



MINNESOTA 20
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HOMEGROWN HOLIDAYS

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Executive Summary

It's the time of year when people gather for holiday parties and receptions and to entertain. That means it is also time for Minnesota 2020 to renew its "buy local" campaign for the third year. A severe recession lingers despite some promising signs it may be bottoming out and a slow recovery may be starting. But "happy days" are not here again – at least not yet.

With that backdrop, the 2009 Buy Local report addresses how we consumers might stimulate our own local and state economies by focusing on four small but exciting sectors of the state's food and beverage economy. It also introduces a new study on import substitution and replacement that shows economic justification for promoting locally made and sold products.

The emphasis is on consumer behavior to benefit the state and local economies, but these issues also have public policy implications. How do state and local economic development planners and policy makers fashion plans to boost the local and state economy? In other words, how might Minnesota use targeted development to retain almost \$1 for state and local economies for every \$1 spent at the retail cash register?

Key Findings

- 1) The previously mentioned Andersonville study showed that 68 cents of locally purchased items stay in the local / state economy while only 43 cents of the retail dollar spent at chain, not locally owned stores stays at home. (Andersonville, **Made in Minnesota: The Value of Buying Local This Holiday Season.**)
- 2) Based on holiday retail industry projections for 2008, Minnesota would gain a \$2 billion economic stimulus if Minnesotans targeted 25 percent of their holiday stopping to buying local. (**Made in Minnesota 2008.**)

But this year's report shows that consumers can help their state and local economies capture much more of the retail dollar by targeting their purchases as part of a Buy Local strategy.

- 3) Four unique local food and beverage industries show great potential for spurring the state and local economy – grapes (wines), beer, apples and cheese.
- 4) The multiplier effect of boosting the state and local economies is even greater when these high-quality, locally-produced products substitute and replace imported products – often of inferior quality – that send most of the consumers' retail dollars out of state. (**Considering Regional Import Substitution and Replacement in Minnesota.**)

Here is evidence:

- 5) The **grape and wine** industry had a \$36.2 million impact on the Minnesota economy in 2007, according to University of Minnesota economic research that factored in the employment and business activity from grape growing, winery operations, winery-related tourism and retail sales. This included 155 jobs extending from tourism spending.

The spreading national popularity of Minnesota developed grape varieties and expansion underway within the Minnesota wine industry suggests impressive growth potential for this small sector of the Minnesota food and beverage industries.

- 6) The Minnesota **beer** industry is one of the state's oldest processing and manufacturing sectors, but is

now in a regenerative stage. Beer is a \$2.5 billion industry in Minnesota with most jobs provided by out of state and foreign brewers involving distribution and retailing. However, Minnesota brewers account for only about 4.5 percent of state beer sales but provide 324 jobs- the same number as the grape and winery sector. All Minnesota brewers operate within the high-quality craft beer sector of the industry – the sector showing great annual growth while total beer sales are relatively flat.



- 7) Minnesota **apple** orchard operators produce a crop of about \$15 million annually, But despite this comparatively small industry, orchard operators and plant breeders across the nation are scrambling to duplicate the quality and reproduce the successful apple varieties that have been developed and issued by scientists at the University of Minnesota. Much research is still needed to breed cold storage (shelf life) capabilities into the Minnesota cold hardy apple varieties, and that will take public support. But with public support for research, the Minnesota apple industry can grow and prosper commensurate with its already established international reputation for quality.
- 8) The Minnesota dairy industry is huge – sixth largest in the nation – and it is old, dating back to early immigrant settlement. But it has a miniscule specialty, or **artisan cheese** industry, that is tailored to meeting market trends and consumer preferences tracked by academics (Iowa State University) and industry observers (International Dairy Foods Association). Only a dozen Minnesota farms and processing companies now make specialty and artisanal

cheeses while Wisconsin has 80 of its 115 cheese factories now making at least one specialty cheese. Growth potential for Minnesota’s dairy industry is statistically enormous.

Theoretical arguments:

- 9) Mertz, in her accompanying paper, shows a convincing argument that the multiplier effect for import substitution and replacement exceeds the benefits derived from export promotion and subsequent exports. That is where these four targeted Minnesota agriculture and food sectors contain such upside potential for both Minnesota consumers and policy makers.

These four sectors – their successes to date and future promise – show why a Buying Local strategy makes economic sense for the state and local communities. From a public policy perspective, economic development policies should be guided by questioning how any public assistance will build on a residual strength to return multiplier benefits from employment, direct economic activity, supplier activity, and how it might substitute or replace imports that drain our economy.

Introduction and Acknowledgements

A good Minnesota holiday party table might offer high quality, locally produced apples, craft beers, specialty cheeses, and, increasingly, Minnesota made wines. Weather and cold storage permitting, there still might be fresh local fruit and vegetables available to adorn the table, or delicacies made from frozen local produce; and there are always plenty of Minnesota potato products for a snack table, especially specialty products such as potato chips and lefse.

Specialty crops are a significant source of revenue and employment in Minnesota even though they are only a small part of the state's huge agriculture and food industry base. (See **Appendix**.)

*In this report we will focus on only four sectors of the specialty food industry that have established roots and still have great potential for growth.

In addition, this report introduces a new research paper by Katie Mertz, a senior economics and political science major at Macalester College, that drives home academic arguments for how Minnesota's economy can benefit from import substitution and replacement – two effects of a buy local strategy. Moreover, it strengthens arguments for consumer behavior and public policies that try to capture more of the consumers' retail dollars within the state's economy. It is imbedded as the fourth part of this report and is used as the platform for looking at benefits derived from our four selected food and beverage industries in Minnesota.

*On a separate note, economic measurement of value-added activity and multiplier impacts on such activity is practically a home-grown Minnesota product. This report is indebted to the models developed for measuring economic activity that are now generally accepted nationwide and throughout much of the world.

This modeling was created within the Department of Applied Economics at the University of Minnesota to measure economic impacts of Minnesota's forestry industry. Researchers working on that project took the models off campus and formed a company at Stillwater. That company is known as the Minnesota IMPLAN Group, or MIG, and is now releasing newer models that will better help analysts and researchers in their work.

