Integrated Cranberry Crop Management for Wisconsin

Cranberry Crop Management Newsletter

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AGR-LITE: PROTECTS AGAINST YIELD AND PRICE LOSS

A new crop insurance for Wisconsin 2007 crop year is Adjusted Gross Revenue (AGR)-Lite. Instead of compiling crop yield history to establish a base, you as a grower document your five year history of Schedule F or equivalent income and insure that number against natural loss including weather and markets. Like other federal crop insurance AGR-Lite is federally subsidized and is administered by the USDA –RMA (Risk Management Agency.) Federal subsidy ranges from 48 to 55% of the cost of the program depending on the specific option that you choose.

For cranberry growers AGR-Lite is the only Federal Crop Insurance Plan that provides protection against declining market prices. The program is called Lite because it has a $1,000,000 liability maximum; a pilot program (AGR) with a $6.5 Million cap is not yet available in Wisconsin.

A grower can have AGR-Lite coverage in addition to the traditional Multi-Peril Crop Insurance (MPCI); in fact if you have dual coverage the AGR-Lite premium will be reduced. As an insured grower your income is more stable, therefore the risk and insurance cost is reduced.

Who is eligible?

Many midsize to larger growers will find themselves ineligible for AGR-Lite because of $1 million claim cap, but you may want to become familiar with the details of the program preparing yourself for the possibility of the AGR program becoming available in the future. If you don't have five years of tax reporting you are also not eligible for AGR-Lite. You need to be primarily a grower, not a retailer with no more than 50% of total revenue from commodities purchased for resale; finally there is a limit if you have other commodities produced besides cranberries that no more than 83.35% of total revenue can come from potatoes.

Available Protection Amounts*

Coverage		Maximum Annual Payment
Level	Rate	Income**
65	75	$2,051,282
65	90	$1,709,401
75	75	$1,777,777
75	90	$1,481,481

* USDA-RMA

** Schedule F or Equivalent, Gross from Commodity

If you have operated as several different entities you should be able to work with your insurance agent to show that the combined entities have the required tax reporting history.

Indexing

It would appear that if you are a growing marsh with higher revenue in recent years than in the past that the five year average income would work against your chances of making a claim. There is an indexing provision where you can establish an increasing income trend based on the last two years to make the program more suitable for you.

AGR-Lite is available at 65% and 75% coverage and with payment rates of 75 and 90 cents for each dollar lost. If you suffer a loss early in the year and decide to decrease inputs you may reduce your coverage, this reduction begins when your allowable Schedule F expenses drop below 70% of approved expenses.

The deadline for the 2008 crop year is March 15. AGR-Lite is somewhat less timely than other crop insurance options for delivering relief since you must file your taxes before you are eligible to make a claim.

While AGR-Lite may fit into the plans of many growers it may have special value to a grower that is engaged in value added activities such as organic production, processing or direct marketing. The program insures your income and therefore potentially covers risk beyond what is incurred simply in production.

When people will not weed their own minds they are apt to be overrun with nettles.

Horace Walpole, 4th Earl of Orford

Lost, yesterday, somewhere between Sunrise and Sunset, two golden hours, each set with sixty diamond minutes. No reward offered, for they are gone forever.

Horace Mann

Loss Payment Example

Assumptions

- 75% coverage level and 90% payment rate chosen.
- Approved adjusted gross revenue of $500,000 and actual revenue from the marsh for the year was $350,000
- Liability is $500,000 x.75 x .9 =$337,500

Loss Scenario:

$375,000 insured minimum revenue- $350,000 actual revenue = $25,000 loss

$25,000 loss x .9 payment rate =$22,500 grower payment

Matt Lippert, Wood County, Cooperative Extension

HOW LONG DOES PHOSPHORUS FERTILIZER REMAIN PLANT AVAILABLE IN THE SOIL?

Growers want to ensure that cranberry vines always have a supply of mineral nutrients in the soil from which the cranberry vines can extract what nutrients they need. Some consultants and salespeople claim that fertilizer must be applied very often, perhaps every week or two, to ensure that plant available fertilizer is present in the soil. The question is, "how long will fertilizer applied phosphorus remain plant available in the soil?" Anion Exchange Membranes (AEM) offer the means to address that question.

