Ohio Grape-Wine Electronic Newsletter

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Disease Note from Mike Ellis:
Sour rot can be a very devastating disease of grapes in Ohio. The disease is not extremely common (thank goodness for that) but when it develops on grapes near harvest, it can be devastating. Several growers in Ohio have suffered severe losses when the disease developed in their vineyard. Dr. Wayne Wilcox (Cornell University) has written an article on “Understanding and Managing Sour Rot”. He has graciously agreed to share it with us. I strongly recommend that all producers of wine grapes in Ohio read the article.
SOUR ROT is often used as an imprecise catch-all term to describe the “snork” that takes over injured clusters near harvest when the weather becomes wet. Unfortunately, this means that different people (and fungicide labels) can use this same name to refer to a general condition that has different causes. For the rest of this discussion, I’ll be referring to what I call “true” sour rot—a syndrome that involves pre-harvest cluster decay accompanied by the smell of vinegar (hence the name, duh).

Winemakers often refer to and measure the cause of this vinegar smell (acetic acid) as volatile acidity (VA). Dr. Wendy McFadden-Smith at OMAFRA on Ontario’s Niagara peninsula, who has been in the forefront of sour rot research for more than 5 years now, has shown that the measure of VA in grapes harvested from different vineyards is strongly associated with the pre-harvest level of sour rot in them. It’s generally accepted that the vinegar is produced by certain acetic acid-forming bacteria (species of *Acetobacter* and *Gluconobacter*), and that wounds (birds, rain cracking, berry moth, compression in tight bunches, powdery mildew, etc.) are necessary to get the whole process started. Sometimes these bacterial infections are accompanied or followed by infections by several wild “bad” yeasts, which can produce ethyl acetate (smells like nail polish remover or varnish). There appears to be a progression of steps involved in this whole process, which probably begins with the production of ethanol by “good” yeasts as the injured berries start leaking grape juice (ethanol is the substrate that the abovementioned bacteria convert to acetic acid, and we’ve found a lot of *Saccharomyces* yeasts associated with sour-rotted berries in the field), but a lot of the details are still rather murky. However, we know a lot more than we did a few years ago.

To my mind, two of the more important things that Wendy and her group have determined insofar as understanding the development of sour rot are: (1) Berries of Pinot noir and Riesling (the primary cultivars they’ve worked with) do not become worrisomely susceptible to infection until they mature to a point of about 15°Brix (minor levels of infection developed from inoculations at 13° Brix, nothing at 10°); and (2) The disease develops rapidly and severely at temperatures between 68 and 77°F; much more moderately at 59 to 68°F; and just barely chugs along at temperatures in the 50’s. These data probably make sense to Finger Lakes Pinot Noir growers who remember last September—very warm and wet after Labor Day as clusters of this cultivar were nearing harvest and rapidly building sugars, with nasty sour rot ensuing soon thereafter.

The Ontario contingent has also done a nice job of documenting that sour rot doesn’t get started in the vineyards until rain occurs after berries have reached 15°Brix and temperatures are at least in the 60’s. Rain probably plays a few roles in disease development, but two of the more important are that it moves the causal bacteria around and into open wounds, plus it can help cause the injuries necessary for infection to occur in the first place (e.g., cracking that results as berries swell rapidly and/or become excessively compacted in tight clusters).
Another piece of the puzzle is the potential (apparent?) role of fruit flies (Drosophila spp.). Clusters with sour rot are typically swarmed with these insects. A prominent line of thinking over the years has been that they are opportunists coming to feed on a convenient food source; indeed, they are attracted to the smell of acetic acid. However, a study from Portugal published in 2012, while far from conclusive, suggests that these insects may actually play a direct role in the initiation and/or spread of the disease. Which caught our interest, see below.

Thus, in terms of managing sour rot, it seems that the likely strategies are: (1) Provide a berry microclimate in the canopy less conducive to pathogen growth; (2) Minimize berry injuries; (3) Minimize pathogen populations; and (4) Control the fruit flies if they are, indeed, a factor.

Last summer, we (graduate student Megan Hall, entomologist Greg Loeb and his technician Steve Hessler, along with yours truly and technician Dave Combs) began a multi-year project to better understand sour rot and how we might be able to better manage it. One year’s worth of results is just that and we might find something very different this year. But as sour rot season starts approaching, here’s what we found, for what it’s worth, along with some other associated information and thoughts about control options:

**Canopy microclimate.** I’ll trot out data presented before from a trial conducted with other Cornell colleagues in a commercial Vignoles vineyard in the very wet fall of 2011. There were two different training systems and three canopy management systems involving shoot thinning and removal of old clusters stems or rachids (to lower Botrytis inoculum). The data and figure captions speak for themselves.

