



NORTHEAST HOP ALLIANCE

NEWSLETTER

June 2019

In This Issue

Flooding Information...1
Hops Fertility and Nutrients...1-4
Powdery Mildew Sampling...5
Contact Info...5

FLOODING INFORMATION:

Much of the Mid-Atlantic and Northeast have already seen a great deal of rainfall this Spring and as the summer continues, it is predicted there may remain a good deal of flooding. The following link at NY EDEN's resources for flooding could be helpful if you are impacted by storms or what they see for the weeks ahead:

<http://eden.cce.cornell.edu/disasters/Pages/Floods.aspx>

FOCUS OF THIS ISSUE from steve miller, Editor

HOPS FERTILITY AND NUTRIENT ANALYSIS

Hop fertility is important to maximize yield because the plants put on a huge leaf and cone load in such a short time. Depending on how, when, and the quantity and formulation of nitrogen you have applied, much of it may have leached beyond the root zone for hops. The following information from Michigan State Extension and the 2019 Michigan Hop Management Guide should be valuable to help determine how much the crop might still need and how to sample for that now. Both can be found on line. Keep in mind that the Guide is for Michigan and differences in latitude and climate could effect what your results might be. Also pesticide recommendations for Michigan are just that, for Michigan. Please follow the recommendations from your own state as not all pesticides for hops are labeled in every state.

Please follow this link to USA hops for info on hop fertility.

<https://www.usahops.org/cabinet/data/9.pdf>

Also, Rob Serrine's factsheet in this issue on fertility testing should encourage you to either continue with a testing program or begin one now to build up your data base for your farm. Petiole samples should be collected now and mailed to a tissue testing laboratory, after obtaining and completing the correct form. Forms can be found using the links under each laboratory.

steve miller can be reached via Email at hops.educator@gmail.com

The Importance of Testing Hop Fertility

Petiole testing can help growers dial in plant nutrient needs.

July 5, 2016 - Author: [Rob Serrine, Michigan State University Extension](#)

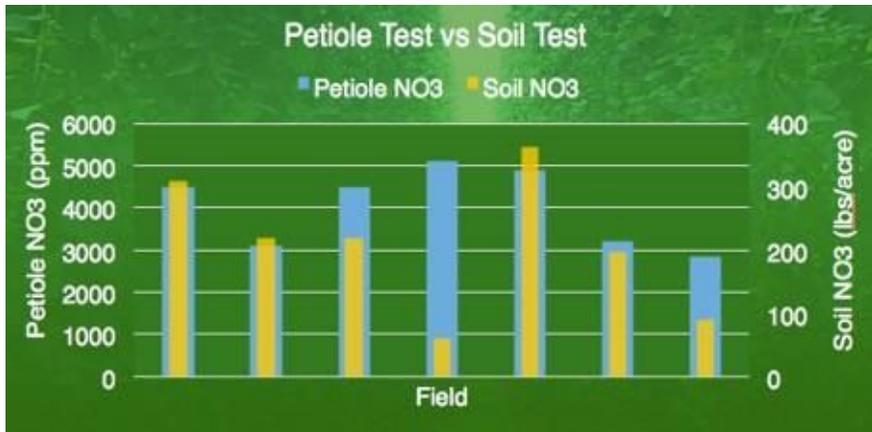


Figure 1. A comparison of petiole vs. soil nitrate levels for hops. Source: Sara Del Moro, 2014 Great Lakes Hop & Barley Conference.

While it is advisable to soil sample each year to determine soil nutrient levels, there is no guarantee that the nutrients present are available for uptake by the hop plant (See Figure 1).

In addition to annual soil tests, tissue testing is a recommended method for determining plant nutrient needs and to help detect potential deficiencies. Hop petioles from mature leaves (5–6 ft. off the ground) should be collected just prior to the plant reaching the wire (likely early July in Northwest Michigan). Petioles should be sent to a tissue-testing laboratory such as the [Michigan State University Soil and Plant Nutrient Lab](#), for nutrient analysis. N,P,K and Magnesium, Calcium, Sodium, Sulfur, Zinc, Copper, Boron, Iron, and Manganese should be measured. If results show deficiencies, foliar nutrients may be applied at that time or granularly applied throughout the year. Figure 2 represents an example of hop petiole complete tissue analysis with low-optimum-high nutrient level ranges. To convert from ppm to lbs/acre multiply ppm x 2 and vice versa (ppm x .5 = lbs/ac).