Information about IMPLAN and the intellectual property company can be found at www.implan.com/v3 while Sara Aase, writing for **Twin Cities Business** magazine, offers a comprehensive look at this company and its work (see References).



Local Examples

In keeping with central themes of this report, ground up economic development from specialty crops and products have a track record of success in Minnesota but still appear to have potential for future growth. Before looking at the four targeted areas of wine, beer, apples and specialty cheese, let's look at what is known about specialty crops in Minnesota – the ground level for building and strengthening these industries.

Data varies greatly from year to year, but the Minnesota Extension Service provides the following as benchmarks for specialty crops in recent years, and the National Agricultural Statistics Service (NASS) Minnesota office provides the following farm cash receipts data for 2008:

Processing Vegetables. This sector involves about 2,600 farmers, produces vegetables with a wholesale value of \$100 million, and, starts a food chain increase that results in \$500 million in annual retail sales. This sector also generates jobs for 6,200 Minnesotans.

Sweet corn and green peas are the dominant crops for processing vegetables in Minnesota, and like most farm crops, they produced record or near-record cash receipts for farmers in 2008. The NASS Minnesota office announced farm receipts of nearly \$239 million from raising sweet corn, green peas, carrots, onions and miscellaneous vegetables – mostly for processing.

Potatoes. This sector – mostly in central Minnesota and the Red River Valley – produces spuds that have \$100 million in wholesale value and \$325 million in retail value. NASS put the farm cash receipts from potatoes at \$175 million in 2008, up from \$96 million in 2006.

Total economic benefits of the potato industry have not been fully analyzed, but the multiplier effect is substantial. Potato chip manufacturing in the Twin Cities and northwest Minnesota is a significant generator of jobs and supplier economic benefits.

Fresh Market Vegetables. About 1,000 growers produce 35 different produce items for local markets and farmers markets that have a retail value of \$6 million. The value of these crops jumps to \$36 million at the retail level. Farm receipts tracked by NASS would be included in the larger category of processing vegetables cited above.

Tree Fruit. Some pears and plums are grown in Minnesota, but 99 percent of this sector involves apples, primarily grown in commercial orchards. Because of unique varieties developed by University of Minnesota plant breeders and by orchard horticulturists, this sector has a disproportionately high profile in the state. Old standbys like the Haralson and newer varieties such as Zestar, HoneyCrisp and SweetTango give Minnesota's apple scientists and apple industry a prestigious reputation across the nation and in Canada that far exceeds the productive capacity of our orchards.

Wide variations in values between the Extension Service benchmarks for the industry and NASS farm receipts records suggest different measurements have been used. Staying strictly with NASS' measurements, the Minnesota apple crop produced \$14.9 million in receipts for orchard operators in 2008, or one-tenth of one percent of total Minnesota farm income for the year, and that was up from \$8.8 million in 2006.

Small Fruit. This sector includes strawberries, raspberries, blueberries and grapes. The Extension Service credits these growers with crops valued at \$9.9 million in recent years while NASS includes these crops in a larger "Other Crops, Fruits & Vegetables" category. The actual economic benefits of grapes will be shown more completely below.

For purposes of this report, we shall look at four specialty food and beverage sectors in Minnesota's agri-food economy that provide products to adorn a holiday table for entertaining. Three of these sectors are currently

demonstrating success in adding to Minnesota's quality of life while producing value-added economic and employment benefits, and a fourth has enormous potential to do so.

Wine and Grapes

"Twenty years ago, I would have said our Minnesota wine industry was at least 50 years behind craft brewing in development," says Robin Partch, winemaker at Northern Vineyards Winery in Stillwater. "Now? We're still behind, but we are closing the gap."

There is analytical research now proving that point. University of Minnesota Department of Applied Economics researchers (Gartner, et. al.) did a comprehensive economic analysis a year ago on the impact grape growers and wineries are having on Minnesota's economy.

Growth of the state's wine industry reflects national increases in wine demand and production each year, the report noted. As part of that growth, Minnesota's young industry has grown from two wineries in 1975 (Alexis Bailly Vineyard at Hastings and the predecessor of Northern Vineyards) to seven in 1995 and 26 in 2008, with more in development stages.

The grape and wine industry had a total economic impact of \$36.2 million in 2007 from grape growing, winery operations and winery-related tourism. In addition, Gartner and fellow researchers found the industry was responsible for 324 jobs and provided \$10.8 million in labor income that year.

Adding to the multiplier effects of this youthful industry, the University researchers found that tourists attending winery events spent \$8.4 million in 2007 – and the total value of this spending increased to more than \$14 million when indirect effects were measured. Thus, winery tourism led to an increase of 155 jobs from tourism spending.

Multiplier effects of grapes, wines and tourism are apparent at St. Croix Vineyards in rural Stillwater. It shares farmstead space with Aamodt's Apple Farm and both the apples and the wines generate tourism and retail traffic for each other, said Matt Scott, general manager of the winery.

*Extending out from wines and apples, however, the attraction to tourists and retail visitors creates an additional market opportunity for other Minnesota entrepreneurs. St. Croix Vineyards, for instance, also offers pottery made by Deckas Pottery of Prior Lake, and ornate, wood-sculptured wine bottle stoppers made by Green Arrow Engraving artists of Crystal.

Whitney Thorpe at Green Arrow Engraving said her artist husband Brad makes most of the stoppers from local wood harvested from felled trees in south Minneapolis and adjacent southwestern suburbs. Having the stoppers for sale at St. Croix Vineyards and Alexis Bailly Vineyard does lead to sales the Thorpes would otherwise miss, she said.



The economic activity generating from local wines starts with the vineyards and builds through the winery on through to retailing, said Northern Vineyards' Partch. In his case, most of the grapes come from about 16 of the wine cooperative's 24 members and from vines close to the Mississippi River in Minnesota and Wisconsin.

