Mirliton Drainage Fact Sheet

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Mirliton.Org

By Lance Hill

I was talking to Vivian Arceneaux in Cut Off, Louisiana the other day. She's been growing mirlitons for 70 years in South Louisiana and has several hundred linear feet of overhead trellis. She knows more about mirliton growing in South Louisiana than anyone I have met. As I looked over her extensive drainage system and raised-mound planting system, I understood how she replicated the native habitat of mirlitons—well drained hill-sides. "If you don't have drainage," Miss Vivian told me, "you don't have anything."

This is truer now than ever. Your grandmother may have been able to grow mirlitons on the back fence with no special soil preparation, but global weather changes have increased rainfall and urban areas have paved over land that use to absorb rain and keep the water table low. Generations of children playing in yards has compacted the soil and made it less capable of drainage. The environment for urban gardening has changed and our growing methods have to change as well.

This has been a very wet summer in South Louisiana and now is a good time to take a quick look at how drainage affects mirlitons. Mirlitons need much more soil aeration—access to oxygen--than most common backyard vegetables. Just because tomatoes thrive in your garden does not mean mirlitons will do as well, even if you are using raised beds and potting soil.

The problem is a condition called "soil waterlogging" and it simply means that the soil has become so saturated with water that it has displaced all the oxygen available to the mirliton. Mirlitons need oxygen to flourish and they acquire it through the roots. As rain increases, the ground becomes saturated and there is inadequate room for oxygen. Even if you have a raised bed it may also not be able to drain into the subsoil and the roots will become waterlogged in your raised bed.

Waterlogging the roots for 24-48 hours is sufficient to kill a mirliton or seriously damage the plant. and it takes a long time for the plant to recuperate. Not only will the leaves be damaged and lose their valuable energy-generating photosynthesis ability, but the fungus that thrives in saturated soil will attack the roots resulting in "root rot." Now the plant has less root structure to support the top-growth as it tries to revive.

Waterlogged roots can't uptake nitrogen and water and can't as easily send minerals and fluids to leaves. This stresses the plant and makes it more vulnerable to diseases and insects. That makes the leaves shut down photosynthesis and the plant wilts, dies, or barely grows and is subject to plant disease like anthracnose. It may look like your plant is dying of anthracnose

(yellowing leaves that turn brown), when in fact the problem is that the roots are waterlogged and plant disease is just a symptom. Eventually the stems may die and, if you are lucky, the plant will send up new shoots--but you have to address the drainage issue if you want to revive your mirliton.

A sure sign of waterlogging is if you planted your mirliton in a container for the winter and it thrived, but when you transplanted it outside it wilted, yellowed, and experienced stunted growth, then the problem is very likely a drainage. It's much easier to control water in small container than in your back yard.

The good news is that there is an easy solution to waterlogging.

If you have a waterlogged mirliton plant, you need to transplant it to a well-drained site. That may set back the vine for a while, but in the long run it will survive and be a healthy plant. That means you need to temporarily remove the plant from its waterlogged site and rebuilding the plant site or creating a new site. Mirlitons transplant well and it is far more likely for a plant to survive if it is take out of chronic water-logging environment than if you wait for the bed to dry out.

I have done this several times with distressed plants that growers contacted me about. Inevitably, the plants were waterlogged and moving them to soil where they can "breathe" worked. In some cases when I dug up the waterlogged plant, the root structure was so damaged and small that I simply replanted the mirliton in a two-gallon container until it could recuperate, and then transplanted to a well-drained site.

Raised beds are not a solution unless they are built correctly . If the soil is not prepared below the bed, it can create a water barrier and the roots will sit in water and rot. The top soil and the bedding soil must be mixed at the transition point. Commercial potting soils are often made to retain water—exactly what mirlitons don't like. Raised bed instructions are often based on growing in moderate climates—the beds are not deep enough and not enough attention is given to drainage. Putting a raised bed on top of waterlogged soil will not solve your problem.

What can you do?

- Never plant on flat ground if you are in a high-rain environment—even an environment that is dry but prone to flood-like rains. Always use raised beds, either "hill planting" (see Miss Vivian below) or enclosed raised beds at least 18 inches deep. Don't simply pile more soil on you plant in an effort to "raise it" —that will only kill the plant.

- Ensure that your raised bed can drain and water is not trapped at the bottom. Don't build a raised hill on top of soil that is waterlogged. Build drainage trenches to move water away from your plant site. These trenches have to be on a slight grade (slope) so the water will drain off. You can use an inexpensive water level to ensure that your

trench will move water away from your plant site. If you want a hidden subterranean drainage system, you can build your own or have a landscape contractor install one of the new inexpensive systems.

- With enclosed raised beds, you can prevent water-logging by (1) using a well-drained soil amended with perlite and organic matter; (2) adding drainage pipe (like flexible perforated drain pipe) to the sides and bottom of the bed to absorb and drain excess water through a outlet pipe at the base; (3) by preparing the soil below the bed so it will drain well (see links below); and (4) by draining the area around the bed as mentioned above by open trenching or a subterranean system. These underground systems are sometimes called "French drains" but the older technology of ceramic pipes tended to clog and was expensive to install. The newer systems use sand and geo-textile covers to filter out soil. Google "flexible perforated pipe for flower beds" to see how easy it is to build a flex drain perforated pipe for mirliton bed.

- If you think your plant is waterlogged, transplant it immediately to a better drained site. Send me photographs of your plant and the plant site if you have any questions. With a new plant, this may mean temporarily moving the plant to a container and letting it dry out and rebuild its root and shoot structure, and then transplanting the plant to a new site. Use a foliar fertilizer to give the leaves a boost since the root structure is depleted and can't uptake nitrogen efficiently.

- Large fluctuations in soil water content is what makes mirliton container growing difficult. I have photos of 35-gallon Tuff Stuff tubs that can hold enough soil that it can minimize moisture fluctuations. You can make a simple soil moisture tester out of a thin bamboo garden stick that can be pressed into the soil and about 18 inches and will give you a good reading of moisture at different levels (just like testing a cake: if the knife comes out with lots of soil particles, it may be saturated; if it comes out clean, then the plant can use some water).

  Links:

See the www.mirliton.org photo site for "hill planting" and "open-trench" drainage system that Vivian Arceneaux uses. Click on each photo and scroll down to see the commentary. She has virtually no problems with root waterlogging but she does have to water her hills carefully since they dry out fast. See her "hill system" and sub-surface drainage at the photo site at www.mirliton.org

A technical article on "Absoption of Water":

http://plantcellbiology.masters.grkraj.org/html/Plant_Cellular_Physiology2-Absorption_Of_Water.htm

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