculture was becoming less viable.

To better understand the nature of this change between 1979 and today, interviews were conducted with six of the area's farmers. Some were third and fourth generation farmers such as Jake Sterino and Allen Scholz. Some were relatively new such as Dan Hulse (although this interview was very short due Hulse's concern for confidentiality and time constraints) and Burt Haugen. We discussed strengths and weaknesses of farming in the greater Puyallup area.

Strengths.

There were few.

- An important one is the quality of the soil.
- Another was the introduction of "niche" farming, such as organic.

Weaknesses.

There were many.

- Some are relatively straight forward, not unusual or have been discussed above:
  - Fugitive dust from farming operations;
  - Noise;
  - Street incompatibility between farm equipment and autos;
  - Labor shortages;
  - Rules and regulations (labor, water, use of pesticides, land use);
  - Disintegration of the agricultural infrastructure.
- Some are more complex.
  - Interstate 5. One respondent indicated the transition in agriculture began with I-5's development.
  - The Port of Tacoma. This was and still is a "jobs" versus "agriculture" issue. The POT has been a significant driving force behind the conversion of farmland for industrial purposes.
  - Road infrastructure. Substantial improvements to SR167, SR410 and River Road East have occurred over the last 30 years, which has encouraged the land conversion process.
  - Land values. This is complex and interesting.
    - Thirty years ago the majority of the land in the Puyallup Valley was unzoned;
    - Urban pressure (residential and non-residential) caused a rapid increase in values reflecting a change in:
      (1) the highest and best use of the land, especially near urban areas (Puyallup, Fife, Sumner and Orting),
      (2) industrial land uses (Port of Tacoma), and
      (3) transportation corridors;
    - It was easy to capture this increase in value because the land was unzoned;
    - Those selling faced a dilemma:
      1. Sell and reinvest in their agricultural operation, or
      2. Sell, retire and/or invest the proceeds elsewhere.
    - For the vast majority of sellers the second option was chosen.
    - This process changed radically when land use regulations were imposed in 1995.

h) County and City Policies

The reason Pierce County retained BM&A in 1979 to study the viability of agriculture in the Puyallup Valley was to better understand how urbanization could affect agriculture there and to weight the trade-offs between the economic activity created by more urbanization, principally related to the Port of Tacoma industrial complex, versus preserving agriculture.

In the early 1980's Pierce County developed a Comprehensive Plan that was presented to county voters. It was rejected in 1985. The state passed the Urban Growth Management act in 1990. The county and cities worked on establishing growth area boundaries, which went into effect in March 1995. Between 1979 and 1995 (15½ years) Puyallup Valley agriculture was transformed:

- Puyallup and Fife annexed a large amount of agricultural land;
- Puyallup zoned the area north of the river industrial;
- Fife zoned all of its area residential, commercial and industrial;
- Sumner annexed the White River Valley land to its north and zoned the majority of it industrial with a small amount of residential leaving an area zoned agriculture of about 100 acres.
- This is why the acreage in vegetable and berry production dropped from 3,489 acres in 1977 to 800 acres in 2011, a loss of 2,689 acres or 77% of this cropland.
- The remaining non-urban land was zoned ARL (Agricultural Resource Land) or RF (Rural Farm).

Today, for farmers, zoning is an important issue for those owning land zoned ARL or RF that was previously unzoned, for it dramatically decreases the land's market value. To farmers this is an important equity issue. To address it Pierce County has adopted a Transfer of Development Rights (TDR) program. It is complex, costly and largely unworkable due to a lack of funds and a simple property rights transfer mechanism.

In addition, there has been a significant transition in the nature of land ownership in the valley, from farmers to investors/speculators.

In 1979 there were indications that agriculture in the Puyallup Valley was slowly deteriorating. The agricultural infrastructure was in decline, gross farm income was declining and operating costs were increasing.

In the 1980's in the north part of the valley the demand for industrial land was increasing causing land values to increase and the highest and best use of land to change, mainly to industrial. The county attempted to pass a comprehensive plan. Many farmers took advantage of land market conditions and sold their farms with the knowledge they would eventually face land use controls (zoning) and asset depreciation.

By the mid-1990's agriculture was at a precipice. Cities annexed large amounts of agricultural land, which was subsequently designated (zoned) industrial and residential. Agriculture's remaining critical mass was fractured. What remains today are a few highly specialized large scale agricultural operations (bulbs, vegetable consolidation) and some struggling farm-to-market operations.

# *Appendix 2*

# *Detailed Literature Review*

## Literature Review

The existence of a critical mass of farmland needed to ensure the economic viability of agriculture was studied by Dhillon and Derr in 1974, who estimated the critical size necessary to operate at or close to the minimum per unit production costs for various agricultural commodities grown in the Philadelphia-New York-Boston corridor[17]. Daniels and Lapping proposed a critical mass threshold definition of (1) at least 100,000 acres, and/or (2) $50 million in agricultural sales in a 2001 study.[18]

A widely cited analysis of the concept was developed by Lori Lynch in collaboration with Janet Carpenter under a grant from the Maryland Center for Agro-Ecology.[19] The conceptual model underpinning their research goes as follows: If the farm acreage falls below some threshold level, businesses that supply inputs to farms, as well as businesses that buy or distribute farm products, will leave the local area. The costs of shipping-in fertilizer, feed, fuel and other needed products, plus the higher transportation costs involved in shipping farm commodities to more distant markets, cause a rapid fall in farm incomes which accelerates the conversion of farm land to higher valued uses.

Lynch and Carpenter used an econometric model to test for the presence of a critical mass for agricultural production in the six Mid-Atlantic States of Delaware, Maryland, New Jersey, New York, Pennsylvania and Virginia over the 50 year period from 1949 to 1997. They found "that as the net returns to agriculture decrease in a county, the county will lose farmland at a faster rate."[20] Specifically, they found that farmland loss occurs when (a) the profitability of the farm sector decreases, or (b) farmers and farm families can earn more off the farm than on, or (c) the demand and thus price for land for residential or commercial uses increases.

However, eighty percent of the farmland studied by Lynch and Carpenter was removed from farming during the first half of the study period, and looking at just the post-1974 years raises questions about whether decreased agricultural profitability is sufficient to explain farmland loss. They conclude, "further examination of whether there is a critical mass and what causes and what slows farmland loss is needed."[21] In reviewing Lynch's more recent 2006 work, S.J. Breslow summarizes the conclusion which emerges from Lynch's work as: "the recent emphasis on preserving a critical mass of agricultural land may be insufficient to ensure the

17 Dhillon, Pritam S. and Donn A. Derr, "Critical Mass of Agriculture and the Maintenance of Productive Open Space," *Journal of Northeastern Agricultural Economics Council*, 3(1):23-34

18. Daniels, Tom and Mark Lapping, "Farmland Preservation in America and the Issue of Critical Mass," presented at the American Farmland Trust National Conference, November 13, Chicago, IL

19. Lynch, Lori and Janet Carpenter, *Does the Farm Sector have a critical mass?* (Dept. of Agriculture & Resource Economics, University of Maryland, 2002); and Lynch, Lori, "Does the Number of Productive Farmland Acres or Farms Affect Farmland Loss?" *Economics & Contemporary Land Use Policy: Development & Conservation at the Rural-Urban Fringe* (Robert John Johnson & Stephen K. Swallow, ed, Resources for the Future, Washington D.C.)

20. Lynch, Lori and Janet Carpenter, *op. cit,* pg 14

21. Lynch, Lori and Janet Carpenter, *op. cit,* pg 22

long term viability of the farm sector" and that "a single minded focus on farmland preservation may allow other factors which are also necessary for a viable agricultural industry to be over looked."[22] In other words, while a threshold amount of land may be necessary for the agricultural industry's survival, Lynch's work indicates that it is not sufficient, by itself, to explain the loss farmland in six Mid-Atlantic States in the half century following the Second World War.

A 2003 study by Benjamin Rashford, David Lewis, Rose Evonuk and Bruce Weber of farming in Oregon's Willamette Valley stated

> In order to effectively preserve farmland, policy makers need to fully understand the interrelationships within rural agricultural communities. The agricultural infrastructure is the web of personal, economic, social and legal relationships that support the production of agricultural commodities.[23]

These relationships are a "revolving circle of interdependence [that] raises the issue of a critical mass in agriculture. The critical mass question inherently has two components: 1) dependencies between farms; and 2) dependencies on local agricultural services. Both components are interrelated."

Rashford, Lewis, Evonuk and Weber's hypotheses is that the existence of a critical mass threshold "is driven by the point where substitution is no longer possible." That is, there is some point after which farmers no longer have the ability to substitute between crops when markets change or substitute among suppliers when one or more leaves the industry. They interviewed over 200 farmers in the Willamette Valley, collected historical data and calibrated a simulation model of the valley. Their conclusion is that critical thresholds exist in agriculture but are different for different crops and different patterns of geographic agglomeration. They also found that strong personal and financial relationships exist between farmers and as interactions between neighboring farmers becomes less prevalent, "the remaining producers may find it…challenging to remain in production."

The idea that agricultural activity has a minimum threshold, or critical mass, is widely discussed in agricultural literature and has motivated some local public policy. Under a heading *Policies to Preserve Critical Mass*, the 1997 Whatcom County Comprehensive Plan recommended "the…long term protection of 100,000 acres of large parcel farmland within the County" – a provision that was upheld by the Western Washington Growth Management

22. Breslow, Sara Jo, *Salmon Habitat Restoration, Farmland Preservation and Environmental Drama in the Skagit River Valley* (dissertation in partial fulfillment of the degree of Doctor of Philosophy, University of Washington, 2011)

23. Benjamin S. Rashford, David J. Lewis, Rose M. Eyonuk and Bruce A. Weber, *Economic Interrelationships in a Small Farming Area: Toward an Estimate of the Threshold of Agricultural Production for Sustainable Farming,* (Department of Agricultural and Resource Economics, Oregon State University, 2003)

Hearings Board.[24] However, the 100,000 acre policy has yet to be implemented by appropriate zoning.

A related body of work does not use the phrase "critical mass" but studies the importance of "agricultural clusters" for farming. Duncan Hilchey, a consultant to New York State while it was working to preserve its agricultural industry defined a formal agricultural industry cluster (AIC) as "a group of farms and/or allied food and agricultural enterprises, individuals, organizations, and agencies who work together on shared interests and toward a common good."[25] Working with a similar definition, Stephan Goetz and Martin Shields found

> Industry clusters have become an increasingly important concept in economic development research and practice. Clusters are geographic concentrations of firms in related industries that benefit not only from agglomeration economies derived from their spatial proximity, but also from increased competitive pressure as a result of co-location.[26]

Evidence of the importance policy makers assign to AICs is the three year; northeast states study of small farm industry clusters funded by the USDA and hosted by the Northeast Regional Center for Rural Development in partnership with six state universities to identify how clusters support long-term farm viability and community sustainability. Similarly, Colorado State University and the Colorado Department of Agriculture teamed-up in 2012 to begin a study of the state's agricultural clusters and map "economic relationships among sectors tied – perhaps unexpectedly – to farm and ranch production."[27]

At the international level, an "Occasional Paper" issued by the United Nations' Food & Agricultural Organization (UN/FAO) states: "promoting ACs [agricultural clusters] is one of the strategies identified by the FAO to support agribusiness and agro-industrial development. ACs are being increasing recognized as an efficient way to develop and stabilize agriculture…and improve the competitiveness of agribusiness, particularly small- and medium-scale companies.[28] And a 2009 article by Martin Petricka and Michael Carter entitled "Critical Masses in the Decollectivisation of Post Soviet Agriculture" assert that: "a full understanding of decollectivisation requires a model that admits multiple equilibria. Based on recent evidence

24. Memo by Matt Shipkey, PDS to Whatcom County Agricultural Advisory Committee, February.27.2002 (Exhibit B)
25. Hilchey, Duncan, *Agriculture Industry Clusters, 2008* (http/www.newleafnet.com/docs/New_Leaf_Agriclture_Industry_Clusters.pdf)
26. Goetz, Stephan J. and Martin Shields, *Agriculture and Food Industry Clusters in the Northeast U.S.* (Technical Report, Northeast Regional Center for Rural Development, Pennsylvania State University, November, 2004)
27. See: http/www.today.colostate.edu/story.aspx?id-6854
28. Eva Gàlvez-Nogales, *Agro-based clusters in developing countries: staying competitive in a globalized economy* (Agricultural Management, Marking and Financing Occasional paper No. 25, FAO/UN, 2010)

on the farm restructuring process, we argue that the interlinkage of two types of critical mass phenomena provide such a model."[29]

*Although cluster analysis focuses on factors causing a region's agricultural economy to expand while critical mass focuses on factors causing a region's agricultural economy to collapse, both reflect the same underlying conceptualization of an agricultural economy as a mass of linked agricultural production facilities, agricultural markets and agricultural infrastructure that are (at least in part) jointly needed for the viability and growth of a area's farm economy*. The idea that individual enterprises can benefit from agglomerating (i.e., locating in close geographic proximity) due to economies that are external to the individual (farm) but internal to the (agriculture) industry resonates with traditional analysis of so-called economies of scale.

Both economists and geographers have long studied the tendency of similar types of economic activity to spatially concentrate. Knowledge and information spillovers, availability of skilled labor pools, availability of good farmland (or other) resources, backward and forward linkages have all been used to explain economies of scale phenomena. A recent article in the *Annals of Regional Science* looked at the influence of agglomeration on worker productivity[30] and a paper presented at the 2012 annual meeting of the Western Regional Science Association (WRSA) reported on a study of the relative importance of economies of scale versus economies of scope for technical efficiency in agriculture.[31] A recent study by Kent Kovacs concluded the important thing keeping farmland from being converted to residential or commercial development was the existence of differential assessment programs where farms were taxed at lower rates than other uses – not escalating farm costs.[32]

In summary, there appears to be fairly widespread agreement that economies of scale and scope are real in agricultural production and lead to agglomerations of market responsive producers. The precise way in which scale economies work, or whether or not they have critical threshold levels, appears to depend on multiple unique local conditions. The research literature appears to also indicate that the viability of Skagit's (or any area's) agricultural economy is a complex interaction of farm production, infrastructure and markets and cannot be adequately assessed by any simple measure of farming's economic profitability.

29. Petricka, Martin and Michael R. Carter, "Critical Masses in the Decollectivisation of Post-Soviet Agriculture," *European Review of Agricultural Economics*, vol 36, no 9, 2009

30. M. Anderson & H. Lööf, "Agglomeration and Productivity," *The Annals of Regional Science* (vol 46, no 3, June, 2011)

31. Kim, Kwansoo and Donghwan An, "A Regional Evaluation of Economies of Scope in the Context of Technical efficiency: An Empirical Application to Rice and Vegetable Farms in Korea," (paper delivered at Session 3B, WRSA 52nd Annual Meeting, Santa Barbara, 2013)

32. Kovacs, Kent, "An Empirical Examination of the Location and Timing of Non-Renewals in a Farmland Differential Assessment Program," *The Annals of Regional Science* (vol 50, no 1, February, 2013)

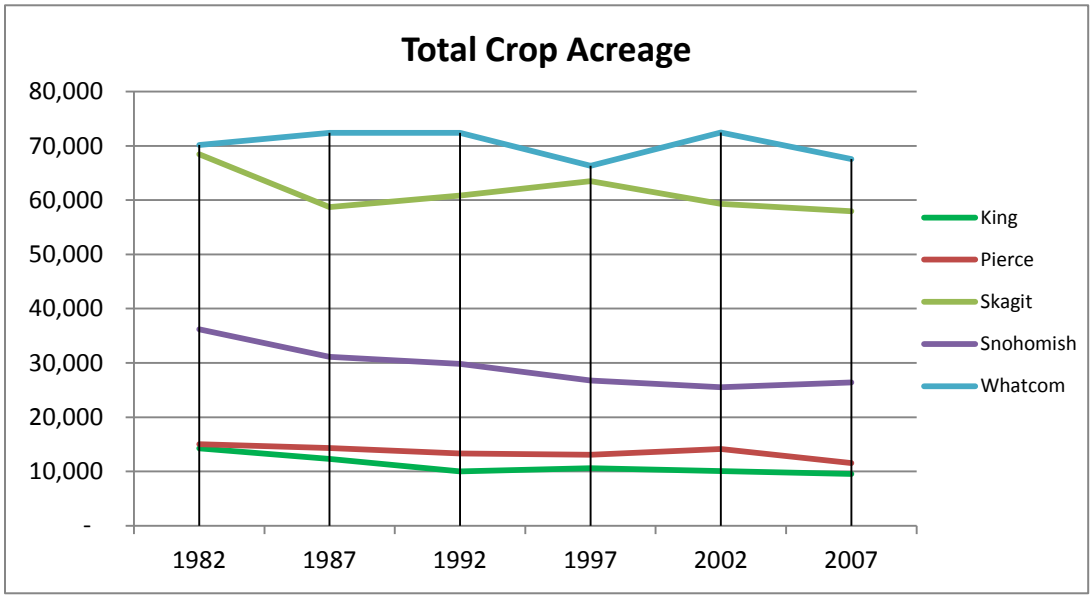
# *Appendix 3*

# *Detailed Discussion of Agriculture in the Puget Sound Region*

## Agriculture in the Puget Sound Region

Skagit County, along with Pierce, King, Snohomish and Whatcom Counties, borders the Westside of Puget Sound. Pierce, King and Snohomish are within the Tacoma and Seattle Metropolitan Statistical Areas while Skagit and Whatcom are more rural. Figure 4 shows how total crop acreage has changed in each of the four counties in the Puget Sound Region (PSR) over the 25 year period, 1982 through 2007, as well as each county's trend line.

Figure 4




Several patterns immediately stand out from Figure 4.

- Skagit and Whatcom Counties have about five times the number of crop acres as King and Pierce Counties and about twice the number as Snohomish County.
- The trend line of crop acres in Whatcom County was virtually flat over the entire 25 year period while it declined in each of the other four counties.
- Pierce County's crop acreage trend line declined fastest among the five PSR counties, averaging a loss of about 1,700 acres every five years. Skagit County had the next fastest decline in crop acreage, but the entire decline occurred between 1982 and 1987 (when almost 10,000 acres were lost) after which it was almost unchanged.

Figure 5

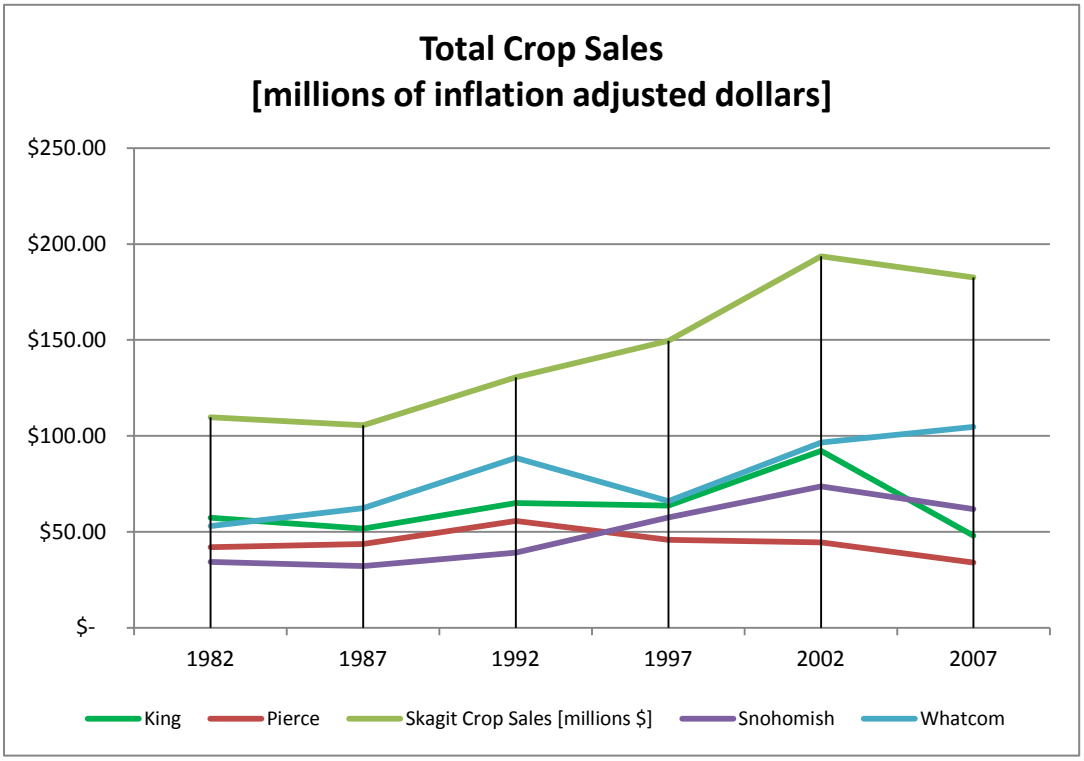



Figure 5 shows total crop sales in each of the PSR's five counties, expressed in inflation adjusted 2012 dollars. The inflation adjustment was made using the GDP implicit price deflator (IPD) for goods.[33] It reveals a set of patterns and trends quite different than those seen for crop acreage.