A few production items are imported, he said. The natural cork comes from Portugal and the foil capsules over the bottle come from Spain. "That's only a few cents at most," Partch said, while glass bottles come from Mexico. Finally, a true accounting would need to amortize less than a cent a bottle for the wine making equipment Northern Vineyards purchased in Italy.



Except for about 75 cents worth of such imported inputs, the rest of the economic value of the \$9 to \$20 bottles of Northern Vineyards' wines stays locally in the St. Croix and Mississippi river valleys with suppliers, employees and the co-op's Minnesota and Wisconsin members.

Meanwhile, the successes with grape breeding and wine development in Minnesota are garnering fans across the country and abroad. That applies to wine development business strategies as well as grape varieties.

The Minnesota cold hardy grape hybrids are being used in parts of Nebraska, along the Mississippi in Iowa and Illinois, around Columbus, Ohio, parts of Michigan, New England and especially along the Wisconsin side of the Mississippi and St. Croix rivers. Some of the new wineries are New Generation Cooperative (NGC) model enterprises patterned after Northern Vineyards Winery in Stillwater (Egerstrom). Furthermore, some Eastern European countries are using that model to privatize former government owned regional wineries and return land holdings to families after Communism. Those holders are usually too small in acreage (hectares) for most conventional agriculture in the modern era. (See case study reference above.)

But it is the quality of the grapes that is attracting wider attention.

Mark Chien, wine grape educator with the Penn State Cooperative Extension Service, is encouraging Pennsylvania wine development patterned after Minnesota experiences and grape development (Chien). "Our hats are off to Peter Hemsted and his team at (University of Minnesota) for developing these varieties, and to Elmer Swenson, who was the original pioneer breeder," Chien wrote to Pennsylvanians. "The best of these wines are almost completely lacking in 'grapey' flavors that indicate their native species heritage. If well grown and made, they may even fool some vinifera snobs."

Elmer Swenson was a former apple breeder at the University of Minnesota who developed several cold hardy varieties of wine grapes while actually trying to improve area table grapes. This goes back several decades when the University did not have a specific grape and viticulture program. Hemsted now continues that work at the University and is also an owner of the St. Croix Vineyards winery in rural Stillwater.

St. Croix winery manager Scott, meanwhile, said Hemsted is among University plant scientists who are back at

work on Swenson's early mission. They are getting close to releasing table grape varieties that hopefully will be as successful as the locally developed wine grape varieties, he said.

Probably the most dramatic, and dastardly evidence of Minnesota grape success was noted in October when a thief, or thieves, made off with clippings of grape genetics from vines at the University's Horticultural Research Center in Victoria (Van Berkel). This sophisticated theft was labeled intellectual property espionage as someone is trying to get a head start of grape development. This is harmful to the University's breeding program, to Minnesota taxpayers, and to the Minnesota vineyards and wineries that work closely with the University.

Despite this setback, grape and wine momentum is building across the spectrum. The **Star Tribune** reported in August that southeast Minnesota is now included in a federally designated Upper Mississippi River Valley viticulture area (Roper). This huge new area that the government and the wine industry recognizes as a common region, such as California's highly successful Napa Valley, stretches along the Mississippi and largely uses grape varieties developed by Swenson and the University of Minnesota.

The infrastructure for growth from more sophisticated marketing and science research is in place for this industry. Inroads are being made to increase consumer awareness of the high quality wines that come from this region alongside high quality beers, apples and cheeses.

Beer

The beer industry is old in Minnesota – so old, in fact, that the August Schell Brewing Co. in New Ulm is planning events for 2010 to celebrate its 150 years of brewing in the southern Minnesota city. Schell's is the second oldest family-owned and operating brewery in America.

Currently all Minnesota breweries and brew pub restaurants are included in the beer industry's definition of craft beer makers. They make smaller batches of beers, or hand-crafted beers, with each brewer making several types of beers. One brewer – the Cold Spring Brewing Co. at Cold Spring – is a contract brewer for several beer companies around the country.

This is small business in terms of the national beer industry, but a sizeable business sector in Minnesota's economy.

Twin Cities Business magazine has documented that craft brewing accounted for only \$6.3 billion of the \$101 billion domestic beer market in 2008 (Harboldt). But in an economic analysis, the Beer



Institute provides strong evidence that Minnesota's local brewing industry has a disproportionately large impact on the state and local economies.

Using IMPLAN models for the total industry, the study found the \$2.5 billion Minnesota beer industry accounted for 27,296 direct, supplier impact and induced jobs of which 15,482 were directly tied to the industry. These included 324 brewing, 1,554 distributing and 13,605 retail jobs (Beer Institute.) The latter two categories for direct employment didn't reveal what Minnesota's job counts would be if we simply imported and distributed beer in the state without local production. But two leading figures in the state's brewing

industry have a good “feel” for their breweries’ impact off the plant premises.

“We buy a lot of glass from a Shakopee glass company,” said Ted Marti, president and fifth generation heir of August Schell. Most of Schell’s malt comes from local malting companies; the barley comes from farmers in Minnesota, the Dakotas, Montana and Manitoba who historically supplied the brewing industry through what was called the Minneapolis barley market. And most of the paper (cardboard) packaging also comes from Minnesota firms mostly in the Twin Cities area.

Mark Stutsrud, president of Summit Brewing Co. in St. Paul, said Schell and Summit account for about 100 of the brewing jobs. Brew pubs are sprouting up all over, he added, and consumers keep looking for unique differences in beer and keep building the craft brewing industry.



Summit turns its brewers loose to keep creating small batches of new and different beers – a practice that is artful and fun for employees that wouldn’t or couldn’t be done by mass marketers. At the end of October, a German-style beer inspired by the Cologne area along the Rhine was winding down in this “Unchained” series of beers and a Scottish ale, partly brewed with heather flowers, was being prepared.

Surly, Flat Earth, Lake Superior, Lift Bridge and several other Minnesota brewers are seeing

sizeable increases in production and sales, based on Minnesota Department of Revenue and beer wholesaler data. “Even with this growth, we’re still only about 4.5 percent of the Minnesota beer market,” Stutsrud said.