![Sour Rot Severity, 9/19](image)

- Effect of training system was greater than that of canopy manipulation: across all four treatments, average of 11.0% cluster area w/sour rot for VSP, 22.2% for Top Wire.
- Effects of training system and canopy manipulation were additive: best treatment = Shoot Thin + Rachis Removal/VSP (7.8%), worst treatment = Check/Top Wire (29.1%)
Minimize injury. Beyond the obvious (do what you can to reduce damage from birds, berry moth, powdery mildew, etc.), loosening clusters is likely to reduce mechanical injuries due to compaction, and will also go a long way toward reducing Botrytis development as well. In fact, I’d consider loosening clusters to be the holy grail for managing the late-season bunch rots that we deal with in this part of the world; unfortunately, finding a good technique for doing so has been almost as elusive a goal. Various treatments that some have found to be effective include giberellic acid (a registered use), the growth regulator prohexidione-calcium (not registered), and prebloom leaf removal. Even the legal options have their risks and are not for the faint of heart, and need to be left for another discussion. Calcium sprays to “toughen” the grape skins haven’t reduced sour rot development when tried by Wendy et al., nor have Raingard or calcium chloride applied as anti-cracking treatments.

Minimize the pathogen population. A number of antimicrobial sprays tried in Ontario did not have any effect on sour rot development: Serenade, Pristine, vermicompost, potassium bicarbonate (e.g., Milstop, Armicarb). But what did reduce sour rot was potassium metabisulfite (“KMS”, in shorthand), applied weekly at a rate of either 0.5 or 1.0% (4 or 8 lb per 100 gallons of water, respectively). It must be noted that whereas KMS is used widely in wineries both to sanitize equipment and as an additive to musts and wines to kill wild microorganisms and prevent oxidation, it is NOT registered for spraying onto vines to control diseases, either in the US or Canada. Also, it is nasty stuff if you get it in your eyes or breathe in the dust.

Control fruit flies. Although some growers have tried this approach, I’m not aware of any experimental data evaluating its efficacy prior to our trial last year.

2013 trial results. We looked at a combination of insecticide and antimicrobial sprays. Alternate rows in a ‘Vignoles’ vineyard were sprayed with the insecticide Delegate (weekly, beginning at 15° Brix), with the remaining rows receiving no insecticide. Then, within these insecticide-plus or –minus rows, we applied various antimicrobial treatments, also on a weekly schedule: (i) 0.5% KMS, beginning at 15° Brix; (ii) 1.0% KMS, beginning at 15° Brix; (iii) Kocide at 2 lb/A (registered!), beginning at 15° Brix; (iv) 1.0% KMS, beginning at first appearance of disease symptoms; (v) none (check). The results are presented below.
Bottom line: Antimicrobials without insecticide provided an average of 9% control (vs. check); antimicrobials with insecticide provided an average of 50% control (vs. check); and insecticide without antimicrobials provided 15% control.

A few comments:
• As noted, these are data from a single experiment. I'll feel more confident if we're able to repeat the results this year. However, both our results and those from Ontario indicate that some antimicrobial sprays can reduce sour rot. Because bacteria are a huge part of the complex and we haven't seen any consistent association with “filamentous” (non-yeast) fungi, I wouldn't expect fungicides to provide much benefit in our region or those with similar climates, other than reducing the number of certain injury sites (e.g., pre-harvest Botrytis infections). In warmer climates (California, Texas, South Australia), species of the Aspergillus fungus often are associated with sour rot, but what causal role they may or may not play is not that clear.
• We have other reasons to believe that fruit flies are important players in this disease complex. (It should be noted that whereas the spotted wing Drosophila is getting a lot of attention and may be a component in the mix, the “garden variety” species—D. melanogaster, which has always been around—seems to be the primary player from what we can tell so far). Now the question is what to do about them.
• This trial was designed as a “proof of concept”—we nuked the hell out some vines in order to see whether insecticide plus antimicrobial sprays can have an effect. Once we're convinced that they can, we'll start working on finding out how much less we can spray to get the same result.
• KMS is not a legal treatment and Kocide has potential copper residue issues that, although legal, might cause problems with fermentation in the winery. This year we’ll also be trying Oxidate, which is expensive but legal and without potential fermentation issues. Wendy did not get benefit from it in her earlier trials, but some Finger Lakes growers tried this product last year as a “rescue” treatment and felt that it helped (of course, such observations are seldom based on comparisons with an
unsprayed check row or rows). We’ll also be using Mustang Max as our insecticide, as Greg thinks it will have more residual efficacy. (Note that it is labeled for use on grapes with a 1-day PHI, although fruit flies are not a listed target pest). Stay tuned.

