



**Reflections on Agriculture and Food Security, Farm Living and Livelihoods, and Urban-
Rural Encroachment:
Whatcom County Agriculture's Biggest Challenge**

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Over the past 350 years, the North American landscape has been rapidly “tamed” from wildlands to agricultural fields, with settlers claiming, often brutally, traditional homelands of American Indians. Once appropriated, settlers cleared land by cutting forests and burning woods to cultivate plants and raise livestock for human consumption (and some export). In the last 150 years, though, another force has been claiming the land base – urban-rural development. Such development seeks the same kind of land used for much of agriculture – level, well-drained soils; it is a kind of development that is the subject of study in academic planning departments as well as in state agencies. The reader is referred to the excellent work of faculty members in the Planning and Environmental Policy degree program at Huxley College of the Environment for examples of land use planning cases and planning tools and vehicles for preserving farm land and promoting wise land use. This paper, however, highlights the implications of such development pressures as well as trends in the industrialization of agriculture. One consequence of such industrialization is increases in certain efficiencies, for example, related to land productivity – the production of more food on less land. Implications for the structure of agriculture also are considered, in light of the geography of place, and, lastly, the implications for food security, a term which we use to mean, quite simply, knowing with some certainty how much food one is likely to have and from where it is coming.² We also include a few case studies of farm diversification in Whatcom County. This paper is put forth for purposes of discussion only, and continued development and improvement.

Over the last century, large-scale agricultural techniques have spread rapidly throughout the world with the introduction of farm machines driven by internal combustion engines and the availability of commercially-produced fertilizers and pesticides. Such advances, the result of considerable engineering “talent”³ and low-priced fossil fuels, allowed North America and other

developed regions to both industrialize and intensify its farming.⁴ By some accounts, land in production was at its highest in 1954, with a reported 1.206 billion acres in agriculture.⁵ Since then, farmland acreage has declined steadily. By 2002, 938 million acres were in cropland and pasture production; this represents a loss of 268 million acres or 22 percent in the land base.⁶

U.S. farm policy has typically emphasized intensification of cultivation and production for export, ultimately increasing agriculture’s share of U.S. exports and favorably impacting our national balance of payments. Global trade in cheaper food products sourced elsewhere has “freed” American soil for domestic, non-agriculture use, has made possible the expansion of the land base for residential development.⁷ The phenomenon of residential development encroaching on or consuming farmland has been known as urban encroachment, but perhaps is better described as urban-rural encroachment, as development occurs further and further outside a metropolitan core.⁸

The USDA categorizes farms⁹ in a number of ways. One categorization is based on sales. Small and medium farms are those with annual gross sales below \$250,000.¹⁰ Large farms are those generating sales above \$250,000, and typically covering more than 1,000 acres.¹¹ With this categorization, between 1974 and 2002, the number of farms had decreased from 2,314,013 to 2,128,982.¹² Table 1 shows these changes for the period of 1974 to 2002.

Table 1. Number of farms and land in farms, U.S. (1974-2002)

Year	Number of farms	Land in farms (acres)
1974	2,314,013	1,017,030,357
1978	2,257,775	1,014,777,234
1982	2,240,976	986,796,579
1987	2,087,759	964,470,625
1992	1,925,300	945,531,506
1997	1,911,859	931,795,255
2002	2,128,982	938,279,056

Data derived from USDA Historical Highlights: 2002 and earlier census years¹³

Despite the loss in numbers of farms, very small farms ranging in size between 1 and 49 acres and large farms greater than 1,000 acres actually increased in numbers (Table 2).¹⁴

Table 2. Number of farms by size, U.S. (1974-2002)