What this suggests is that the Minnesota-based beer industry is riding current beer trends and has huge potential for market growth even while total beer volume stays relatively flat.

Apples

Using data from the USDA’s NASS, Minnesota orchard operators produce an apple crop of about \$15 million each growing season, and that is almost certain to increase in future years. But economists have yet to conduct a thorough analysis of the crop’s upstream and downstream economic activity with an IMPLAN or other economic model. So the full economic impact of Minnesota apple industry is unknown. What’s more, given Minnesota’s rich apple breeding and development history, there are sociological “quality of life” features to the apple industry for which social scientists have yet to agree on a comparable measure like those used by economists – but it is real for Minnesota households and tourism.

A fall news release from the Minnesota Department of Agriculture (see reference) encouraged consumers to visit orchards in late October for plentiful supplies of late-harvested apples. Highlighted were a few University of Minnesota varieties that reflect the state’s long and successful apple breeding program.

Classic Minnesota apples include the Haralson, released by University scientists in 1922. The Fireside came from the University in 1943, the Regent was released in 1964, and the Honeygold was released in 1970 (Minnesota Department of Agriculture).

More recent issues include the Sweet Sixteen, Keepsake, State Fair, Zestar and, in recent years, the Frostbite, SnowSweet, the extremely popular Honeycrisp and this year's new apple – the SweeTango. Excitement is already building for a new apple in the University's pipeline.

Nurseries and orchard operators around the globe are clamoring for seed stock to grow these apples. Developed for our climate, the success of these apples suggests there is still potential to grow our apple industry.

Anecdotal information suggests most orchards are small family operations. Several orchards have pooled resources into larger-size apple cooperatives to gain marketing strength and gain economies of scale for processing products such as cider and juice.

The Minnesota Grown Directory published by the Minnesota Department of Agriculture lists nearly 100 orchards for consumers and tourists to visit or make direct orders. The Minnesota Apple Growers Association lists 122 commercial orchards among members on its www.minnapples.org web site.



The multiplier effect on communities from this industry has to be enormous. Traffic backs up on U.S. Highway 61 as tourists wait to turn off to visit Pepin Heights and other orchard retail locations in southeastern Minnesota.

Tour businesses regularly bring groups to Aamodt's Apple Farm and the St. Croix Vineyards winery on the apple farm's premises, said Luann Overby, an Aamodt's employee polishing apples one recent day for Chicago visitors off a charter bus. The same is true at Carlos Creek Winery and Orchard near Alexandria, with visitors from Canada and the Dakotas.

Apples are an old industry in Minnesota but like beer brewing, apples still have have great potential to grow.

Specialty Cheese

This specialty product category really is in its infancy. Mary Richards, cheese shop manager for Syrdyk's Cheese Shop in Minneapolis, said there are about a dozen makers of specialty and "artisanal" cheeses in Minnesota, mostly located on dairy, goat and sheep farms.

There is irony here. That's because Minnesota is actually the home of America's gourmet blue cheese industry, said Joe Sherman, operator and cheese maker for Northern Lights Foods in St. Paul. Blue cheese making dates back to 1936 and Felix Frederickson, founder of Treasure Cave blue cheese in Faribault. That is a long enough history to squelch thoughts of an industry in infancy but, by its current stage of development, it still is.

Treasure Cave was eventually sold to a large agribusiness firm that now contracts out production of branded cheese to other makers. Sherman and some partners eventually bought the Faribault property and started Faribault Dairy, which makes Amablú and St. Pete's branded products. Sherman has since gone his own way and now makes about 100 wheels of his Northern Lights Blue each month from rented laboratory space at the University of Minnesota's dairy foods facilities on the St. Paul campus. This production is sold each month through specialty cheese shops, a few upscale Twin Cities supermarkets, and for use at gourmet restaurants.

While the founder of Treasure Cave worked with scientists at the University of Minnesota and Iowa State University to develop molds and techniques for blue cheese-making, Minnesota's Agricultural Utilization and Research Institute (AURI) has helped some latter day cheese makers develop specialty and artisan cheese products, said Dan Lemke, AURI communications directory. Many of these newer cheese makers are small and



work strictly off their farms.

AURI's list may be incomplete, but Lemke can identify the following as being part of the re-emerging industry: Faribault Dairy, Shepherd's Way in Northfield, Star Thrower Farm in Glencoe, Eichten's Hidden Acres in Center City, Stickney Hill in Kimball, Donnay Dairy in Kimball, Poplar Hill Dairy in Scandia, Green Pastures Dairy in Carlton, Pastureland Cooperative in Goodhue, and Alemer Cheese Co. in Mankato.

How economically important is this new cottage industry? You couldn't isolate that with a Babcock cream separator. Only a handful of these

cheese makers have operations large enough to merit hiring employees outside of family members.

A 2009 IMPLAN study of the Minnesota dairy industry finds dairy farming and dairy processing provide total employment of 39,085 jobs and generates total economic output of \$8.96 billion (Su Ye). Specialty cheeses would be too small a part of this industry to measure.

The key here is that these few specialty cheese makers are making cheeses that consumers want, said Steve Young-Burns, marketing manager for PastureLand Cooperative in Goodhue.

PastureLand makes specialty butter products and cheeses from all or part of the milk production on four member dairy farms in southern Minnesota. Cedar Summit Farm in New Prague, which markets a large number of milk and dairy products under its own name, is a member of the co-op.

For too long, Young-Burns complains, federal dairy policy has encouraged mass production of commodity cheddar cheeses and commodity butter. That is not where America or Minnesota palettes are headed, he said.

Look at national data:

Minnesota has lost a step in the nation's dairy industry, dropping to sixth among producing states behind California, Wisconsin, New York, Idaho and Pennsylvania.

As a cheesemaker, however, Minnesota has retained its No. 5 ranking (Geisler and Huntrods) while Wisconsin has struggled to keep ahead of California (Herzog).

