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Brad Runsick  
County Extension Agent  
Telephone: 425-2335  
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### **What's Wrong with My Plant?**

If I had to choose a single question that I've gotten more than any other this spring, it would easily be this one. Usually it goes something like this: "My (insert plant name) is dying, and the leaves are yellow and brown." Or maybe, it's: "There's some kind of spots on my leaves, and after a while, they turn brown and die." So, what to do, what to do? Chances are, most of these folks' plants have a disease, in one form or the other.

So, let's start with the science. Plant disease is, in short, any appearance or growth that deviates from what is considered normal plant growth and development. Said disease may be due to an abiotic (non-living) factor, such as is the case with nutrient deficiencies, wind damage, etc., or it may be a result of a biotic (living) pathogen. Among those include your fungal, bacterial, and viral diseases. We could throw insects and their associated damage under that umbrella as well. Most all of these organisms are native and present every year, so why, then, do we not have these diseases every single year. Well, that question gets to where my plant science heart's passion truly lies...plant pathology. I just love a nice, sick plant. I fully understand that that makes me a weirdo. Healthy plants all look the same. Variety is the spice of life, right? Plus, it's job security.

Within the study of plant pathology (that is the study of plant disease), we have what is known as the plant disease triangle. The three points of that triangle being the following: a susceptible host, a favorable environment, and a pathogen. All three of those things must be present for a plant disease to occur. So, if that tomato plant is there every season and that *Fusarium* wilt fungal spore is lying in wait in soils all over the world, then when and why does sometimes disease occur and sometimes it doesn't? The answer: environment!

Anyone who's been paying attention knows that it has been an abnormally wet spring this year. Wet, cool, and cloudy conditions are all great ingredients to a good recipe for fungal and bacterial disease in plants, and let me tell you, disease, we've got in abundance. Roughly 9 of 10 of the clients that have called or stopped by our office this spring have done so because of a plant disease issue.

One thing to realize is that many of the vegetables, flowers, and other ornamentals that we grow here in Baxter County in northern Arkansas aren't native, and as such they aren't all that well adapted to the native pathogens that we have here. Tomatoes originated around the equator in the areas of present day Peru and Ecuador. Okra is likely from western Africa or South Asia. Peaches are of Chinese origin. There's nothing

particularly wrong with that, of course, but it does lend some understanding to why we fight disease issues more so with those species that aren't from here.

So, what to do about it, if anything? Many plants, especially perennials, that catch a bug, will come out of it on their own once that favorable environment for disease is no longer favorable. Other than that, we as gardeners and growers can do our part to remove one point of that disease triangle. We'll hit on each, briefly.

Sometimes, we create the favorable environment in the way and time that we water the plants or where we put them in the garden. Sun exposure, moisture, spacing, and drainage considerations are just a few and many considerations. We can't always control what we get when it comes to rainfall and sunshine, but we can control what we do. Maybe just plant those tomatoes in a different spot in the garden where pathogen populations haven't built up as much over time.

As far as a susceptible host, we've got plenty of control over that aspect. When available and desired, choose varieties that have some bred resistance to common diseases. This isn't always an option, but consider it. For example, 'Arkansas Black' apples are susceptible to fire blight, a bacterial disease. 'Enterprise' apples are moderately resistant. Or in some instances, just don't plant that particular species at all unless you're willing to diligently keep fungicides sprayed every spring.

Managing the pathogen itself is often the hardest part. These organisms have been here a long time and will continue to persist. Total eradication of a particular pathogen in your area isn't feasible. Knowing which pesticide to use, be it conventional or organic, depends upon the pathogen present and the stage its current life cycle stage. For example, we wouldn't use a fungicide to manage fire blight because it's bacterial. We can provide recommendations on that, as well, but proper identification is first and foremost. Ultimately, our best bet is to manage around the pathogen by controlling the environment and the host.

One great resource that Extension provides to make that proper identification is the Plant Disease Clinic, whereby the county office can ship diseased plant samples to the lab, and within a few days, get a diagnosis and control recommendations. The best part is: It's free! All you need to do is bring us a sample of the plant that is showing symptoms, bag it up in a gallon plastic bag, and come by the office. We'll ask a few questions, ship it off, and within a few days, get you a solution...if one exists. That's something to keep in mind. Just like in humans, not all diseases are curable or fixable. Sometimes, the answer is to just dig it up and plant something else in its place. This service is for all plants: ornamentals, vegetables, trees, shrubs, pasture plants, turf grasses, etc.

For any other questions on plant disease or other horticulture related issues, give us a call at 870-425-2335.