- Crop sales in three of the five PSR counties had a positive time trend, with only King and Pierce Counties' 25 year trend being negative.
- Skagit's crop sales had the strongest upward time trend among the 5 counties, adding about $3.0-$4.0 million of inflation adjusted sales annually over the entire period.
- Over the entire 25 year period, inflation adjusted crop sales in Skagit grew at about twice the rate of those in Whatcom and averaged about 80 percent higher value – indicating that crop sales per acre in Skagit were substantially higher than those in its northern neighbor.

33 The IPD index closely tracks the CPI over the entire 25 year period. It also closely tracks the U.S. DoA's agricultural producer price index (APPI) between 1982 and 1997, but rises much more slowly in 2002 and 2007. The latter 10-year period however was marked by extreme weather fluctuations – particularly in the Midwest – which caused some crop prices to spike. Since these were not crops grown in Skagit to any significant extent, it was decided to use the IPD for goods to adjust farm sales for inflation.

Taking the two above graphs together, Skagit County has one of, if not the, strongest agricultural economies among the five counties on the west side of Puget Sound. Only Whatcom County has about the same number of acres in crop cultivation and it produces substantially less in the way of (inflation adjusted) crop sales.

# *Appendix 4*

# *Detailed Discussion of Skagit County's Agricultural Economy*

## SKAGIT COUNTY'S AGRICULTURAL ECONOMY

Skagit County's total land area is approximately 1,721 square miles, (1.108 million acres). In 2007, the county's total land in farms reported by the Census was 0.109 million acres – or about 10 percent of the county's total land area – and about 0.089 million acres were zoned "Agriculture: Natural Resource Land" – about 8.0 percent. Table 1 shows the 2007 distribution of land in Skagit County by zoning designation.

Just over 80 percent of Skagit County's land area is in (a) public open space of regional/statewide importance, (b) secondary and industrial forests, and (c) rural resource areas. The county's urban growth areas (UGAs) account for an additional 3.1 percent, and commercial/industrial lands outside the UGAs account for about one-tenth of one percent (0.1 %). Land zoned "Natural Resource Areas: Agriculture" accounted for 8.0 percent of the Skagit's land area in 2007.

The Census defines total land in farms to include (a) cropland, (b) woodland, (c) permanent pasture/rangeland, and (d) land in buildings. Using the Census definition there was 108,541 total acres of farmland in 2007. The trend in the Census defined total acres of farm land in Skagit County is shown below

The difference between the red and blue lines in graph is because the 2002 Census of Agriculture experimented with using a sample to gather data instead of a complete enumeration. The result was not good and in 2007 the Census went back to a complete enumeration. As a result, there are questions about the accuracy of the 2002 Census data. The red line connecting the years 1997-2002-2007 shows the actual data reported in the 2002 Census. The blue line connecting those years shows a linear extrapolated estimate of the 2002 data. The steep growth of acreage between 1997 and 2002 and the slow growth from 2002 to 2007 shown by the actual Census data is likely a result of problems with the 2002 sample and the smother extrapolated acreage for 2002 is probably more reliable.

Figure 6

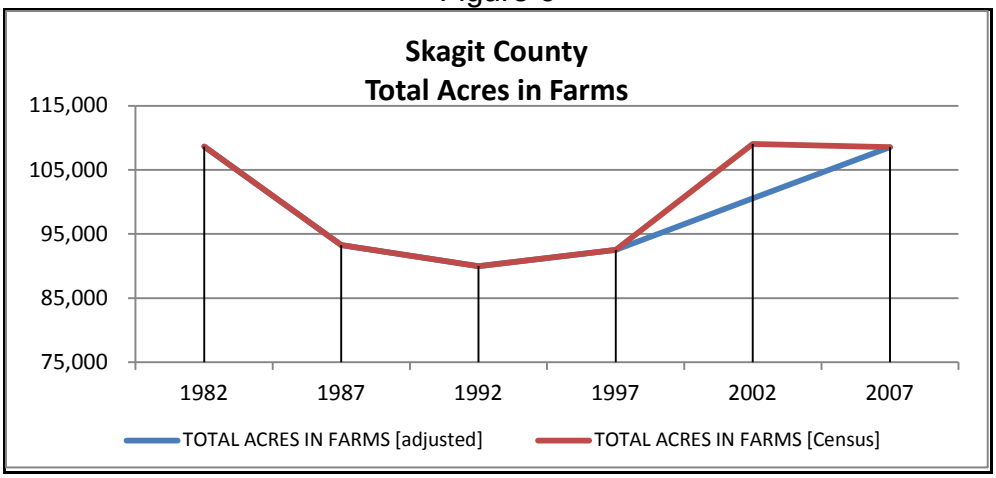


Table 9
**Distribution of Zoned Land in Skagit County in 2007**

| LAND USE DESIGNATION | ACREAGE | PERCENT |
|---|---|---|
| **Water Bodies** | **[176,696]** | |
| **Mineral Resource Overlay (MRO)** | **[61,492]** | |
| **PUBLIC OPEN SPACE OF REGIONAL/STATEWIDE IMPORTANCE (OSRSI)** | | |
| National Forest, Park, Recreation & Wilderness Areas | 497,190 | 44.8% |
| State Parks & Recreation Areas | 5,425 | 0.5% |
| Other | 16,727 | 1.5% |
| **Subtotal** | **519,342** | **46.8%** |
| **NATURAL RESOURCE LANDS (NRL)** | | |
| Secondary & Industrial Forests (SF-NRL; IF-NRL) | 357,631 | 32.2% |
| Rural Resource Areas(RRc-NRL) | 26,871 | 2.4% |
| Agricultural Areas (Ag-NRL) | 89,277 | 8.0% |
| **Subtotal** | **473,779** | **42.7%** |
| **RURAL LANDS** | | |
| Rural Village Residential & Rural Intermediate (RV & RI) | 10,826 | 1.0% |
| Rural Reserve (RRv) | 70,378 | 6.3% |
| **Subtotal** | **81,204** | **7.3%** |
| **COMMERCIAL/INDUSTRIAL LANDS** | | |
| Rural Business (RB) | 186 | 0.0% |
| Natural Resource Industrial (NRI) | 239 | 0.0% |
| Master Planned Resort | 113 | 0.0% |
| All Other Commercial/Industrial Land (RFS,RVC,SRT,RC,RMI,SSB) | 165 | 0.0% |
| **Subtotal** | **703** | **0.1%** |
| **URBAN GROWTH AREAS (UGA)** | | |
| Incorporated UGA Areas (not including water areas) | 22,675 | 2.0% |
| Unincorporated UGA Area | 11,409 | 1.0% |
| **Subtotal** | **34,084** | **3.1%** |
| **TOTAL** | **1,109,112** | **100.0%** |

** Note: acreage contained in brackets - [ ] - not counted in totals*

SOURCE: *TLA and BMA, from Skagit County Mapping Services data*

b. Number of Acres, Farms and Sales

Using the extrapolated 2002 estimate, Skagit County's total farm acreage dropped by 18,650 acres (17 percent) during the decade 1982 through 1992. Between 1992 and 1992 however, reported farm acreage increased more than 18,560 acres and reached a level of 108,540 acres – virtually unchanged over the entire 25-year period 1982 through 2007.

Most of the total farm acreage lost between the 1982 and 2007 Censuses of Agriculture was in cropland, which declined by about 14,930 acres (17.5 percent), and then by an additional 620 acres (1.0 percent) during the 15-years from 1992 to 2007. Harvested cropland accounted for most of both the earlier (1982-1992) and later (1992-2007) acreage fluctuations while non-harvested cropland (grazing, cover crops, failed crops and summer fallow acreage) declined during the earlier period but was virtually flat during the later period (it grew be about 0.4 percent). The growth of total farmland by 18,560 acres between 1992 and 2007 is consequently largely attributable to added acres classified as woodland (3,200 acres), permanent pasture/rangeland (7,220 acres), and land in buildings (8,820 acres). These patterns are shown in Table 10.

Table 10
Total Farmland Acres in Skagit County
[*using 2002 adjusted data*]

| | 1982 | 1987 | 1992 | 1997 | 2002 | 2007 |
|---|---|---|---|---|---|---|
| **Total Cropland** | **85,418** | **71,442** | **70,484** | **72,070** | **70,940** | **69,810** |
| Harvested | 70,687 | 57,226 | 57,946 | 61,257 | 59,710 | 58,163 |
| Grazing | 12,441 | 11,361 | 11,590 | 9,074 | 8,660 | 8,246 |
| Cover Crops | 504 | 1,904 | 448 | 1,300 | 1,983 | 2,665 |
| Failed | 260 | 109 | 32 | 73 | 161 | 249 |
| Summer Fallow | 1,526 | 842 | 468 | 366 | 427 | 487 |
| **Total Woodland** | **11,456** | **9,148** | **9,048** | **8,188** | **10,216** | **12,243** |
| Pastured | 6,811 | 3,417 | 3,991 | 2,837 | 3,033 | 3,229 |
| Not Pastured | 4,645 | 5,731 | 5,057 | 5,351 | 7,183 | 9,014 |
| **Permanent Pasture/Rangeland** | **6,226** | **7,722** | **7,380** | **7,967** | **11,283** | **14,598** |
| **Land in buildings** | **5,529** | **4,939** | **3,070** | **4,312** | **8,101** | **11,890** |
| **TOTAL ACRES IN FARMS** | **108,629** | **93,251** | **89,982** | **92,537** | **100,539** | **108,541** |

SOURCE: *TLA and BMA, from data contained in the U.S. Census of Agricultures, various years*

Declines in harvested farm acres over the 25-year period were more than off-set by a better than doubling of sales per acre. As a result, the value of total inflation adjusted (2012 purchasing power) crop sales went up by two-thirds (66.6 percent) to reach $182.7 million in 2007 (Table 11).

Table 11
Harvested Sales per Acre in Skagit County

| | Harvested Crop Acreage | Crop Sales [inflation adjusted 2012 dollars] | Sales per Acre |
|---|---|---|---|
| **1982** | 70,687 | $ 109,665,211 | $ 1,551 |
| **1987** | 57,226 | $ 105,440,092 | $ 1,843 |
| **1992** | 57,946 | $ 130,550,502 | $ 2,253 |
| **1997** | 61,257 | $ 149,525,438 | $ 2,441 |
| **2002** | 62,074 | $ 193,636,670 | $ 3,119 |
| **2007** | 58,163 | $ 182,658,581 | $ 3,140 |

NOTE: The 2002 sales per acre calculated with unadjusted Census data
SOURCE: *TLA and BMA, from data contained in the U.S. Census of Agricultures, various years*

Table 12 shows the number of farms in Skagit County from 1982 through 2007, and their average harvested crop acreage and crop sales per farm. Over the 25-year period, 1982 through 2007, the total number of harvested acres trended downward due to a sharp decline of about 13,500 acres between 1982 and 1987 – after which it remained relatively constant. Harvested crop acreage per farm fluctuated narrowly around an average of about 115 acres between 1982 and 2002 but dropped to 91 acres in 2007. Inflation adjusted sales per farm almost doubled between 1982 and 2002 but declined by about 20 percent between 2002 and 2007. As will be discussed later, the productivity changes implied by these changes are related to either the scale or scope of farms, new technologies, new – changed in value – crops, or the opening up of new markets.

Table 12
Farm Numbers, Acreage & Sales in Skagit County

| | Total Farms with Harvested Acreage | Harvested Crop Acreage per Farm | Crop Sales per Farm [adjusted 2012 dollars] |
|---|---|---|---|
| **1982** | 603 | 117 | $ 181,886 |
| **1987** | 499 | 115 | $ 211,303 |
| **1992** | 513 | 113 | $ 254,484 |
| **1997** | 511 | 120 | $ 292,613 |
| **2002** | 543 | 114 | $ 356,605 |
| **2007** | 640 | 91 | $ 285,404 |

SOURCE: *TLA and BMA, from data contained in the U.S. Census of Agricultures, various years*

b. Crops

Table 13 presents the number of farms and amount of acreage harvested by major Census crop category between 1982 and 2007.

The crop data reveal the divergence in growth among different crop categories. Grains (wheat, barley, oats) declined in both the number of acres harvested and farms between 1982 and 2007. The majority of the declines were in barley and occurred between 1982 and 1987 when barley acreage declined by over 50 percent and barley farms declined by over a third (33 percent). Potatoes increased by over five times between 1982 and 2002 before declining by eight percent between 2002 and 2007. The number of potato farms grew by almost four times between 1982 and 2007, with most of the growth occurring in the final decade of the period. Other vegetable crops declined by two-thirds in acreage and one-third in the number of farms. Berry production almost doubled its number of acres between 1982 and 2007 while the number of berry farms almost tripled. The number of acres and farms producing nursery and greenhouse crops dropped sharply between 1982 and 1987 and then grew steadily until 2002 after which it declined slightly between 2002 and 2007. The Census groups (a) seed crops with hay, (b) forage and silage crops and (c) the entire category were relatively stable in both acres and number of farms between 1982 and 2007.

Table 13
Harvested Cropland Acres and Farms in Skagit County

| **HARVESTED CROPLAND ACRES** | | | | | | |
|---|---|---|---|---|---|---|
| | **1982** | **1987** | **1992** | **1997** | **2002** | **2007** |
| **Total Grains** | 8,824 | 6,489 | 4,860 | 4,360 | 6,380 | 5,900 |
| Wheat | 4,260 | 4,180 | 3,433 | 3,477 | 5,886 | 4,686 |
| Barley | 4,140 | 1,947 | 1,264 | 821 | 456 | 1,100 |
| Oats | 424 | 362 | 163 | 62 | 38 | 114 |
| **Potatoes** | 2,107 | 3,095 | 6,794 | 6,948 | 11,205 | 10,353 |
| **Field & grass seed, hay, forage, silage, & corn for silage/greenchop** | 30,477 | 25,854 | 25,250 | 26,226 | 23,337 | 26,886 |
| Field & Grass Seeds, Hay, Forage, & Silage | 25,094 | 21,046 | 19,836 | 19,545 | 17,466 | 19,491 |
| Corn for silage or greenchop | 5,383 | 4,808 | 5,414 | 6,681 | 5,871 | 7,395 |
| **Vegetables** | 24,560 | 19,090 | 17,949 | 16,686 | 11,342 | 8,964 |
| **Fruits, Nuts, and Berries** | 1,354 | 1,757 | 1,444 | 2,134 | 2,825 | 2,638 |
| **Nursery and Greenhouse Crops** | 5,255 | 2,729 | 3,071 | 4,200 | 5,056 | 4,814 |
| *Acres in the Open* | 4,173 | 2,709 | 3,041 | 4,154 | 4,968 | 4,753 |
| *Acres Under Glass* | 14 | 20 | 30 | 46 | 88 | 61 |
| **Total** | **71,509** | **59,014** | **59,368** | **58,420** | **60,145** | **57,555** |
| **NUMBER FARMS WITH HARVESTED CROPLAND** | | | | | | |
| | **1982** | **1987** | **1992** | **1997** | **2002** | **2007** |
| **Total Grains** | 184 | 171 | 112 | 91 | 84 | 93 |
| Wheat | 78 | 84 | 51 | 49 | 41 | 28 |
| Barley | 85 | 56 | 34 | 20 | 10 | 20 |
| Oats | 11 | 13 | 11 | 6 | 3 | 8 |
| **Potatoes** | 10 | 18 | 16 | 16 | 30 | 37 |
| **Field & grass seed, hay, forage, silage, & corn for silage/greenchop** | 188 | 189 | 177 | 229 | 170 | 255 |
| Field & Grass Seeds, Hay, Forage, & Silage | 112 | 119 | 113 | 160 | 118 | 213 |
| Corn for silage or greenchop | 76 | 70 | 64 | 69 | 52 | 42 |
| **Vegetables** | 170 | 127 | 117 | 103 | 105 | 107 |
| **Fruits, Nuts, and Berries** | 59 | 61 | 58 | 64 | 95 | 140 |
| **Nurseries & Greenhouses (including Christmas tree farms)** | 114 | 92 | 111 | 116 | 151 | 114 |
| **Total** | **725** | **658** | **591** | **619** | **635** | **746** |

Notes (1) *the Census reported both total cropland and harvested cropland. For 1982, 1987 and 1992 the difference between the two types of cropland averaged about 4%. For 1997, 2002 and 2007 the difference was less than 1%.*
*(2) Farms harvesting more than one crop are counted multiple times, which is why Table 4 totals are larger than those in Table 3.*

SOURCE: *TLA and BMA, from data contained in U.S. Census of Agriculture, various years*

Table 14 shows inflation adjusted harvested crop sales between 1982 and 2007. Once all the changes discussed in the table's Notes are accounted for, the same general crop category trends observed for acreage and the number of farms generally apply. Unlike the data in the two previous tables however, if you compare the 1982-1992 decade with the 1992-2002 decade, impressive gains occurred in the Table's first four crop columns.

Table 14
Harvested Crop Sales
[millions of inflation adjusted dollars]

| | All Crops [Including nursery and greenhouse] | Vegetables, sweet corn, melons | Fruits, nuts, berries | Nursery and greenhouse | Other crops | Grains: All | Cut Christmas trees |
|---|---|---|---|---|---|---|---|
| **1982** | $ 105.3 | $ 43.0 | $ 13.0 | $ 34.2 | $ 9.4 | $ 5.7 | $ - |
| **1987** | $ 103.2 | $ 33.1 | $ 10.6 | $ 41.9 | $ 14.8 | $ 2.7 | $ - |
| **1992** | $ 128.0 | $ 28.3 | $ 10.6 | $ 61.3 | $ 25.3 | $ 2.4 | $ - |
| **1997** | $ 145.7 | $ 31.8 | $ 13.7 | $ 70.1 | $ 27.9 | $ 2.1 | $ - |
| **2002** | $ 195.6 | $ 98.2 | $ 15.9 | $ 76.3 | $ 1.8 | $ 3.3 | $ 0.1 |
| **2007** | $ 182.7 | $ 79.2 | $ 18.1 | $ 77.9 | $ 2.9 | $ 4.4 | $ 0.2 |

Notes: *(1) "Other Crops" data are for the total market value of all crops not fitting into one of the Census' crop sales categories.*
*(2) Starting with the 2002 Census, "Potatoes" were moved from "Other crops" to "Vegetables, melons, potatoes and sweet potatoes". "Hay, silage and field seeds" is combined with the "Other crops and hay" category. A new category, "Cut Christmas trees" is formed. Previously, Cut "Christmas trees" were included in the "Nursery" category*
*(3) The 2002 sales for Fruits, nuts, berries and Grains: All are linear extrapolation estimates by TLA/BMA.*

SOURCE: *TLA and BMA, from data contained in U.S. Census of Agriculture, various years*

Seed crops however are an important component of Skagit County's agricultural economy and more detailed information on seed crop acreage (although not number of farms or sales) is available through the Washington State Department of Agriculture (WSDA).[34] WSDA's survey years are different than the Census of Agriculture's years but are close enough to provide insight into recent seed acreage trends.

Table 15 shows the seed crop acreages reported by WSDA. The major seed crops in Skagit County are Spinach and beets, which together account for just under three-quarters of all seed acreage. The fastest growth of seed acreage however has been in the growing of ryegrass seed while both spinach and beet seed acreage decline.

34 WSDA conducts a field inventory and GIS mapping of crop acreage in Skagit County every 3-years.

Table 15
Seed Crop Acreages

| Seed Type | 2005 Total Acres | % | 2008 Total Acres | % | 2011 Total Acres | % |
|---|---|---|---|---|---|---|
| Beet | 875 | 26.4% | 522 | 17.1% | 513 | 23.4% |
| Cabbage | 376 | 11.3% | 415 | 13.6% | 231 | 10.5% |
| Mustard | 39 | 1.2% | 70 | 2.3% | - | 0.0% |
| Ryegrass | 262 | 7.9% | 561 | 18.3% | 401 | 18.3% |
| Spinach | 1,707 | 51.4% | 1,407 | 46.0% | 1,010 | 46.1% |
| Other Seeds | 60 | 1.8% | 136 | 4.5% | 36 | 1.6% |
| **Total** | **3,319** | **100%** | **3,058** | **100%** | **2,191** | **100%** |

SOURCE: *TLA and BMA, from data contained produced by WSDA, various years*

While specific estimates of seed crop values are not available from either the Census or the WSDA, the value of production per acre is widely known to be high. Consequently, the economic contribution of seed crops to Skagit's agricultural sector is significant. Based on the sales data in Table 14 for the years 1982 through 1997 when seed crops were included in the *Vegetables, sweet corn and melon* category but potatoes were not, it seems reasonable that seed crops contribute in the order of $20 million annually in sales.