But Iowa State University's Geisler and Huntrods note USDA projections that U.S. cheese consumption per person is increasing by more than 3 percent in 2009, after a gain of 1.7 percent in 2008. Cheese production, meanwhile, is increasing by at least 2 percent as dairy foods companies switch from making butter and nonfat dry milk products; and consumers are responding – imports of foreign-made cheeses were projected to decline by 2 percent this year.

Further, they noted, American consumers now purchase more mozzarella than the traditional cheddar cheeses made in English-speaking countries, and that the popularity of ethnic cooking has production and consumption of Italian and Mexican cheeses on the rise.

"Increased cheese consumption can be attributed, in part, to growth in specialty, artisanal and farmstead cheeses," they wrote. Specialty cheese now accounts for 16 percent of Wisconsin's cheese production, and 80 of the state's 115 cheese factories now make at least one specialty cheese.

International Dairy Foods Association statistics show American cheese plants increased production of mozzarella and other Italian-style cheeses by 4 percent in 2007. Cheddar production declined by 2.1 percent and American pasteurized cheese production declined by 0.9 percent (IDFA).

The dairy industry suffered from low milk prices through the first half of 2009, but Bob Yonkers, chief economist for IDFA, saw the dairy market turning around in the final quarter of the year (Yonkers). Federal statisticians found that to be the case with a sizeable uptick in prices during August (NASS Dairy Products).

What the farmers and makers of specialty cheese and dairy products are trying to do is match products to the changing tastes and wants of consumers. By doing so, they also enter markets that remove their farms from the volatile dairy commodity business, said Young-Burns.

On top of that, these specialty farms and cheese makers are achieving something more: they are moving their cows, goats and sheep further up the food chain – returning more of the consumer's dollar to their farms and, not inconsequentially, displacing some of the imported gourmet cheeses that have sent Minnesota food dollars abroad.

Considering Regional Import Substitution and Replacement in Minnesota

The following section is by Katie Mertz, MN2020 Undergraduate Research Fellow

I. Introduction

Over the last decade the popularity of the buy local movement has expanded significantly. Consumers are not only seeking local produce for themselves but are hosting local Thanksgiving dinners for family and friends. Buying locally has become a trend thanks to big retailers like Whole Foods that advocate locally-grown food across the country. This is one trend that must not fade out. Buying local should become a long-term preference for consumers and producers alike.

One mode of solidifying a long-term buy local effort is through import substitution and replacement programs. After defining import substitution and replacement, this paper explores the ways in which these programs may affect a regional economy and identifies the benefits associated with those effects. The following sections show that buying locally may stimulate the development of local industry, increase regional income, create new sources of employment, expand networking and communication among regional firms, and reduce transportation and environmental costs associated with imports. Furthermore, the potential for import substitution and replacement in Minnesota is high based on the emergence and success of smaller buy local campaigns and successful models of more widespread regional import substitution programs.

II. Defining Import Substitution and Import Replacement

“Buying local” usually brings the food industry to mind. Advocating locally or regionally grown food in supermarkets and via farmers markets has become commonplace over the last few years. Although the food industry is perhaps one of the best markets for buy local campaigns, scholars have also explored broader definitions of buying local. Import substitution and import replacement are two buy local strategies that apply not only to consumers but to regional producers as well.

Import substitution refers to the substitution of a region’s imported goods with goods that are already produced within that region (Jacobs, 1984). For example, if a Minnesota cheese shop previously bought its cheese from Wisconsin but decides to buy from local artisan cheese producers instead, the shop is import substituting. Import replacement, on the other hand, is when a region replaces imported goods with goods that regional producers learn to make themselves (Jacobs, 1984). This would be the case if Minnesota stopped importing cars from Detroit and instead started up a local production plant.

Import substitution is generally less costly than import replacement, but the latter can have more groundbreaking potential. Jane Jacobs, an urban theorist and activist, expands on these two concepts in her book *Cities and the Wealth of Nations* (1984). She notes that because import replacement actually creates new industries, the benefits associated with buying local (e.g. creating more jobs and income, discussed below) would be much greater than they would be for import substitution, which would produce the same benefits but to a lesser degree since the industry already exists. Greater costs or drawbacks, however, would probably be associated with import replacement, as they would include start-up costs that would not apply to import substitution.

III. Benefits of Buying Local

1. Industry Linkages

Literature on the benefits of import substitution has traditionally focused on the importance of so-called “backward linkages” and “forward linkages,” developed by economist Albert Hirschman (1968). These linkages refer to the spillover effects of an increase in demand for a good on other parts of its production chain. The increase in demand would occur as a result of import substitution or import replacement. Referring to an earlier example, all of a sudden cheese producers in Minnesota are supplying not only dedicated local cheese lovers, but many more standard cheese consumers in the region. As it turns out, cheese producers are not the only ones affected by this shift.

Backward linkages occur when demand for a final good increases and subsequently demand rises for all inputs required to produce that good. If demand for regional cheese spikes, demand for milk will follow suit. This gives regional milk producers an opportunity to expand and develop their farms as well. The backward link is therefore the positive spillover effect that intermediary industries experience when the final good's demand is stimulated.

When increased demand for a good leads to an increase in production of products that use that good as an input, this is a forward linkage. For example, increased demand for regional cheese may stimulate the production of pizza as regional cheese becomes more abundant, and ideally cheaper, due to improving production techniques and increasing regional competition. Just as backward linkages enhance earlier steps in the production chain, forward linkages encourage production further down the line.

The implication of these linkages is that the regional promotion of one good has the potential to affect markets for other goods used in the same industries. This chain reaction process amplifies the benefits of import substitution and replacement. A successful buy local campaign would spur production in many industries of the region.

The benefits associated with backward and forward linkages, however, can be compromised if parts of the production chain do not comply with the import substitution or replacement program. If inputs used to make a regional good are imported from elsewhere, and backward linkages do occur, it is possible that this would only increase the amount of inputs imported. For the linkages to truly incite local production in many stages of the production process, producers must be highly committed to the program. This might not happen if regional inputs are not competitive in price and or quality, as producers will seek to import "better" inputs and resist using regional alternatives. This potential drawback would need to be addressed using efforts and incentives to stimulate cheaper, more efficient production of local intermediary inputs.