• We’re looking at a lot of other issues regarding the various microbes involved, the mechanistic role of fruit flies in this whole process, their interactions, and when these different components appear and/or start multiplying to high levels in the vineyard. We hope to have some interesting and useful information to report as the project continues.

**What does this all mean for 2014?** Sour rot occurs sporadically and the “state of the art” with respect to understanding and controlling it is still pretty sketchy. Individual growers will approach managing it differently depending on their own individual perceived risk and philosophy for addressing it. For now, I’d keep these concepts in mind: Disease can be initiated once rains occur after berries reach approximately 15° Brix; warm temperatures (extended periods in the upper 60’s and above) are much more problematic than cooler temperatures; good canopy management will keep things from getting worse than they would otherwise; it’s much easier to keep things down to a dull roar if you address a disease outbreak early than if you wait until things start blowing up in your face. Just how to do this is the $64,000 question (and that term was coined in 1950’s currency!).

Knowing what we do at this point, if it was me and I had a few thousand dollars per acre of crop threatening to go south in a hurry, I’d put something on to help control the fruit flies and responsible microbes. If it was consistently warm and wet and I’d had a problem in that block before, I might start at 15° Brix before seeing symptoms and back off if the weather turned more favorable and/or disease development stayed in check. Otherwise, I’d probably keep a very close eye on my vineyards and the weather, and be ready to jump in if I saw the disease starting and the weather looked conducive for its spread. Here’s to hoping that we get plenty of disease pressure in our test plots so that we can find out more about it, but that it stays away from commercial blocks this year.
Berry Sampling to Determine Maturity
by David Scurlock, OSU/OARDC Viticulture Outreach Specialist

Berry sampling begins a couple of weeks past veraison and continues up until harvest. Sampling is first done on a weekly basis to follow the development of the maturity of the grape and then as you more closely approach harvest samples should be taken every other day. A good sample consists of taking a minimum of a couple replicate samples of 100 berries each per variety. A good cross section of you particular block will include berries taken from the top, middle and bottom of the clusters at random and taken both within the canopy interior as well as the exterior. Avoid the vines on the outside of the vineyard. These vines usually are bigger vines and differ more than interior vines. Adopt a pattern of every third vine and a couple of berries taken each vine that will give you a good representative sample and one that is reproducible through the berry sampling period from veraison to harvest. The larger the sample size and the more representative your sample will be of the particular block and the closer your results will compare with the must results from the winery at the time of pressing. This is a decision you will have to make. Time and cost of performing sampling and running the lab tests all figure in to what you can afford to do. Your berry sample test results should increase in sugar content and your acid levels should go down as you approach harvest. This is a good tool for the grower and winemaker to use to communicate to each other and plan or predict a harvest date. Be advised that a sample taken right after a rain will, you guessed it, be diluted, so the sugar readings will be lower and the acid content will also be lower and give you a false reading due to the uptake of water. It is best to wait a day after a rain to take your sample or do it a day earlier if rain is forecasted. There can also be a point where the acid levels begin to increase. This is due to berry shriveling or loss of water content and the acid concentration may increase.

Plan on taking berry samples the same time of day and day of week to have consistent comparable results. As you approach harvest, sample every other day and at the same time of day and keep close contact with the winemaker or buyer. If you do everything right you will still be about a brix higher than the brix content of the must at the time of pressing. That is close enough. There are berries inside the cluster which are less ripe and cannot be easily sampled unless whole clusters are used. Whole cluster sampling usually means a smaller sample size. Whole cluster sampling usually involves a minimum of 20 clusters, which means you only sampled 20 vines per block. Berry sampling you are probably sampling double that amount of vines. Either method you choose, it is a good means to follow the maturity of the grapes and a good means to communicate to the winemaker or buyer.