Another important crop in Skagit County is the growing of tulip and other bulbs. The Census puts this activity in the category "Bulbs, corms, rhizomes, and tubers, dry", and the acreage harvested is shown in Table 16.

Table 16
Skagit Bulb Production

| | Acres |
|---|---|
| **1982** | 959 |
| **1987** | 2,495 |
| **1992** | 1,344 |
| **1997** | 1,547 |
| **2002** | 1,749 |
| **2007** | 1,393 |

SOURCE: *TLA and BMA, from data contained in U.S. Census of Agriculture, various years*

The agricultural land use data available from WSDA's GIS-based inventory provides the most detailed picture of Skagit's farm activity available. We analyzed the data and

found them consistent with (different year) Census data. WWAA field checked WSDA's land use data and found them highly reliable. Table 16 presents the WSDA land use data for 2005, 2008 and 2011 (the only years available).

The table reveals some interesting agricultural land use trends that have occurred during the seven year period 2005 through 2011. Total agricultural acres inventoried increased from 53,000 in 2005 to 70,800 in 2011 – although it should be kept in mind that between one and two percent of the land included in WSDA's inventory is land that used to be in agriculture but has shifted out.[35] Several recent trends stand out:

- Although Skagit's agricultural economy encompasses a large variety of crops, most agricultural acreage is concentrated in just a few activities. Potatoes (16.9 percent), hay and grass (19.2 percent), pasture (9.6 percent), field corn (11.9 percent) and shellfish (10.6 percent) account for over two-thirds (68.2 percent) of the agricultural acreage inventoried by WSDA in 2011. Of these land uses, only potatoes, field corn and shellfish are primarily harvested for market activities with the rest being rotational crops needed to rebuild the soil.
- Seed crops, berries and bulbs are high income and sales agricultural activities yet they account for a relatively small amount of the land used in agriculture – less than 10 percent of the total land inventoried by WSDA.
- Among vegetable crops, peas accounted for almost 3,500 acres in 2005 but were virtually gone (11 acres, under 0.1 percent of total acreage) in 2011.
- There were a total of about 700 acres in wildlife feed (including habitat restoration) areas plus CRP/Conservation (including USDA erosion and stream shading) areas in 2011 that used to be in farm production. There were about 270 acres in housing and/or commercial development that used to be in farm production.
- Potatoes and cucumbers combined accounted for about 94 percent of the land used for vegetable production in 2011. In 2005, they accounted for about 69 percent of vegetable land uses and peas accounted for about an additional 18 percent.

35 This includes such land uses as: habitat areas that used to be in agricultural production, USDA CRP/Conservation areas, housing land that used to be in production, and land occupied by the WSU Research Station.

Table 16
WSDA Estimate of Agricultural Land Use in Skagit County

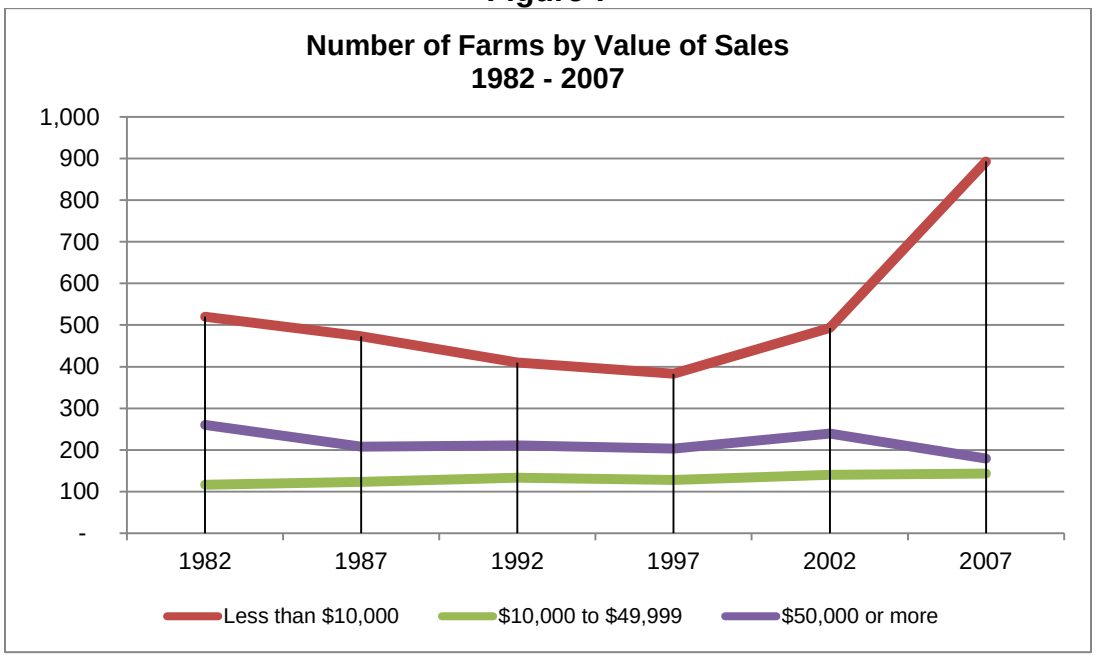
| | 2005 acres | | 2008 acres | | 2011 acres | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Beet, Seed | 875 | *26.4%* | 522 | *16.8%* | 513 | *23.4%* |
| Ryegrass, Seed | 262 | *7.9%* | 561 | *18.0%* | 401 | *18.3%* |
| Spinach, Seed | 1,707 | *51.4%* | 1,407 | *45.2%* | 1,010 | *46.1%* |
| Other Seed Crops | 475 | *14.3%* | 621 | *20.0%* | 266 | *12.2%* |
| **total seed crops** | **3,319** | ***100.0%*** | **3,110** | ***100.0%*** | **2,191** | ***100.0%*** |
| Cucumber | 1,997 | *10.8%* | 977 | *6.0%* | 1,851 | *12.6%* |
| Pea, Green | 3,453 | *18.7%* | 2,475 | *15.2%* | 11 | *0.1%* |
| Potato | 10,670 | *57.9%* | 10,932 | *67.2%* | 11,954 | *81.4%* |
| Other Vegetable Crops | 2,322 | *12.6%* | 1,877 | *11.5%* | 877 | *6.0%* |
| **total vegetable crops** | **18,442** | ***100.00%*** | **16,261** | ***100.00%*** | **14,693** | ***100.00%*** |
| Wheat | 5,221 | *89.4%* | 7,285 | *88.4%* | 6,338 | *86.7%* |
| Other Grains | 619 | *10.6%* | 953 | *11.6%* | 975 | *13.3%* |
| **total grain crops** | **5,840** | ***100.0%*** | **8,237** | ***100.0%*** | **7,313** | ***100.0%*** |
| Grass, Hay | 7,879 | *77.4%* | 8,615 | *81.0%* | 13,570 | *65.8%* |
| Pasture | 1,692 | *16.6%* | 1,342 | *12.6%* | 6,824 | *33.1%* |
| Other Hay, Grass, Alfalfa | 603 | *5.9%* | 686 | *6.4%* | 240 | *1.2%* |
| **total grass, hay, alfalfa, pasture** | **10,174** | ***100.0%*** | **10,643** | ***100.0%*** | **20,634** | ***100.0%*** |
| Blueberry | 1,106 | *35.2%* | 1,380 | *44.2%* | 1,528 | *46.9%* |
| Caneberry (rasberries/blackberries) | 1,432 | *45.5%* | 1,068 | *34.2%* | 1,120 | *34.3%* |
| Strawberry | 359 | *11.4%* | 390 | *12.5%* | 421 | *12.9%* |
| Other Fruits, Nuts | 247 | *7.9%* | 282 | *9.0%* | 191 | *5.9%* |
| **total fruits & nuts** | **3,144** | ***100.0%*** | **3,120** | | **3,261** | ***100.0%*** |
| Nursery, Ornamental | 863 | *95.9%* | 845 | *90.3%* | 902 | *89.6%* |
| Other Horticulture | 37 | *4.1%* | 90 | *9.7%* | 104 | *10.4%* |
| **total horticulture** | **900** | ***100.0%*** | **935** | ***100.0%*** | **1,006** | ***100.0%*** |
| Bulb, Daffodil | 578 | *42.2%* | 1,041 | *74.1%* | 865 | *70.2%* |
| Bulb, Iris | 349 | *25.5%* | 44 | *3.2%* | | *0.0%* |
| Bulb, Tulip | 443 | *32.3%* | 319 | *22.7%* | 367 | *29.8%* |
| **total bulbs** | **1,370** | ***100.0%*** | **1,404** | ***100.0%*** | **1,232** | ***100.0%*** |
| Corn, Field | 6,365 | *64.9%* | ,058 | *36.3%* | 8,451 | *41.6%* |
| Market Crops | 210 | *2.1%* | 131 | *0.6%* | 423 | *2.1%* |
| Poplar, Hybrid | 415 | *4.2%* | 334 | *1.5%* | 342 | *1.7%* |
| Christmas Tree | 28 | *0.3%* | 30 | *0.1%* | 51 | *0.3%* |
| Shellfish | | | 10,838 | *48.8%* | 7,501 | *37.0%* |
| Sod Farm | 306 | *3.1%* | 409 | *1.8%* | 169 | *0.8%* |
| Green Manure | 608 | *6.2%* | 346 | *1.6%* | 136 | *0.7%* |
| Fallow | 1,231 | *12.5%* | 1,474 | *6.6%* | 2,408 | *11.9%* |
| Research Station | 147 | *1.5%* | 147 | *0.7%* | 147 | *0.7%* |
| Wildlife Feed | 502 | *5.1%* | 437 | *2.0%* | 664 | *3.3%* |
| CRP/Conservation | - | *0.0%* | - | *0.0%* | 49 | *0.2%* |
| Developed | - | *0.0%* | 4 | *0.0%* | 268 | *1.3%* |
| **total misc. land uses** | **9,812** | ***100.0%*** | **22,204** | ***100.0%*** | **20,291** | ***100.0%*** |
| ***TOTAL ACRES*** | ***53,001*** | | ***65,917*** | | ***70,779*** | |

SOURCE: *TLA and BMA, from data provided by the Washing State Department of Agriculture, various years*

c. Trends in Farm Size

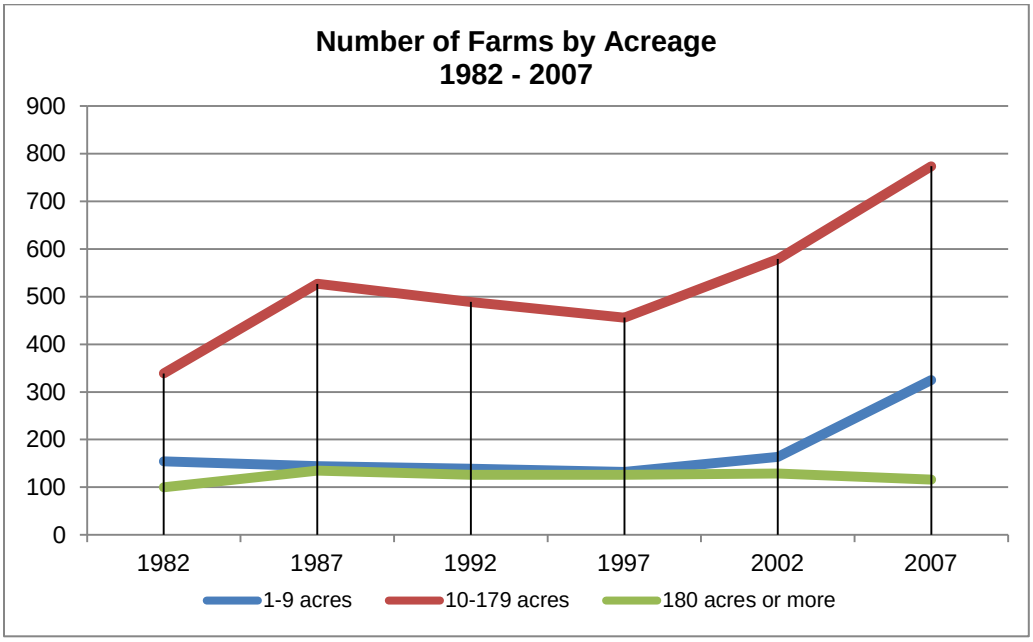
During the decade 1997 through 2007, there was a sharp increase in the number of Skagit farms with annual sales of less than $10,000. The number of farms with sales between $10,000 and $49,000 grew very slowly while farms with sales over $50,000 declined between 2002 and 2007 after rising slowly during the prior 15 years. (Figure 7)

**Figure 7**




Measured in terms of acreage, a somewhat different pattern emerges. The number farms with less than 10 acres fluctuated very little between 1982 and 2002 and then increased sharply during the next five years. Farms of 10 through 179 acres rose sharply between 1982 and 1987, declined very moderately between 1987 and 1997, and then rose sharply again between 1997 and 2007.

Figure 8




d. Farm Operator Characteristics

As seen in Table 17, Skagit farms are primarily owner operated. Only 11 percent of all farms were primarily operated by renters in 1982 and that percentage shrunk to five percent by 2007.

Table 17

**NUMBER OF FARMS BY OWNERSHIP STATUS OF PRIMARY OPERATOR**

| | total | owner operated | | renter operated | |
|---|---|---|---|---|---|
| | | number | % | number | % |
| **1982** | 897 | 798 | 89.0% | 99 | 11.0% |
| **1987** | 806 | 722 | 89.6% | 84 | 10.4% |
| **1992** | 754 | 675 | 89.5% | 79 | 10.5% |
| **1997** | 714 | 648 | 90.8% | 66 | 9.2% |
| **2002** | 872 | 812 | 93.1% | 60 | 6.9% |
| **2007** | 1,215 | 1,151 | 94.7% | 64 | 5.3% |

*note: owner operated farms include sole proprietorships, partnerships, families and family corporations*

SOURCE: *TLA and BMA, from data contained in U.S. Census of Agriculture, various years*

Table 18 shows the distribution of agricultural acreage by the ownership status of the primary operator and it follows the same general trends as presented in Table 17. Only the percentage of renters which had gone down from 15 to 11 percent between 1982 and 2002 rose to 14 percent in 2007.

Table 18

| FARM ACREAGE BY OWNERSHIP STATUS OF PRIMARY OPERATOR | | | | | |
|---|---|---|---|---|---|
| | total | owner operated | | renter operated | |
| | | number | % | number | % |
| **1982** | 109,834 | 93,175 | 84.8% | 16,659 | 15.2% |
| **1987** | 95,357 | 85,681 | 89.9% | 9,676 | 10.1% |
| **1992** | 92,074 | 80,703 | 87.7% | 11,371 | 12.3% |
| **1997** | 93,525 | 83,434 | 89.2% | 10,091 | 10.8% |
| **2002** | 99,255 | 88,464 | 89.1% | 10,791 | 10.9% |
| **2007** | 108,541 | 93,493 | 86.1% | 15,048 | 13.9% |
| *note: owner operated farms include sole proprietorships, partnerships, families and family corporations* | | | | | |

SOURCE: *TLA and BMA, from data contained in U.S. Census of Agriculture, various years*

Tables 19 and 20 show two aspects of changing gender among Skagit's principal farm operators.

Table 19

| FARMS BY GENDER OF PRINCIPAL OPERATOR | | | |
|---|---|---|---|
| | Male Principal Operated Farms | Female Principal Operated Farms | Percent Female Operated Farms |
| **1982** | 832 | 65 | 7.2% |
| **1987** | 739 | 67 | 8.3% |
| **1992** | 658 | 96 | 12.7% |
| **1997** | 615 | 99 | 13.9% |
| **2002** | 714 | 158 | 18.1% |
| **2007** | 940 | 275 | 22.6% |

SOURCE: *TLA and BMA, from data contained in U.S. Census of Agriculture, various years*

Table 20

| ACREAGE BY GENDER OF PRINCIPAL OPERATOR | | | |
|---|---|---|---|
| | **Male Principal Operated Acres** | **Female Principal Operated Acres** | **Percent Female Operated Acres** |
| **1982** | 107,180 | 2,654 | 2.4% |
| **1987** | 93,191 | 2,166 | 2.3% |
| **1992** | 88,839 | 3,235 | 3.5% |
| **1997** | 88,795 | 4,700 | 5.0% |
| **2002** | 107,187 | 6,634 | 5.8% |
| **2007** | 98,919 | 9,622 | 8.9% |

SOURCE: *TLA and BMA, from data contained in U.S. Census of Agriculture, various years*

The percent of primary farm operators who were female rose from seven to 23 percent over the 25-year period 1982 through 2007 (Table 19) while the percent of crop acreage under their direction rose from two percent to nine percent (Table 20). As late as the most recent Agricultural Census in 2007, farms with a woman as the primary operator were still smaller than average but better than one out of five Skagit farms had a female primary operator, There are no indications that the trend toward greater gender parity among primary agricultural operators will slow down in the future.

Table 21 shows the distribution of primary farm operators by where they work and where they live. The number of operators whose primary occupation is farming went from about 49 percent during the 1980s to about 52 percent during the 1990. Since the turn of the century, the percent of primary farm operators who listed farming as their primary occupation first rose to 60 percent in 2002 and then fell dramatically to 39 percent in 2007. A similar pattern was reported for primary place of work as the percentage of operators who said they worked exclusively on the farm went from forty percent in the 1980s, to 45 percent in the 1990s, then up to 51 percent in 2002 and back down to 33 percent in 2007. The percent of primary operators reporting that they lived on the farm they operated however remained stable at around 85 percent throughout the 25-year period. However, it is our opinion that the 2002 “blip” should largely be ignored since it probably comes from sampling error rather than actual trends.

TABLE 21
PRINCIPAL OPERATORS' PLACES OF RESIDENCE AND WORK

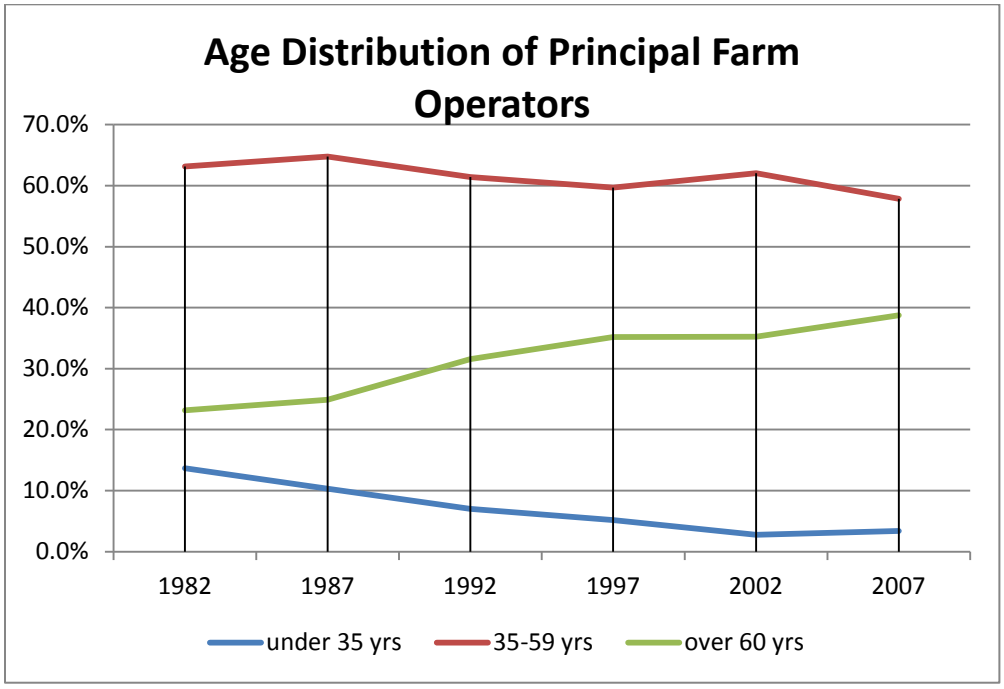
| | Primary Occupation is Farming | Work Exclusively on Farm | Live on Farm Operated |
|---|---|---|---|
| **1982** | 48.7% | 40.2% | 87.5% |
| **1987** | 48.5% | 40.6% | 84.5% |
| **1992** | 52.1% | 45.8% | 85.3% |
| **1997** | 52.7% | 45.3% | 83.1% |
| **2002** | 60.9% | 51.4% | 84.5% |
| **2007** | 39.4% | 32.8% | 85.8% |

SOURCE: *TLA and BMA, from data contained in U.S. Census of Agriculture, various years*

The percent of primary operators who lived and worked on their present farms for 10 years or more went up from about 60 percent to 68 percent between 1982 and 1992, and has remained relatively stable since then ranging between a high of 71 percent (2002) and a low of 68 percent (1992). Over the same 25-year period, the average age of primary farm operators went up steadily from 50 years in 1982 to 56 years in 2007.

