

WISCONSIN GINSENG

Impacts and Implications



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History of Ginseng

Discovered more than 5,000 years ago in the mountains of Manchuria, China, ginseng has grown into a widely produced crop throughout the world. According to historians, for nearly 2,000 years the Chinese used the crop primarily as food, but then discovered medical benefits. Ginseng became a part of Chinese medicine and emperors came to revere the plant.

According to the old Chinese Canon of Medicine, ginseng strengthens the soul, brightens the eyes, opens the heart, expels evil, benefits understanding, invigorates the body and prolongs life. Modern medicine backs many of these claims. As stated before, emperors within third century revered the root and were willing to trade its weight in gold—not surprisingly, this quickly sparked industry of diggers, traders and robbers. Not long after, Korea caught wind of the trade and willingly supplied the Chinese with their naturally inhabited ginseng. Unfortunately, this early boom practically wiped out ginseng from Asia and the trade came to an utter halt. Much later, in the seventeenth century, Korea experimented with ginseng, resulting in the world’s first farmed crop of this plant.

In 1716, the root finally made its way to North America when a Jesuit priest in Canada heard of the many benefits ginseng provided. Realizing the Canadian landscape resembled that of Manchuria, China, he searched for three months and discovered American ginseng near Montreal. Shortly after, Canada started exporting large amounts of ginseng to China.

In the 1870’s, ginseng made its first appearance in Wisconsin, but the crops failed due to disease. In 1904, the Fromm brothers from the township of Hamburg, near Wausau, transplanted 100 plants of ginseng that were growing in nearby forests and planted them on their plot of land, carefully duplicating the conditions they found the roots growing in. Given their careful duplication, and the natural landscape and conditions of Marathon County, ginseng growth in Wisconsin thrived. Currently, Marathon County is the capitol of ginseng production in the United States, supplying nearly 10 percent of the world’s total supply. Nearly 90 percent of the ginseng grown in the United States belongs to Wisconsin, and Marathon County alone produces over 90 percent of that ginseng. As a result, ginseng is important for the economic vitality of Wisconsin; affecting farmers, local workers, suppliers and other establishments throughout the state.

**Table 1.0
Ginseng Statistics for Wisconsin**

Year	Sales (1,000 lbs)	Growers (Number)
1990	1,149	1,300
1991	1,174	1,360
1992	1,677	1,167
1993	1,966	1,230
1994	2,083	1,264
1995	1,944	1,468
1996	2,230	1,336
1997	1,922	1,207
1998	1,651	1,266
1999	1,221	1,274
2000	859	818
2001	411	890
2002	421	840
2003	350	764
2004	477	322
2005	358	247
2006	282	190
2007	569	198

Profile of the Ginseng Industry

Ginsenoside levels in Wisconsin ginseng makes Wisconsin ginseng a desirable commodity. Ginsenosides, found only in ginseng, provide health benefits to those who consume the plant. They include:

- **Improved metabolism**
Many dietary routines utilize the benefits of ginseng to assist in regulating weight loss and overall health.
- **Increased libido**
- **Improved blood sugar levels**
Many health professionals believe that the benefits of ginseng on the bloodstream are invaluable.
- **Improved mental and brain function**
Ginseng is known to help lower stress levels and improve mental and emotional clarity.

As stated before, without the presence of ginsenosides in the ginseng root, none of the posted health benefits would exist. Ginseng roots with higher levels of ginsenoside bear higher price tags throughout the world. This helps explain why the ginseng industry in Wisconsin remains a primary provider for the world. Table 1.1 displays the comparison of ginsenoside levels among ginseng roots throughout the world.

The United States, and specifically Wisconsin, exports ginseng to three major regions in Asia:

- **China**
- **Hong Kong**
- **Korea**

From 1996 to 2006, to Hong Kong accounted for more than 65 percent of all exported ginseng from the United States. China imported the second highest amount.

Unfortunately, over the last decade, production and sales of ginseng in the United States dropped drastically. From 1996 to 2006 alone, ginseng sales plummeted more than 90 percent. In 1996, sales of ginseng totaled 2 million pounds and dropped to 0.3 million pounds in 2006 (refer to table 1.0).

Such a drastic drop in sales and production of ginseng likely resulted in negative economic impacts on the local communities. For maintaining operations, ginseng growers utilize local insurers, pesticide and fertilizer suppliers, equipment suppliers, and equipment maintenance and repair shops. When sales and production thrive, these local business owners reap the benefits of the overflow. However, in recent years, local businesses have experienced lowered revenues with the downfall of ginseng.