AEM mimic plant roots by adsorbing and desorbing negatively charged ions in relationship to their abundance near the membrane. This is similar to what happens in soils with plant roots.

We amended sand taken from a cranberry marsh with phosphorus fertilizer to equal a rate of 20 pounds of phosphate per acre. This was incorporated as a liquid into the top inch of soil. We also had a control to which no P was added. We inserted

AEM's into the soil and left them for three days after which they were removed and a new set were inserted into new locations in the tub. This continued for 3½ weeks. The membranes had the phosphorus adsorbed to them extracted and the extract was analyzed for P concentration.

The results of our research are shown in Figure 1. Application of P fertilizer increases the exchangeable P in the soil and this is apparent after only 3 days. The amount of exchangeable P increases for about 10 days and then begins to decline. In our model system without plants extracting P from the soil the exchangeable P never dropped to pre-treatment levels. Even after three weeks and almost four weeks following application exchangeable P was available in the soil above that found in the control.

Since there were no plants in our model system one may ask, "Where did the P go? Why did the exchangeable P values drop after 13 days? The answer is likely that the P began to be tied up by aluminum and iron ions that were present in the soil. This reaction might have been slower in our system than in the field because we added distilled water to the system. In the field, irrigation water often contains iron and aluminum ions that would serve to tie up the P. However, our field results from 2004 and 2005 showed similar results. Following an application of fertilizer in the field we found elevated exchangeable P values for two to three weeks.

What do we conclude from these data?

- Applications of P fertilizer remain plant available in cranberry bed soils for 2-3 weeks.
- The amount of exchangeable P increases slowly for about 2 weeks and then declines slowly for an additional 2 weeks.
- Soils to which P fertilizer is added have higher exchangeable P than soils with no P added, even though the control always had some exchangeable P.
- Application of P fertilizer at short intervals is not warranted.

Teryl Roper, UW-Madison Extension Horticulturist

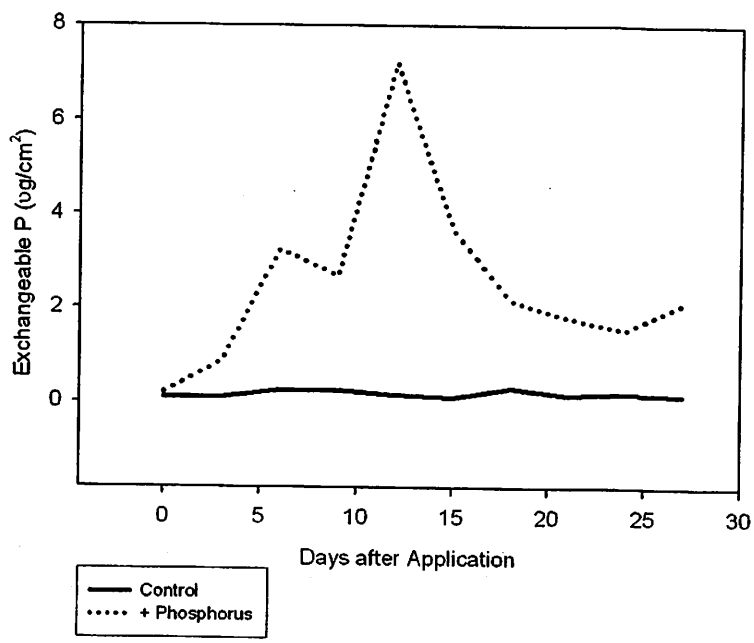

Figure 1. The presence of exchangeable phosphorus following a single application of fertilizer in sandy soil. This research was done in tubs in the laboratory. While we believe it reflects what happens in the field, some differences do remain.

ON MARGINALITY

An often-overlooked economic concept is the notion of equating marginal revenue and marginal cost when making production decisions. Equating marginal revenue with marginal cost results in optimal economic use of production inputs – making as much (or losing as little) money as possible.