As shown in Figure 9 however, the change in average age among primary farm operators came from a decline among operators under 35 years of age from 14 percent of the total in 1982 to just three percent in 2007 while, at the same time, the percentage of operators over 60 years of age went up from 23 percent to 37 percent. Farm operators between the ages of 35 and 59 years fluctuated very slightly – averaging about 62 percent of all farm operators and fluctuating by no more than three percentage points during any Census between 1982 and 2007.

Figure 9




e) Livestock & Livestock Products Farms

The inflation adjusted sales of livestock and livestock products shown in Table 22 all exhibit a strong downward trend.

- Dairy products sales (expressed in inflation adjusted 2012 dollars) fell from $105.6 million in 1982 to $62.6 million in 2007 – a decline of 41 percent over the 25 year period.
- Poultry and poultry products sales almost doubled between 1987 and 1992 going from $14.7 to $28.6 million, but declined thereafter down to $12.8 million in 2007. Over the entire 20 year period 1987 through 2007, poultry and poultry products sales declined by 13 percent.
- The sale of cattle, calve, hog, pig, sheep & lamb products declined from $23.7 million in 1982 to $11.7 million in 2007 – a decline of 51 percent. Over 80 percent of the sales decline however occurred during the 10 year period from 1997 through 2007.

The different ways in which different segments of livestock farming adjusted to declining sales is also shown in Table 22.

Dairy products farms declined from 140 farms in 1982 to 52 farms in 2007 (a 63 percent decline) – and interviews with knowledgeable persons in the County indicate that the number of farms will likely be below 30 when the 2012 Census data is released. With the number of dairy farms falling at a faster rate than inflation adjusted dairy sales, sales per farm went up by 60 percent, rising from $750 thousand in 1982 to $1.2 million in 2007. Within the dairy segment, however, the performance of organic and traditional dairies was very different, according to several knowledgeable persons in the County. Organic dairies are all members of an organic milk distribution cooperative that has been able to use its market dominance to maintain stable retail prices. Organic dairies consequently have earned a good return on their production, and have used their revenues to grow larger, more integrated, and more technologically sophisticated. Traditional dairies on the other hand have faced highly volatile retail prices as well as market pressures to grow and become vertically integrated, and each time there is a major downturn in milk prices, the more marginal producers are driven out of the market. The net result has been a significant decline in the number of traditional dairy farms but not in the number of dairy cows.

Sales (in inflation adjusted, 2012 dollars) of poultry and poultry products fell by more than half over the 15 year period between 1992 and 2007, while at the same time the number of poultry product producing farms went up by almost five times, rising from 27 in 1992 to 125 in 2007. With declining sales (in constant value dollars) and a rapid growth in the number of poultry farms, average sales per farm dropped from about $1.0 million in 1992 to barely a $100 thousand in 2007. It appears that the production of poultry and poultry products in Skagit County is shifting from larger farms selling into commercial markets to smaller farms (some owned and operated by persons with significant non-farm income) – including organic operators – who sell primarily into direct consumer markets in the multi-county Seattle Metropolitan Area. Again however, it is our opinion that the 2002 “blip” should largely be ignored since it probably comes from sampling error rather than actual trends.

Table 22
Livestock Farms & Inflation Adjusted Sales

| | 1982 | 1987 | 1992 | 1997 | 2002 | 2007 |
|---|---|---|---|---|---|---|
| **Adjusted Sales*** | | | | | | |
| Dairy Products | $ 105,630,170 | $ 85,664,545 | $ 94,136,871 | $ 83,442,248 | $ 69,801,007 | $ 62,624,660 |
| Poultry and poultry products | $ - | $ 14,684,024 | $ 28,607,058 | $ 21,972,590 | $ 16,165,814 | $ 12,765,304 |
| Cattle, calves, Hogs, pigs, sheep & lambs** | $ 23,745,101 | $ 20,231,174 | $ 18,311,094 | $ 21,815,442 | $ 11,388,151 | $ 11,743,828 |
| Other livestock and livestock products | $ - | $ 760,853 | $ - | $ 7,253,618 | $ - | $ 12,097,255 |
| **Number of Farms** | | | | | | |
| Dairy Products | 140 | 114 | 109 | 83 | 69 | 52 |
| Poultry and poultry products | 47 | 34 | 27 | 22 | 41 | 125 |
| Cattle, calves, hogs, pigs, sheep & lambs | 662 | 561 | 467 | 410 | 381 | 481 |
| Other livestock and livestock products | 73 | 83 | 90 | 67 | 100 | 141 |
| **Adjusted Sales per Farm** | | | | | | |
| Dairy Products | $ 754,501 | $ 751,443 | $ 863,641 | $ 1,005,328 | $ 1,011,609 | $ 1,204,320 |
| Poultry and poultry products | $ - | $ 431,883 | $ 1,059,521 | $ 998,754 | $ 394,288 | $ 102,122 |
| Cattle, calves, hogs, pigs, sheep & lambs** | $ 35,869 | $ 36,063 | $ 39,210 | $ 53,208 | $ 29,890 | $ 24,415 |
| Other livestock and livestock products | $ - | $ 9,167 | $ - | $ 108,263 | $ - | $ 85,796 |

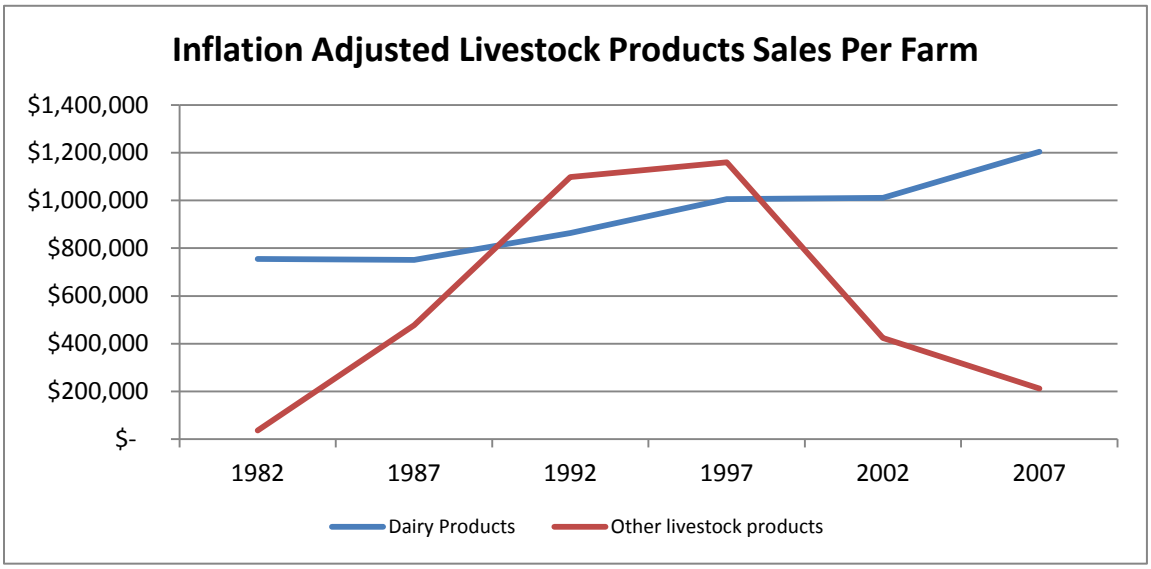
* *all sales data adjusted for inflation and expressed in 2012 dollars*

** *cattle & calves account on average for 99% of this category's total sales*

SOURCE: *TLA and BMA, from data contained in U.S. Census of Agriculture, various years*

The sale (in constant value, 2012 dollars) of cattle, calf, hog, pig, sheep and lamb products very slightly declined between 1982 and 1997 and then declined by almost 50 percent over the next five years, from $21.8 million in 1997 to $11.7 million in 2002, before stabilizing with a slight gain of $0.3 million in 2007. Virtually all (99 percent) of the sales in this category are generated by the sale of cattle and calves. The number of farms selling cattle, calves, hog, pig, sheep and lamb products declined from 662 in 1982 to 381 in 2007, before growing back up to 481 farms in 2007. The big drop in the number of cattle, calf, hog, pig, sheep and lamb producing farms between 1982 and 1997 more than made up for slight sales decline that occurred over the same years, and sales peaked at $53,200 per farm in 1997. The sharp decline in inflation adjusted sales between 1997 and 2002 combined with the growth in the number of farms resulted in inflation adjusted, constant value, dollar per farm sales of only $24,000 in 2007 – the lowest per farm, constant value, sales level reported by the Census in 25 years. Again, several different factors seem to be at work. Hog, pig, sheep and lamb producers (as well as some producers of exotic livestock such as llamas) appear to be small operators – again, often organic – who sell directly to consumers, and the number of these small producers is rising. A significant part of the cattle and calves raised in Skagit County (excluding dairies) function as "rotation" activities for farmland that needs to have its fecundity restored. That use of livestock as a rotational activity has been observed mainly at larger farms.

Figure 10




f. Agro-Tourism

Farm based tourism in Skagit County takes several forms. The most well known is the annual Skagit Valley Tulip Festival which occurs in April of each year. The Festival attracts national

attention and about a quarter of its visitors come from out of state or out of country. Estimates of attendance and direct expenditures generated by the Festival vary widely. As reported in Wikipedia, the Festival's most recent estimate puts attendance at over 1.0 million but The *Everett Herald* in 2008 estimated visitor attendance at 350,000 while *Travel & Leisure* in 2003 estimated attendance at 500,000. Dean Runyan Associates prepared an *Skagit Valley Tulip Festival: Economic Impacts and Visitor Profile* report for the Washington State Department of Community, Trade and Economic Development in 2000 and estimated the Festival's total attendance that year at 351,700 and its visitor attendance (i.e., Festival attendees residing outside Skagit County) at 288,400.

Another wide range of estimates exists with respect to the direct expenditure's generated by the Festival. The Dean Runyan study estimated total direct expenditures at $14.0 million. EcoNorthwest in 2010 estimated total direct expenditure at "Skagit Agricultural Festivals and Events" at $19.0 million. An *Economic Impact Assessment* of the Festival in 2012 by the International Festivals & Events Association (IFEA) stated that "the event generated $206.97 in direct spending for each visitor that attended Skagit Valley Tulip Festival in 2012". Multiplying IFEA's per visitor expenditure times the number of visitors identified by Dean Runyan in 2000 gives a total direct expenditure estimate of $59.7 million. To identify the rough size of the direct expenditure ballpark within which various estimates can be evaluated, TLA/BMA obtained Skagit County's quarterly retail sales for 2010, 2011 and 2012 as reported by the Washington State Department of Revenue (DOR). We calculated a trend line between the first and third quarters and subtracted the trended estimate from actual second quarter sales. The procedure produced an estimate of direct expenditures made in Skagit County (as reflected in DOR's tax-based sales estimates) by visitors as a result of the Festival in the range of $3.5 million to $5.0 million.

DOR's tax-based sales estimates also allow us to estimate the relative importance of agro-tourism for different places in Skagit County. This is shown in Table 23 which shows how the DOR tax-based Festival impact estimates are distributed among different jurisdictions. Specifically, the table shows the percentage of total Festival direct spending (calculated by subtracting a trended direct spending estimate from actual second quarter sales) reported for Burlington, La Connor, Mount Vernon, Sedro Woolley and Unincorporated Skagit County.

Table 23
Distribution of Tulip Festival Direct Spending

| | Average (2010-2012) 2nd Qtr. Sales Impacts as Percent of Total Festival Impacts |
|---|---|
| **Nursery, garden center, and farm supply stores** | |
| Burlington | * |
| La Conner | * |
| Mount Vernon | 21.8% |
| Sedro Woolley | * |
| Unincorporated Skagit County | 78.0% |
| **Arts, entertainment, recreation** | |
| Burlington | * |
| La Conner | 7.4% |
| Mount Vernon | * |
| Sedro Woolley | * |
| Unincorporated Skagit County | 92.0% |
| **Accommodations** | |
| Burlington | * |
| La Conner | * |
| Mount Vernon | * |
| Sedro Woolley | 35.5% |
| Unincorporated Skagit County | 63.5% |
| **Food Services and drinking places** | |
| Burlington | * |
| La Conner | 28.4% |
| Mount Vernon | 42.0% |
| Sedro Woolley | 3.2% |
| Unincorporated Skagit County | 25.5% |

* less than 1.0%

*Source: TLA & BMA from DOR data*

Since Tulip Festival sites are located in Unincorporated Skagit Country, it not surprising that that's where the biggest relative impacts occur. More surprising are the relatively large direct sales impacts occurring in Mount Vernon and miniscule impacts occurring in Burlington.

In addition to the Tulip Festival, the Skagit Harvest Festival and the Skagit County Fair also attract thousands of visitors each year. A 2003 Skagit County Planning study estimated the direct expenditures generated by these events at $1.3 million and attendance was estimated at about 56,000. Within the context of other county fairs in western Washington however, Skagit's County Fair and Harvest festival are relatively modest events.

Ducks Unlimited is actively working with farmers to promote the use of farmland by duck hunters and the EcoNorthwest study estimated annual direct expenditures by hunters in Skagit

County at $1.5 million in 2010. The same study estimated that “Wildlife Watching” annually generated $26.0 million, but this estimate appears unreasonably high and further study seems warranted.

Other aspects of farm based tourism in Skagit County include roadside stands selling fresh produce to visitors, organic-based tourism being promoted by several organic farmers in the Skagit valley, and the ambiance associated with driving along scenic farm roads to reach historic La Connor.

Although estimates of the number of persons attracted to visit Skagit County by farm-based tourism and their direct expenditures vary widely, even taking the low end from the range of estimates reveals that thousands of visitor days and millions of dollars of expenditure are generated by agro-tourism annually.

# *Appendix 5*

# *Detailed Discussion of Interviews with Skagit County Farmers*

## Interviews with Skagit County Farmers

A total of 19 interviews with farmers were held as part of the study. Of the 19 farmers interviewed, there were two organic dairies, two traditional dairies, three seed farms (one organic, two traditional), four potato farms, 1 bulb farm, 1 berry farm and three vegetable farms (one organic, one traditional and one part organic/part traditional).

- Seven of the farms were less than 1,000 acres, three were between 1,000 and 1,999 acres and four were over 2,000 acres. The average size of the farms interviewed was 1,450 acres, and their range went from a low of 120 acres to a high of 6,000 acres.

- Half the farms both owned and rented/leased land while the other half owned all the land they farmed. Among farms both owning and renting/leasing land, the average acres owned was 470 and the average acres rented/leased was 940. Among farms owning all the land they farmed, the average size was 960 acres.

- Among the farms interviewed, potatoes (4,970 acres), bulbs (1,650 acres), vegetables (1,275 acres) and berries (1,000 acres) were the largest crops with silage, hay, grass and other rotation crops accounting for an additional 6,950 acres. There were about 610 acres used for seed growing.

- Full time employment among the interviewed farms averages 50 workers per farm – of who three were family members – and ranged from a low of 3 workers to a high of 220. Part time (including harvest) workers averaged 190 – with a seasonal peak of 1,700 on one farm.

Farmers interviewed were asked about major markets where they sold product, and – depending on the type farm – a variety of markets were identified.

- Organic dairies had their product processed at Darigold plants in Seattle or Portland and marketed by Organic Valley Cooperative (headquartered in Lafarge, WI).
- Organic vegetable farms generally sold their product to the Mount Vernon Cooperative or directly to consumers at farmers market and food stands located in Skagit County or elsewhere in the Puget Sound Region (PSR). One organic grower reported selling one of his products (leeks) to retailers throughout the U.S.
- Traditional vegetable farmers generally sell product at high end, niche markets located across the PSR or sell directly to consumers.
- Seed farms sold their products to seed companies located locally, such as Christianson, D&D or Vikima.
- Most potato farms are vertically integrated and grow, process, pack and sell their product. Skagit's high quality red and yellow potatoes have national name recognition and

traditionally have sold well to west coast U.S. and Canadian retail chain stores and wholesalers. The new high tech rail facility at Wallula in eastern Washington benefited local potato growers by opening up east coast markets. A few growers reported selling small amounts in foreign markets.

- Berries were sold fresh in Washington, Oregon and California through both retail chains and at consumer direct outlets. Processed and/or frozen berries are exported to Japan.
- A small amount of bulbs and flowers are sold locally to tourists but the majority of product is sold to either west coast retail chain stores or wholesalers.

When asked where they obtained most of their equipment and supplies, the overwhelming majority of farms said they used local dealers, although a few bought some particular services or supplies from companies located in Whatcom County. Vertically integrated farms that do their own packing obtain boxes from companies located in either Seattle or Portland. Some larger farm operators reported using the agricultural divisions of large banks located outside Skagit County for financing.

Interviewed farmers were asked to assess Skagit's strengths as an agricultural area and their responses converged on several key factors. Central to their responses were Skagit's soil and climate. The soil's high glacial clay content makes it very fertile (although it needs irrigation) while Skagit's coastal marine climate provides cool, long, growing days. Among other strengths, the most frequently identified were:

- An excellent infrastructure of drainage, dike and irrigation districts that – under current state law – are special purpose districts which own the water they generate.
- Passionate and forward looking farmers who have a long term commitment to sustainable agriculture in Skagit County (most have family succession plans), and know how to work cooperatively (95 percent of all land rentals/swaps are estimated to be done on a handshake basis).
- Access to local farm machinery dealers who are available when problems occur that require immediate attention. Several farmers said that availability of service representatives to help trouble-shoot and solve problems was more important than getting their machinery and equipment at the lowest price.
- Widespread support for agriculture. Skagit's residents/voters want agriculture to remain healthy resulting in county land use regulations that support agriculture and a county Agriculture Advisory Board made up of farmers who advise local government on farm issues.
- WSU's Northwestern Washington Research Center in Mount Vernon provides excellent technical support as well as doing agricultural research that benefits the entire farm economy.

- Lots of small organic farmers and lots of young persons trying to get into sustainable farming

When asked to assess Skagit's major weaknesses and/or threats as a sustainable agricultural economy, most farmers identified the two biggest issues as (a) over-regulation by state and federal governments (particularly environmental regulations and the fed's e-verify requirements) that increase the cost of farming and (b) water rights issues (particularly the ability to move water around to where it's needed). Other weaknesses/threats identified included:

- The rising costs of farm inputs (especially land, lagoon management, spraying and energy) are limiting entry into farming for young people while the average age of the existing farm population is rising.
- The encroachment onto farm lands resulting from urban development, habitat/ conservation set asides, and Indian fisheries concerns could threaten agriculture's economic viability in Skagit's delta areas by reducing the number of farms and farmers below what's needed for sustainability.
- Consolidation of outlets for farm equipment and supplies can cause costs of farm operations to rise and could threaten the viability of Skagit's agricultural economy.
- Distance from eastern markets forces growers to specialize in high-end, niche crops and limits what they can produce and successfully market.
- The competition for water among farmers, Indians and environmentalists often appears to take place within a "win at any price" culture that precludes the ability to achieve collaborative solutions.
- Seed crops, potatoes, some berries and other high value crops deplete the soil and require extensive and often lengthy rotation, but farmers are lucky to break even on the rotation crops they currently use.
- Skagit needs a storage and shipping (trucking) coop to support organic sales and an organic processing plant to provide washing and packaging for small farmers. If such facilities don't develop, organic crop farming will not be able to reach its market potential.