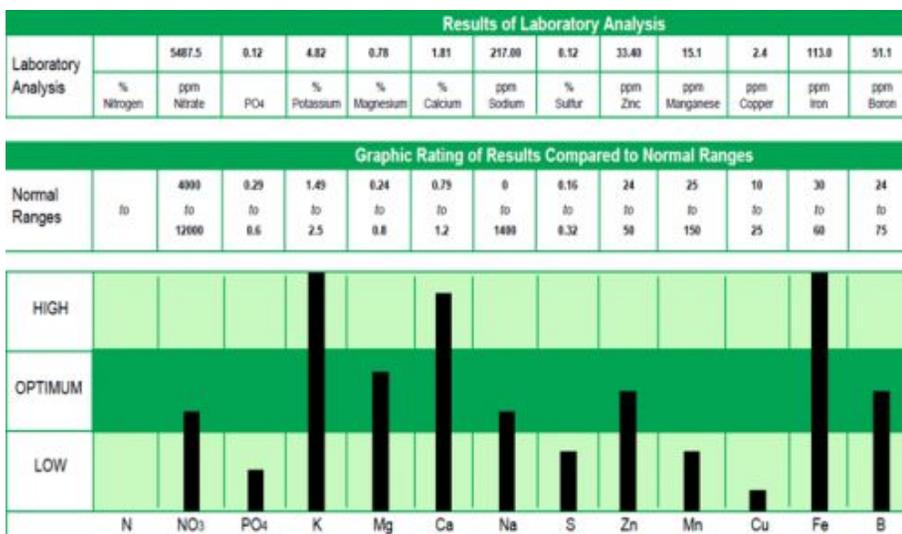


Figure 2. Hop petiole test result examples for macro and micronutrients. Source: Sara Del Moro, 2014 Great Lakes Hop & Barley Conference

This article was published by [Michigan State University Extension](#). For more information, visit <http://www.msue.msu.edu>. Please continue to visit [Michigan State University Extension's hop webpage](#) or the [MSU Hops News Facebook](#) site for up to date information.

Nutrient Management Considerations

As hops reach technical maturity in August and September, prior to dormancy more carbohydrates are produced than are needed for growth; excess carbohydrates are directed toward the rootstock in preparation for the following growing season. As hops break dormancy, they rely solely on carbohydrate reserves until photosynthesis commences with the period of vegetation. For optimum production, supplemental nutrition is necessary at this time¹. Because fertility requirements can be cultivar-specific and each growing season can vary, growers are encouraged to collect soil and petiole/leaf samples each year to optimize plant nutrition, growth, and yield. Nitrogen (N) While hops require macro and micro-nutrients, because of the rapid growth characteristics of the hop plant, effectively managing nitrogen fertility is particularly important. Nitrogen fertilizer is available in many different forms and growers should consult closely with their chosen soil testing lab to optimize N fertility. Nitrogen is an essential plant nutrient required for optimum cone production. The nitrogen replacement value, or the amount needed to replace what has been taken up by the plant biomass for fully-grown bines, is approximately 110 lbs/ac/year (cones-45 lbs/ac, crop residue-65 lbs/ac). By the end of July, hops have generally accumulated 80-150 lbs of N/ac². Depending upon site-specific characteristics like soil quality and management practices (fertilizer type, application method, cultural practices, etc.), the nitrogen use efficiency (NUE) for hops is roughly 65 percent³. This suggests that roughly thirty-five percent of the actual nitrogen applied is not taken up by the hop plant, but is instead lost to the environment; usually through leaching or volatilization. If the replacement value is 110 lbs/ac/yr and only 65 percent is taken up by the hop plant, then producers should be applying ~170 lbs of actual N/ac/yr. This does not account for additional N inputs such as compost, plant residue, N-fixing leguminous cover crops, nor for the method or timing of nitrogen application. Nitrogen that is banded into the hop rows in one spring application, prior to the optimum period of uptake, is likely lost at a higher rate than liquid nitrogen fertigated on a daily basis throughout the primary vegetative growth period from late May- early July. Hop sites on sandy soils have low soil organic matter levels and may need to apply the higher rate of nitrogen to optimize growth. Based on average Michigan conditions, it is recommended that hop growers apply 150- 200 lbs of actual N/acre/yr to mature hop plants (See Figure 2, which shows 185 lbs/ac/yr). Baby hops require less Nitrogen ~ 75lbs/ac/yr. Near the end of June, internode length should measure around 8 inches in length. If length is less than 8 inches, growers need to increase N. If greater than 8 inches, growers should back off on N. At the same time, growers should calculate cumulative lbs. of actual N applied YTD. It should be around 150 lbs. by the end of June when plants begin to transition from vegetative to reproductive growth. If the early summer has been overly wet and growers have not had the opportunity to fertigate this amount, granular N should be band applied and lightly tilled. Nitrogen needs may differ depending upon cultivar vigor and disease susceptibility. Vigorous cultivars may need less N, while weaker cultivars may need more N over the course of the season. Verticillium wilt may be more severe with excessive N application. For organic options growers can continue with composted manure and should account for this N when developing their seasonal N budgets, but should be diligent about not over applying Phosphorous. Other organic options include granular products like Nature safe 13-0-0, feathermeal, and blood or bone meal that should be applied in early spring. Cover crops can also provide significant quantities of N, but cover crops must be tilled in for N to be released. For more information on cover crops please review, *Managing Cover Crops Profitably*, 3rd ed. Via the SARE (Sustainable Agriculture Research and Education) learning center at www.sare.org/Learning-Center.

