

Wine-Grower-News #383

5-3-18

Midwest Grape & Wine Industry Institute: <https://www.extension.iastate.edu/wine/>

Vineyard Pest Management Resource Issue

Pesticides and Pest Management (17 resources)

Grape Pest Identification (23 resources)

Wildlife Control (6 resources)

Pesticide Drift Management (22 resources)

Pesticide Regulation & Safety (13 resources)

Sprayer Calibration & Operation (10 resources)

Tank Mixing Pesticides (6 resources)

Sprayer Cleanout (3 resources)

Spray Nozzle Companies & Catalogs (8 resources)

Sustainable Viticulture (13 resources)

Organic Viticulture (24 resources)

Biodynamic Viticulture (6 resources)

Weather (16 resources)

USDA Cooperative Extension Search Engine



Pesticides and Pest Management

1. *2018 Midwest Fruit Pest Management Guide* 180 pp., Purdue Extension:
Free PDF, \$15 hardcopy: <https://store.extension.iastate.edu/product/14488>
2. *Midwest Small Fruit Pest Management Handbook*, Purdue Extension: 210 pp.:
<http://extension.missouri.edu/sare/documents/MidwestSmallFruitPestManagement2012.pdf>
3. *2018 Michigan Fruit Management Guide*, MSU Extension, approx. 275 pp. hardcopy only.
\$30: https://shop.msu.edu/product_p/bulletin-e0154.htm
5. *2018 New York and Pennsylvania Pest Management Guidelines for Grapes*, Cornell & Penn State Extension, \$31 online or \$43 hardcopy:
<https://store.cornell.edu/c-875-pmep-guidelines.aspx>
6. *2018 Pest Management Guide for Horticulture & Forest Crops*, 341 pp. Virginia Tech.
Free PDF, \$15 for hardcopy. (the grape section is 26 pages):
<http://pubs.ext.vt.edu/456/456-017/456-017.html>
7. *2018 Pest Management Guide for Winegrapes in Oregon*, Oregon State Univ. 43 pp.:

<https://catalog.extension.oregonstate.edu/em8413>

8. *2018 Pest Management Guide for Winegrapes in Washington*, WSU Extension, 64 pp.: Free PDF, \$9.50 hardcopy: <https://pubs.wsu.edu/ItemDetail.aspx?ProductID=13362>
9. *Developing an Effective Fungicide Spray Program for Wine Grapes*, 13 pp. 2018, Ohio State Univ.: <http://www.oardc.ohio-state.edu/fruitpathology/organic/PDF/OSU-Organic-Grape-Diseases.pdf>
10. *2016 Compendium of Herbicide Adjuvants, Purdue & Southern IL Universities*, 76 pp.: Free PDF: <https://ppp.purdue.edu/wp-content/uploads/2016/11/PPP-115.pdf>
11. *Pesticide Resistance Action Groups*:
Fungicides (FRAC): <http://www.frac.info/> Herbicides: (HRAC): <http://www.hracglobal.com/>
Insecticides (IRAC): <http://www.irac-online.org/>
12. *Pesticide Labels and MSDS sheets*: <http://www.cdms.net/LabelsMsds/LMDefault.aspx>
13. *Pesticide Environmental Stewardship Organization*: <https://pesticidestewardship.org/>
14. *Virginia Tech Grape Disease Updates* by Dr. [Mizuho Nita](http://grapepathology.blogspot.com/)
<http://grapepathology.blogspot.com/>
15. *Example Conventional Grape Spray Guide Worksheets*, Univ. of Kentucky, 3 pp.: <http://plantpathology.ca.uky.edu/files/ppfs-fr-s-20.pdf>
16. “TracGrape” *Vineyard Spraying Records Excel Spreadsheet Software*, \$60, Cornell Extension: <https://store.cnl.cornell.edu/collections/tracfruit/products/tracgrape>
17. *VineSmith Pesticide Guide*: (Now \$45, Best commercial vineyard pesticide guide posters on the market.) Very Good! <http://www.vinesmith.com/>

