

**Crop Insurance Practices and Experiences of Wisconsin Potato and Vegetable Growers
Common'Tater: The Badger Beat: August 2009
By Paul Mitchell, UW Agricultural and Applied Economics Department**

All farmers know that growing crops is a risky business. Weather can delay or even prevent planting in the spring, then a variety of calamities can befall a crop after it is up and growing—a late (or early) frost, hail, drought, flood, insects, and numerous diseases. For potato and vegetable growers, crops quality is also an issue; yield may be there, but the quality is not, meaning lower prices. To help farmers manage these production risks, the USDA-Risk Management Agency (RMA) has developed crop insurance policies for most of major crops. In Wisconsin, policies are available for potatoes, plus sweet corn, snap beans, and green peas for processing. Fresh market sweet corn, snap beans and green peas are not insurable in Wisconsin except potentially with a written agreement.

Farmers talk about crop insurance with one another, but usually not about the details, such as the coverage levels they use and how they do in terms of indemnities relative to premiums paid. Also, farmers may wonder how typical the information about crop insurance they hear from the few farmers they talk to about it. In this article, I provide information regarding these details so farmers can see how they compare to “typical” Wisconsin potato and vegetable growers in terms of their practices and experience with crop insurance. This will help farmers see if their practices and experience are common or atypical, with these assessments based on concrete data.

Crop Insurance for Potatoes and Processing Vegetables in Wisconsin

Farmers in Wisconsin have essentially one crop insurance option for potatoes, sweet corn, snap beans, and green peas. The policy is called APH (actual production history) and it provides yield coverage—if harvested yields fall below a pre-set guarantee, indemnities are paid. There are numerous other policy details and rules not reviewed here. They are not the focus of this article and farmers are likely familiar with them and if not, their insurance agent can help. Finally, note that sweet corn growers can insure their sweet corn acres under a field corn GRP or GRIP policy, but I will not discuss this option here, as the data are mixed with the field corn data and cannot be separated.

The summary presented here is based on RMA’s Summary of Business data available online (<http://www.rma.usda.gov/data/sob/scc/index.html>). The data include annual aggregate data on acres insured, number of units, total liability, coverage levels, and indemnities paid by state and county for each crop and policy. The data are anonymous. Based on these data, I summarize Wisconsin farmer practices with crop insurance, focusing on participation rates and coverage levels.

Farmer Participation in Crop Insurance

The RMA annually reports crop insurance participation rates, that is, the percentage of planted acres that are insured. Figure 1 presents these participation rates since 2000 for each vegetable crop in Wisconsin. The plot shows that insurance participation rates have generally been growing for Wisconsin potatoes, but fairly flat for green peas, with large jumps up and down between years. Sweet corn has been flat on average, with an upward swing in the last few years, while snap bean has generally increased, with a downward swing in the last few years. In 2008,

about two-thirds of potato acres were insured, while about half of sweet corn, snap bean and green pea acres for processing were insured, which gives growers an idea of how common crop insurance use is among Wisconsin potato and vegetable growers.

These participation rates may seem high, but compared to Minnesota and Michigan, Wisconsin is a low participation state when it comes to crop insurance. This is true, not only for traditional crops such as corn, soybeans and wheat, but also for potatoes and processing vegetables. Around 90% of corn, soybean and wheat acres in Minnesota were insured in 2008, while in Wisconsin these percentages were around 70% for corn and soybean and less than 50% for wheat. For potatoes and vegetables this trend holds as well. In 2008, over 80% of Minnesota potato acres were insured and around 85% of sweet corn acres, compared to 67% and 51% in Wisconsin. Compared to Michigan, Wisconsin participation rates for potatoes have caught up only recently—in 2004, 47% of potato acres were insured in Wisconsin, but 69% in Michigan.

I see two implications for Wisconsin farmers. First, it means that many farmers seem to find crop insurance valuable, so that those not buying insurance may want to look into it more to see if they are missing something. Second, from the perspective of insurance companies, Wisconsin is a growth market—a place where they can potentially pick up new customers without having to take them from some other insurance company. This may partially explain any greater emphasis growers may have noticed on crop insurance in Wisconsin compared to a few years ago.

Crop Insurance Coverage Levels

One important choice that farmers make when buying crop insurance is the coverage level, which essentially sets the insurance deductible. Specifically, the coverage level is the percentage of the insured land's average yield that the farmer chooses for the yield guarantee. Higher coverage levels imply higher yield guarantees and thus higher premiums.