# *Appendix 6*

# *Skagit County Farmer Structured Interview Instrument*

Skagit Farmer Interview
Key Items to Cover

Interview by (initials)____

Name of Farmer:_____

Farm Location(s):_____

Interview Date & Location:_____

Length of time farming in Skagit_____Other locations_____

Age:_____ Retirement:_____Succession_____

Crops and Acreages:

| Crop | Acres 2011 | 2012 |
|---|---|---|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

Have you participated in crop pinning? ___No ___Yes (Explain*)

| Crop (Pinned crop/Buffer Crop) | Acres (Pinned/Buffer) 2011 | 2012 |
|---|---|---|
| _____/_____ | ___/____ | _____/_____ |
| _____/_____ | ___/____ | _____/_____ |
| _____/_____ | ___/____ | _____/_____ |
| _____/_____ | ___/____ | _____/_____ |
| _____/_____ | ___/____ | _____/_____ |

Typical Gross and Net Income/Acre for 2011.

| Crop | Income Gross | Net |
|---|---|---|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

Farming in Skagit County (Explain*)

Marketing/Markets

Strengths:_____

Weaknesses/Threats:_____

Infrastructure

Strengths:_____

Weaknesses/Threats:_____

Institutions

Strengths:_____

Weaknesses/Threats:_____

Regulations (Fed., State, Local)

Strengths:_____

Weaknesses/Threats:_____

Outlook for your (and other) crops (% increase or decrease/year).

Crop

_____

_____

_____

_____

_____

_____

_____

Outlook for Skagit Agriculture in General

Branding (Explain*)_____

Value added/Vertical integration (Explain*)_____

Other (Explain*)_____

_____

*Explain: Add comments on a separate sheet of paper.

**What are your major markets?**

1. Major buyers to whom you sell product

   (a)_____

   (b)_____

   (c)_____

2. Approximate 2011 sales made to each major buyer

   (a)$_____

   (b)$_____

   (c)$_____

3. Location of each major buyer

   (a)_____

   (b)_____

   (c)_____

**What are your major suppliers?**

1. Major companies from whom you buy supplies and equipment

   (a)_____

   (b)_____

   (c)_____

2. Approximate 2011 purchases made from major suppliers

   (a)$_____

   (b)$_____

(c)$_____

3. Location of major supplies and equipment companies

   (a)_____

   (b)_____

   (c)_____

**What is your crop rotation pattern?**

1. Number of years in your crop rotation cycle

| crop | years |
|---|---|
| (a)_____ | _____ |
| (b)_____ | _____ |

2. Do you rotate on your own land or by swapping with other growers?

   Rotate on own land _____

   Swap land with other growers _____

3. If you swap land with other growers please describe how you make arrangements to do this

   _____

   _____

   _____

   _____

   _____

4. If you rotate on your own land please describe how you use the land when it is not used for growing rotated crop

   _____

   _____

   _____

   _____

5. If you swap land with other growers please describe how you make arrangements to do this

   _____

   _____

   _____

   _____

**Other Issues**

1. What do you think are the 3 most important things to keeping Skagit agriculture strong and viable?

   (1) _____

   (2) _____

   (3) _____

2. What do you think are the 3 biggest threats to Skagit agriculture?

   (a) _____

   (b) _____

   (c) _____

# *Appendix 7*

# *List of Farmers Interviewed*

## Farmers Interviewed

| | |
|---|---|
| Allen Mesman | Organic Dairy Farmer |
| Annie Lowman | Organic Seed Farmer |
| Bob Hart | Vegetable & Berry Farmer |
| Curtis Johnson | Vegetable & Seed Farmer |
| Darrin Morrison | Potato Farmer |
| Dave Christenson | Seed Farmer |
| Dave Hedlind | Organic & Traditional Vegetable Farmer |
| Dean Cunningham | Potato Farmer |
| Jeff Boon | Vegetable Farmer |
| Jerry Nelson | Potato Farmer |
| John Roozen | Washington Bulb Company |
| Ken Dahlstedt | Seed & Berry Farmer |
| Larry Jenson | Seed & Potato Farmer |
| Leo Roozen | Washington Bulb Company |
| Lyle Wesen | Organic Dairy Farmer |
| Nels Lagerlund | Non-organic Dairy Farmer |
| Ray Devries | Organic Vegetable farmer |
| Roger Knutzen | Potato Farmer |
| Steve Sakuma | Berry Farmer |

# *Appendix 8*

# *Detailed Discussion of Skagit's Infrastructure*

## Skagit's Agricultural Infrastructure

a) Private Suppliers of Goods and Services

This analysis follows a process similar to the one used in the Puyallup Valley case. The number of suppliers of input and output services was inventoried over a twenty year period (1993 – 2013). Data was developed from the Skagit Valley's Yellow Pages, the Polk Directory and interviews (see Appendix 15). The sectors and their performance:

- Farm Equipment. Between 1993 and today the number of dealers has ranged between four and seven. There is no upward or downward trend. Interviews with equipment dealers indicate this sector has been and remains financially healthy.
- Fertilizer (Retail, Wholesale and Manufacturing). This sector has also essentially remained flat. There was a decline between 1993 and 2003 but there have been two new entrants to the market since then bringing the number of dealers up to seven. Interviews also indicate this sector is healthy.
- Wholesale Produce Fruit and Vegetables. This section consists of two categories, wholesale produce and wholesale fruit and vegetables. The two categories have been combined; they exclude potatoes. Between 1993 and 2003 this category experience substantial growth, from 4 to 10 establishments. More recently there has been a slight decline to a current number of 8. This is still a healthy number.
- Wholesale Potatoes. This category has shown steady increases for the last two decades, from none in 1993 to a current level of 9. This quantifies three phenomena. First, the expansion of potato acreage. Second, the increasing sophistication and business acumen of those producing potatoes. And third, the vertical integration this industry has undergone in the Skagit Valley.
- Total Produce, Fruit, Potatoes and Vegetables Wholesale. This summarizes the wholesale activity. In 1993 wholesaling was not a significant activity. Over the last 20 years its importance has increased four-fold, to 17 firms presently.
- Fruit and Vegetables, Retail. This is another category where there has been a significant increase. It includes operations such as roadside stands to CSA's (Community Supported Agriculture). The trend has been consistently upward, from 2 firms in 1993 to a current number of 9.
- Processors. The 1993 to 2013 trend has been nearly flat, at 3 and 2. Over the last 20 years two processors have exited the market (National Frozen Foods and Source International) and two have entered (Small Planet and Sakuma Brothers).

We have taken a longer term look at how the processor category has changed since this category directly affects farm cash flow. This data is shown in Table 24 (Skagit Valley Infrastructure, Canneries & Frozen Processors).

Table 24
Skagit Valley Infrastructure: Canneries & Frozen Food Processors

| Company | Location | 1937-48 | 1954 | 1974 |
|---|---|---|---|---|
| Canneries | | | | |
| Boze**m**an Canning Co. | Mt. Vernon | x | | |
| Kehr's Custom Canning | Mt. Vernon | | x | |
| McMillan Brothers, | LaConner. | x | x | |
| National Fruit Canning Co. | Burlington | x | | |
| Pictsweet Foods, Inc. | Mt. Vernon | x | x | |
| San Juan Islands Cannery (peas) | Mt. Vernon | x | x | |
| Skagit Custom Canning | Mt. Vernon | x | | |
| Stokely-Van Camp. | Burlington | | x | |
| Twin Cities Foods | Stanwood | x | | |
| **Total** | | **7** | **5** | |
| Frozen Foods | | | | |
| Anacortes Frozen Foods | Anacortes | | x | |
| Cascade Frozen Foods | Burlington | | x | x |
| National Frozen Foods | Burlington | | | x |
| Libby, McNeil & Libby | Mt. Vernon | | x | |
| Stokely-Van Camp. | Mt. Vernon | | | x |
| Twin City Foods | Stanwood | | x | x |
| **Total** | | **0** | **4** | **4** |

*Source: TLA & BMA*

This data shows a rather dramatic change. First, in the late 1930's and through the 1940's the area was dominated by seven canneries. By the early 1950's canneries were becoming obsolete, being replaced by frozen food processors. In 1954 there were 4 such operations. By 1974 there were no more canneries and still four frozen food operations, however two had left the market (Anacortes Frozen Foods and Libby) but they were replaced by National Frozen Foods and Stokely Van Camp, which had converted from canneries to frozen food lines.

By 1993 the only remnant was Twin City Foods, with only a repackaging line. All had either gone out of business or relocated to Eastern Washington.

Summary, 1937 – 2013. Overall, the agricultural infrastructure has demonstrated a progressive increase. Commercial scale processing has transitioned out of the Greater Skagit Valley. The loss of the processing sector parallels what happened in the Puyallup Valley. However, unlike the Puyallup Valley, the overall private sector agricultural infrastructure has increased at a healthy rate.

Perceptions of input and output suppliers doing business in the Skagit Valleyare based on interviews conducted with representatives of various private and .

Perceived Strengths.

There were 50 positive comments regarding strengths by representatives of the 11 organizations. These were tabulated and some of the key elements are:

- Soil and water – 8.
- Maritime climate – 11.
- Community & government support – 4.
- Proximity to Seattle and Vancouver – 3.
- Special purpose districts – 2.

Perceived Threats/Weaknesses

There were 35 threats and weaknesses identified by respondents. Key threats and weaknesses and the number of times mentioned were:

- Native American organizations and Washington Department of Fish and Game. These dealt mainly with water, its availability and rights to it – 5.
- Competition. Seed vs. potato, foreign (international and E. WA.) & internet – 4.
- Marketing of crops. Niche and direct – 4.
- Over dependence on one crop (potatoes) – 3
- Urbanization – 3
- Labor; Shortages and cost – 3
- County. Too much road traffic, bureaucracy – 2.
- Regulations in general and environmental – 3.
- Succession, lack of – 2.
- Habitat restoration/creation – 1.
- Tide gates and salmon – 1.
- Genetically modified organisms – 1.
- Resistance to changes in agriculture – 1.
- Parcel sizes are too small – 1.
- Inadequate number of suppliers – 1.

In summary, from the perspective of those establishments providing the "backbone" for farmers, they believe the soil, water and climate are the principle strengths of the area. Lesser factors are the support the industry gets from government and the community as well as the area's proximity to the five million people in the Greater Vancouver B.C. and Seattle area.

There is not the uniformity of views regarding weaknesses and threats to the farming community. Several are seen as more problematic including various "issues" with Native American organizations and the state's Department of Fish and Game (n=5). The "issues" are mainly associated with regulation pertaining to the environment (n=3). Competition from outside the valley, both foreign and statewide, are threats. A weakness is poor marketing of crops and of the valley in general.

The Skagit Valley has many substantial strengths to carry it forward according to those private and public entities that provide inputs and source outputs from farmers. On the other hand there are some significant challenges. The main challenge can be traced to regulations associated with the environment brought about by the "tribes" and the Washington State Department of Fish and Game. There are other threats and weaknesses that are not as problematic and that can be dealt with relatively easily through various policies and initiatives. Those are threats by "outside" competition, poor marketing of crops and poor marketing of the Skagit brand. Then there are some that should be able to be turned into advantages, such as urbanization. Land use controls, such as zoning, are popular. Others, such as CSA's, road-side produce stands, keeping ahead of the wave with organic and non-GMO products and "Skagit" brands all can benefit from urbanites. Our interviews with farmers and those that support them (the agricultural infrastructure) have brought out some important issues and, even more important, unintended consequences. As our interviews indicated, this is why it is so important to find rotation crops that will build up the nutrient and fiber content of potato ground.

b) Public sector support services

A major part of Skagit County's agricultural infrastructure is its 20 drainage, dike and irrigation (D&D) districts that own/operate 435 miles of drainage channels, 160 miles of dikes and levees, and 135 tide gates. WWAA estimates 60,000 acres of farmland in the delta areas are served by the districts and an estimated 35,000-40,000 acres of farmland would go under water if the D&D districts were abandoned and Skagit's delta areas were re-flooded.

The purpose of the D&D districts is to protect the health, safety and property of delta residents. D&D districts are so-called *Special Purpose Districts*, and each district's commissioners are elected by its own landowners. Each district's budget and work program is approved by its

commissioners, submitted for approval to the County Commissioners, and paid for by property taxes levied on its own property owners.

As defined under Titles 85 and 86 of WA RCWs – which define *Special Purpose Districts* - water developed by the D&D districts belongs to them and they currently sell it to farmers for irrigation. This is the only exception to Washington State's ownership and management functions over water rights. The importance of the D&D districts stems from both the composition of the delta's soil and the close-to-surface location of Skagit's water table, and it makes the D&D's one of the keys to agriculture's sustainability in the county.

When interviewed, both D&D staff and farmers were in agreement that one of the few things that could make Skagit's multi-generational farmers walk away would be the elimination or significant reduction in the county's dike and irrigation infrastructure. A major issue is that the feds consider tide gates an obstruction to salmon recovery and salmon are an endangered species under the Endangered Species Act (ESA). This could result in endless disputes over appropriate mitigation each time a tide gate or drainage system requires repair. Under the so-called Tide Gate Fish Initiative (TFI) – negotiated by WWAA – 2,700 acres of habitat for salmon breeding will be set aside from D&D district lands in return for which (a) federal funding will be provided for tide gate repairs on an "as needed" basis and (b) there will be no blocking of the repairs by legal challenges. Several interviewees said they are concerned that the Swinomish Indian Nation – which declined to become a signatory to the TFI – may assert its claim to "treaty rights" and attempt to block the TFI from becoming operational.

Another major part of Skagit County's public sector agricultural infrastructure is the WSU Agricultural Research Center. (WSU/ARC). It provides both basic research into agricultural production and also is available to address specific problems Skagit growers may encounter. WSU used to operate ARC's in both Pierce County and Skagit County but – in a sign of both Skagit's strength and Pierce's weaknesses – the two were combined into a single western WA facility in Skagit County and the Pierce County ARC was closed. WSU/ARC's research has been particularly important in supporting the seed and crop growing sectors of the county's agricultural economy and it recently added a livestock specialist staff position.

A third important public institution supporting Skagit agriculture is WSU's County Extension Office which provides services to both the economy's agricultural and natural resources sectors. In particular, the Extension Office supports Skagit's unique annual seed *pining* event. The event developed because of seed growing's unique isolation requirements for maintaining the quality of the seeds produced. Every year, seed company representatives and seed growers come together at the WSU/ARC where the Extension Office presides over an annual allocation of different parcels that meet the seed sector's requirements among seed growers and companies.

Additionally, Skagit contains a large variety of agriculture oriented non-profit organizations including, but not limited to, the following:

- Agricultural Advisory Board to Skagit County
- Agriculture for Skagit County
- Farm Bureau
- Northwest Agriculture Business Center
- NW Dairy Association
- Skagit County Cattleman's Association
- Skagit County Farmland Legacy Program
- Skagit Conservation District
- Skagit Land Trust
- Skagitonians to Preserve Farmland
- Washington Tilth Association

c) Public sector rules & regulations

This section of the report deals with the many land use and other regulations farmers and the "infrastructure backbone" have to deal with. We begin with land use controls, namely the Skagit County Comprehensive Plan and zoning.

c1. Skagit County's current Comprehensive Plan was adopted in September 2007. Its purpose is to guide various land use decisions for the next 20 years. The original plan was adopted in 1985. The Introduction of the plan provides an indication of how important agriculture is to the county.

> "Agriculture is the dominant factor in Skagit County's economy and community character. Farming and ranching have been an important part of the community's heritage since early settlement in the 1800's. The Skagit Valley is regarded as one of the most fertile valleys in the world, producing major commodities, specialty crops, and vegetable seeds and flowers with unique market niches."[36]

The plan and its companion – the Zoning Ordinance - define the parameters for short and long term land use in the study area. There are two main land use categories in the Plan that also carry over to the zoning ordinance that control the destiny of Skagit Valley agriculture, especially the valley's most productive areas which are located within the Study Area. The two categories are the Rural Residential and Natural Resource Lands.

Rural Residential is subdivided mainly into three distinct categories:

1. Rural Reserve. This "designation applies to all rural area outside of the following designations: Natural Resource Lands, Rural Intermediate, Rural Village, Rural

[36]. Skagit County Comprehensive Plan, chapter 1, page 1.

commercial/industrial, Open Space of Statewide/Regional Significance, or Urban Growth Area. The minimum allowed residential gross density is 1 residence per 5 acres in conservation and reserve development land divisions, and 1 residence per 10 acres in standard land divisions."[37]

2. Rural Intermediate (RI). This zone applies "to rural areas where the average existing and/or surrounding parcel density is predominately more than or equal to 1 parcel per 2.5 acres…"[38]
3. Rural Village Residential (RV). This zone is found in historical rural "communities" and allows in-fill within those communities.

In 2007 Skagit County GIS estimated there were 10,826 acres in the RI and RV categories and 70,378 in the Rural Reserve category. Some of these lands are in prime agricultural areas, especially Conway and Bayview. The majority are in the Allen to Alger vicinity, north of Allen and east of the BNSF right-of-way. The Allen/Alger lands are mainly forested.
Natural Resource Lands (NRL) "are the cornerstone of Skagit County's economy, community and history. As such, their protection and enhancement is of paramount importance to Skagit County and its citizens."[39] The Plan goes on to state its "policies guide long-range planning, programs and regulations to conserve natural resource lands." Further, "Lands within designated agricultural resource areas should remain in large parcels and ownership patterns conducive to commercial agricultural operations and production."[40] The following types of land use categories and their acreages are found in NRL.[41]

- Secondary Forest (SF-NRL). 38,008 acres.
- Industrial Forest (IF-NRL). 319,623 acres.
- Rural Resource (RRc–NRL). 26,871
- Agriculture (Ag-NRL). 89,227.
- Mineral Resource Overlay (MRO) (61,492)

Of principal concern to this study are the Rural Resource and Agricultural lands. The Rural Resource lands are primarily located to the northeast of Allen and the BNSF right-of-way. They have long term forestry or agricultural characteristics but may not be managed for those uses on a long term basis. They are typically 40 acres or larger and are comprised of "prime upland farmland soils." Residential development density is one dwelling unit per 40 acres or

37. op cit, Chapter 3, page 10-11.
38. ibid.
39. op.cit., Chapter 4 page 2
40. ibid
41. op.cit., Chapter 4 page 2

one dwelling unit per 10 acres if CCR's (conditions, covenants and restrictions) or a conservation easement is executed to "encourage" long-term forestry or agriculture.[42] The Agriculture Resource Lands (Ag-NLR) are described in the Comprehensive Plan as follows:

> Agricultural Resource Lands are those lands with soils, climate, topography, parcel size, and location characteristics that have long-term commercial significance for farming. Skagit County is committed to preserving and enhancing the agricultural land base and promoting economic activities and marketing support for a strong agricultural industry. The agricultural community faces significant challenges in preserving the agricultural land base and a viable agricultural industry, including: conversion of agricultural lands to development and inappropriate habitat restoration; conflict with neighboring residential uses; drainage impacts; and other disruption of agricultural lands functions and values.[43]

These are lands classified by the USDA Natural Resource Conservation Service as "prime farmland soil" the majority of which falls within the 100 year floodplain and comprises the majority of the Study Area. Residential gross densities for new land divisions in lands designated as Agriculture Resource shall be one (1) residential dwelling unit per 40 acres or 1/16 of a section.