Year	Small Farms		Medium Sized Farms			Large Farms	
	1-9 acres	10-49 acres	50-179 acres	180-499 acres	500-999 acres	1,000-1,999 acres	2,000 acres or more
1974	128,254	379,543	827,884	616,098	207,297	92,712	62,225
1978	151,233	391,554	759,047	581,631	213,209	97,800	63,301
1982	187,665	449,252	711,652	526,510	203,925	97,395	64,577
187	183,257	412,437	644,849	478,294	200,058	102,078	66,786
1992	166,496	387,711	584,146	427,648	186,387	101,923	70,989
1997	153,515	410,833	592,972	402,769	175,690	101,468	74,612
2002	179,346	563,772	658,705	388,617	161,552	99,020	77,970
Percent change, 1974-2002	40%	49%	-20%	-37%	-22%	7%	25%

Data derived from USDA Historical Highlights: 2002 and earlier census years

As can be seen in Table 2, medium sized farms, ranging between 50 and 999 acres, experienced a decline. Farmland diminished (Table 1), but the number of certain medium-sized farm categories diminished at an even faster rate. The reality of incongruent trends in farm size – the loss of mid-sized farms, the increase in small-scale operations – poses challenges for policymakers that are, in effect, at least a century old.^{15, 16} A comprehensive food and farm policy would address such issues raised earlier and also consider the squeeze on mid-sized farms, sometimes referred to as “Agriculture of the Middle.” It would also consider flagging rural economies, increasing pollution and human health problems due to certain agrichemical use, labor laws, and, in general consumer/community support for agriculture.

It is understandable that consumers want low-priced food, but such “cheap” food may come at a high price – for example, compromised environmental health. Further, across all stakeholder groups, there is increasing concern about farmers’ resilience to extreme events. Such concerns can be grouped under the umbrella of “food security” – a term which includes considerations of vulnerabilities to food shortages (i.e., to extreme events), as well as environmental and personal health concerns, and economic robustness of economies.¹⁷ A critical question here is “Can industrial farms feed us in an emergency where access to imports is denied?” and is discussed some in the Vincent et al “Issues in Emergency Food Distribution” report. This key question will be further explored in subsequent IGCR work.¹⁸

Undoubtedly, the efficiency with which industrialized agriculture has been able to produce food and fiber has enabled our nation to free acreage for other uses. So why preserve farmland if food production can be successful on fewer acres than before? This question begs consideration of the word, “successful.” Industrialized agriculture may be successful at producing large quantities of certain foods, but not without environmental side effects. Further, the crops being produced are

shipped out and used as one of many ingredients in processed foods – high in inexpensive calories but not necessarily high in a full spectrum of nutrients. Therefore, industrial farms may be feeding the economy to a certain degree but they are not necessarily feeding people – one only needs to read any one of the many articles and books by Michael Pollan for evidence of this.¹⁹

In our Backyards: Whatcom County?

Whatcom County is one of the nation's top producers of dairy products and berries. In 2002, Whatcom County ranked 15th out of all 3,078 U.S. counties in dairy production, with \$159,868,000 in sales.²⁰ Though production has been climbing in the past several years, the number of dairy farms has been steadily declining. Dairy farm numbers were reported as 248 in 2002 compared to 475 farms 15 years earlier, in 1997.²¹

Whatcom County ranks even higher in berry production, being 4th in the nation for raspberry production, with 7,063 acres of berries in production in 2002. This represents almost 65% of the raspberries grown in the nation. According to the 2002 NASS census, there has been a countywide increase in the number of harvested raspberry acres – up from 6,502 acres in 1997 – while the number of raspberry farms decreased from 144 to 113.²²

While raspberry farms grow larger, some farms have had financial difficulties that stem from relying on one crop. Farmers are particularly vulnerable when markets or weather conditions are not ideal. A case in point is the heat wave that hit Whatcom County the summer of 2007. An estimated 20% of the season's raspberry harvest was lost as a result of the heat wave. Shortly following was a week of rain that hindered further production of the plants.²³ Such an example is why many berry farmers and others who have relied primarily on one crop have begun to diversify some.²⁴