2. The Multiplier Effect

Import substitution and import replacement are essentially strategic import reduction programs. This is one of many avenues to development and growth that economic theory considers. Reducing imports decreases leakages of money out of a local economy because as imports increase, more money flows out of the economy to pay for those goods (Sandro, 1995). Another development strategy is export promotion, which seeks to increase the amount of revenue flowing into a region.

Both approaches have a multiplier effect, which is the impact that a dollar of increased export sales or increased local sales (from import substitution or replacement) has on the local economy. H. Craig Davis (1987) showed that the multiplier for decreased imports due to buy local programs is actually greater than it is for export promotion programs. According to his work, we observe a standard GDP function as a measure of a region's income:

$$(1) \quad Y = C + I + G + E - MY = C + I + G + E - M$$

Where Y = local income, C = Consumption, I = Investment, G = Government Expenditure, E = Exports and M = Imports. These variables can be specified further considering that consumption, imports, and exports are functions of the region's income (subscript $_1$), while investment and government spending are not (subscript $_0$). Therefore, the variables are defined as:

$$(2) \quad C = c_0 + c_1Y$$

$$(3) \quad I = I_0$$

$$(4) \quad G = g_0$$

$$(5) \quad M = m_0 + m_1Y$$

$$(6) \quad E = e_0 + e_1Y$$

By substituting (2) (6) into (1), Davis finds that a region's income is defined by the equation

$$(7) \quad Y = \frac{c_0+i_0+g_0+e_0-m_0}{1-c_1-e_1+m_1}Y = \frac{c_0+i_0+g_0+e_0-m_0}{1-c_1-e_1+m_1}$$

The multiplier for the impact of a dollar increase in export sales (Δe_0) and a dollar decrease in imports (Δm_0) on regional income (Y) is

$$(8) \quad \frac{1}{1-c_1-e_1+m_1} \frac{1}{1-c_1-e_1+m_1}$$

The value of this multiplier is not the same for both effects on regional income (Y), however, because import substitution or replacement actually creates local production, which decreases the marginal propensity to import (m_1). This increases the import multiplier's value, so that a dollar less of imports positively affects regional income more than a dollar more of exports (Davis, 1987).

The multiplier story indicates that import substitution is a more effective way of advancing a region's income growth than export promotion. This is not to say export promotion would not cause growth, as the multiplier is positive, or that it should not be pursued at all. The "right" growth strategy in fact should probably combine import substitution or replacement with export promotion. On a national scale, import substitution was tried by many Latin American countries in the 1950's-60's. The strategy failed, due in large part to a lack of domestic markets for the goods that local industry began to produce. Since the countries were not producing for export or promoting exports at all, import substitution was inefficient and wasteful in this case. In contrast, Japan's experience with import substitution was much more successful because they used import substitution to grow new industries that produced not only for local products but also for export. Although import substitution and replacement positively affect local income more than export promotion does, the latter should not be neglected as an important source of growth.

3. Income and Job Creation

The multiplier effect, described above, is one of the ways that import substitution or replacement generates income. Another way that buy local campaigns generate income is through the creation of new jobs. This is more relevant for import replacement than import substitution because the former actually creates new industries, increasing the demand for certain types of labor. Even through import substitution, however, jobs are created simply because local firms start producing for regional markets as well as external ones, increasing their production and requiring more labor.

Phillip Sandro (1995) studied the expected employment effects of a potential buy local campaign in Chicago. Specifically, he considered the effects of public-sector import substitution. He proposes that the city "would attempt to contract with local suppliers for goods and services that had previously been procured outside of the Chicago area. This would decrease leakages, increase local spending and generate increased wealth, growth, and jobs" (Sandro, 1995, p. 204). The proposed buy local program would increase the percentage of the city's goods and services purchased locally from 60% in 1987 to 90%. Non-profits facilitate the program by matching up firms with local producers, providing technical assistance to firms, and monitoring their compliance with the program.

Sandro simulates his program under six different scenarios, each of which is concurrent with neoclassical critiques of buy local programs. These are essentially the six "worst case" scenarios in terms of expected benefits of buying locally. The model that Sandro uses is specific to the Chicago area, and considers the potential structural changes that can occur in a local economy resulting from a policy change such as the buy local program. Using this model, Sandro finds that the buy local program under all six scenarios created a significant number of jobs ranging from 2,800 to 7,700. Additionally, using cost estimation techniques he concludes that the program would be 50-80% self-financing in the worst case scenario. Sandro (1995) ultimately shows that the "Buy Chicago Program would create substantial numbers of jobs at a fraction of the

cost relative to other public-sector job creation programs” (p. 221).

In his study Sandro captures the positive employment effects of buy local campaigns. Stimulating local industry increases the demand for local labor, and more jobs generate more paychecks and increased income.

4. Regional Networking and Communication

Another important implication of buy local programs is the potential for increased regional networking and communication among local firms buying and selling import substitutes or replacements. Swenson (2006) highlights the importance of “increased economic activity and trade-related communication among local businesses” (p. 11). A successful buy local campaign would focus not only on finished goods bought by consumers but also on intermediaries purchased by and from local firms. Introducing new suppliers to buyers and vice versa would create a more dense regional business network. With improved access to information about suppliers and resources, firms can make better and more informed decisions to increase their productivity. Additionally, more awareness of regional firms and their activities can lead to technology spillovers and innovation (Pittaway, Robertson, Munir, & Denyer, 2004).

5. Import Cost Reduction

Importing goods instead of producing them locally has significant costs associated with transportation and the environment. Actual transportation costs have dropped drastically over the last 50 years, due to more efficient transport networks. Improvements in infrastructure and shipping mechanisms allow African-grown food to be sold in European grocery stores in as little as 4 days, without those transportation costs offsetting the benefits of cheaper African production. In the last 20 years, the United States has almost doubled the value of fresh produce that it imports (Rosenthal, 2008).