Grape Pest Identification

1. *Grape IPM Guide for Minnesota Producers*, 65 pp. University of Minnesota: <http://fruit.cfans.umn.edu/files/2012/08/Grape-IPM-Guide.pdf>
2. *4. A Pocket Guide for Grape IPM Scouting Grapes in North Central & Eastern U.S.*, \$20: http://shop.msu.edu/product_p/bulletin-e2889.htm
3. *The Vineyard Advisor phone App for (disease, insect & weed rec's from TX Tech & TX A& M)*: [iTunes App Store \(iPhone\)](#) [Google Play \(Android\)](#)
4. *Grapes e-Xtension (search engine)*: http://articles.extension.org/category/grapes_27
5. *Truck Disease Project (USDA, USDA-ARS & several Universities)*: <http://treeandvinetrunkdiseases.org/>
6. *Cornell University's Grape IPM Resources*: <https://blogs.cornell.edu/grapes/ipm/>

7. *North Central IPM Grape Guide*, 107 pp.:
<http://www.ipmcenters.org/pmsp/pdf/NorthCentralGrapePMSP.pdf>
8. *Grape IPM Plan for the Northeast U.S.* 92 pp.:
<https://ipmdata.ipmcenters.org/documents/pmsps/Grape-PMSP-for-Northeast-2017.pdf>
9. *Weed Science Society of America*: <http://wssa.net/>
10. *Iowa State University Weed Science*:
<http://www.weeds.iastate.edu/mgmt/qtr97-1/weedid.htm>
11. *University of Missouri Weed ID guide*: <https://weedid.missouri.edu/>
12. *University of Missouri Weed ID phone App*:
https://play.google.com/store/apps/details?id=com.extension.idweeds&hl=en_US
13. *Ohio State University list of weed ID sites*:
<https://u.osu.edu/osuweeds/weed-id/websites/>
14. *American Plant Pathology Society*: <http://www.apsnet.org/Pages/default.aspx>
15. *Grape Disease Identification*, 48 pp. Syngenta:
<http://www.syngentacropprotection.com/prodrender/imagehandler.ashx?imid=8534ba41-bf17-4214-a3ec-94eef252d17&fty=0&et=8>
16. *Texas Grape Disease Handbook*, Texas A & M:
<https://plantdiseasehandbook.tamu.edu/food-crops/fruit-crops/grape/>
17. *American Entomology Society*: <https://www.entsoc.org/>
18. *BugGuide*: <https://bugguide.net>
19. *Grape Insect Pests of the Home Garden*, University of Minnesota:
<https://www.extension.umn.edu/garden/insects/find/grape-insect-pests-of-the-home-garden/>
20. *Grape Insects*, Washington State University:
<http://wine.wsu.edu/extension/grapes-vineyards/grape-pests/>
21. *Grape Insects*, Michigan State University: http://www.ipm.msu.edu/grape_insects
22. *Grape Insects*, University of California IPM:
<http://ipm.ucanr.edu/PMG/selectnewpest.grapes.html>
23. *2015 Grape IPM Guide for Nova Scotia*, Nova Scotia Extension, 23 pp.:
<http://www.perennia.ca/wp-content/uploads/2016/04/2015-grape-guide.pdf>



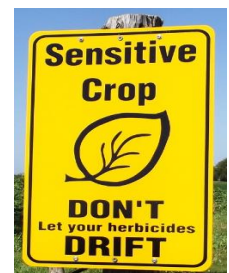
Wildlife Control

1. *The Handbook: Prevention & Control of Wildlife Damage*, University of Nebraska-Lincoln:
<https://digitalcommons.unl.edu/icwdmhandbook/>