The concept goes like this. The yield response to most inputs used in growing cranberries can be characterized by a production function that exhibits declining marginal productivity. In plain English, this means that each additional pound of fertilizer you apply, for example, results in smaller and smaller increases in yield. This is sometimes called the law of diminishing returns. Taken to the extreme, additional fertilizer will eventually reduce yields as burning or excessive vine growth starts to occur.

Now let's introduce economics. The increase in cranberry yield (lbs./acre) from an additional pound of fertilizer multiplied by the price of cranberries ($/lb.) is the marginal revenue from that particular pound of fertilizer. The higher the cranberry price, the higher will be marginal revenue from additional fertilizer. But regardless of price, marginal revenue will start off high and then tail off, eventually becoming negative, as more and more fertilizer is applied.

The marginal cost of fertilizer is the price of an additional unit of fertilizer. Unlike marginal revenue, the marginal cost of fertilizer doesn't change as more is applied and is not affected by cranberry price. So the marginal cost of fertilizer is a constant, a target to which marginal revenue is driven. Equating marginal revenue and marginal cost in this case means applying fertilizer only so long as the dollars received in additional cranberry revenue are greater than the dollars you spend to buy the fertilizer. The difference between marginal revenue and marginal cost is the contribution of another unit of fertilizer to your profits.

Too fast for you? OK, look at it this way. You know from experience that if you bump fertilizer use from current levels by 1,000 pounds/acre you can expect to increase cranberry yield by 5 barrels/acre. Say the particular fertilizer you're using costs $400/ton (including application) or $200/acre in marginal cost for the increased use. At a cranberry price of $50/barrel, you're generating $250/acre in marginal revenue by putting on that extra half-ton of fertilizer (5 barrels/acre times $50/barrel equals $250). The extra fertilizer adds $250 to revenue and $200 to cost – and $50 to your bottom line. Good decision; apply even more fertilizer since marginal revenue exceeds marginal cost at this level of use!

But what if the cranberry price is $20/barrel? In that case, the extra $200 worth of fertilizer would bring you only $100 in additional revenue, resulting in a $100/acre loss in profit. Not a very good decision; cut back on fertilizer use since marginal revenue is less than marginal cost.

Obviously this is a "cooked" example. In real life, the yield response to fertilizer, pesticides, and other production inputs depends on a host of factors and cannot be precisely specified. Moreover, some input expenditures incurred this year have carryover benefits or defecits in subsequent years, which complicates the decision. There are also environmental factors to consider in determining chemical use. But UW-Extension specialists and other horticulturalists can provide you with some reasonable yield response guides to help gauge marginal revenue. Get their help.

This principle can also be used to decide where to expend scarce resources. For example, on a weedy marsh a greater return would be realized from focusing on weed control compared to fertility since adding fertilizer won't overcome shading and competition caused by weeds.

Ed Jesse, UW-Madison Extension Ag Economist
This article was slightly edited by Teryl Roper

YIELDS AND HOT WEATHER

Growers throughout Wisconsin have been wondering how this hot weather in June and July will affect yields in October. Since weather patterns are unique from year to year, it is impossible to look at individual cases and draw broad conclusions. However, a little research has been done relating weather and yield. A study in New Jersey examined the relationship between weather and yields for the period of 1906 to 1984 and two subsets within that time. These researchers found that temperature and sunshine are two important variables. In general, warm temperatures from mid-May to late June, mid-October to mid-November and cold temperatures in early-February through March corresponded to good yields. Sunny weather in early May through mid-June also corresponded to high yields. On the other hand, hot temperatures (above 90°F) during the immediate pre-bloom period (400 to 530 GDD) or during July corresponded to lower yields.

In a two year study of hybrid cranberry cultivars in the five cranberry growing states, we found that the rate of growth of cranberry fruit was best predicted by the number of moderate temperature days, between 60 and 85°F. This accounted for more than 80% of the variation in rate of fruit growth across states. One cool year in Wisconsin slowed fruit growth by 11 days compared to a more average year the year following. Including sunlight intensity improved the prediction above 90% accuracy.