More efficient shipping coupled with increasing trade flows also means the environmental impact of importing and exporting goods is growing. The biggest environmental worry is carbon dioxide emission caused by land, air, and sea transport. Carbon dioxide is a major contributor to global climate change. Currently, most environmental costs of shipping are not paid for by producers, shippers, or consumers. In fact, fuel for international shipping by air and ocean freight is exempt from taxation according to the 1944 Convention on International Civil Aviation (Rosenthal, 2008).

Imported food may have other environmental costs such as additional packaging and refrigeration. If these costs were added to shipping costs, producing goods locally may actually be cheaper than imports. By buying and producing locally, consumers and producers can reduce the environmental harm associated with shipping huge quantities of goods around the globe.

IV. Potential for Import Substitution and Replacement in Minnesota

Individual buy local campaigns are not absent in Minnesota. Retailers such as Whole Foods and other specialty organic and local food stores consistently advertise local goods or carry food from local farm cooperatives. Farmers markets are not only popular in the Twin Cities but are becoming increasingly widespread throughout the state. Nevertheless, buy local efforts in Minnesota are still largely concentrated in food production and consumption. Because of this, campaigns have little opportunity to flourish outside of the warm summer months, which are more limited in Minnesota than they are in many other parts of the country.

Climate, geography, and natural resources shaped the traditional comparative advantage that characterizes Minnesota goods, and these factors lessen the potential for import replacement. I don't suggest that Minnesota start growing oranges. The most logical step to start with is import substitution, rather than import replacement. I propose that the key to buying locally in Minnesota is to focus on eliminating imported goods that are redundant with what the state produces. Minnesota should not be importing corn, for example. If corn is cheaper elsewhere, state or industry-wide import substitution programs should be developed to make Minnesota corn production as efficient as its competitors. Another promising avenue for import substitution would be to focus on industrial goods rather than foodstuffs. Northern Minnesota's Iron Range gives us an advantage in metal goods. Focusing on metal production, for example, or other more industrial-type goods

would generally not be constrained by climate or geography as foodstuffs would.

David Swenson, an economist at Iowa State, has researched the impacts of a couple of regional buy-local programs (2006). These include Omaha's "Buy the Big O" and Des Moines' subsequent "Buy into the Circle." Both programs focus on persuading local industries to buy and use local intermediary inputs rather than targeting final household goods or food. According to Swenson both campaigns were "trying to maximize regional inter-firm transactions with an eye towards bolstering local production through import substitution and capturing the multiplied-through effects of that shift" (p. 2). Drawing on these two examples, Swenson suggests that a successful import substitution program in rural Iowa would use input-output data to identify the industries that import the most and develop target goal percentages for import substitution, excluding industries where import substitution would not be viable such as mined goods or other specialized commodities. Swenson uses IMPLAN data, comprised of input-output data and region-specific data, to model how a given change or event would impact a region. Swenson models the projected economic impact of an import-substitution program on Marshall County, Iowa, and finds significant composite multipliers for output, labor income, and jobs.

The projected success of rural import substitution programs detailed in Swenson's work and urban import substitution programs detailed in the aforementioned study by Sandro (1995), both within the Midwest region, suggest that larger scale import substitution programs could be successfully implemented in Minnesota.

VI. Counter-Arguments

For those who subscribe to the arguments presented in this paper, the benefits of import substitution and replacement programs are clear. Others have a number of reservations concerning potential negative economic impacts of these programs. This section describes a few of the most common points of opposition to widespread buy local programs.

The first argument is that buy local programs are protectionist, because they give regional goods preference over non-regional imports, effectively decreasing trade. Apart from being protectionist this would sour trade relations between regions, as the non-local region would see their exports decline. Opponents of this argument would state that the same sense of competition would emerge if the region enacted an export-led growth strategy, entering new outside markets and displacing other sellers (Sandro, 1995). Import substitution also cannot feasibly replace most of the products that a region imports, such as Minnesota importing bananas or automobiles. People trade so that consumers in one region may enjoy goods that they cannot produce; import substitution seeks only to replace imports with local goods that are manufactured within the region.

A second argument maintains that import substitution or replacement programs will not cause a significant rise in employment because as the demand for labor rises, so will the cost of labor. As the cost of labor increases and the cost of capital remains constant, employers will adjust the ratio of capital to labor that they employ in favor of the cheaper input—capital. This neoclassical phenomenon is rejected by post-Keynesian economists, and other scholars have determined that wages will not adjust quickly to changes in labor demand due to union power and long-term wage contracts.

Third, critics assert that even if regional income rises due to buy local efforts, this opens up opportunities to purchase more imports and newer, more diverse imports. This effect could counteract the initial import substitution or replacement effort. This could be minimized by implementing import substitution or replacement in stages to take the place of new imports (Sandro, 1995).

Finally, higher taxes in order to fund government-sponsored import substitution or replacement programs are a concern. Taxation doesn't have to be the only mode of financing for these projects, however. Sandro (1995) models an import substitution program in Chicago and finds that his model would be almost completely self-financing. There are, therefore, alternatives to funding via taxes and buy local program proposals shouldn't be discounted regarding this concern.

VII. Conclusion

This paper suggests that a long-term program to implement and sustain more widespread import substitution or replacement in Minnesota would have substantial benefits for the region. An import substitution program would encourage consumers to purchase goods already being produced in Minnesota in lieu of imports and would encourage Minnesota producers to purchase intermediary inputs already being produced in Minnesota. A more challenging but potentially more valuable import replacement program would encourage new Minnesota production of goods that Minnesota consumers and producers currently import.

The benefits of these programs are theoretical at this time, as such an undertaking has not been significantly attempted by any state or city government. Scholars have discussed and modeled the anticipated effects of import substitution and replacement, however, and anticipate significant benefits. These include local industry development through linkages, job creation, a rise in local income due to a stronger multiplier effect, improved communication and networking among local firms, and a reduction in environmental and transportation costs from importing.