Skagit County has adopted a broad range of policies to preserve agricultural lands. Included are: Agricultural Support Programs

- Agricultural Advisory Board
- Conservation Futures Advisory Committee
- Farmland Legacy Program
- Agricultural Resource Lands Database
- Agricultural Lands Status Report
- Farmland Preservation Incentives
- Agricultural and Critical Area Goals
- Natural Resource Lands Information Clearinghouse
- Financial and Estate Planning
- Sustainable Agricultural Practices
- Promote Agricultural Products
- Promote Public Awareness
- Promote Education
- Preserve Agricultural Land Base and Use

42. op.cit., Chapter 4 pages 22, 23
43. op.cit., Chapter 4 page 5

- Long-Term Designation of Agricultural Lands
- Development Rights Program

Conservation Easement

c2. Skagit County Zoning: As of December 23, 2008 the county had eight principle zoning categories:

1. Urban
2. UGA
3. Rural
4. Natural Resource Lands
5. Commercial/Industrial
6. Open Space
7. Mineral
8. Other.

Within those eight categories there are 1,109,112 acres in the county. Our study area comprises approximately 182,976 acres[44]. Land areas for the following zoning classifications found within the study area were also estimated. Ranked in ascending order, by size, and land use or zoning classification and acreages are:

| | | |
|---|---|---|
| 1. | Swinomish Reservation | 1,950 |
| 2. | Open Space | 3,743 |
| 3. | Rural Resource | 7,782 |
| 4. | Forest | 22,734 |
| 5. | Urban Areas (Urban & UGA) | 29,004 |
| 6. | Rural Reserve (RRv) | 35,875 |
| 7. | Agriculture-NRL | 81,888. |
| | Total | 182,976. |

The county has embraced policies that are meant to preserve and enhance agriculture. The 40 acre minimum lot size in agriculturally zoned areas attests to that. Since the production of the comprehensive plan the ability to build residences in the agriculture-NRL zone has been tightened. Currently, to build, one has to have owned the parcel for three years and produced active farming income from it on their own account (that is, not from leasing it) for three consecutive years to obtain a building permit. While the comprehensive plan suggests it is the county's policy to discourage urban development on lands zoned Rural Reserve (RRv), the second largest block of land in the study area, its policies are much more liberal regarding urban development. Minimum lot sizes are 10 acres and two dwelling units are allowed within the 10-acre site. The county tries to minimize the conversion of land from the agriculture to rural zone by requiring extensive time-consuming reviews (currently approximately two to three years), not allowing "spot" zones, requiring adjacent RRv zoning and charging a high ($5,000)

44. TLA and BMA, area estimated using a planemeter

fee. Our interviews with farmers and those who support the farming industry did not reveal attitudes, positive or negative, regarding zoning related land use issues.

c3. Federal and State Regulations

In 2010 the United States Senate and House of Representatives passed the Food Safety Modernization Act of 2010. President Obama signed it into law on January 4, 2011. This legislation requires the Food and Drug Administration to proactively insure the safety of the U.S. food supply chain from farmer to consumer. The law "aims to ensure the U.S. food supply is safe by shifting the focus of federal regulators from responding to contamination to preventing it. The Food Safety Modernization Act (FSMA) has given the Food and Drug Administration (FDA) new authority to regulate the way foods are grown, harvested and processed. The law grants FDA a number of new powers, including mandatory recall authority, which the agency has sought for many years. The FSMA requires FDA to undertake more than a dozen rule makings and issue at least 10 guidance documents, as well as a host of reports, plans, strategies, standards, notices, and other tasks.
The legislation affects every aspect of the U.S. food system, from farmers to manufacturers to importers. It places significant responsibilities on farmers and food processors to prevent contamination—a departure from the country's reactive tradition, which has relied on government inspectors to catch tainted food after the fact. The legislation requires food producers and importers to pay an annual $500 registration fee, which would help fund stepped-up FDA inspections, enforcement and related activities such as food-safety research. About 360,000 facilities in the United States and abroad would be subject to the fees.
Several components of the law, relevant to this study, are:

For the first time, FDA will have a legislative mandate to require comprehensive, science-based preventive controls across the food supply.

Mandatory preventive controls for food facilities

- Food facilities are required to implement a written preventive controls plan. This involves: (1) evaluating the hazards that could affect food safety, (2) specifying what preventive steps, or controls, will be put in place to significantly minimize or prevent the hazards, (3) specifying how the facility will monitor these controls to ensure they are working, (4) maintaining routine records of the monitoring, and (5) specifying what actions the facility will take to correct problems that arise.

Mandatory produce safety standards

- FDA must establish science-based, minimum standards for the safe production and harvesting of fruits and vegetables. Those standards must consider naturally occurring hazards, as well as those that may be introduced either unintentionally or intentionally, and must address soil amendments (materials added to the soil such

as compost), hygiene, packaging, temperature controls, animals in the growing area and water.

There are some exceptions to this legislation, for example farming operations that are either selling to CSA's (Community Supported Agriculture) or selling themselves for less than $500,000 per year. However, the legislation requires them to meet all state and local rules and regulations.

In summary, local, state and/or federal regulation will become a way of life for farmers. In our interviews, with farmers in particular, this was a very hot item, especially regarding threats and weaknesses. However there were positive responses too, such as:

Positive Responses to Regulations:

- Land use regulations support agriculture;
- States UGA regulations limit development in 100-year flood plains, which is all of the Skagit's delta area – and this should help keep land in agricultural use;
- Strong public (including county government) support;
- Government protects agricultural land uses.

There was minimal positive response regarding rules and regulations. But, the responses mainly regarded the need to preserve Skagit County Agriculture.

Negative Responses to Regulations:

Seventy-five percent of the farmers interviewed expressed opinions about regulations that they saw as threats to agriculture or weaknesses that agriculture must deal with. Some of those responses were:

- Environmental regulations – 5 responses;
- Over regulation – 2 responses;
- Land use regulations;
- Endangered Species Act;
- Clean Water Act;
- Regulations in general;
- Bureaucratic red tape;
- Federal EPA;
- State DOE.

c4. Immigration

Labor issues such as availability and cost, and what may happen regarding immigration were of particular importance to those interviewed, especially farmers. Seventeen farmers were interviewed. When asked about threats and weaknesses facing them ten (59%)

brought up labor and immigration matters. Of those, three specifically were concerned about immigration policies. There were 7 more that were indirectly concerned about immigration for they felt there was an inadequate labor pool or that labor costs were becoming too burdensome. In general respondents felt a more manageable and liberal immigration policy would help.

When one considers the number of people employed by the farmers in the Skagit Valley, it is easy to understand why they are concerned. The majority of full time and part time (seasonal) employees are of Hispanic race and they or their parent(s) emigrated from Mexico. Given this, it is easy to understand why immigration policies with Mexico are of such importance.

# *Appendix 9*

# *Infrastructure Interviews Structured Instrument*

SKAGIT AGRI-BUSINESS INTERVIEW
Key Items to Cover

Interview Date & Location: _____

Interview by (initials)_____

**Business ID**:

Name: _____

Location(s): _____

Length of time in Skagit: Personally_____Family_____

Age:_____ Succession Plans_____

**2012 Activity**:

| Product Sold | % All Sales |
|---|---|
| _____ | _____% |
| _____ | _____% |
| _____ | _____% |
| _____ | _____% |
| _____ | _____% |
| _____ | _____% |

**Doing Business in Skagit County**

Markets

Strengths:_____

_____

_____

Weaknesses:_____

_____

_____

Infrastructure

Strengths:_____

_____

_____

Weaknesses:_____

_____

_____

Institutions

Strengths:_____

_____

_____

Weaknesses:_____

_____

_____

Regulations (Fed., State, Local)

Strengths:_____

_____

_____

Weaknesses:_____

_____

_____

**Major markets in 2012**

| major buyer | % All Sales | location |
|---|---|---|
| _____ | _____% | _____ |
| _____ | _____% | _____ |
| _____ | _____% | _____ |
| _____ | _____% | _____ |

**Major suppliers in 2012**

| major supplier | % All Purchases | location |
|---|---|---|
| _____ | _____% | _____ |
| _____ | _____% | _____ |
| _____ | _____% | _____ |
| _____ | _____% | _____ |

**Other Issues**

What do you think are the 3 most important things to keeping Skagit agriculture strong and viable?

(1) _____

_____

(2) _____

_____

(3) _____

_____

What do you think are the 3 biggest threats to Skagit agriculture?

(1) _____

_____

(2) _____

_____

(3) _____

**Other Issues**

What do you think are the 3 most important things to keeping Skagit agriculture strong and viable?

1. _____

   _____

2. _____

   _____

3. _____

   _____

THANKS FOR YOUR COOPERATION

# *Appendix 10*

# *List of Persons Interviewed about Infrastructure*

## Persons Interviewed about Infrastructure

| | |
|---|---|
| Ben Gee | Produce Manager, Mt. Vernon Coop |
| Bill Rindal | Barnett Implements |
| Brian Duquesne | Skagit Farmers |
| Don McMoran | Agricultural Extension Faculty, WSU |
| Don Monks | Skagit County Assessor |
| Ignacio Marquez | Community Liaison, Washington Dept. of Agriculture |
| Jerry Scott | Manager, Twin Cities Foods |
| Kyle Heberle | Complex Director, Draper Valley Farms |
| Leo Roozen | Washington Bulb Company |
| Lindsey J. du Toit | WSU Agricultural Research Center |
| Mark Jackson | Wilbur-Ellis |
| Mike Hulbert | Vikima Seed Co |
| Mike Rundlett | Western Washington Agricultural Association |
| Mike Shelby | Western Washington Agricultural Association |
| Milo Lyons | Christianson Seed Company |
| Molly Doran | Executive Director, Skagit Land Trust |
| Paul Frederickson | Patrol Coordinator, Puget Soundkeeper Alliance |
| Stan Olson | Valley Farm Center |
| Steve Jones | Director, WSU Agricultural Research Center |

# *Appendix 11*

# *Detailed Discussion of Skagit's Agricultural Markets*

## Skagit's Agricultural Markets

There is no single, dominant market for agricultural products grown in Skagit County. Rather, different crops, different types of production and different technologies have combined to form different market segments. Local, national and international markets exist for both traditionally grown and organic farm products, while seed crops sell into a distinct national and international submarket. Additionally, changes in transportation often bring with them new market opportunities.

b) Local markets

Several different types of local markets (i.e., markets within the four-county PSR) exist for Skagit's agricultural products.

- Both organic and traditional dairy farmers ship their product to Darigold facilities in King or Whatcom counties for processing. Big price fluctuations in the market for traditional dairy products has exerted pressure for larger and more vertically integrated dairy farms and this trend will likely continue into the foreseeable future. Because organic dairies sell through a national marketing cooperative that limits entry in accordance with effective market demand, the pressure for growth in size is absent and they are able to maintain viable operations at smaller size farms.
- Costco, Hagen's and other local retail chains purchase potatoes and vegetables from local producers for sale at their retail outlets in the PSR. This market has been growing as an "eat local" attitude on the part of consumers has been getting stronger. In a similar manner, organic restaurants in the PSR have become a market for organic food produced by Skagit farmers.
- Skagit County is a major producer of cabbage, table beet, and spinach seed for the world. About half of the world's beet and Brussels Sprout seed are grown in the Valley. Fifty percent of the U.S. supply of parsley, cabbage, and parsnip seed and 90 to 100 percent of the U.S. supply of Chinese kale, Chinese cabbage, Chinese mustard, and Brussels sprout seed are also grown in Skagit County. Commercial vegetable seed production is conducted under so-called "bailment contracts", where a seed company provides a grower with the seed necessary to produce a crop. The seed company retains ownership of the seed, the growing crop, and the resulting harvested seed. The growers produce and harvest the crop and are paid a contract price for the resulting seed. Seed contracts typically specify quality criteria (germination percentage and purity) that a grower must meet to be paid full compensation for the crop. Major seed companies – such as: Christianson, Vikima, or Sygenta – as well as smaller ones such as D&D Seeds or Skagit Seed Service are all located in the county and make contracts with local growers. Though the seeds are distributed nationwide and worldwide by the seed companies, their location in Skagit County makes this a local market segment.

- The direct sale of agricultural products to consumers occurs in several submarkets.
    - Neighborhood farmer's markets that exist in Everett, Seattle, Tacoma and other regional cities where farmers can rent stalls and sell their products. These outlets are particularly popular for the sale of organic farm products.
    - Roadside stands in Skagit County where farmers sell their products directly to consumers who drive by.
    - On-farm markets operated by growers selling their own products. Such on-farm markets are also particularly popular for the sale of organic farm products.
    - Organic food stores in the county buy produce directly from farmers during harvest season – with at least one such outlet buying as much as 60 percent of the produce it sells from local organic farmers.

d) National markets

The major crop produced in Skagit County and sold nationally is potatoes – which is sold all over the west coast and parts of the mid-west and east coast. Skagit red potatoes are a niche crop and are nationally known – primarily because of their beautiful color. Other parts of the country grow red potatoes but Skagit potatoes command a prime price. Local growers sell to regional and national retail food chains as well as to distributers. The larger growers are vertically integrated and employ year-round sales staffs while smaller growers often work through commercial distribution channels.

Berry growing in Skagit County produces a superior crop that is sold successfully throughout the western United States. And while most organic crops are sold locally, we interviewed one organic farmer who sells his niche crop of organic leeks throughout the country.

Tulips, tulip bulbs and cut flowers are nationally distributed (particularly in western states) and local growers sell directly, through catalogue sales and to large retail chains.

Draper Valley Farms distributes its organic chicken products throughout Washington and the northern half of Oregon.

e) International markets

The only significant foreign export sales we were able to identify were potatoes – primarily to Canada – and frozen berries – which go to Asian markets.

# *Appendix 12*

# *Detailed Discussion of Current Trends Projection*

## Current Trends Projection

a. Major Influences

The four major forces that will influence the future viability of agriculture in Skagit County are: demographics, economics, technology and government regulation/permitting. An overview of why each of these forces is important for agriculture to remain viable in the Skagit and Samish River valleys follows.

I. Demographics

Skagit County's population was reported by the Census in 2010 as 116,900. Over the 50 year period 1960 through 2010, it grew by an average of about 1,300 persons (or 1.6 percent compounded) per year.

Table 25
Skagit's Historical Population

| | Population | Change | Percent Change |
|---|---|---|---|
| 1960 | 51,350 | | |
| 1970 | 52,380 | 1,030 | 2.0% |
| 1980 | 64,140 | 11,760 | 22.5% |
| 1990 | 79,540 | 15,400 | 24.0% |
| 2000 | 102,980 | 23,440 | 29.5% |
| 2010 | 116,900 | 13,920 | 13.5% |

Source: U.S. Decennial Census; TLA & BMA

If Skagit's historical trend is projected forward, the county's population would be 134,560 in 2020 and 158,640 in 2030. The population projection contained in the *Envision Skagit* study done by the County Planning Department projects Skagit's population to be 135,760 in 2020 and 156,500 in 2030. The two projections are very close, differing by 0.9 percent in 2020 and 1.4 percent in 2030. The *Envision Skagit* projection was selected since it is very close to the historical trend and it's the "futures planning" projection used elsewhere in the county.

The U.S. Census reports that Skagit's persons per household averaged 2.54 between 2008 and 2012 and households per housing unit was 1.13 over the same period.[45] Assuming these ratios stay the same, there will be about 39,600 additional persons, 15,600 additional households and 17,700 additional housing units in Skagit County in the year 2030. This is an increase of just over one-third (34.3 percent) in the number of housing units in Skagit County over the next 20 years[46]. It can only come from (a) conversion of existing farm, or other open space, land into residential uses, or (b) higher densities in Skagit's cities and towns.

Table 26
Projected Population, Households, and Housing Units

| | *Envision Skagit* Population | Cumulative Additional Population | Implied Cumulative Additional Households | Implied Cumulative Additional Housing Units |
|---|---|---|---|---|
| 2010 | 116,900 | | | |
| 2020 | 135,760 | 18,860 | 7,420 | 8,420 |
| 2030 | 156,500 | 39,600 | 15,590 | 17,690 |

Source: Skagit Planning Department ; TLA & BMA

## II. Economics

The major economic force acting on Skagit's agricultural economy will be the growth of non-agricultural wage and salary employment.

Skagit County's peak employment level was reached in 2007, just before the recession. From peak-to-trough, Skagit County shed 3,700 jobs or over 7 percent. Relative to Washington State, Skagit County entered the recession early, experienced a greater decline and took longer to see a recovering labor market. (Washington state and the US both began to recover in 2010; Skagit County's recovery has lagged by a year). As of 2012, Skagit County is still lagging the state and the nation in its recovery. It will take time to rebuild the economy; and the local outlook, according to the Washington State Employment

45. The difference of 13 percent between the number of households and number of housing units results from vacant units up for sale, vacant rental units, second homes and abandoned housing units.

46. These ratios may or may not be stable. The recent trend in average household and family sizes has been downward, which would mean an even larger number of housing units in the county for the same population.

Security Department (WSES), points to a "slow yet steady" recovery.[47] These trends are shown in Table 27, Skagit Non-Agricultural Employment

Such a slow steady recovery, while not the best of times for the general economy, should not generate important industrial or commercial development pressures interested in converting farm land. At the same time, current trends imply that most of Skagit's non-agricultural longer term job growth will occur in the service sector; and both private and public (mostly local school) jobs tend to concentrate in urbanized locations. There should be little pressure for agricultural land conversion generated by the growth of service jobs.

Table 27
Skagit Non-Agricultural Employment (thousands of workers)

| | Total Nonfarm | Goods Producing | | Services Providing | | | |
|---|---|---|---|---|---|---|---|
| | | Total | Mfg. | Total | Private | Government | Local Government |
| **1990** | 29.7 | 6.0 | 3.3 | 23.7 | 17.6 | 6.2 | 4.5 |
| **1991** | 30.9 | 6.5 | 3.6 | 24.5 | 18.0 | 6.5 | 5.0 |
| **1992** | 31.4 | 6.3 | 3.7 | 25.1 | 18.2 | 6.9 | 5.0 |
| **1993** | 32.1 | 6.2 | 3.7 | 25.9 | 18.8 | 7.1 | 5.3 |
| **1994** | 33.0 | 6.5 | 3.7 | 26.5 | 19.3 | 7.2 | 5.6 |
| **1995** | 33.9 | 7.0 | 4.2 | 26.9 | 19.5 | 7.4 | 5.8 |
| **1996** | 34.9 | 6.8 | 4.3 | 28.1 | 20.4 | 7.7 | 6.0 |
| **1997** | 37.0 | 7.6 | 4.7 | 29.4 | 21.3 | 8.1 | 6.3 |
| **1998** | 37.7 | 7.4 | 4.7 | 30.2 | 22.0 | 8.2 | 6.5 |
| **1999** | 38.5 | 8.0 | 4.8 | 30.4 | 22.3 | 8.2 | 6.6 |
| **2000** | 41.9 | 9.0 | 5.6 | 33.0 | 23.9 | 9.0 | 6.9 |
| **2001** | 41.9 | 8.7 | 5.5 | 33.1 | 23.6 | 9.6 | 7.7 |
| **2002** | 41.7 | 8.5 | 5.2 | 33.3 | 23.4 | 9.8 | 8.0 |
| **2003** | 42.6 | 8.4 | 5.0 | 34.1 | 24.2 | 10.0 | 8.0 |
| **2004** | 43.8 | 8.6 | 5.0 | 35.2 | 25.0 | 10.2 | 8.3 |
| **2005** | 45.4 | 9.1 | 5.2 | 36.2 | 25.9 | 10.3 | 8.3 |
| **2006** | 46.7 | 9.9 | 5.6 | 36.8 | 26.5 | 10.3 | 8.4 |
| **2007** | 47.6 | 10.2 | 5.8 | 37.4 | 26.9 | 10.5 | 8.6 |
| **2008** | 47.3 | 9.8 | 5.7 | 37.6 | 26.8 | 10.8 | 8.9 |
| **2009** | 44.5 | 8.2 | 5.1 | 36.4 | 25.6 | 10.8 | 8.9 |
| **2010** | 44.0 | 7.8 | 4.9 | 36.2 | 25.3 | 10.8 | 9.0 |
| **2011** | 43.9 | 7.8 | 5.0 | 36.2 | 25.3 | 10.9 | 9.1 |
| **2012** | 44.5 | 7.9 | 4.9 | 36.7 | 25.7 | 11.0 | 9.2 |

Source: WSES; TLA and BMA

47. This paragraph is adapted from *Skagit County Profile*, WSES, 2013.

## III. Technology

Technology has influenced agricultural production in several import ways.

- Mechanization
  - GIS controlled tractors
  - Robotic dairies
- Transportation
  - Refrigeration
  - Containerization
  - Airfreight
- DNA Sequencing
  - GMO crops
- Communication Systems
  - Direct marketing
  - Internet linked control of on-farm systems (e.g., irrigation)

According to Brian Scott,[48] the twelve technologies that have most influenced agriculture during the past decade were:

1. Tractors on Autopilot: GPS, tractors, combines, sprayers, etc.
2. Swath control and VRT(variable rate technology)
   a. Swath: Making sure there is no overlap
   b. VRT: Variable application rate. i.e. fertilizer, water
3. Telematics: equipment communicating with dealer or farmer equipment (i.e. combine and cart)
4. Radio frequency identification collars on cows, tags in hay bales (moisture, weight)
5. Crop sensors: obtaining data from crops regarding transpiration, nutrient, etc.
6. Field documentation: monitors on equipment. tied to GPS uploading data on crop yields, soil conditions and mapping
7. Biotech and genetic engineering (GE): Genetically modified for herbicide resistance, pesticide production.
8. Smart phone: irrigation
9. Internalizing dairy cow manure.
10. Ultrasounds for livestock: determining quality of meat and keying to blood-lines
11. Apps for smart phones and tablets: keep tabs on employees, tweet, camera, flashlight, and soil type via GPS, agriculture news & markets, calculators for mixing herbicide, tracking of growing degree days (GDDs).