Whatcom County is similar to other agricultural counties in the United States. In fact, the majority of U.S. soil is used to grow commodity crops that are exported from the county of production. Most of the raspberries in Whatcom County are purchased by processors for juices and preserves. Much of blueberries, too, is shipped overseas. The 246²⁵ dairy farms selling dairy products in the county accounted for about \$159,868,000 in sales, providing over a billion pounds of fluid milk that is pumped into the Darigold Plant in Whatcom County. It is then converted into powdered milk at the Lynden plant, much of which is earmarked for Asian markets.²⁶

Clearly, Whatcom County acreage is being used for the production of a select number of products geared primarily for exports (other specialty crops include, for example, potatoes and nursery stock). This is due to some combination of comparative advantage, economies of scale, history and markets, and production and reproduction of knowledge systems. However, what would

happen in the county if, for any reason, we were cut off from our customary food supply? Would we be surprised to find ourselves with a food shortage, in such a highly productive agricultural area.²⁷

Hunger amidst plenty is ironic in such an agricultural county. Whatcom County, alone, is the largest producer of powdered milk in the United States, producing enough dairy to meet as much as 75% of the demand for dairy products in Washington state.²⁸ Yet, production is threatened due to looming poor market prices; in such an economic climate only the most resilient farms, able to adjust production practices and product mix may be able to survive.²⁹

Through Whatcom County's farmers' markets, Community Supported Agriculture (CSA) or subscription buying, and "Eat Local" campaigns, Whatcom County is proud of its agricultural identity. Using agricultural census data, land in farms appears to have increased. Yet, by some accounts, the agricultural acreage has showed a decline through loss of agricultural land to development.³⁰ What is clear, however, is that land "lost to development" is very difficult to later develop for food production. It would be exceptionally difficult in Whatcom County, for example, to recapitalize a dairy farm after the real loss of "dairy infrastructure," upon development.

Table 3. Selected Statistics, Whatcom County Agriculture

	Year		
	1992	1997	2002
Number of farms	1,367	1,228	1,485
Land in farms, acres	118,136	103,600	148,027
Average size of farm, acres	86	68	100
Total Whatcom land area, acres	NA	NA	1,356,501
Number of farms under 1,000 acres	1,362	1,226	1,474
Net cash farm income of operation (dollars)*	28,698	37,957	55,675

Data derived from USDA National Statistics Service 1997 and 2002 tables³¹

* This is given as "net cash return from agricultural sales, average per farm" for 1992 and 1997.

An important hypothesis to consider in the discussion of land productivity and development pressures in light of food security questions, is whether or not it is in the economic interest of a particular region to prioritize agriculture by preserving its farm land and diversifying crop/livestock production. But is the diversification of crops essential to a community's food security? If so, then policymakers need to consider boosting support for small- and medium-sized farms. According to the 2002 National Agricultural Statistics Service and other sources mentioned in this paper, of the 1,485 farms in Whatcom County, 1,061 had less than \$50,000 in value of sales; the value of sales category that represented the most number of farms was 'less than \$1,000,' with 396 farms

in this category. These figures reveal that the majority of Whatcom farms are small and medium sized operations. In 2002, 923 farms – 62% of all county farms – were less than 50 acres in size.³²

An interesting consideration here is that such small- and medium-sized farms seem to figure prominently in conservation programs. For example, such farms accounted for 82% of the land enrolled by farmers in the Conservation Reserve and Wetlands Reserve Programs.³³ These farms also accounted for considerable crop diversification. It's a trend spreading throughout Whatcom County. In the past decade, for example, roughly 100 Whatcom mid-sized raspberry growers have supplemented their revenue streams by adding blueberries and some strawberries in order to mitigate unpredictable weather and the low prices offered by central distributors.³⁴ One farm [name withheld], for example, had mainly produced raspberries and strawberries for processors since the 1960s. Seasons' profits fluctuated heavily depending on the weather and market prices. To achieve more stability in income, the farm began producing a diverse range of crops, including carrots, potatoes, flowers, onions, garlic, green beans, corn, and cucumbers. In addition, the farm redirected its marketing from wholesale to retail by exploring local markets within close proximity of its farm site.