Some potential drawbacks or counter-arguments are discussed in section VI and I expect there are many others that have not been addressed. The drawbacks of import substitution and replacement no doubt deserve more research before a program is implemented. Based on the findings of this paper, however, I believe import substitution on a local level is a promising growth strategy. Like any successful development policy, it must be monitored, adapted, and combined with others as policymakers see fit. Flexibility and pragmatism, as opposed to rigidity and optimism, are two of the most important lessons learned from the world's experience with development policy over the last 30 years. Local policymakers should keep these larger-scale lessons in mind as they debate the different strategies they seek to enact for their own state or community.

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Conclusions and Recommendations

Buying and promoting local merchandise and services is becoming increasingly popular, partly as a way for local shopping malls to encourage people to shop at retail stores rather than online (Mitchell). The International Council of Shopping Centers actually encourages malls to promote themselves as local, to ride nationally identified trends that favor local companies.

Within these trends, the specialty foods and beverages examined in this report would seem to have capacity and opportunity for greater growth.

Upside Potential

Over the past century, entrepreneurs started world class food companies in Minnesota to turn commodity abundance into higher-valued products and made Minnesota the epicenter of America's food industry. Farmers followed their lead and took matters into their own hands by moving up the food chain. Their cooperatives shared in the growth of the state's agriculture and food industries. In more recent decades, producers have created newer co-op business models to gain even more of the consumers' food dollar by holding equity positions in processing and manufacturing plants (Egerstrom, 1994).



These evolutionary economic steps were all logical buildups from our agricultural resources. We haven't exhausted Minnesota's great creativity; rather, where we've come from should only be a launching platform for more entrepreneurial growth and development.

The challenge now facing Minnesota consumers and policy makers is to continue our engrained tradition and support those who are trying to build up specialty food and beverage industry sectors.

Regarding beer, Vomhof reports that craft beer sales were up 74.5 percent in Minnesota in 2008,

compared with a 5.8 percent gain for the sector nationwide. Newer companies such as Flat Earth in St. Paul, Surly Brewing in Brooklyn Center, Minneapolis Town Hall Brewery and Lift Bridge Brewing in Stillwater appear to be adding to the momentum anchored by Schell and Summit brewers.

Regarding wine, Penn State's Chien writes about his tour of Vermont and New Hampshire wineries that use Minnesota developed grape varieties: "Agriculture and agri-tourism are huge industries in Vermont, and cheese is one of its main products. What goes better with cheese than wine?"

Regarding cheese, the University of Nebraska research center AgMRC, in its executive summary to its Specialty Cheese Report, sees growth potential from trends in gourmet foods. "American consumers spent about \$38.5 billion on specialty food products in 2006 (all types). ... Educating consumers about the finer points of cheese tasting, much like the wine industry did, should be an important part of cheese marketing. Consumers want to know where the cheese is made, a description of the flavor and texture, pairing suggestions, serving suggestions, tips for cutting and storing and new recipes incorporating the cheese."

Regarding Mertz's findings on import substitution and replacement, it should be evident that Minnesota farmers and specialty food processors and manufacturers are the match of world-class gourmet food makers worldwide. They merely need help from policy makers to develop their emerging industries - and consumer support in the marketplace.

Therefore, we recommend:

- Policy makers continue support and perhaps increase funding for the Minnesota Grown campaign at the Minnesota Department of Agriculture. It is a proven success story for linking Minnesota consumers with growers and farms, and merits continued public support. It is especially helpful for what the Minnesota Extension Service defines as the Small Fruit, Tree Fruit and Fresh Market Vegetables categories for growers and their consumers, and will need continued support despite state budget problems.
- Lawmakers and state officials should explore ways to further help Minnesota beer brewers and wineries promote their products, both because of the multiplier impacts from their employment and local input purchases and from the stimulus these industries provide from import substitution.
- We do reap what we sew. The University of Minnesota's apple breeding program is the envy of apple producing states nationwide. Since these plant scientists are now also developing cold weather hardy table grapes and improving Minnesota's wine grapes, the University's horticultural, soils and plants sciences departments need sustained and increased public support.

Finally, Minnesota policy makers should turn loose economic, social science and business administration researchers to craft a model for measuring import substitution and replacement values from economic development. Such a model, like IMPLAN models, could guide state and local officials on development strategies to assure greater "bang for the buck" from strengthened multiplier effects and higher retention of retail dollars for local income growth and tax revenue collection.

Appendix

Minnesota Farm Cash Receipts

Specialty crops remain a small part of Minnesota's agriculture even though they contribute greatly to Minnesota employment, quality of life and local and regional economic activity off the farm.

To put these crops in perspective, the following Minnesota agricultural data are offered here, gleaned from annual statistics gathered by the U.S. Department of Agriculture's National Agricultural Statistics Service Minnesota office and by USDA's Economic Research Service. The complete report can be found at

Cash Receipts from Farm Marketings: Minnesota, 2006-2008*

Commodity	2006	2007	2008
Total Crops & Livestock	\$10.3 billion	\$12.8 billion	\$15.8 billion
Total Crops	\$5.6 billion	\$7.0 billion	\$9.8 billion
Total Livestock	\$4.7 billion	\$5.8 billion	\$6.1 billion

(Selected sectors)

Corn	\$2.2 billion	\$3.1 billion	\$4.7 billion
Soybeans	\$1.7 billion	\$2.1 billion	\$2.8 billion
Hogs	\$1.7 billion	\$1.9 billion	\$2.0 billion
Dairy Products	\$1.1 billion	\$1.7 billion	\$1.7 billion
Turkeys	\$598.5 million	\$633.5 million	\$744.2 million
Barley (beer and feed)	\$ 7.5 million	\$10.7 million	\$19.9 million
Vegetables	\$292.9 million	\$376.8 million	\$528.7 million
Apples	\$8.8 million	\$10.7 million	\$14.9 million

*Numbers are rounded. In a separate report on Farm Income and Expenses, USDA's Economic Research Service showed that total net farm income for Minnesota was \$3 billion in 2006 and \$2.9 billion in 2007 before jumping to a record \$5.8 billion in 2008. Prices for most Minnesota commodities, and thus farm income, have fallen substantially from 2008 records.

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