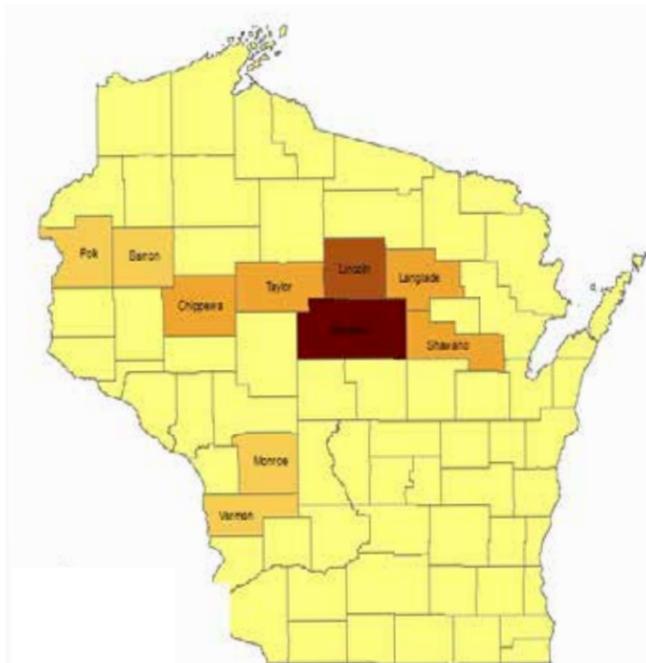
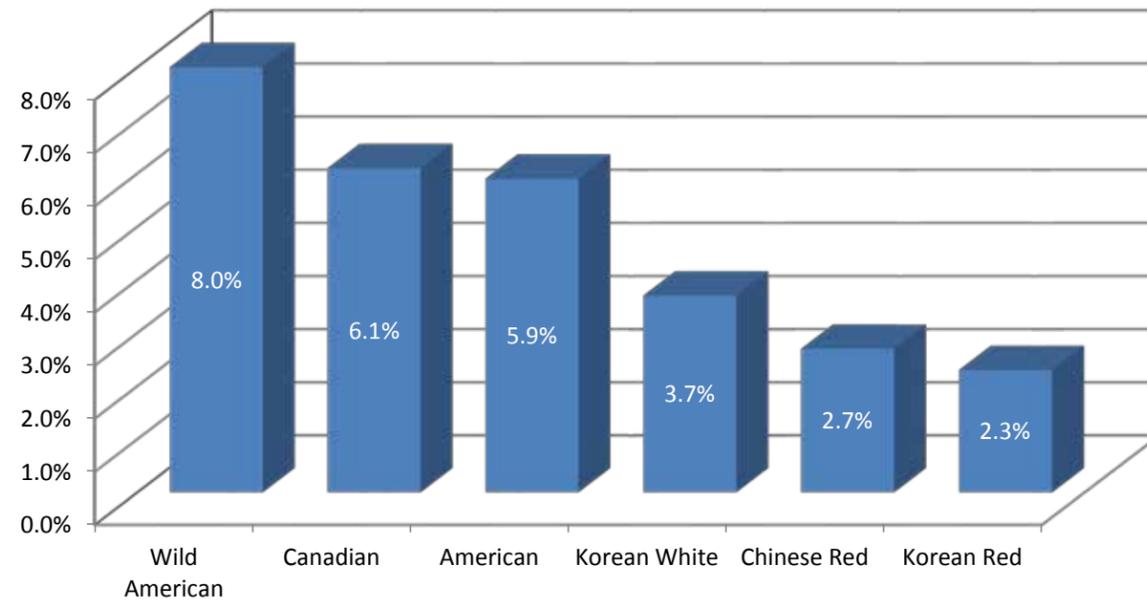
According to experts and industry participants, many factors contribute to the experienced downfall of the ginseng industry. These factors include:

- **Overgrowing**
- **Lowered ginseng prices**
- **Unrevealed profits**

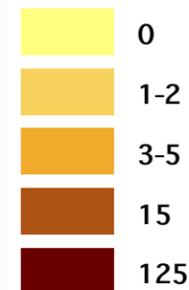
While Wisconsin’s ginseng industry has witnessed a recent recovery, the actual sales and production numbers are not readily available. This obliqueness in data creates a challenge in developing an economic multiplier. Common commodities such as corn and soybeans are closely tracked; the Department of Agriculture provides timely production data. The ginseng data is not as robust as these more common commodities. However, using a variety of sources, such as 2009 data provided by the Agriculture and Agri-Food Canada Agency, it is reasonable to create a stylized estimate of revenues produced by Wisconsin ginseng. For example, the Canadian data estimates the price of a pound of ginseng is at least \$50. Using the 2007 production data for Wisconsin (the most recent available) of 569,080 pounds, the revenues produced by this harvest is estimated to be \$28,454,000. Keep in mind that ginseng itself is not a homogeneous product (some varieties command higher prices than others). In fact, Wisconsin tends to produce higher-valued ginseng (see Table 1.0). As a result, this research should underestimate the actual sales revenues. In addition, this estimate does not reflect the recent recovery in yields and production.

Profile of the Ginseng Industry

**Table 1.1
Ginsenoside Levels of Ginseng Plants Throughout the World**



**Table 1.2
Number of Ginseng Operations
in Wisconsin by County**



The Economic Multiplier

To determine the economic impact of the ginseng industry in Wisconsin, the 2011 IMPLAN economic modeling system was used. This produces an economic multiplier, which is a quantitative measure of economic impact that recognizes that all levels of economies are interconnected networks of interdependent activity. When there is a change in one part of the economy, it will change throughout the system. This will typically result in a greater total impact than was caused by the original injection of capital into the economy.