Other examples of small and medium farms diversifying their crops are Alm Hill Gardens, Hopewell Organics, and Broadleaf Farm, all located near the farming town of Everson. Alm Hill Gardens was started in 1974, with 2.5 acres of raspberries. However, such small production over, essentially, a four-month season was not viable. In 1978, Ben Craft and his wife, Gretchen, began to expand their operations to include flowers, berries, and vegetables on close to 40 acres of land and to sell at close to 20 farmers markets in Seattle and Bellingham. In taking advantage of the local markets now available because of the recent "Eat Local" trend, Whatcom farmers are finding a degree of financial security that they did not have when relying on growing one or two commercial crops and selling to centrally-located distributors. Still, despite the availability of more markets for small- and medium-scaled farms, challenges exist to achieve a flourishing agricultural economy in Whatcom County.

What can be concluded from this discussion? For one, scale matters. Policymakers need to consider an all-inclusive structure of agriculture that values place and locale, production that is environmentally sound and economically robust – i.e., able to withstand uncertainties in weather, production costs, and markets.

What can be done? Consumers need to be interested in food and farm systems that use sustainable connections between growers and producers. As discussed in the Vincent et al work mentioned earlier, Whatcom County is no different than the other counties in the U.S. – all are vulnerable to consumer food shortfalls due to extreme events (subduction-zone earthquake to

seasonal flooding, uncertain energy prices to seed shortfalls) and endemic poverty.³⁵ It is ironic that Whatcom County is rich with agricultural land, but produces little food for people to eat. The dependence on one or two crops “make it vulnerable to a disease outbreak or even climate variations”.³⁶ How best, then, to decrease such vulnerability? Many approaches are possible, but one thing is certain – none are likely unless farmland can be protected.

As Whatcom County’s population grows, development pressures in farmland areas will continue to increase, especially since farmland is prime for building given its generally flat and well drained soil characteristics. Nevertheless, there are a number of tools available to protect farmland. For example, the county’s ‘preferential agricultural open space taxation’ program designates various zoning to protect agricultural lands. Further efforts to preserve farmland in Whatcom County reside with the State of Washington and its Open Space Taxation Act, enacted decades ago, which allows for differential property valuation of open space lands for the production of food, fiber, and forest crops. Beyond state legislation to protect agricultural land from development, there are over a dozen nonprofit organizations working on behalf of Whatcom County agriculture – Whatcom Farm Friends, Sustainable Connections, the Whatcom County Farm Bureau, Small Potatoes Gleaning Project are notable examples. The number of small farms in the county has actually increased in the past decade, indicating a growing interest from young and new farmers to establish farming businesses. Clearly, prioritizing food security, knowing with some certainty how much food one is likely to have and from where it is coming, is one way forward and warrants further consideration by policymakers, politicians, and the constituencies they represent.

¹ Data and early narrative drafted by Amaris Lunde, revised and expanded by Gigi Berardi.

² Thanks to my class, ESTU 410 spring 2008, for this definition.

³ Thanks to Western Washington University’s Mark Springer for the inventive use of the word, “talent.” For more on such agricultural history, see Gigi M. Berardi and Charles C. Geisler, *The social consequences and challenges of new agricultural technologies* (1984. Boulder: Westview Press).

⁴ Production increases in corn grown for grain illustrates changes in the intensity of production. According to the National Agricultural Statistics Service (NASS), the number of acres estimated for growing corn for grain was at 61,653,842 in 1974 and increased to 68,230,523 in 2002, an 11% increase. The increase in yields, however, was reported as 4,396,912,922 bushels and 8,732,478,098, respectively -- a striking 99% increase.
http://www.nass.usda.gov/census/census02/volume1/us/st99_1_001_001.pdf.)