2. Internet Center for Wildlife Damage Management: <http://icwdm.com/>
3. USDA-APHIS National Wildlife Research Center:
<https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/programs/nwrc>
4. Living with Wildlife in Illinois, University of Illinois: <http://web.extension.illinois.edu/wildlife/>
5. Late Season Bird & Deer Control in Vineyards, eXtension:
<http://articles.extension.org/pages/31612/late-season-bird-and-deer-control-in-vineyards>
6. ISU Extension & Outreach Problem Wildlife homepage:
<https://www.nrem.iastate.edu/wildlife/problem-wildlife>

Pesticide Drift Management

1. FieldWatch / DriftWatch sensitive crop registry: <http://www.fieldwatch.com/>
2. Northern Grapes Project Vineyard Herbicide Drift webinar, 11-3-12:
<http://northerngrapesproject.org/northern-grapes-webinar-series/herbicide-drift-webinar-resources>
3. Factors Affecting Pesticide Drift, ISU Extension, 2 p.:
<https://store.extension.iastate.edu/product/12933>
4. Selecting the Correct Nozzle to Reduce Spray Drift, 4 p.:
<https://store.extension.iastate.edu/product/2449>
5. Watch out for GRAPES, Purdue Extension, 2 pp.:
<https://ppp.purdue.edu/wp-content/uploads/2016/08/DW-10-W.pdf>
6. Options for Dealing with a Pesticide Drift Incident, Purdue Extension,
2 pp. brochure: <https://ppp.purdue.edu/wp-content/uploads/2016/08/PPP-110.pdf>
7. Reducing 2,4-D and Dicamba Drift Risk to Fruits, Vegetables and Landscape Plants,
1/2016 Ohio State Extension: <http://ohioline.osu.edu/factsheet/hyg-6105>
8. Using Buffers to Reduce Pesticide Drift & Wind Erosion, Pesticide Stewardship Org:
<https://pesticidestewardship.org/pesticide-drift/using-buffers-to-reduce-pesticide-drift-and-wind-erosion/>
9. Protecting Oklahoma's Vineyards from Phenoxy Drift: OK Dept. of Ag, 2 p. brochure:
<http://www.oda.state.ok.us/forms/cps/grapebroc.pdf>
10. Questions & Answers about Vineyard Injury from Herbicide Drift, KSU, 2 p.:
<http://www.bookstore.ksre.ksu.edu/pubs/mf2588.pdf>
11. Avoiding Phenoxy Herbicide Damage to Grapes, 3 p. Ed Hellman, TX A&M Extension:
<http://agrilife.org/winegrapes/files/2015/11/phenoxy1.pdf>
12. Preventing Herbicide Drift and Injury to Grapes, 7 pp. Oregon State Extension:
<https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/em8860.pdf>



13. *Avoiding Injury to Grapes from Off Target Herbicide Exposure*, Maryland Extension, 2 p.:
<https://extension.umd.edu/sites/extension.umd.edu/files/docs/programs/viticulture/TVHerbicideExposure.pdf>
14. *Protecting Pesticide Sensitive Crops*, Univ. of Nebraska Extension, 4 p.:
<http://extensionpublications.unl.edu/assets/pdf/g2179.pdf>
15. *Phenoxy Herbicide, 2,4-D Injury Symptoms*, Michigan State University Extension:
http://msue.anr.msu.edu/uploads/files/Physiological_PDFs/PhenoxyHerbicideInjury.pdf
16. *Vineyard Drift Monitoring – Leaf Index* WA Assn. of Wineries & Grape Growers:
http://wawgg.org/drift-monitoring_29.html
17. *Physical & Chemical Disorders of Grapes*, Michigan State University Extension:
https://www.canr.msu.edu/grapes/integrated_pest_management/physiological-chemical-disorders
18. *Herbicide Injury Diagnostic Key*, University of Wisconsin Extension:
<http://fyi.uwex.edu/weedsci/herbicide-injury-diagnostic-key/>
19. *Response of Wine Grape Cultivars to Simulated Drift Rates of 2,4-D, Dicamba, and Glyphosate, and 2,4-D or Dicamba Plus Glyphosate*, 9/2016, Ohio State Extension:
<http://www.bioone.org/doi/pdf/10.1614/WT-D-15-00106.1>
20. *Practical Farmers of Iowa Pesticide Drift Brochure*, 2 p.:
<http://practicalfarmers.org/app/uploads/2014/06/Drift-Brochure-1.pdf>
21. *Practical Farmers of Iowa list of private labs that can do pesticide residue testing*:
<http://practicalfarmers.org/app/uploads/2016/04/Labs92315.pdf>
22. *Herbicide Drift: What to Do*, Missouri Grape & Wine Institute:
<http://gwi.missouri.edu/grape-growers/ipm-reports/herbicide-drift.pdf>