48. A 4th generation farmer from NW Indiana with a BS in Agriculture from Perdue; quoted in Crop Life Magazine.

12. Cameras: keeping track of everything wirelessly.

There are lots of different lists besides Brian Scott's on which technology changes have most influenced agriculture over the past decade; and while there is disagreement about what technologies to include, agreement is widespread that agriculture's technology has changed significantly – and will continue to change in the future.

In an article by Joseph Russo in the 3/1/2013 issue of Crop Life magazine, the following top five technology trends that will be impacting agriculture during the next decade are identified:

1. Need for continuing education
2. Big Data. Collecting, processing and intelligently using data.
3. Robotics. Mechanical. But also audio – voice recognition: ingesting, converting, integrating and outputting (i.e. recommendations). "Autonomous tractors."
4. Evaluative Metrics (EM). "Field-to-Market Fieldprint" calculator, for tracking sustainable practices for land use, soil conservation, soil carbon, irrigation water use, energy, greenhouse gas emissions, water quality. A part of "big" data.
5. Market Feedback. Two types: Quality and Quantity. Through the use of EM.

## IV. Government Regulation/Permitting

Government regulation and permitting – at the local, state, and federal levels – impact almost every aspect of farming in Skagit County.

Local government is the key non-market influence on how land is used in Skagit County. The zoning category *Agriculture Natural Resource Land* (Ag-NLR) requires a maximum residential density of one dwelling unit per forty acres and a stipulated minimum farm income – both of which tend to discourage the conversion of farmland to other uses. Ag-NLR zoned lands encompass 80 percent of Skagit's farmland.[49] The county has a strong transfer of development rights (TRD) program supported by revenues from the conservation futures tax (CFT) authorized under Skagit's Farmland Legacy Program which works closely with Skagitonians to Preserve Farmland (SPF) to acquire the development rights of strategically located farmland. The County Assessor taxes farmland on the basis of its *current use* as distinguished from the highest *economic use* standard that's applied to non-agricultural lands. Overall, the American Farmland Trust (AFT) awarded Skagit County a score of 102 points out of a maximum of 136 for its protection of agriculture (a score of 0.81out of a possible 1.00 points). There appears to be widespread voter support for maintaining the viability of

[49] Dennis Canty, Alex Martinson Ausaika Kumar, *Losing Ground: Farmland Protection in the Puget Region*, (American Farmland Trust, 2012), Appendix B: Skagit County.

agriculture activity in the county, and it is likely that this trend toward local protection of farmland will continue.

State government's most important agricultural impact is its determining the amount and distribution of water available for agricultural production.

b. Major Trends

VI. Traditional Agriculture

The historical and current research we have conducted in the Skagit Valley reveals an interesting transformation in "traditional" agriculture there. Traditional is distinguished from "new age" agriculture such as organic dairies, organic free range non-GMO poultry, fresh vegetable production and greenhouse operations.

Historically, agriculture made up a significant part of the five county Pierce County to Whatcom County gross domestic product. Today, the only counties with significant agricultural economic bases are Whatcom and Skagit counties, each with similar cropland acreages. Only Skagit's continues to grow at a healthy rate, about twice that of Whatcom and with agricultural sales some 80% greater.

The following compares agricultural census data from 1982 with 2007 and summarizes some of the more important long term trends occurring in Skagit County:

- The number of farms has increased slightly, 603 to 640, a 6.1% increase;
- Farms with high sales (i.e. $50,000 and above) are decreasing, those with low sales (<$10,000) are increasing rapidly;
- Livestock farms have declined in importance:
  - Dairy: Sales have decreased 41%, the number of dairy farms decreased 63%;
  - Livestock: Sales -51%, number – 27%;
  - Poultry: Sales – 12%, number +166% (We believe current data will show a sales increase and number decrease due to Draper Valley Farms acquisitions and dramatic sales increases).
- Sales/acre has more than doubled, $1,551 to $3,140;
- The number of large acreage farms have been changing little, small and modest sized ones increasing rapidly;
- Crop and pasture land totals have decreased slightly, 8%, from 91.6 thousand to 84.4 thousand acres;

- Some crops have seen large acreage declines, others large increases:

  The Figures below compare 1982 with 2011:

  - Total seed production: -34%;
  - Spinach seed production: - 41%
  - Wheat: +49%
  - Field corn: +57%
  - Potatoes: +467%!!

- Ranking crops with more than 1,000 acres, as of 2011, we see the following:

  - Hay & grass: 13,570*;
  - Potatoes: 11,954;
  - Field Corn: 8,451;
  - Pasture: 6,824*;
  - Wheat: 6,338;
  - Fallow: 2.408*;
  - Cucumber: 1,851;
  - Blueberry: 1,528;
  - Caneberry: 1,120;
  - Spinach Seed: 1,010;
  - The above indicates land principally used in a potato rotation. There are some 22,800 acres suggesting a 2:1 grass to potato rotation.

- The percent of owner operated farms increased from 89% to 95% between 1982 and 2007;

- % of farms operated by females increased from 7% to 23%;

- % of farms where farming is the operators primary occupation dropped from 49% to 39%;

- The age distribution of the primary operator has changed significantly:

  - Young farmers (<35 years old) have declined significantly, 14% to 3%;
  - Middle aged (35 – 59) have declined slightly, from 63% to 59%;
  - Old farmers (60+) have increased substantially, 23% to 38%.

Skagit Valley agriculture, sandwiched between Vancouver B.C. on the north and the Seattle Metropolitan Area on the south in the Skagit River delta and bisected by the Skagit River is a highly unique agricultural area. It is:

- Highly specialized. Many organic, berry and bulb farms;

- Complex. Producing a very significant proportion of the nation's, in fact world's, spinach, cabbage, etc. seed that requires large buffer areas to guard against cross-pollination and cooperation between landowners and seed growers.
- An area that uses the land intensively, in contrast to the more industrial and extensive land-use practices in Eastern Washington. Potatoes are grown in both regions but the agronomic practices are dramatically different. Eastern Washington "browns" (i.e. Russets) lend themselves well to large-scale industrial agriculture where, in the spring, a farmer may make three passes over their land with tractor-pulled implements to accomplish ground preparation through planting. That contrasts with Skagit's red (i.e. Norland) and yellow (i.e. Yukon Gold) thin skinned potatoes where the farmer may pass over the land 10-12 times between preparation through planting and that requires very specialized harvesting equipment to insure there is no damage to the thin potato skin.
- Diversifying in some very interesting ways. For example the proportion of women operating farms increased from 7% to 23% over a 25 year period. There is no reason this trend shouldn't continue which would add new perspective and diversity to farming operations.

## VII. Organic Agriculture

Organic agriculture is relatively new addition to the mix of Skagit's agricultural activity. It is still small, but growing rapidly and takes several different forms. Unfortunately, organic agriculture is sufficiently new that it has not been incorporated into most statistical data bases, and the following is based mostly on interviews conducted as part of this study.

- There are a few larger growers of organic vegetables, fruits and/or berries but most production occurs in smaller farms, often by younger persons who got into organic production for ethical as much as economic reasons. Organic crops raised in Skagit County are mainly destined for local and regional green markets. One local producer sells his product nation-wide, but he is the exception. The market for locally produced, organic foods is expected to grow in the coming decade and combined with the population growth projected for the Seattle Metro area –which includes Snohomish County – should create a strong demand for output from this part of Skagit's agricultural economy.
- Organic dairies, as discussed above, distribute their product through a national marketing co-operative that has been able to match supply with demand at levels that support strong organic milk prices. This situation is likely to continue into the foreseeable future. It makes existing, technically progressive organic dairies very

viable but also will put an upper limit on the number and size of organic dairies in the county.

- The growing of organic seed will likely grow somewhat in parallel to the growth of the entire organic agriculture sector. Because of the isolation required for all seed growing – and in particular organic seed growing – the rate of growth will likely be less than the equivalent rate in the production of organic crops.

Overall, the trend of organic agricultural products is strong. As one interviewee said, "people in the Northwest want high quality fresh food and they are willing to pay for it." If this trend continues to be strong in the future, organic agriculture could represent a significant share of Skagit's total farm income and output.

## VIII. Urbanization/Urban Encroachment

In the Puyallup Valley, once the constraints to urban expansion were lifted, it only took some two decades for urbanization to displace agriculture. Are there indicators this may be happening in the Skagit?

Our interviews with farmers indicate this is a threat. Of the 19 farmers interviewed six indicated urbanization was a threat.

### Population and Employment Pressure.

Skagit County is "sandwiched" in between two major rapidly growing coastal metropolitan areas. Eighty one miles to the north is Vancouver, B.C. with a current (2012) population of nearly 2.1 million (Table 28). Sixty two miles to the south is the Seattle Metropolitan area with a 2012 population estimated at some 3.55 million. Therefore, about 5.6 million people are "squeezing" Skagit County's land base.

This "squeeze" is being driven by a rapidly expanding employment base in both areas. Vancouver's employment in 2012 reached 1.27 million and has been steadily growing at a two percent rate. Seattle's employment base is larger (1.75 million) but has been growing more slowly (approximately 1.2%/year). Regardless, the growth rate for both areas is impressive. Even more impressive are the number of people added annually to their population base – some 96,200.

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | Table | | | |
| | Population and Employment Change | | | | | |
| | Seattle and Vancouver B.C. Metropolitan Areas | | | | | |
| | | | | | | |
| | Vancouver, B.C. | | | | Annual % Change | |
| | Population | | Employment | | Population | Employment |
| Year | | | | | | |
| 1996 | 1,535.1 | | 944.7 | | | |
| 2004 | 1,757.1 | | 1,104.6 | | 1.8% | 2.1% |
| 2012 | 2,059.7 | | 1,274.4 | | 2.2% | 1.9% |
| | | | | | | |
| | Seattle, WA. | | | | Annual % Change | |
| 1996 | 3,058.0 | | 1,474.6 | | | |
| 2004 | 3,434.0 | | 1,600.4 | | 1.5% | 1.1% |
| 2012 | 3,552.2 | | 1,749.9 | | 0.4% | 1.2% |
| | | | | | | |
| Source: TLA/BM&A, Census Canada, U.S. Bureau of Cesus, Wa. OFM. | | | | | | |
| | | | | | | |
| | | | Distances | | | |
| Mt. Vernon to Vancouver B.C. CBD | | | | | 80.8 miles | |
| Mt. Vernon to Seattle CBD. | | | | | 61.8 miles | |
| | | | | | | |
| Source. Goggle Maps. | | | | | | |
| | | | | | | |

For Skagit's agriculture this sandwich affect is both a blessing and curse. On the beneficial side it provides a huge market for agricultural goods and agro-tourism. It is a curse because it increases the demand for urban land uses (both residential and commercial) eating away at the agricultural land base. And, there are the unintended consequences of this urbanization such as increased levels of traffic, and "seed savers".

Permitting.

To what extent is agricultural land, in particular the most productive land which is zoned Ag-NRL being "consumed" by urbanization. Unfortunately, we were not able to obtain specific statistics on the land conversion process. However, the county maps various types of permits that are applied for. The permits cover a broad range (from access to water).

We counted the number of permits granted for buildings (homes) and manufactured homes within the area zoned Ag-NRL. There were 48 over the five years or an average of about ten per year. Eight were in very close proximity to Mt. Vernon; nine were immediately east of the airport within the Skagit Golf and Country Club; six were a short distance south of the

Hickox Rd./I-5 interchange. The remaining 25 (some five/year on average) were scattered throughout the Ag-NRL area. In conclusion, there has been a minor amount of urbanization taking place within the prime agricultural area. This is minor in comparison to what happened in the Puyallup Valley.

Land Values.

Another factor that "drove" the land conversion process in the Puyallup Valley was the significant difference between the market value of agricultural land and its economic value based on agricultural land rent. This was accentuated when, in 1985, the state adopted its Growth Management Act. Cities dramatically expanded their boundaries and land use classifications (zoning) within and outside the cities. Land was priced "at market" by the use allowed. The difference between agriculturally designated and industrial/residential land was approximately a factor of 4.0. What ensued was a dramatic conversion of land from agriculture to industrial/residential and the collapse of commercial agriculture in the Puyallup Valley.

In 2009 Mundy/Lane published a study done for the Skagitonians to Preserve Farmland, the City of Burlington and Skagit County entitled "Demand For and Value Of Density (Heritage) Credits." As a part of that study an exhaustive analysis of agricultural land market and economic values was conducted. Multiple independent methods were used to arrive at both sets of values. The agricultural land value conclusions were:

Economic Value - $3,500/acre.
Market Value - $12,250.
Difference Factor – 3.50.

Therefore, there is a significant financial incentive to convert land. This would be particularly true for farmers where there is no succession plan and desirous of retiring. Today, there are only two real reasons this conversion isn't taking place:

1. Zoning, which is rigorously enforced;
2. Farmers desire to continue to farm and the public in general desirous of retaining the open landscape.

Farmers and Urbanites are Basically Incompatible.

From a farmer's perspective farmers and urban folks are basically incompatible. Interestingly, it is not a two-way perspective (street?). Most urbanites have no problems with farm-folks. Farmers have a significant problem with urban folks. Many of these problems were vividly pointed out in our interviews with farmers.

- Traffic/congestion of "farm" roads;
- Odor/air quality, especially related to manure;

- Water: irrigation, drainage, storage, wetlands, flood plains;
- Conservation: land and wildlife;
- Regulations of all sorts;
- Puget Soundkeepers and dairy farmers

In summary, in the long term, there may be significant demographic and economic pressure to convert farm land to urban land.

## IX. Labor/Immigration

Labor issues such as availability and cost, and what may happen regarding immigration were of particular importance to those interviewed, especially farmers. Seventeen farmers were interviewed. When asked about threats and weaknesses facing them ten (59%) brought up labor and immigration matters. Of those, three specifically were concerned about immigration policies. There were 7 more that were indirectly concerned about immigration for they felt there was an inadequate labor pool or that labor costs were becoming too burdensome. In general respondents felt a more manageable and liberal immigration policy would help.

When one considers the number of people employed by the farmers in the Skagit Valley it is easy to understand why they are concerned. For example, thirteen of the farmers we interviewed provided us with employment data. The 13 employ:

- 643 people full time, for an average of 49 per farm;
- 2,809 people part time (seasonal) for an average of 255 per farm.
- Totally they employ 3,452 for an average of 203 per farm.
- Regarding full time employees, the lowest number was 3, the highest was 220.
- Regarding part time (seasonal employees), the fewest were 2 and the highest was 1,700.

The majority of full time and part time (seasonal) employees are of Hispanic race and they or their parent(s) emigrated from Mexico. Given this, it is easy to understand why immigration policies with Mexico are of such importance.

## X. Habitat Restoration & Conservation

Habitat restoration impacts can be positive or negative for agriculture depending on how it is implemented. Positive impact habitat restoration occurs when farmers earn income by leasing lands that are put into some form of habitat, most often for shore birds. When the

lease is over, the farmer takes back the now rejuvenated land and resumes farming. Negative impact habitat restoration occurs when farmland is purchased for habitat restoration by some conservation organization and permanently removed for agricultural production. Both types of habitat restoration are occurring, but no reliable data is available that quantifies how much.

No agency systematically tracks and records the conversion of agricultural land to other uses. However, as discussed above, the WSDA inventoried total farm acreage in Skagit County in 2005, 2008 and 2011. Included in the inventory was acreage that had been in agricultural production but was no longer. These data are shown in Table 29.

Table 29
Acreage Withdrawn From Farming

| Crop | 2005 Total Acres | 2008 Total Acres | 2011 Total Acres | change 2005-08 | change 2008-11 |
|---|---|---|---|---|---|
| CRP/Conservation* | - | - | 49 | - | 49 |
| Wildlife Feed** | 502 | 437 | 664 | (65) | 227 |
| Developed*** | - | 4 | 268 | 4 | 264 |

* USDA conservation from erosion & stream shading

** includes habitat areas that used to be in production

*** areas that used to be in production - now in other uses like housing

*Source: WSDA, TLA and BMA*

The first two rows of data in the table are agricultural acres withdrawn from production for habitat restoration or conservation purposes. The net change between 2005 and 2008 was negative – with at least part of the reason being the completion of habitat leases and the return of the land to agricultural activity. Between 2008 and 2011, 278 acres (227 habitat and 49 conservation) were taken out of agricultural production. By way of comparison, the bottom row of the above table (below the double line) shows that there were fewer acres taken out of production for housing or other development between 2008 and 2011 than there were for habitat and conservation purposes. There is no hard data on how much of that land was leased and how much sold, but the current trend is for habitat/conservation pressures to be as great as development pressures for the conversion of farmland over the coming decades.

# *Appendix 13*

# *Alphabetical Listing of Detailed Agricultural Land Uses*

Alphabetical Listing
Detailed Agricultural Land Uses in Skagit County

| Crop | 2005 Acres | 2008 Acres | 2011 Acres |
|---|---|---|---|
| Alfalfa, Hay | 209 | 45 | 66 |
| Alfalfa, Seed | 5 | - | - |
| Alfalfa/Grass, Hay | 10 | 9 | 2 |
| Apple | 240 | 194 | 108 |
| Apricot | 1 | 1 | 1 |
| Asparagus | - | 2 | 5 |
| Barley | 571 | 713 | 886 |
| Bean, Dry | 26 | 4 | - |
| Bean, Green | 22 | - | 4 |
| Beet | - | - | 2 |
| Beet, Seed | 875 | 522 | 513 |
| Blueberry | 1,106 | 1,380 | 1,528 |
| Bluegrass, Seed | 20 | 47 | - |
| Broccoli | 531 | 670 | 351 |
| Bulb, Daffodil | 578 | 1,041 | 865 |
| Bulb, Iris | 349 | 44 | |
| Bulb, Tulip | 443 | 319 | 367 |
| Cabbage | 50 | 58 | 34 |
| Cabbage, Seed | 376 | 415 | 231 |
| Caneberry | 1,432 | 1,068 | 1,120 |

| Crop | 2005 Acres | 2008 Acres | 2011 Acres |
|---|---|---|---|
| Canola | - | - | 17 |
| Carrot | - | 320 | 170 |
| Cauliflower | 354 | 331 | - |
| Cereal Grain, Unknown | - | 118 | - |
| Christmas Tree | 28 | 30 | 51 |
| Clover, Hay | 384 | 631 | 172 |
| Corn, Field | 6,365 | 8,058 | 8,451 |
| Corn, Seed | 35 | - | 1 |
| Corn, Sweet | 549 | 192 | 115 |
| Cranberry | - | 3 | - |
| CRP/Conservation | - | - | 49 |
| Cucumber | 1,997 | 977 | 1,851 |
| Developed | - | 4 | 268 |
| Fallow | 1,231 | 1,474 | 2,408 |
| Fescue Seed | - | - | 35 |
| Filbert | 6 | 84 | 83 |
| Golf Course | 392 | 484 | 438 |
| Grape, Wine | 14 | 27 | 27 |
| Grass, Hay | 7,879 | 8,615 | 13,570 |
| Green Manure | 608 | 346 | 136 |

| Crop | 2005 Acres | 2008 Acres | 2011 Acres |
|---|---|---|---|
| Kale | - | 14 | - |
| Leek | 72 | 77 | 16 |
| Lettuce | 4 | 2 | - |
| Market Crops | 210 | 56 | 346 |
| Mint | - | 12 | - |
| Mustard, Seed | 39 | 4 | - |
| Nursery, Greenhouse | 9 | 9 | 42 |
| Nursery, Orchard/Vineyard | - | 51 | 12 |
| Nursery, Ornamental | 863 | 845 | 902 |
| Oat | 48 | 239 | 89 |
| Onion | 13 | 16 | 22 |
| Pasture | 1,692 | 1,342 | 6,824 |
| Pea, Green | 3,453 | 2,475 | 11 |
| Pear | 2 | 10 | 9 |
| Poplar, Hybrid | 415 | 334 | 342 |
| Potato | 10,670 | 10,932 | 11,954 |
| Pumpkin | 527 | 139 | 113 |
| Radish | - | - | 38 |
| Research Station | 147 | 147 | 147 |
| Ryegrass, Seed | 262 | 561 | 401 |
| Seed, Unknown | - | 52 | - |

| Crop | 2005 Acres | 2008 Acres | 2011 Acres |
|---|---|---|---|
| Shellfish | - | 10,838 | 7,501 |
| Sod Farm | 306 | 409 | 169 |
| Spinach | - | - | 5 |
| Sorghum | 1 | - | - |
| Spinach, Seed | 1,707 | 1,407 | 1,010 |
| Squash | 4 | - | - |
| Strawberry | 359 | 390 | 421 |
| Swiss Chard, Seed | - | 38 | - |
| Tea | 6 | 7 | 7 |
| Triticale | - | - | 122 |
| Unknown | 116 | - | 13 |
| Vegetable, Unknown | 169 | - | - |
| Wheat | 5,221 | 7,285 | 6,338 |
| Grand Total | 53,001 | 65,917 | 70,779 |