Each time money is spent, a portion of the money will “leak” out of the local economy through taxes or money being spent outside the local economy. Only a fraction of the money spent by ginseng producers is likely to stay in the local economy. People who work within the industry could be from outside the State. Insurance paid by the employers and employees might be paid to a company in a different state. Harvesting equipment could have been not only assembled by people from outside the community, but also designed and fabricated in a state other than Wisconsin. Each of these and many more possibilities allow for money to leak out of the economy and to affect other areas.

However, systems are available by which an economic model can be estimated. An example of an economic multiplier is to consider that 30 employees were hired to work in the ginseng industry; employment will increase by more than 30 jobs directly tied to the industry. Employment increases by more than 30 for two reasons. First, the operation of a “ginseng” fair would require several expenditures including utilities, insurance and maintenance costs. This spending creates additional jobs in those industries that supply those services. These impacts are referred to as indirect effects because they are indirectly created by the establishment of jobs in the ginseng industry.

Another impact occurs from the people who work in the industry spending their earned income in the local community. This spending creates jobs in businesses that provide the services. These impacts are called induced impacts. This defines

the employment multiplier as the number that is multiplied by the number of jobs directly involved with ginseng production to give the total number of jobs created. If the total number of jobs created by the industry was 40, then the employment multiplier would be 1.33 (40/30).

To calculate the impact of expenditures by the ginseng industry, an IMPLAN input - output model was used. An IMPLAN model is capable of determining the overall economic impact that initial spending has on the local economy. The IMPLAN model uses data gathered in surveys and estimates to what extent different spending categories affect the local economy in terms of initial effect, direct effect, indirect effect, and induced effect. This Input/Output (I/O) Model provides a means to capture and measure these effects. It uses the following three effects to measure economic impact:

- **Direct effect**- refers to production change associated with a change in demand for the good itself. It is the initial impact to the economy, which is exogenous to the model. In the case of the fair, it is the spending brought about by the ginseng industry.
- **Indirect effect**- refers to the secondary impact caused by changing input needs of directly affected industries (e.g., additional input purchases to produce additional output). It concerns inter-industry transactions: The ginseng industry has a demand for locally produced materials needed to produce their product (perhaps office supplies). The success of the ginseng industry affects all of the industry’s suppliers.
- **Induced effect**- is caused by changes in household spending due to additional employment generated by direct and indirect effects. The induced effect measures the effects of the changes in household income: those individuals working in the ginseng industry and the industry’s suppliers spend money at restaurants, grocery stores and shops.

The Economic Multiplier

Table 1.3

Impact Type	Direct Effect	Indirect Effect	Induced Effect	Total Effect
Employment	42.0	123.9	50.4	216.3
Labor Income	\$2,927,367	\$4,142,427	\$1,934,166	\$9,003,960
Value Added	\$9,077,616	\$4,760,013	\$3,472,743	\$17,310,372
Output	\$28,454,000	\$8,589,362	\$6,149,432	\$43,192,794

During this study, two types of data were used to assess the economic impact of the ginseng industry in Wisconsin. The first type of data, direct spending by the industry, is measured in terms of the costs of operating the industry (predominantly wages and operating expenses). This includes the employees and other expenses not directly connected to labor (utilities, maintenance, insurance, etc.).

The economic impact of the ginseng industry is measured across industry sales, job creation and employment income. Using the 2007 sales estimates, this industry contributes \$43,192,794 in industry sales to the Wisconsin's economy and creates 216.3 annual full-time jobs with a total labor income of \$9,003,960. This gives a "ginseng industry sales multiplier" of 1.52 ($\$43,192,794 / \$28,454,000$), which suggests that for every dollar of sales by the industry, an additional 52 cents of economic activity will be generated in Wisconsin. The "ginseng industry employment multiplier" is 5.15 ($216.3 / 42$), which implies that for every job created by attendees of the industry, 4.15 additional jobs will be created. Caution should be given to this result—due to the small size of the overall industry, this impact may be overstated. However, due to the high value-added nature of ginseng, a high average labor income and employee multiplier is not surprising. Finally, the income multiplier created by the industry is 1.91, implying that for every dollar of labor income earned by employees of the industry, an additional 91 cents of income is generated in Wisconsin.

Conclusion

The direct impact of Wisconsin ginseng production is \$28,454,000. This industry led directly to the creation of 42 jobs within the state. The indirect spending is limited due to "leakages" out of Wisconsin caused by the state's interaction with national and world markets. In an economically complex state such as Wisconsin, some of the services and inputs required by the ginseng industry can be acquired at a local level. However, "leaking" will persist when some of products required for harvesting ginseng are not produced in Wisconsin.

The ginseng industry has a notable economic impact on the state. Its total output (including direct, indirect, and induced effects) is \$43,192,794; the industry creates a total of 216.3 jobs for the state. Due to worldwide demand for high-quality Wisconsin ginseng, growing of this crop proves to be valuable. This market provides many rewards to owners, workers and communities participating in the ginseng industry. However, due to high yield volatility, these economic benefits vary.