Table 1 reports the percentage of farmers choosing each coverage level in 2008 for each crop. Catastrophic coverage is popular among potato farmers—42% chose this coverage in 2008. After catastrophic coverage, the 70% coverage level was the most commonly chosen for potatoes in 2008. Catastrophic coverage is also somewhat commonly used for sweet corn, snap beans, and green peas as well, but higher coverage levels are chosen more often. For all three crops, the 70% coverage level is the most commonly chosen, then the 65%. About half of the farmers insuring sweet corn and snap beans buy 70% or 65% coverage, while over three-fourths of farmers insuring green peas do so.

Catastrophic policies are essentially free for farmers—they pay only a \$300 administrative fee regardless of the number of acres insured or the guarantee. However, catastrophic coverage is the lowest coverage available, with a guarantee equal to 50% of the average yield and a price election at 55% of the full price (the catastrophic potato price was \$4.21/cwt in 2009). Higher coverage levels offer more protection, but cost more as well. Because of the price, catastrophic coverage is a good place for many farmers to start with crop insurance. After building experience, each can then see how often they would have been paid indemnities if they had purchased a higher coverage level and compare these to the premiums paid. From the information in Table 1, it seems that many farmers find higher coverage levels valuable, especially for processing vegetables.

Farmer Loss Ratios

Farmers buy crop insurance coverage because it helps them out then they have yield losses, but they pay premiums for this coverage. In some years they pay premiums and do not receive indemnities, but in other years they pay premiums and collect even larger indemnities. An actuarially fair premium is one that, on average over several years, breaks even—collects as much in premiums as it pays out in indemnities.

This relation between premiums and indemnities is measured by the loss ratio—the ratio of indemnities paid divided by premiums collected. A loss ratio of 1.0 means premiums equal indemnities, i.e., that the premiums are actuarially fair. The federal government via the RMA subsidizes farmer crop insurance premiums to encourage farmers to buy crop insurance. The implication is that farmers pay less than actuarially fair premiums. In other words, from the farmer's perspective, the loss ratio should exceed 1.0—meaning they receive more than they pay in, on average over several years. For example, a farmer loss ratio of 2.0 means, on average over the years, that he has received \$2 of indemnities for every \$1 paid in premiums.

The RMA is mandated to achieve a program loss ratio of 1.0—that the indemnities paid on average equal the premiums collected. However, the premiums used in the program loss ratio are the sum of the farmer premium paid and the federal premium subsidy. From the farmer's perspective, the program loss ratio is not what matters, but rather his loss ratio—the ratio of indemnities paid divided by the premiums he pays, not including the federal premium subsidy.

Table 2 reports farmer loss ratios for crop insurance by crop across all insured acres in Wisconsin for each year since 2000, plus the average loss ratio across these years. The farmer loss ratio is 2.29 for potatoes, meaning that, on average across the whole state from 2000 to 2008, Wisconsin potato farmers received \$2.29 in indemnities for each \$1 in premiums that they paid. For the processing vegetable crops, the farmer loss ratios are lower, ranging from 1.43 for sweet corn to 1.74 for snap beans. In all cases, the loss ratios exceed 1.0, meaning that on average, across the whole state, that farmers win the crop insurance bet—that is they receive more in indemnities than they pay in premiums. However, this does not mean that every farmer makes money on crop insurance every year. Payments vary not only across years, but also across farmers. In some years, farmers receive indemnities and in other years they do not. Also, some farmers bought crop insurance every year and have never received an indemnity, implying a loss ratio of 0.0, while others have loss ratios far in excess of 1.0. Averaging across years smoothes this year-to-year variation, but to get a better idea of how loss ratio vary across the state, we look at farmer loss ratios at the county level, the lowest level possible with the RMA data.

Figure 2 provides maps that report average farmer loss ratios by county for these four crops, averaging over the 13 years from 1995 to 2007. Counties in white have no data for that crop because no one purchased crop insurance for that crop in that county from 1995 to 2007. Counties in gray are counties where at least one farmer bought crop insurance for the crop at least once from 1995 to 2007 and never received an indemnity. From there, the farmer loss ratios increase as indicated by the legend in each figure.

All four maps show the tremendous spatial variation in farmer loss ratios for these crops. Though Table 2 shows that, on average across the state, farmers have generally come out ahead with crop insurance, these maps show that this is not the case at the county level. Some counties have loss ratios of 0.0 or below 1.0, while neighbouring counties have loss ratios in excess of 3.0, with a few counties having loss ratios exceeding 5.0. Farmers can pick out their county and see how the county loss ratio compares to their experience with these crops.