SOURCE: *Washington State Department of Agriculture, various years*

# *Appendix 14*

# *Agricultural Support Firms, by NAICS Codes, Location & Jobs*

## Agricultural Support Firms by NAICS Code, Location and Employment

| | | LOCATION | ACTIVITIES | EMPLOYEES |
|---|---|---|---|---|
| | | | | |
| **NAICS # 1119 Other Crop Farming** | | | | |
| Monsanto | | LaConnor | | 5-9 employees |
| Farm Power Rexville LLC | | Mt. Vernon | | 1-4 employees |
| **NAICS # 1151 Support Activities for Crop Production** | | | | |
| Agrotech Northwest Inc | 17171 Best Rd | Mt. Vernon | Soil Preparation, Planting, Cultivating | 1-4 employees |
| Chris Knutzen & Co | 16626 Allen West Rd | Bow | Postharvest Crop Activities | 5-9 employees |
| Pleasant Ridge Farm | 19166 Rexville Grange Rd | Mt. Vernon | Postharvest Crop Activities | 10-19 employees |
| William C Porter Farm Co | PO Box 809 | Marblemount | Soil Preparation, Planting, Cultivating | 1-4 employees |
| **NAICS # 1152 Support Activities for Animal Production** | | | | |
| All West Select Sires | 450 N Hill Blvd | Burlington | Support Activities for Animal Production | 10-19 employees |
| Fidalgo Taxidermy | 12944 Thompson Rd | Anacortes | Support Activities for Animal Production | 1-4 employees |
| Fossil Ridge Farm | 28134 Minkler Rd | Sedro Woolley | Support Activities for Animal Production | 1-4 employees |
| Over the Hill Taxidermy | 22774 Buchanan St | Mount Vernon | Support Activities for Animal Production | 1-4 employees |
| Way Out Ranch | 30142 Walberg Rd | Sedro Woolley | Support Activities for Animal Production | 1-4 employees |
| **NAICS # 3253 Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing** | | | | |
| Hexcel Corp | 15062 Steele Rd | Burlington | Fertilizer (Mixing Only) Manufacturing | 100-249 employee |
| Hi Q Compost | 1020 Hodgin St | Sedro Woolley | Fertilizer (Mixing Only) Manufacturing | 1-4 employees |
| RSA Micro Tech | 11915 Westar Ln | Burlington | Nitrogenous Fertilizer Manufacturing | 5-9 employees |
| San Juan Composites | 502 34th St | Anacortes | Fertilizer (Mixing Only) Manufacturing | 20-49 employees |
| Skagit Soils Inc | 13260 Ball Rd | Mount Vernon | Fertilizer (Mixing Only) Manufacturing | 1-4 employees |
| Sulex Inc | 13221 FM Rd | Mount Vernon | Nitrogenous Fertilizer Manufacturing | 5-9 employees |
| **NAICS # 3116 Animal Slaughtering and Processing** | | | | |
| Andal's Custom Meats Inc | 20251 E Hickox Rd | Mount Vernon | Meat Processed from Carcasses | 1-4 employees |

| | | LOCATION | ACTIVITIES | EMPLOYEES |
|---|---|---|---|---|
| Draper Valley Farms Inc | 1000 Jason Ln | Mount Vernon | Poultry Processing | 250-499 employee |
| Island Grown Farmers Co-Op | 13400 D Arcy Rd | Bow | Meat Processed from Carcasses | 5-9 employees |
| Schenk Packing Co Inc | 1321 S 6th St | Mount Vernon | Animal (except Poultry) Slaughtering | 20-49 employees |
| **NAICS # 3114 Fruit and Vegetable Preserving and Specialty Food Manufacturing** | | | | |
| Cascade AG Svc | 13459 Dodge Valley Rd | Mount Vernon | Fruit and Vegetable Canning | 20-49 employees |
| **NAICS # 3112 Grain and Oilseed Milling** | | | | |
| Fairhaven Organic Flour Mill | 808 N Hill Blvd | Burlington | Flour Milling | 10-19 employees |
| Four H Machine Inc | 9056 N Texas Rd | Anacortes | Flour Milling | 10-19 employees |
| **NAICS # 4442 Lawn and Garden Equipment and Supplies Stores** | | | | |
| Alger Alps Tree Farm & Nursery | 19019 Minnie Rd | Burlington | Nursery, Garden & Farm Supply Stores | 1-4 employees |
| Bti Landscape Supplies | 20872 Cook Rd | Burlington | Nursery, Garden & Farm Supply Stores | 1-4 employees |
| Cape Horn Nursery | 41920 S Shore Dr | Concrete | Nursery, Garden & Farm Supply Stores | 1-4 employees |
| Christianson's Nursery | 15806 Best Rd | Mount Vernon | Nursery, Garden & Farm Supply Stores | 10-19 employees |
| Concrete Garden Ctr | 45977 Main St | Concrete | Nursery, Garden & Farm Supply Stores | 1-4 employees |
| Cypress Springs Inc | 10504 Halloran Rd | Bow | Nursery, Garden & Farm Supply Stores | 10-19 employees |
| D Avenue Nursery | 1502 D Ave | Anacortes | Nursery, Garden & Farm Supply Stores | 5-9 employees |
| Faithland Growers | 16918 State Route 20 | Mount Vernon | Nursery, Garden & Farm Supply Stores | 1-4 employees |
| Go Outside | 111 E Morris St | La Conner | Nursery, Garden & Farm Supply Stores | 1-4 employees |
| Jensen Tree Farm | 22989 Franklin Rd | Mount Vernon | Nursery, Garden & Farm Supply Stores | 1-4 employees |
| J-N-G Blooms Inc | | Mount Vernon | Nursery, Garden & Farm Supply Stores | 1-4 employees |
| Lefeber Turf Farm | 15195 State Route 536 | Mount Vernon | Nursery, Garden & Farm Supply Stores | 10-19 employees |
| Nelson's Rhododendrons | 706 Sapp Rd | Sedro Woolley | Nursery, Garden & Farm Supply Stores | 1-4 employees |
| North Hill Resources | 657 N Hill Blvd | Burlington | Nursery, Garden & Farm Supply Stores | 5-9 employees |
| Northstar Stone & Landscape | 3312 Old Highway 99 S Rd | Mount Vernon | Nursery, Garden & Farm Supply Stores | 1-4 employees |

| | | LOCATION | ACTIVITIES | EMPLOYEES |
|---|---|---|---|---|
| Osborne International Seed Co | 2428 Old Highway 99 S Rd | Mount Vernon | Nursery, Garden & Farm Supply Stores | 5-9 employees |
| Skagit Valley Gardens | 18923 Peter Johnson Rd | Mount Vernon | Nursery, Garden & Farm Supply Stores | 10-19 employees |
| Skagit Wild Bird Supply | 17188 State Route 536 | Mount Vernon | Nursery, Garden & Farm Supply Stores | 5-9 employees |
| Summersun Nursery-Landscaping | 4100 E College Way | Mount Vernon | Nursery, Garden & Farm Supply Stores | 5-9 employees |
| Sunland Bark & Topsoils Co | 12469 Reservation Rd | Anacortes | Nursery, Garden & Farm Supply Stores | 10-19 employees |
| Thompson's Greenhouse | 6412 State Route 9 | Sedro Woolley | Nursery, Garden & Farm Supply Stores | 20-49 employees |
| Waterfall Pond Supply | 20408 Conway Frontage Rd | Mount Vernon | Nursery, Garden & Farm Supply Stores | 1-4 employees |
| Wells Nursery LLC | 1201 Blodgett Rd | Mount Vernon | Nursery, Garden & Farm Supply Stores | 10-19 employees |
| Wiggin's Landscape Nursery | 13156 Pulver Rd | Mount Vernon | Nursery, Garden & Farm Supply Stores | 10-19 employees |
| **NAICS # 333111 Farm Machinery and Equipment Manufacturing** | | | | |
| De Laval Mfg | 3709 Old Highway 99 S Rd | Mount Vernon | Farm Machinery & Equipment Manufacturing | 50-99 employees |
| Westside Metal Fabricators | 27 Willow Ln | Mount Vernon | Farm Machinery & Equipment Manufacturing | 1-4 employees |
| **NAICS # 424910 Farm Supplies Merchant Wholesalers** | | | | |
| Belfast Feed Store | 6148 N Green Rd | Burlington | Farm Supplies Merchant Wholesalers | 1-4 employees |
| Cargill Animal Nutrition | 16939 State Route 20 | Burlington | Farm Supplies Merchant Wholesalers | 20-49 employees |
| Christians Alf Seed Co | 11857 Bay Ridge Dr | Burlington | Farm Supplies Merchant Wholesalers | 5-9 employees |
| Coastal Farm Supply | 2021 Market St | Mount Vernon | Farm Supplies Merchant Wholesalers | 5-9 employees |
| Conway Feed Inc | 18700 Main St | Conway | Farm Supplies Merchant Wholesalers | 10-19 employees |
| Feed Barn | 100 W State St # A | Sedro Woolley | Farm Supplies Merchant Wholesalers | 1-4 employees |
| Green Land Enterprises | 39 Marigold Dr | Bellingham | Farm Supplies Merchant Wholesalers | 1-4 employees |
| Hansen & Peterson | 210 N Oak St | Burlington | Farm Supplies Merchant Wholesalers | 1-4 employees |
| Rijk Zwaan | | Mount Vernon | Farm Supplies Merchant Wholesalers | 5-9 employees |
| Skagit Farmers Supply | 900 Riverside Dr | Mount Vernon | Farm Supplies Merchant Wholesalers | 10-19 employees |
| Skagit Farmers Supply | 39394 State Route 20 | Concrete | Farm Supplies Merchant Wholesalers | 1-4 employees |
| Skagit Farmers Supply | 1665 Park Ln | Burlington | Farm Supplies Merchant Wholesalers | 5-9 employees |

| | | LOCATION | ACTIVITIES | EMPLOYEES |
|---|---|---|---|---|
| Skagit Farmers Supply | | Conway | Farm Supplies Merchant Wholesalers | 1-4 employees |
| Skagit Farmers Supply | 915 Moore St | Sedro Woolley | Farm Supplies Merchant Wholesalers | 10-19 employees |
| Skagit Farmer's Supply | 12939 Avon Allen Rd | Burlington | Farm Supplies Merchant Wholesalers | 5-9 employees |
| Vanzyverden Inc | 12035 Higgins Airport Way | Burlington | Farm Supplies Merchant Wholesalers | 1-4 employees |
| Washington Bulb Co Inc | 16031 Beaver Marsh Rd | Mount Vernon | Farm Supplies Merchant Wholesalers | 250-499 employees |
| Wilbur-Ellis Co | 13586 Bayview Edison Rd | Mount Vernon | Farm Supplies Merchant Wholesalers | 5-9 employees |
| **NAICS # 423820 Farm and Garden Equipment Merchant Wholesalers** | | | | |
| Barnett Implement Co Inc | 4220 Old Highway 99 S Rd | Mount Vernon | Farm & Garden Equip Merchant Wholesalers | 20-49 employees |
| Brim Tractor Co | 2500 Cedardale Rd | Mount Vernon | Farm & Garden Equip Merchant Wholesalers | 10-19 employees |
| Ewing Irrigation Products | 555 E George Hopper Rd | Burlington | Farm & Garden Equip Merchant Wholesalers | 1-4 employees |
| Excel Dairy Svc Inc | 2725 Old Highway 99 S Rd | Mount Vernon | Farm & Garden Equip Merchant Wholesalers | 20-49 employees |
| Farmers Equipment Co | 17893 State Route 20 | Burlington | Farm & Garden Equip Merchant Wholesalers | 20-49 employees |
| Scholten's Equipment Inc | 9534 Green Rd | Burlington | Farm & Garden Equip Merchant Wholesalers | 5-9 employees |
| Sonshine Rural Supply | PO Box 421 | Burlington | Farm & Garden Equip Merchant Wholesalers | 1-4 employees |
| Valley Farm Ctr | 305 Freeway Dr | Mount Vernon | Farm & Garden Equip Merchant Wholesalers | 5-9 employees |
| **NAICS # 493120 Farm product warehousing and storage, refrigerated** | | | | |
| Biringer Nursery | 15060 Beaver Marsh Rd | Mount Vernon | Nursery & Florist Merchant Wholesalers | 5-9 employees |
| Boo Shoot Gardens LLC | 17618 Dunbar Rd | Mount Vernon | Nursery & Florist Merchant Wholesalers | 20-49 employees |
| Brandywine Nursery Inc | 17336 Mclean Rd | Mount Vernon | Nursery & Florist Merchant Wholesalers | 10-19 employees |
| Brose's Wholesale Florist | 1808 Railroad Ave # D | Mount Vernon | Nursery & Florist Merchant Wholesalers | 1-4 employees |
| Choice Bulb Farm | 18412 Beaver Marsh Rd | Mount Vernon | Nursery & Florist Merchant Wholesalers | 1-4 employees |
| Far Pastures Inc | 21614 Bulson Rd | Mount Vernon | Nursery & Florist Merchant Wholesalers | 5-9 employees |
| Jonkheer Greenhouses | 16559 Calhoun Rd | Mount Vernon | Nursery & Florist Merchant Wholesalers | 10-19 employees |
| Northwest Horticulture | 14113 River Bend Rd | Mount Vernon | Nursery & Florist Merchant Wholesalers | 100-249 employees |
| Skagit Gardens Inc | 3100 Old Highway 99 S Rd | Mount Vernon | Nursery & Florist Merchant Wholesalers | 250-499 employees |
| Staffanson Farms Inc | 12918 Dodge Valley Rd | Mount Vernon | Nursery & Florist Merchant Wholesalers | 5-9 employees |

| | | LOCATION | ACTIVITIES | EMPLOYEES |
|---|---|---|---|---|
| Wells Nursery LLC | 14015 River Bend Rd | Mount Vernon | Nursery & Florist Merchant Wholesalers | 20-49 employees |

# Appendix 15

# Skagit Valley Agricultural Infrastructure

## Table 8
## Skagit Valley Agricultural Infrastructure

| Category/Name | Location | 1993 | 1998 | 2003 | 2008 | 2013 |
|---|---|---|---|---|---|---|
| **Farm Equipment** | | | | | | |
| Blue Diamond Dairy Service | Mt. Vernon | | x | | | |
| Bryant Implement | Stanwood | x | **x** | | | |
| Burlington Ford New Holland | Burlington | | **x** | | | |
| Smith Tractor & Equipment | Mt. Vernon | x | | | | |
| Barnett Implement | Mt. Vernon & Snohomish | x | x | x | x | x |
| Brim Tractor Co. | Mt. Vernon | | | x | | x |
| Caterpillar (NC Machinery) | Mt. Vernon | | | | x | x |
| Farmers Equipment | Burlington | x | x | x | | x |
| Meridian Eqjuipment | Bellingham | | | x | | x |
| Scholten's Equipment | Burlington | x | x | x | x | x |
| Skagit Farmers Supply | Mt. Vernon | | | | x | |
| Valley Equipment | Stanwood | x | | | | |
| Washington Tractor | Lynden | | | | | x |
| Total | | 6 | 6 | 5 | 4 | 7 |
| **Fertilizer (Retail, Wholesale & Mfg.)** | | | | | | |
| Agrichem | Burlington | x | x | | | |
| Boliden Inertrade | Mt. Vernon | | x | | | |
| Conway Feed | Conway | x | | | | |
| Organix | Sedro Wooley | x | | | | |
| Smith & Ardussi | Mt. Vernon | x | | | | |
| Valley Fertilizer | Mt. Vernon | x | | | | |
| Magic Earth Biological | Anacortes | | | | x | x |
| Northern Lights Gardening | Billingham | | | | | x |
| RSA Microtech | Burlington | | x | x | x | x |
| Skagit Farmers Supply | Burlington | x | x | x | x | x |
| Skagit Farmers Supply-Cenex | Conway | | | | | x |
| Sulex | Mt. Vernon | | | x | x | x |
| UAP Northwest | Burlington | | | x | x | |
| Wilbur Ellis | Mt. Vernon | x | x | x | x | x |
| Wolfkill | Mt. Vernon | x | x | | | |
| Total | | 8 | 6 | 5 | 6 | 7 |
| **Produce - Wholesale** | | | | | | |
| North Cascade Mushroom Farms | Mt. Vernon | | x | | | |
| Skagit Wholesale Market | | | | | x | x |
| Sky Harvest Produce | | | | | | x |
| Total Produce - Wholesale | | | 1 | | 1 | 2 |
| **Fruit & Vegetables - Wholesale[4]** | | | | | | |
| Big Sky Garden | Bow | | | x | | |
| C.F. Fresh | Sedro Wooley | x | x | x | x | x |
| Duck Delivery of WA. | | | | | x | |
| Delta Farms | Mt. Vernon | | x | | | |
| King Corn | Mt. Vernon | | | x | | |
| Merrit's Apples | Mt. Vernon | x | x | x | x | x |
| Nalley Fine Foods | Mt. Vernon | x | x | | | |

**Table 8 (continued)**

| | | | | | | |
|---|---|---|---|---|---|---|
| Sakuma Brothers | Burlington | | x | x | x | x |
| Skagit Growers | Mt. Vernon | | x | x | | |
| Skagit Valley's Best Produce | Mt. Vernon | | | x | | x |
| Swanson's Fruit & Vegetables | Mt. Vernon | | | x | | |
| Valley Pride Sales (Jensen) | Mt. Vernon | x | x | x | x | x |
| Washington Lettuce & Veg. Co.(Hughes) | Mt. Vernon | | | x | x | x |
| Total Fruit & Vegetables - Wholesale | | 4 | 7 | 10 | 6 | 6 |
| Total Produce Fruit and Vegetables | | 4 | 8 | 10 | 7 | 8 |
| **Potatoes (Wholesale) [1][2]** | | | | | | |
| Erickson Farms | Mt. Vernon | | | x | x | x |
| Knutzen Farms | Burlington | | | | | x |
| Maple Wood Farm (Kenneth Junquist) | Mt. Vernon | | x | | | |
| Nelson Brothers | | | | | x | x |
| Norm Nelson Farms | Bow/Burlington | | x | | x | x |
| Potatoes Unlimited (Don McMoran) | Mt. Vernon | | x | | | |
| Skagit Valley's Best | Mt. Vernon | | | x | x | x |
| Smith & Morrison | Mt. Vernon | | | x | x | x |
| Sterling Hill Potatoes | Burlington | | | | x | x |
| Thulen Farms | | | | | | x |
| Valley Pride | Mt. Vernon | | | x | x | x |
| Wallace Farms | Burlington | | x | x | x | |
| Total Potatoes | | 0 | 4 | 5 | 8 | 9 |
| Total Produce, Fruit/Potatoes/Vegetables Wholesale | | 4 | 12 | 15 | 15 | 17 |
| **Fruits & Vegetables - Retail** | | | | | | |
| Amerifresh | Mt. Vernon | | | x | | x |
| Anderson Blueberry Farm | Bow | | | x | x | x |
| Cedardale Orchards | Conway | | x | x | x | x |
| Country Farms | Burlington | | | x | | |
| J Waters Country Farms | Burlington | | | | x | x |
| Jones Creek Farms | Sedro Wooley | | | | | x |
| LaConnor Fruit & Produce | LaConnor | | | | x | |
| North Sound Food Hub | Bow | | | | | x |
| Northwest Wildfoods | Burlington | | | | | x |
| Perkin Variety Apples | Sedro Wooley | | | x | | x |
| Reidel Farms | Burlington | x | x | x | | |
| Snow Goose Produce Inc. | Mt. Vernon | x | x | x | x | x |
| Total Fruit & Vegetables - Retail | | 2 | 3 | 7 | 5 | 9 |
| **Processors[3]** | | | | | | |
| National Frozen Foods Corp. | Burlington | x | x | x | | |
| Source International Food Products | LaConnor | x | | | | |
| Sakuma Bros. Processing | Burlington | | x | x | x | x |
| Small Planet Foods | Sedro-Wooley | | | | | x |
| Twin City Foods | Stanwood | x | x | x | x | x |
| Total Processor | | 3 | 3 | 3 | 2 | 3 |
| **Grand Total** | | **23** | **30** | **35** | **32** | **43** |