It is good if you can run lab tests on Brix, pH and TA (titratable acidity) to report your results to the winemaker. Another good idea is to invite the winemaker/buyer to your vineyard to inspect, sample or taste the berries. Communication is the key to great results!
Grape Phenology:
Grapes in Wooster are ripening despite the cool wet summer. Today, August 28, in preparation for this article, I taste sampled several varieties and was pleasantly surprised at the development. NY76.0844.24, recently named “Aromella”, has grapefruit and muscat flavors. The crop is light and this is one that probably should also be harvested in the near future. Chambourcin, one of our later harvested varieties in Wooster, has nice color although overall they are not quite fully colored. I have a picture below of two clusters that are very uniform. The sugars are evident although the acid is still a little high, but not too far out of balance. Hang time will improve both of these parameters. Chardonel clusters and berries are sizing well and the flavor is coming along too. We have a modest crop and I did notice some bird activity on a couple of clusters. The Traminette vineyard has a very light crop and the color development in these is slow. They look green and the berries are still hard enough that I did not taste sample these. The hardy Minnesota varieties such as LaCrescent, Frontenac, Frontenac gris and Marquette all have a full crop. I did taste sample all four of these varieties. LaCrescent, had grapefruit flavors and the acidity was just a little high but it would be my guess that these will be ready for harvest in a couple of weeks if not sooner. LaCrescent does not hang well so it must be watched carefully and picked when ready. LaCrescent is another variety that I saw some bird damage. Frontenac, Frontenac gris and Marquette still have to hang a little while longer although I was surprised that Frontenac and Frontenac gris did not have a huge imbalance of sugar to acid. I did take some berry samples of Frontenac in Kingsville this week and the Brix there were 16.9% and the acids were 2.55% TA. By taste, I think the Wooster Frontenac %TA has to be at least a point or more lower.
In last months Vineyard Update I did say “I heard someone state that some Minnesota varieties were beginning to collapse due to winter injury.” We have not seen this in Wooster. The vines have a full crop and have not shown any signs to date of vine collapse. There are some varieties such as Eidelweis that is on the lower end of cold hardiness compared to Frontenac, which is on the high end of cold hardiness. We have not experienced any collapsing of vines in our hardy
Minnesota and NY variety block. This is actually the first year that any canopy management such as pulling leaves around the clusters has been done and I think this has greatly improve the health, color, sugars and hastened the ripening time.

**Vinifera varieties Cab franc, Chardonnay and Riesling**

Vines continue to grow and suckers have been retained to retrain the framework for next year. We do not have a crop on any of these vines. The only vinifera vines to have in Wooster this year are Regent and Gamay noir, although very limited.

**Weather Conditions:** Weather comparisons of 2014

Growing degree days start April 1 and continue until the end of the growing season on October 31

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*April was updated, May updated  
**2014 June was updated from last month  
***July data was updated  
****August data is from Aug1-Aug27. Data will be updated next month

1-The 10 year average for GDD was 2360 GDD. 2014 is 172 GDD below the 10 year average and 451 GDD below the best year of 2010, for GDD. Despite the cool wet season sugars and acids are still developing nicely and harvest should be near normal harvest dates.

**Pest & Disease Situation**

We trapped 7 Brown Marmorated Stink Bugs or BMSB using pheromone traps in June but have not caught anymore in July or August. I have been in contact with the soybean entomologists and they are catching BMSB on sunflowers and Rose of Sharon bushes. The first SWD caught in the State of Ohio was in SW Ohio in mid- July. They can be devastating and as I have stated before the threshold level to spray is one SWD. The SWD should be more prevalent as the sugar levels in grapes increases to around 15° brix and above. Please vigilant in monitoring for the SWD and the BMSB as the reports in other states have been recording increasing numbers of each. Phylloxera has been reported on many different varieties this year. Phylloxera thrives in cool wet conditions. We can control these with the proper use of insecticides early in the season. Timing of the sprays when the shoots are 8 to 10 inches in length is critical for control. If you are using a systemic insecticide such as Admire Pro or Movento, it is important to apply the insecticide 3 weeks prior to the 8 to 10 inch shoot length so the chemical can move through the grapevine ahead of potential infestation.
Downy mildew is a constant threat in a cool wet year like this year. It is best to be proactive and keep a protectant spray on the grapevines to prevent infection. Also on the order of being proactive, please read the article “Understanding Sour Rot” in this same issue. It also discusses some of the potential causes and warns to be proactive to protect your crops from both disease and in particular both fruit flies and the dreaded Spotted Wing Drosophila.