A recent study of berry scald in New Jersey found that a severe scald event in 1990 included clear skies, air temperatures above 80°F, canopy

temperatures up to 106°F, soil temperatures at 1 inch at about 80°F, dry soils from lack of rainfall AND dry air (dewpoints <54°F). However, growers who sprinkle irrigated during the heat of the day reported much lower incidence of scald (<0.5%) than on unirrigated beds (~25%). The rule of thumb used by New Jersey growers is to begin irrigation when air temperatures reach 84°F. Irrigation replaces lost soil moisture and serves to cool the vines from the cooler water temperatures and from evaporative cooling.

Extreme heat is stressful to cranberry vines. Since cranberries have a rudimentary root system, replacing water lost to the air is critical. Cranberries don't have good control of the openings in the leaves that allow water to evaporate, so when the plant is having a hard time keeping up with the demand for water they can't simply "close the holes". The optimal temperature for photosynthesis in cranberries is about 75°F and the rate of photosynthesis declines as temperatures are warmer or cooler than this.

One common symptom seen during hot weather is vine yellowing. The leaves may turn yellowish between the leaf veins. This usually appears in patches. These symptoms are rarely seen during cool years. I don't know of a remedy for vine yellowing except more moderate weather. Experience suggests that yellow leaves are less productive than green ones, thus fruit number or size may be reduced.

What can growers do to alleviate the detrimental effects of extremely hot weather? Four suggestions follow:

1. Make sure soil moisture is adequate and continuous. Irrigate in the mornings to saturate the root zone. Morning or evening irrigation minimizes evaporation.
2. Check soil temperatures. Unvined areas on sand may be very hot and will lose soil moisture quickly.
3. Irrigate during the heat of the day. Vine and soil temperatures will be reduced from the cooler water temperatures as well as from evaporation (although with dew points near 70 evaporation is very slow). Cycle irrigation on for 20 to 30 minutes to conserve water. Water droplets remaining on vines DO NOT act like little magnifying glasses leading to scald spots on vines. This has no basis in fact!

4. Consider draining mainlines if you plan to irrigate during the heat of the day. Water sitting in aluminum pipe heats up quickly and will scald vines when it is pumped through the sprinklers.

Careful thought and good management practices will allow you to beat the heat and still produce good yields.

Teryl Roper, UW-Madison Extension Horticulturist

WEED PHOTOS

With funding provided by the Wisconsin Cranberry Board we are working on a cranberry weed publication. The first step is to collect photos of the various weeds found in cranberry beds. Several people have been hunting through cranberry marshes for weeds, both common and uncommon. We thank growers who have graciously allowed us to come onto your mashes to take photos of weeds. Hopefully when the project is completed growers will have a resource that will help them identify the weeds they find on their marsh and with proper identification appropriate control measures can be taken. If you are willing to allow us to take weed photos on your marsh, please contact Teryl Roper or Jed Colquhoun at UW-Madison.

WISCONSIN CRANBERRY FIELD DAY

The annual Wisconsin Cranberry Field Day will be hosted by Copper River Cranberry Co. near Merrill on Wednesday August 8. Registration materials have been mailed from the WSCGA office. Please confirm your lunch registration with WSCGA. Vendors will be on hand to demonstrate their products. Educational sessions are planned along with a bus tour of the property. A short WSCGA business meeting will also be held.

Please note that Highway 64 between Merrill and the Copper River Marsh is closed for construction. A detour is marked. For those travelling from the south the best route to the marsh is to go directly north on Wisconsin Hwy 107 from Marathon City. This eventually becomes CTH M and leads directly to the marsh.

We thank the Ed Sabey and Tim Burton Families for hosting the field day this year. We recognize all of the extra work they have undertaken to make the field day a success.

We hope to see you all there.

No passion so effectually robs the mind of all its powers of acting and reasoning as fear.

Edmund Burke

MIKE BRETL
FARMLAND BIRON MARSH
120 COUNTY ROAD U
WISCONSIN RAPIDS WI 54494-8803

Wisconsin Cranberry Crop Management Newsletter
Department of Horticulture
1575 Linden Drive
Madison, WI 53706

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