Note that we cannot connect high loss ratios with profitability. High loss ratios can indicate areas where crop production is quite risky and unprofitable. Also, these loss ratios have not been weighted by the number of observations. Some of the counties with high loss ratios may have only a few observations when a farmer grew a processing crop for a few years, had low yields (and so large yield losses) and then quit. Finally, high loss ratios can be due to premiums that are too low for the level of yield risk in the county.

Overall, these maps show that setting insurance premiums is an inexact science subject to lots of variability. Not only do farmers not always win with crop insurance, but insurance companies also do not always win. Farmers should not buy crop insurance just to make money, but rather to manage their yield risk. The benefit to farmers of eliminating the cost of low yields is not captured by the farmer loss ratio, and so is not illustrated in these maps. The value of these risk management benefits of crop insurance are for each farmer to assess for themselves and their operations and to see if crop insurance fits into their overall risk management scheme. Crop insurance is not for everyone and farmers have other ways to manage risks besides crop insurance. However, these maps show that, historically, crop insurance for potatoes and processing vegetables has generated financial benefits for many Wisconsin farmers, some more than others.

Figure 1. Percent of planted acres insured by crop and year in Wisconsin.

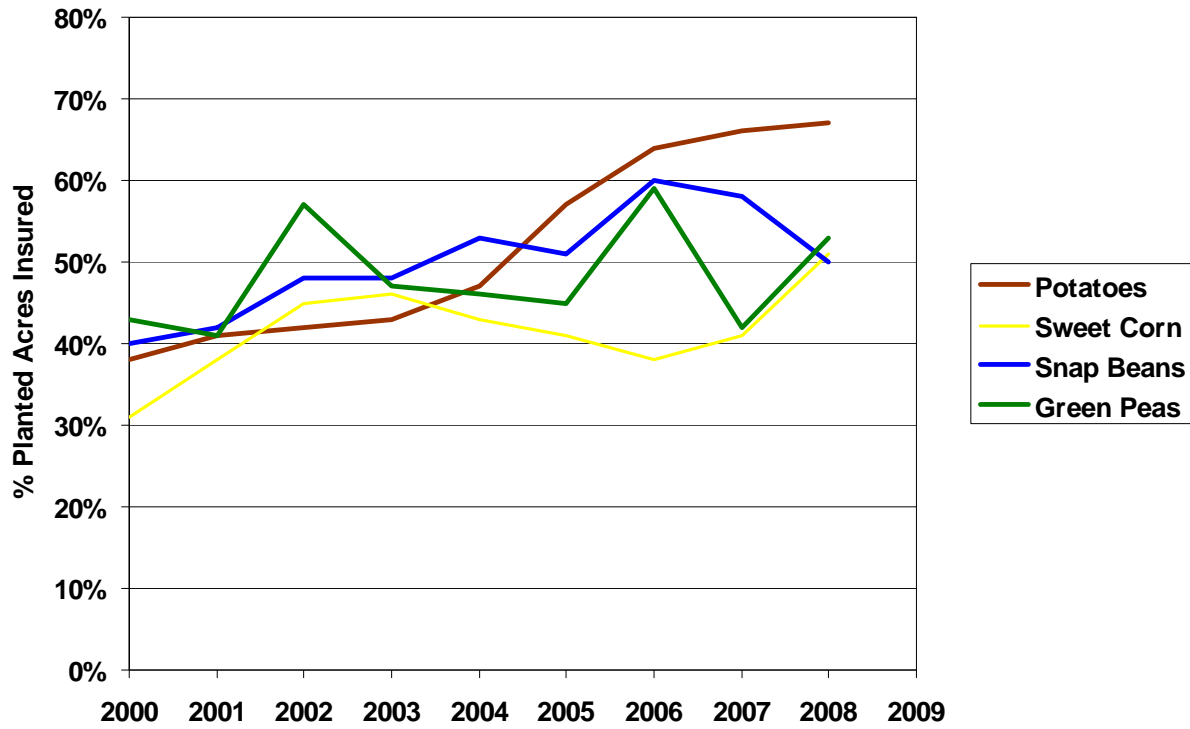


Figure 2. Average farmer loss ratios by county from 1995 to 2007.