**Cultural Practices:**
In the month of August we have been checking our BMSB and SWD traps and I am happy to report that we have not been catching either insects. Reports from surrounding states are not the same. States such as Pennsylvania, Indiana and Michigan have all been reporting increasing numbers of both BMSB and SWD. Both of these insects can damage to the fruit and hasten bunch rots, if you have fruit. We have applied only 7 cover sprays to date. Our vineyard is free from downy and powdery mildew at this time. Our biggest problem this year has been WEEDS. It has been very difficult to bring up new replacement shoots and maintain good weed control. In a trying year like this one, it is good to have a shielded herbicide sprayer so you can go down the row and knock down the weeds without damaging the new green suckers (or replacement parts). Bird netting was applied to some varieties in early August. I have noticed some bird damage this week to LaCresent and Chardonel grapes which were not netted this year. Typically birds are more attracted to the small dark berries. Foch is an example of a typical Bird Magnet. Berry sampling has begun and we will be sampling on a weekly basis and then every other day as we approach maturity. See the article Berry Sampling in this issue.

**Grower Observations:**
Downy mildew is a concern to all growers this year. Not all growers have grapes to protect this year but downy mildew weakens the vine by causing the leaves to drop prematurely with the result of stopping the production carbohydrates which lessens the ability of the vine to survive the winter. A healthy vine is a happy vine, is a potentially more hardy vine going into winter. Frost will eventually cause the leaves to drop but until then, do what you can to extend the production of stored food to the roots via the leaves and the development of the good mature brown wood or periderm. Some growers called and said they are planning of harvesting some varieties such as Seyval in the south this weekend. I wish those of you that have grapes, a happy harvest and those of you who are retraining a better year next year. Remember to contact you local FSA to take advantage of the TAP program.

Please click on the link below to find out your local FSA representative contact information. [http://www.oardc.ohio-state.edu/grapeweb/images/OGEN_31_MARCH_2014(14).pdf](http://www.oardc.ohio-state.edu/grapeweb/images/OGEN_31_MARCH_2014(14).pdf)
Preliminary Phylloxera Results from AARS, Kingsville
by David Scurlock, OSU/OARDC Viticulture Outreach Specialist

A Phylloxera control trial of 8 insecticide treatments, plus a Check (no insecticide application), were applied to a Frontenac vineyard at the Ashtabula Agricultural Research Station in Kingsville, Ohio in May 2014. This experiment was initiated by Dr. Gary Gao, Dave Scurlock and John Elliott. In the spring of 2013, Greg Johns, Manager of The Ohio State University AARS, contacted us to set up a trial in a Frontenac block that was totally infested and devastated with phylloxera. Frontenac is especially sensitive to phylloxera and can be so severely affected that photosynthesis can be reduced and consequently both sugar development and acid reduction or maturity can be extremely impaired. The misshapen leaves resemble 2 4D symptoms with galls added. *See pictures at the end of this article

The treatments are:

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<th>Rate/A</th>
<th>Rate/gal</th>
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<td>0.07</td>
<td>2.1</td>
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<td>May 6</td>
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<td>*Soil Applied at 1qt/vine</td>
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<td>3 Admire Pro</td>
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<td>No insecticide application</td>
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*Soil Applied at bud swell
*Foliar Applied pre-bloom at 7-10 inch shoot growth

The results for 2014 are:
The standard is Danitol applied at 8 to 10 inch shoot growth in the spring. We applied Admire Pro to the soil about 3 weeks ahead of when we thought the shoots would be in the 8 to 10 inch length. Admire Pro is a systemic insecticide and it takes about 3 weeks for it to get into the vine through the roots up to the canopy and back down to the roots. We used 14oz/Acre and 7oz/Acre. The 14oz/Acre is better, we did not see any phylloxera at all but we did have good control with the 7oz/Acre being soil or foliar applied. We applied 1 quart per vine with the soil applied treatment and did not retreat. I think you could apply the soil treatment with a herbicide applicator. All the foliar treatments were applied at 8-10 inch shoot growth and then reapplied 3 weeks later. All treatments worked well. Another effective chemical that can be used to treat for phylloxera is Assail. Apply Assail 30SG at the rate of 2.5oz/Acre and reapply in 2 weeks. If you
have a problem this year I can guarantee you will not next year if you follow the timing of the sprays. *We did add 1% spray penetrant to the Movento insecticide and the penetrant we used was JMS Stylet Oil. Below are a couple of pictures of phylloxera infection on Frontenac.