Pesticide Regulation & Safety

1. *National Pesticide Information Center – Safe Use of Pesticides*, OR State University:
<http://npic.orst.edu/health/safeuse.html>
2. *Searchable U.S. map of state pesticide agencies*, National Pesticide Information Center:
http://npic.orst.edu/reg/state_agencies.html
3. *Environmental Protection Agency*: <https://www.epa.gov/>
4. *EPA Worker Protection Standard*:
<https://www.epa.gov/pesticide-worker-safety/agricultural-worker-protection-standard-wps>
5. *EPA Worker Pesticide Safety for workers and handlers*:
<https://www.epa.gov/pesticide-worker-safety/safety-training-pesticide-workers-and-handlers>
6. *Worker Protection Standard Respiratory Protection Guide – 44 pp.*:
<http://pesticideresources.org/wps/hosted/PERC-WPS-Respirator-Guide.pdf>

7. ISU Extension Worker Protection Standard (WPS) information. FREE online Worker Training and Trainer training: <https://www.extension.iastate.edu/psep/WorkerProtect.html>
8. American Association of Pesticide Safety Educators: <https://aapse.wildapricot.org/>
9. Pesticide Educational Resources Collaborative, (PERC)
<http://www.pesticideresources.org/>
10. National Pesticide Applicator Certification Core Manual, 253 pp.:
<http://www.ag.utah.gov/documents/CoreManual.pdf>
11. U.S. National Agricultural Health Study: <https://aghealth.nih.gov/>
12. ISU Extension Pesticide Safety Program:
<https://www.extension.iastate.edu/psep/>
13. Pesticides & Personal Protective Equipment, 36 pp. Purdue Extension:
<https://www.extension.purdue.edu/extmedia/ppp/ppp-38.pdf>



Sprayer Calibration & Operation

1. *Effective Vineyard Spraying, 2nd Edition or Effective Orchard Spraying* by Dr. Andrew Landers of Cornell University, \$60 each book: <http://effectivespraying.com>
2. Dr. Andrew Landers “Pesticide Application Technology” homepage, Cornell Univ.
<http://web.entomology.cornell.edu/landers/pestapp/>
3. *Airblast 101 – A Handbook of Best Practices in Airblast Spraying*, 207 pp. Jason Deveau, Ontario Ministry of Agriculture: <http://sprayers101.com/tag/airblast101/>
4. *Airblast Sprayer Calibration Resources*, Penn State University Extension:
<http://extension.psu.edu/pests/pesticide-education/applicators/air-blast-sprayer-calibration-information>
5. *Airblast Sprayer Calibration*, University of Kentucky Extension:
<http://www.uky.edu/hort/sites/www.uky.edu.hort/files/documents/calibration.pdf>
6. *Calibration of Boom Sprayers*, Kansas State University Extension:
<http://web.extension.illinois.edu/psep/facts/calibration/mf2894.pdf>
7. *Small Hand Sprayer Calibration*, Iowa State University Extension & Outreach:
<http://www.extension.iastate.edu/Publications/PM1271.pdf>
8. *Sprayer Calibration and Pesticide Mixing phone App*, Clemson University Extension:
<http://www.clemson.edu/extension/mobile-apps/>
9. *Sprayer Calibration Nozzle Selection phone APP* from Studio Noframe:
https://play.google.com/store/apps/details?id=it.farmis.apps.sprayercalibrator&hl=en_US