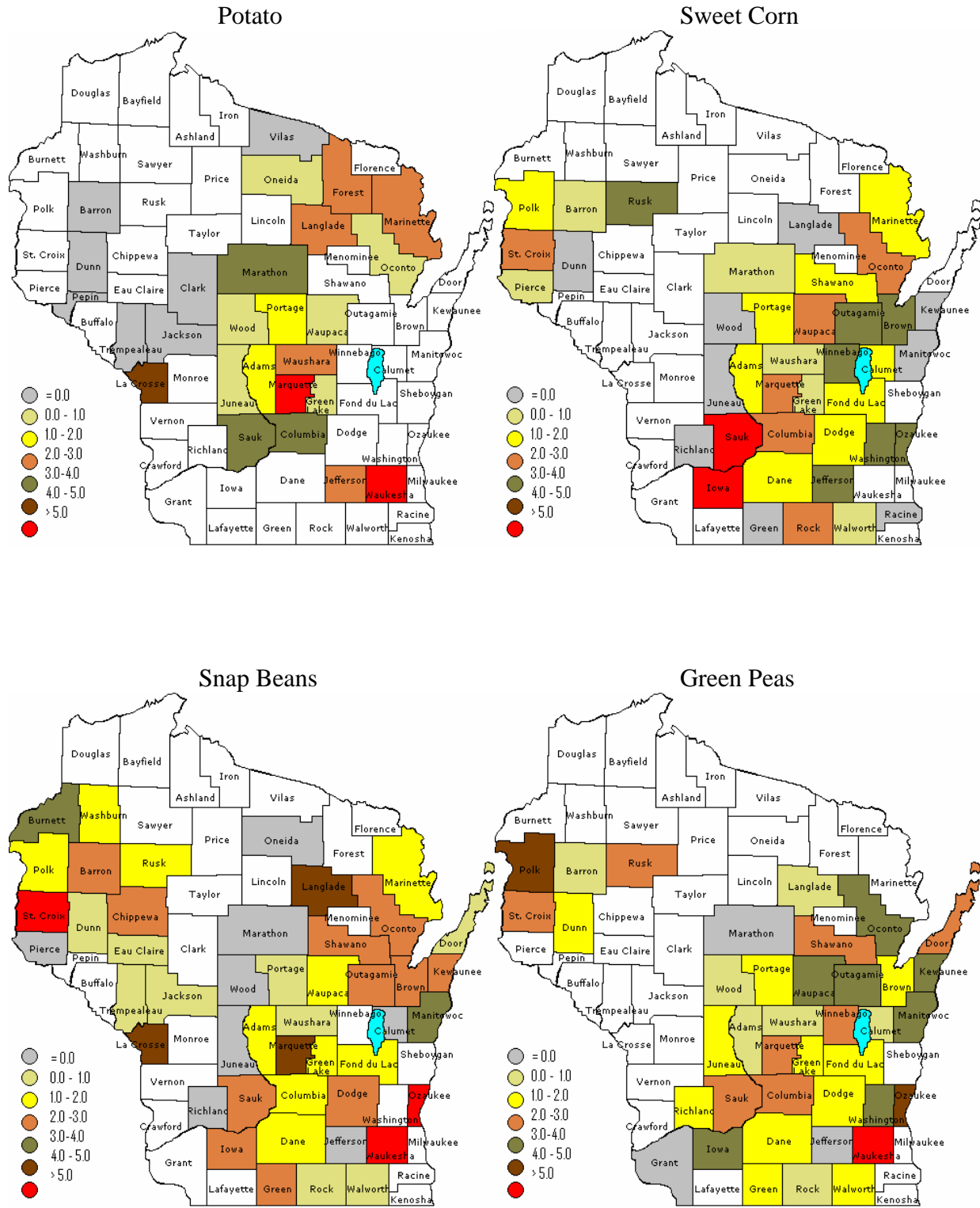


Table 1. Percentage of Wisconsin growers choosing each coverage level in 2008 by crop.

Coverage Level	Potatoes	Sweet Corn	Snap Beans	Green Peas
Catastrophic	42%	18%	16%	6%
50%	8%	14%	9%	3%
55%	2%	0%	1%	1%
60%	12%	5%	4%	4%
65%	3%	19%	23%	11%
70%	22%	30%	29%	66%
75%	11%	11%	15%	7%
80%	0%	2%	2%	0%
85%	0%	1%	0%	0%

Table 2. Annual farmer loss ratios for potatoes and processing vegetables in Wisconsin.

Year	Potatoes	Sweet Corn	Snap Beans	Green Peas
2000	4.72	0.68	1.67	0.46
2001	4.01	0.98	3.73	1.69
2002	3.81	3.48	1.55	2.80
2003	3.09	0.79	1.94	1.28
2004	2.11	1.29	0.37	3.03
2005	0.70	2.07	1.16	1.04
2006	0.59	1.43	2.22	1.59
2007	0.33	0.93	1.83	0.98
2008	1.23	1.21	1.15	1.95
Average	2.29	1.43	1.74	1.65