⁵ <http://www.usda.gov/news/pubs/fbook98/chart2.htm>

⁶ http://www.agcensus.usda.gov/Publications/2002/Volume_1_Chapter_1_US/st99_1_001_001.pdf;

<http://www.usda.gov/news/pubs/fbook99/factbook1999.pdf>

⁷ Statistics show that the population increase of 23 million people in the U.S. from 1982 to 1992 would have called for the conversion of 7.8 million acres of farmland to residential use, in the case that expansion occurred horizontally rather than vertically. The true figure of conversion was 14 million acres. This statistic was published in a review article in the *Journal of Applied Poultry Research* in 2005, see “Encroachment and historically agricultural areas” at <http://japr.fass.org/cgi/reprint/14/2/378>.

⁸ See Encroachment and historically agricultural areas <http://japr.fass.org/cgi/reprint/14/2/378>

⁹ A farm is defined by the USDA as any establishment from which \$1,000 or more of products were sold or would normally be sold during the year <http://www.usda.gov/news/pubs/fbook99/factbook1999.pdf>.

¹⁰ <http://www.ers.usda.gov/Briefing/FarmStructure/glossary.htm>

¹¹ <http://www.ers.usda.gov/publications/EIB12/EIB12a.pdf>

¹² http://www.agcensus.usda.gov/Publications/2002/Volume_1_Chapter_1_US/st99_1_001_001.pdf

¹³ Ibid.

¹⁴ Ibid.