AARS Frontenac infected by phylloxera Aug 27 2014 Photos by Dave Scurlock
Editor note: The Ohio Fruit Industry has a very long history with the George F Ackerman Company in Curtice, Ohio. We as a farm family would like to express our heartfelt sympathy and prayers to the Ackerman Family. George and Kurt have been long-time equipment suppliers and friends to the Ohio Fruit Industry.

George F. Ackerman
Obituary

OREGON: George F. Ackerman (83) of Oregon, OH passed peacefully into the presence of Jesus Christ on Saturday, August 23, 2014 at his home with his four sons and loving family by his side.

He was preceded in death by his wife Elaine; parents, George and Elsie; daughter, Kay; brothers, Harold and Jim; and sister, Dorothy Bauer. His father George R. died 62 years ago to the day and was instrumental in starting the family farm equipment business in 1939.

George is survived by sons Paul (Kathy), Mark (Debra Ann), Kurt (Beth) and Glen; 11 grandchildren, two great grandsons; and sister, Ruth Cummerow; as well as numerous nephews, nieces and cousins.

George was born on August 20, 1931 at the family farm, Corduroy and Coy Rds. in Oregon. He graduated from Clay High School in 1949 serving as class President and District V.P. of the Ohio Future Farmers of America. On October 10, 1953 George married Elaine Louise Helmke. They were married for over 59 years.

George farmed with his two brothers until 1958. From that point on, he custom sprayed vegetable crops for local farmers and operated the George F. Ackerman Co. on Bury Rd. which sold and serviced specialized fruit and vegetable machinery including spraying, irrigation, harvesting and packing equipment. In 1969 he expanded the business by distributing tomato harvesting and related equipment. The business grew, necessitating a move in 1980 to the current location in Curtice, OH. He served as the company's President until 2006. In 1989 he diversified with the addition of Ackerman Industrial Equipment, doing business as a Nissan forklift dealership. George was well respected by his customers and people associated with the tomato industry in Ohio, Michigan and Indiana. He contributed much to the Mid-America Food Processors Association. He was honored to receive the Tomato Achievement Award by his peers in 1991 which recognized his outstanding service to the tomato industry. He was awarded the...
distinguished H.D. Brown Food Processing Person of the Year award in 1995 as well as awards for distinguished service to the Ohio Vegetable and Potato Growers Association and received Purdue University’s Romanowski award for Cooperation and Excellence to the Mid-America Tomato Industry.

George served on the Board of Directors for the Ohio-Michigan Equipment Distributors Association from 1990-1997 and served as President 1995-1996. He was elected to the Oregon School Board in 1958 and served as President from 1960-1961 and was instrumental in the development of both Fassett and Eisenhower Middle Schools. George was active in the Toledo Swiss Singers and sang in the First St. John Lutheran Church choir for 60 years. George was active in the Oregonians, where he served as a vice-president, and was a past President of the Oregon Chamber of Commerce from 1976-77. George and Elaine established a Clay High School Agricultural Scholarship fund to assist students pursuing careers in agriculture. In 2010 George received the Outstanding Citizen Award from the Curtice Community Club "for setting an example for all of us".

George's entrepreneurial spirit and generosity to his family and community were defining characteristics of his life and will be his legacy. He liked to be the life of the party and had a good sense of humor. He enjoyed bringing people together to see familiar faces and have a good time. He was a great man and will be missed by many.

Special thanks go to George's at-home caregivers and Hospice of NW Ohio who provided excellent care.

Visitation will be held at Eggleston Meinert & Pavley Funeral Home, Oregon Chapel, 440 S. Coy Rd., on Wednesday from 4-8 PM and Thursday from 2-8 PM. Funeral services will be held at First St. John Lutheran Church, 2471 Seaman Rd. in Toledo on Friday at 10:30 AM, where the family will greet friends beginning at 9:30 a.m. Internment will be in the church cemetery. A luncheon will follow.

Memorials in George's memory may be given to First St. John Lutheran Church, The Gideon's International or First Alliance Church. www.eggleston-meinert.com

Cards may be sent to:
George F. Ackerman Family
P.O. Box 157
Curtice, OH 43412
# OSU Grape & Wine Research & Outreach Specialist

Please contact the following Research, Extension/Outreach Specialists, and Educators if you have any questions relating to their respective field of expertise.