¹Gingrich, G., J. Hart, and N. Christensen. 2000. *Fertilizer Guide: Hops*. FG 79. Oregon State University, Corvallis, OR.
²Sullivan, D.M., J.M. Hart, and N.W Christensen. 1999. *Nitrogen Uptake and Utilization by Pacific Northwest Crops*. P.10.

³Neve, R.A. 1991. *Hops*. London: Chapman and Hall.

Nutrient Analysis Services

The Cornell Nutrient Analysis Lab can analyze your hops leaves for nutrients such as total nitrogen, carbon, phosphorus, potassium, calcium, magnesium sulfur, iron, manganese, boron, copper, zinc, molybdenum, cobalt and heavy metals such as arsenic, cadmium and lead. The cost is \$25.00. They will also take sample extract out the fluid for the analysis of nitrate and ammonia at no additional cost at this time.

They will provide you with both your personal test results and what the normal values should be. You may need to provide this information to a consultant who can best advise you on what amendments you need to make to your fertilizer applications.

Submit to the lab a quart zip lock bag full of leaves. Let them know if the sample is from new growth at vegetative stage prior to bloom or new growth at reproductive stage and full flower. Samples should be labeled with consecutive numbers 1 through to the end. If you email the key code, they will include it with the report. The email is mar9@cornell.edu

More information and a submission form can be found at <http://cna.cals/cornell.edu>. Print and complete the form - check box 6022 - and mail to the attention of

Michael Rutzke
Cornell Nutrient Analysis Lab
804 Bradfield Hall
Ithaca NY 14853

Other nutrient analysis options include:

Agro-One Soils Laboratory (Form PTV)

Dairy One, 730 Warren Road Ithaca, NY 14850
<http://dairyone.com/wp-content/uploads/2014/01/Tissue-Analysis-Vegetables-Hops-EF3.pdf>

Servi-Tech Laboratories

Servi-Tech Laboratories 1816 East Wyatt Earp Dodge City, KS 67801
<http://www.servitechlabs.com/Services/Plant%20Tissue/tabid/69/Default.aspx>

Hop Powdery Mildew Sample & Data Collection

Wanted: Hop Powdery Mildew Samples during 2019 growing season. Bill Weldon, a graduate student at Cornell University is tracking the distribution of hop powdery mildew across the US. There are diverse strains of the pathogen, and it's important to everyone that we know where they are located, because it is relevant to how we control the disease. Contact Bill immediately (ww395@cornell.edu) should you encounter powdery mildew in your hop yard this season. All grower-specific information will remain confidential for this study.

For a better understanding of hop powdery mildew and management, you may wish to refer to this article by David Ghent... <https://www.plantmanagementnetwork.org/pub/php/review/2008/hop/>

NEWSLETTER SUBMISSIONS

We are looking for people to contribute to our newsletter. Send your news, events, ads, research, questions, photos, and ideas to northeasthopalliance@gmail.com by the 15th of the month.



CONTACT INFO

Northeast Hop Alliance, Inc.

www.northeasthopalliance.org

www.facebook.com/northeasthopalliance

EMAIL: northeasthopalliance@gmail.com

steve miller: hops.educator@gmail.com

NEHA NEEDS YOU!

Are you an “active” member?

Member dues are the only source of income we have to provide you with the many benefits of membership. Please go to our webpage at www.northeasthopalliance.org, click the JOIN US link, and renew today.

Become ACTIVE!

We are looking for volunteers that want to see the industry prosper throughout the Northeast. The more volunteers we have the more we can all accomplish. Please contact Steve Miller at hops.educator@gmail.com.