10. The Golden Formula for Sprayer Calibration

$$\text{GPM} = \frac{\text{GPA} \times \text{MPH} \times \text{W}}{5,940}$$

$$\text{GPA} = \frac{5,940 \times \text{GMP}}{\text{MPH} \times \text{W}}$$

$$\text{MPH} = \frac{\text{Feet Traveled}}{\text{Seconds}} \times \frac{60}{88} \quad \text{or} \quad \frac{60}{\text{Seconds to travel } 88'}$$

Where: GMP = Gallons/Minute/Nozzle
GPA = Gallons/Acre
MPH = Miles/Hour
W = Nozzle Spacing in Inches
or = $\frac{\text{Row Spacing Inches}}{\text{\# Nozzles per Row}}$

Tank Mixing Pesticides

1. *Preparing Pesticide Tank Mixes*, University of Illinois Extension, 2 p.:
https://web.extension.illinois.edu/psep/facts/calibration/preparing_tank_mixes.pdf
2. *Factors to Consider before Tank Mixing Pesticides*, Univ. of California Extension, 3 p.:
<http://horticulture.oregonstate.edu/system/files/onn050305.pdf>
3. *Tank Mixing Order and Jar Test, Sprayers 101*: <https://sprayers101.com/tankmix/>
4. *Impact of Water Quality on Pesticide Performance*, 38 pp. Purdue Extension:
<https://www.extension.purdue.edu/extmedia/ppp/ppp-86.pdf>
5. *Water Temperature and Herbicide Performance*, 8 pp. Purdue Extension:
<https://ppp.purdue.edu/wp-content/uploads/2017/02/PPP-112.pdf>
6. *Mix Tank phone App from Precision Laboratories (mix order sheets, spray logs, nozzle selection, labels, mixing precautions & more)*:
<http://www.precisionlab.com/agriculture/products/mix-tank-app-agriculture-mixing-sequence-iphone-android>

Sprayer Cleanout

1. *Sprayer Clean-out Guidelines, Iowa State University Extension*:
<http://www.weeds.iastate.edu/reference/pat30.pdf>
2. *Removing Herbicide Residues from Herbicide Application Equipment, Purdue Extension*:
52 p., 8/2015 https://www.edustore.purdue.edu/item.asp?Item_Number=PPP-108
3. *Cleaning Pesticides from Agricultural Spraying Equipment, 26 slide 2015 PowerPoint NDSU*: <https://www.extension.umn.edu/agriculture/ag-professionals/cpm/2015/docs/2015-hofman.pdf>

Spray Nozzle Companies & Catalogs

1. *Delavan*: <http://www.delavanagspray.com/>

2. *Fimco Spray tips*: http://www.fimcoindustries.com/education_spray_tips.html
3. *Greenleaf Technologies*: <http://www.greenleaftech.com/>
4. *Hypro Spray Nozzles*: <https://hypro.pentair.com/en>
5. *John Deere Spray Nozzles*:
https://www.deere.com/en_US/parts/parts_by_industry/ag/sprayer/spray-nozzles.page
6. *Lechler*: <http://www.lechlerusa.com/>
7. *Spraying Systems Company*: <http://www.spray.com/>
8. *TeeJet Technologies*: <http://www.teejet.com/index.shtml>