<table>
<thead>
<tr>
<th>Name &amp; Address</th>
<th>Contact Information</th>
<th>Area of Expertise &amp; Assistance Provided</th>
</tr>
</thead>
</table>
| Dr. Mike Ellis, Professor  
Dept. Plant Pathology  
224 Selby Hall -- OARDC  
1680 Madison Avenue  
Wooster, OH 44691 | Phone: 330-263-3849  
E-mail: ellis.7@osu.edu  
Website: [www.oardc.ohio-state.edu/fruitpathology/organic/grape/index](http://www.oardc.ohio-state.edu/fruitpathology/organic/grape/index) | Grape diseases and control.  
Recommendation on grape fungicides |
| Dr. Celeste Welty  
Dept. of Entomology  
Columbus, Ohio | Phone: 614-292-2803  
E-mail: welty.1@osu.edu | Fruit and vegetable Insects |
| Dr. Doug Doohan, Professor  
Dept. Horticulture & Crop Science  
205 Gourley Hall – OARDC  
1680 Madison Avenue  
Wooster, OH 44691 | Phone: 330-202-3593  
E-mail: doohan.1@osu.edu  
Website: [www.oardc.ohio-state.edu/weedworkshop/default.asp](http://www.oardc.ohio-state.edu/weedworkshop/default.asp) | Vineyard weeds and control.  
Recommendation on herbicides |
| Dr. Imed Dami, Associate Professor & Viticulture State Specialist  
Dept. Horticulture & Crop Science  
216 Gourley Hall – OARDC  
1680 Madison Avenue  
Wooster, OH 44691 | Phone: 330-263-3882  
E-mail: dami.1@osu.edu  
Website: [oardc.osu.edu/grapeweb/](http://oardc.osu.edu/grapeweb/) | Viticulture research and statewide extension & outreach programs.  
Recommendation on variety selection.  
Imed is the primary research contact of the viticulture program. |
<table>
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<th>Phone</th>
<th>Email &amp; Website</th>
<th>Area of Expertise &amp; Assistance Provided</th>
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</thead>
</table>
| David Scurlock, Viticulture Outreach Specialist  
118 Gourley Hall – OARDC  
1680 Madison Avenue  
Wooster, OH 44691 | 330-263-3825 | E-mail: scurlock.2@osu.edu  
Website: oardc.osu.edu/grapeweb/ | Evaluation of site suitability for vineyard establishment and all aspects of grape production practices in northern Ohio. David is the primary extension contact of the viticulture program |
| Todd Steiner, Enology Program Manager & Outreach Specialist  
Dept. Horticulture & Crop Science  
118 Gourley Hall – OARDC  
1680 Madison Avenue  
Wooster, OH 44691 | 330-263-3881 | E-mail: steiner.4@osu.edu  
Website: oardc.osu.edu/grapeweb/ | Commercial wine production, sensory evaluation, laboratory analysis/setup and winery establishment. Todd is the primary research and extension contact of the enology program |
| Dr. Gary Gao, Small Fruit Specialist and Associate Professor, OSU South Centers  
1864 Shyville Road, Piketon, OH 45661  
OSU Campus in Columbus  
Room 256B, Howlett Hall, 2001 Fyffe Ct  
Columbus, OH 43201 | 740-289-2071 ext.123  
Fax: 740-289-4591 | E-mail: gao.2@cfaes.osu.edu  
Website: http://southcenters.osu.edu/ | Viticulture Research and Outreach, VEAP visits in southern Ohio, vineyard management practices, soil fertility and plant nutrition, fruit quality improvement, variety evaluation, table and wine grape production |
| Greg Johns, Station Manager  
Ashtabula Agricultural Research Station  
2625 South Ridge Road  
Kingsville, OH 44048 | 440-224-0273 | E-mail: johns.1@osu.edu  
Website: www.oardc.ohio-state.edu/branches/branchinfo.asp?id=1 | Winegrape production in Northeast Ohio, especially vinifera varieties |
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</table>
| David Marisson, County Extension Director, Associate Professor & Extension Educator, OSU Extension-Ashtabula County 39 Wall Street Jefferson, Ohio 44047 | 440-576-9008 Ext. 106 | E-mail: marrison.2@osu.edu  
Website: ashtabula.osu.edu | Vineyard and winery economics, estate planning and Extension programs in Northeast Ohio |