

OSU MG Study Group Diagnostic Show-and-Tell Highlights: January 7, 2019

Prepared and photographed by Elizabeth Price

Join our friendly OSU MG Study Group on the first Monday of each month from 1 to 3 pm for Diagnostic Show-and-Tell. Have fun while learning! We explore bugs, diseases and more. Below are a few samples of what MGs brought to our last session.

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The weed common vetch (*Vicia sativa*):

Things you might not know

Weeds like this one Linda brought in are so common, persistent and annoying it's easy to forget they're capable of remarkable things. Many know that common vetch, like all plants in the legume family (Fabaceae), fixes nitrogen, a process during which nitrogen in the atmosphere (N_2) is converted into a form plants can use (NH_3 , ammonia). But it's not the plant doing the fixing. In a mutualistic relationship, bacteria nodules form on and grow into the roots, convert the nitrogen and deliver it to the plant; the legume returns the favor by sharing sugars from photosynthesis with the bacteria.

However, none of us knew (the room uttered a collective aaah) that only until the nodules grow to a certain size and are pink or red are they actively fixing N. The color indicates the presence of leghemoglobin¹ (yes, that's a real word), which carries oxygen and reddens the bacteria. As you can see in the photos to the right, we witnessed nodules in active symbiosis. In annual legumes, such as common vetch and other cover crops, new nodules are constantly replacing discarded ones. But once seed set begins, plants divert resources to the pods and cut off the bacteria's sugar supply, at which point the nodules turn green or grey.

A final weird aside: Leghemoglobin from soybeans is the ingredient in a new meatless patty, called the Impossible Burger, that gives it meat-like flavor and color—apparently, it actually bleeds when cut. (Hmm, pasta anyone?)

For more information: [New Mexico State: Fixation of Legumes](#) [Impossible Burger](#)

¹A protein unique to the bacterial nodules of legumes.

The even more common weed bittercress (*Cardamine* sp.):

Some more things you might not know

Linda also brought in a robust bittercress specimen, a winter annual weed in the mustard family (Brassicaceae) omnipresent in many people's gardens right now. After Rhonda mentioned that bittercress was edible, a spontaneous taste test broke out. Opinions ran the gamut from bland (Judy) to pleasantly bitter and peppery (Elizabeth) like mild arugula, which is also in the mustard family. Unfortunately, there was no oil and vinegar on hand. But if we'd had a few pantry items, we could have made [bittercress pesto](#) or one of the other many recipes found online for this herb that reportedly contains the same vitamins and minerals as other more commonly consumed mustard greens.

One doesn't typically lose sleep over weeds with fungal infections. But we were all surprised to learn that the white rust (*Albugo candida*) we discovered on the underside of the bittercress leaflets is a pathogen not just of all mustards but also of spinach, a plant whose health we do very much care about—another reason to keep this weed out of your greens' bed.

For more information: [PNW Disease Handbook: white rust](#)



An annual weed in the legume family



Delicate compound leaves



This plant had dozens of bacterial nodules along the roots.



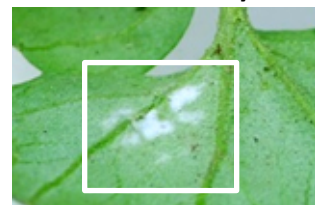
Nodule red from leghemoglobin means N fixation is in process



An edible annual weed in the mustard family



Compound leaves with stemmed leaflets



White rust on the underside of a leaflet

All mustards as well as spinach are hosts to white rust (not a true rust).