- ¹⁵ One of the most high-profile debates on farm scale, its socio-economic consequences, and associated challenges for policymakers was researched and outlined by the anthropologist Walter Goldschmidt (1946) in his *Small business and the community: A Study in Central Valley of California on Effects of Scale of Farm Operations*, a report to the Special Committee to Study Problems of American Small Business, United States Senate, on December 23. Some questions resulted regarding methodology, not enough, however to warrant the agency harassment he later experienced. His fight with the US government in publicizing the results of his study – and his research program’s premature end is discussed at length in his 1978 book, *As you sow: Three studies in the social consequences of agribusiness*.
- ¹⁶ See also Berardi’s early *Rural Sociology* article (1981), “Socioeconomic consequences of agricultural mechanization in the United States: Needed redirections for mechanization research” and other classic works: H.W. Quaintance (on the influence of farm machinery on production and labor, published in 1904 by the American Economic Association), USDA (“Technology on the Farm” published in 1940), B.O. Williams (on the impact of mechanization of agriculture on the farm population of the South, published in *Rural Sociology* in 1939), C. Horace Hamilton (on the social effects of recent trends in the mechanization of agriculture, published in *Rural Sociology* in 1939), Robert T. McMillan (on the social aspects of farm mechanization in Oklahoma, published by the Oklahoma Agricultural Experiment Station in 1949), Alvin L. Bertrand (on agricultural mechanization and social change in rural Louisiana, published by the Louisiana Agricultural Experiment Station in 1951), Andrew Schmitz and David Seckler (on mechanized agriculture and social welfare in the case of the tomato harvester, published in *The American Journal of Agricultural Economics* in 1970), and other works on automated tomato and tobacco harvesting including a piece by Berardi (“Can Tobacco Farmers Adjust to Mechanization? A Look at Allotment Holders in Two North Carolina Counties,” published in William Finger’s edited volume *The tobacco industry in transition: Policies for the Eighties*), as well as studies of land productivity, case studies of lettuce production, agribusiness in the United Kingdom, and social impacts of biotechnology by well-known authors such as William Friedland, Charles Geisler, and Jack Kloppenburg. All are included in Berardi and Geisler’s *The social consequences and challenges of new agricultural technologies* and are available from Berardi at Gigi.Berardi@wwu.edu.
- ¹⁷ Vincent, A., Phillips, C., Hoss, M., Desmond, C., Green, R., Lowesu-Dietch, J. (2008). Issues in Emergency Food Distribution for Whatcom County, WA. Institute for Global and Community Resilience Report 2008-3. A 3-5 page policy brief based on the longer work will appear on the Institute for Global and Community Resilience website www.wwu.edu/resilience.
- ¹⁸ See pending work on farm resilience in Western Washington <http://news.wwu.edu/go/doc/1538/244352/>.
- ¹⁹ His book *In defense of food: An eater’s manifesto* (2008, Penguin Press) and his recent essay in the *New York Times*, “Letter to the ‘farmer-in-chief,’” October 9, 2008, are some of his most compelling work.
- ²⁰ http://www.agcensus.usda.gov/Publications/2002/County_Profiles/Washington/cp53073.PDF. See also http://www.agcensus.usda.gov/Publications/2002/Volume_1,_Chapter_2_County_Level/Washington/st53_2_011_011.pdf. This and the County Profiles data is the information source for most of the figures in this section.
- ²¹ http://www.agcensus.usda.gov/Publications/2002/Volume_1,_Chapter_2_County_Level/Washington/st53_2_001_001.pdf; <http://www.nass.usda.gov/census/census92/atlas92/datafile/wac037.txt>
- ²² http://www.nass.usda.gov/Census/Pull_Data_Census.jsp
- ²³ <http://www.thebellinghambusinessjournal.com/september2007/cultivation.php>
- ²⁴ <http://www.ers.usda.gov/AmberWaves/February08/DataFeature/>
- ²⁵ Please note that these numbers vary, even among NASS table reports; from the (http://www.nass.usda.gov/Census/Pull_Data_Census.jsp). The 246 figure represents about a 21% decline from the figure of 312 dairy farms in 1997. By other recent accounts (including the 2007 census), however, the numbers of dairy farms are dramatically lower.
- ²⁶ <http://www.nwbusinessmonthly.com/Businesspulse/bp2002/june/0602bpdairy.html>;
<http://www.whatcomcounts.org/whatcom/modules.php?op=modload&name=News&file=article&sid=1811>;
<http://www.nwbusinessmonthly.com/Businesspulse/bp2002/june/0602bpdairy.html>;
<http://bellinghamsunriserotary.org/newsletter3.html>.
- ²⁷ Again, see Vincent et al’s “Issues in Emergency Food Distribution,” with special attention to food availability in Whatcom County – agriculture, farming, and food in storage as well as household food supplies; vulnerable populations; emergency food distribution and EM protocols; and, enhancing gleaning capabilities and sustainable agriculture.
- ²⁸ <http://www.whatcomcounts.org/whatcom/modules.php?op=modload&name=News&file=article&sid=1811>
- ²⁹ <http://www.bellinghamherald.com/602/story/714074.html>
- ³⁰ *Whatcom Counts*, a source of community health facts in Whatcom County (issued by Healthy Communities Foundation and Affiliates) measures the rate at which Whatcom agricultural land is being lost to development. See <http://www.whatcomcounts.org/whatcom/modules.php?op=modload&name=News&file=article&sid=1811>.
- ³¹ <http://www.agcensus.usda.gov/Publications/1997/index.asp>;
<http://www.agcensus.usda.gov/Publications/1997/Highlights/Washington/wac037.txt>;
http://www.agcensus.usda.gov/Publications/1997/County_Profiles/Washington/wa/wap037.pdf
- ³² http://www.agcensus.usda.gov/Publications/2002/Volume_1,_Chapter_2_County_Level/Washington/st53_2_001_001.pdf; <http://www.co.whatcom.wa.us/assessor/taxguides/openspace/openspace.jsp>
- ³³ http://www.ers.usda.gov/publications/EIB12/EIB12_reportssummary.pdf
- ³⁴ <http://www.thebellinghambusinessjournal.com/september2007/cultivation.php>
- ³⁵ Vincent, A., Phillips, C., Hoss, M., Desmond, C., Green, R., Lowesu-Dietch, J. (2008). Issues in Emergency Food Distribution for Whatcom County, WA. Institute for Global and Community Resilience Report 2008-3. www.wwu.edu/resilience.
- ³⁶ *Ibid.*