Sustainable Viticulture

1. *Sustainable Agriculture Research Extension (SARE)*: <https://www.sare.org/>
2. *USDA Sustainable Agriculture*:
<https://nifa.usda.gov/program/sustainable-agriculture-program>
3. *California, Lodi Rules for Sustainable Winegrowers*: <http://www.lodigrowers.com/>
4. *California Sustainable Grape Growing Alliance*:
<http://www.sustainablewinegrowing.org/>
5. *Long Island Sustainable Winegrowing (LISW)*: <http://www.lisustainablewine.org/>
6. *New York, Cornell University - Vine Balance*:
http://www.vinebalance.com/sustainable_viticulture.php
7. *Ontario Sustainable Viticulture*: <http://www.grapegrowersofontario.com/1052>
8. *Oregon Live, Sustainable Winegrowers*: <https://livecertified.org/>
9. *Salmon Safe – Oregon*: <https://www.salmonsafe.org/getcertified/vineyards>
10. *Sustainability in Practice (SIP)*: <http://www.sipcertified.org/>
11. *Virginia Vineyards Association*:
<http://www.virginiavineyardsassociation.com/sustainability-guide/>
12. *Washington Association of Wine Grape Growers*:
Winery Wise: <http://www.winerywise.org> *Vine Wise*: <http://www.vinewise.org/>
13. *Washington State University – Juice Grape Sustainability Report Card*:
<https://pubs.wsu.edu/ListItems.aspx?Keyword=em085>

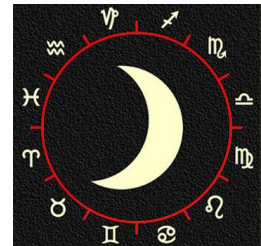
Organic Viticulture

1. *Washington State University Organic Viticulture Resources:*
<http://wine.wsu.edu/research-extension/grape-growing/organic/>
2. *ATTRA has an excellent organic grape production guide here, \$3.95 digital, \$6.95 print copy, 44 pp.:* <https://attra.ncat.org/attra-pub/summaries/summary.php?pub=5>
3. *Organic Risk Mgt. Crops Manual, Univ. of MN:* <http://www.organicriskmanagement.umn.edu/>
4. *Organic Transition: A Business Planner for Farmers, Ranchers & Food Entrepreneurs, 180 pp, 2017 SARE:* <https://www.sare.org/Learning-Center/Books/Organic-Transition>
5. *Sources of Organic Fertilizers & Amendments, ATTRA:*
https://attra.ncat.org/attra-pub/org_fert/
6. *Whole-farm Impact of Converting Conventionally Managed Eastern Vineyards to Organic Management Practices, 1990 to 1994 SARE.org research report:*
http://mysare.sare.org/sare_project/LNE90-020/?page=final
7. *National Organic Materials Review Institute:* <http://www.omri.org/>
8. *National Organic Program USDA homepage:* <http://www.ams.usda.gov/nop/>
9. *USDA NRCS organic resources (Includes info on EQUIP Organic cost share program)*
https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/organic/?cid=nrcs143_023940%20
10. *USDA National Organic Farming Handbook, 43 pp.:*
<https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=39107.wba>
11. *Iowa Department of Ag Organic Certification Program:*
<http://www.iowaagriculture.gov/AgDiversification/organicCertification.asp>
12. *ISU Organic Agriculture Extension Program:* <http://extension.agron.iastate.edu/organicag/>
13. *Commercial Book: The Grape Grower – A Guide to Organic Viticulture by Lon Rombough, 290 pp. \$41 plus shipping:* <http://www.bunchgrapes.com>
14. *Learning Material on Organic Farming in Europe (put “Viticulture” in search box):*
http://wiki.organic-edunet.eu/index.php/Main_Page
15. *Organic ePrints – International Organic Farming Search Portal. (put “Viticulture” in search box):* <http://orgprints.org/>
16. *Organic Winegrowing Manual, 2011 McGourty, Ohmart & Chaney – UC Davis, \$35, 192 pp.:* <http://anrcatalog.ucanr.edu/Items.aspx?search=organic%20grape>
17. *Northeast Organic Network Cornell Univ.:* <http://www.neon.cornell.edu/training/resources.html>
18. *Midwest Organic & Sustainable Education Service (MOSES):* <http://mosesorganic.org/>

19. *Organic Fruit Growers Association*: <http://organicfruitgrowers.org/>
20. *Rodale Institute*: <http://rodaleinstitute.org/>
21. *Weed Control in Organic Grape Production*, 33 pp, North Carolina State Univ.:
<https://cefs.ncsu.edu/wp-content/uploads/weedmgmtjan808accessible.pdf?x47549>
22. *2013 Production Guide for Organic Grapes, Double A Vineyards*:
<https://doubleavineyards.com/kb/articles/2013-production-guide-for-organic-grapes/>
23. *Organic Grape & IPM Production Guide*, 44 pp. Cornell University Extension:
<https://ecommons.cornell.edu/handle/1813/42888>
24. *Disease Control Considerations in Organic Grape Production*, 3 pp. Michigan State University,: <http://www.isaacslab.ent.msu.edu/grapescout/meetings/organic.pdf>

Biodynamic Viticulture

1. *Demeter Biodynamic Certification*: <http://www.demeter-usa.org/>
2. *Biodynamic Association*: <https://www.biodynamics.com/>
3. *Earth Legacy Organization* (source of Biodynamic preparations):
<http://www.earthlegacyagriculture.com/>
4. *Michael Fields Agricultural Institute*: <http://michaelfields.org/>
5. *Josephine Porter Biodynamic Preparations*: <https://www.jpibiodynamics.org/>
6. [Sample Costs to Produce Biodynamic Wine Grapes](#), 29 pp., 2016, UC Davis Extension:



Weather

1. The American Meteorology Society: <https://www.ametsoc.org/>
2. *The National Weather Service*: <https://www.weather.gov/>
3. *ISU Environmental Mesonet*: <https://mesonet.agron.iastate.edu/>
4. *Midwest Climate Watch*: <http://mrcc.isws.illinois.edu/cliwatch/curclim.html>
5. RFD TV Weather Resources: <http://www.rfdtv.com/category/278590/weather-resources>
6. *The Weather Underground*: <https://www.wunderground.com/>
7. *The Weather Channel*: <https://weather.com/>
8. USA Today Weather: <https://www.usatoday.com/weather/>



9. Intellicast: <http://www.intellicast.com/>

10. Network for Environmental & Weather Applications (NEWA):
<http://newa.cornell.edu/>



11. USPest.org, Oregon State University: <http://pnwpest.org/>

12. U.S. Growing Degree Day Calculator by region or state, Oregon State University:
<http://pnwpest.org/cgi-bin/usmapmaker.pl>

13. U.S. Drought Monitor: <http://droughtmonitor.unl.edu/>

14. USDA National Phenology Network: <https://www.usanpn.org/data/visualizations>

15. U.S. Precipitation Forecast Map, The Weather Channel:
<https://weather.com/maps/usprecipitationforecast>

16. U.S. Frost/Freeze Outlook Maps, Intellicast:
<http://www.intellicast.com/National/Temperature/FrostFreeze.aspx>



<https://search.extension.org/>

Circulation to recipients in AZ, CA, CO, CT, DE, FL, GA, OH, OK, IA, IN, IL, KS, KY, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, NY, OK, OR, PA, SD, TX, VA, VT, WA, WA DC, WI, Australia, Brazil, Canada, Chile, France, India, Norway, Pakistan, Spain, Sweden, Turkey & U.K.

Michael L. White – [CCA](#), [CPAq](#), [CSW](#)
ISU Extension & Outreach Viticulture Specialist
909 East 2nd Ave. Suite E, Indianola, IA 50125
off/cell: 515-681-7286, fax: 515-961-6017
[Midwest Grape & Wine Industry Institute](#)
Subscribe to [ISU Wine Grower News](#)
[Facebook](#) [Twitter](#) [YouTube](#)

To Subscribe to this FREE e-mail newsletter, just include the word "subscribe" in the Subject Line. **To Unsubscribe** Please reply with the word "unsubscribe" in the Subject Line.

Iowa State University Extension and Outreach does not discriminate on the basis of age, disability, ethnicity, gender identity, genetic information, marital status, national origin, pregnancy, race, religion, sex, sexual orientation, socioeconomic status, or status as a U.S. veteran. (Not all prohibited bases apply to all programs.)
Inquiries regarding non-discrimination policies may be directed to Ross Wilburn, Diversity Officer, 2150 Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, 515-294-1482, wilburn@iastate.edu.