BY MIKE ZEMKE AND A.R. CHASE

Using Recycled Water

If we look at water as a precious resource and the current drought conditions that many states are facing, we need to really think about recycling. We often hear about saving water with down spout barrels or some other containers, watering your lawns every other day and not washing cars, etc. Anything we can do to save our water supply benefits everyone and everything.

Chase Agricultural Consulting, LLC was formed in 2011 by Ann (A.R.) Chase and Mike Zemke. Ann has more than 35 years experience in research, diagnostics and practical consulting in plant pathology. She has been retired from the University of Florida since 1994 but remains on staff as a Professor Emeritus. Mike holds an Associate of Applied Science in manufacturing drafting and started his education in horticulture when he and Ann were married in 1995. He specializes in communications of all sorts within the industry.

Last year at the SHADE (Arizona Nursery Association) conference, I heard a validation by someone at the Arizona water commission that the lakes were down 50 to 65 percent. Recently, we drove back from a visit to Missouri in August, and passed some of the big lakes on the Arizona-New Mexico border and it was quite devastating to see that the water level was down like 12 to 16 feet. I can only imagine what the rest of the U.S. lakes and reservoirs are like.

I hear talk of building more desalinization plants, but at what cost? Who is going to operate these plants? We've all heard that most states are either broke or having a hard time with operating budgets.

Getting a good water management system in place can be a big savings over constantly using well or even city water. If I'm at a restaurant and use the restroom, I sometimes see the faucet has a slow leak or is dripping, or maybe the last person didn't get it turned off all the way. I will turn it off or attempt to do so. We might want to take a walk around the nursery or greenhouses and look for any old leaking faucets or connections. It is easy to get used to a little water waste and end up with a huge loss.

DO YOUR PART

We all need to do our part in saving water, whether it is in our homes or nurseries/greenhouses, and the best way for a nursery or greenhouse to save water is by recycling it. Recycling water has become standard practice for greenhouses and nurseries in many areas of this country. Sometimes it is pursued due to high water costs or lack of sufficient water and other times it is legally mandated in order to protect the environment. The benefits of recycling water are proven and accepted generally. However, a major deterrent is the potential for spreading plant pathogens and pests as well as plant growth regulators and herbicides. The plant pathogens most commonly found in water are Pythium and Phytophthora and although they are frequently detected in irrigation water, we don't really know how serious the risks can be.

In order to make an informed decision we need to know a number of facts that are hard to come by. The concentration of the pathogen is something we would like to know but even if you can find a lab that will test water for specific species of a pathogen like Phytophthora, there is little known about how much is too much. In the past, I have had trouble finding labs that will routinely identify Phytophthora in water to species. There are many species that do not cause disease, so just finding them means nothing.

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The risk of irrigating ornamental nursery plants using water naturally infested with *Phytophthora* spp. has been evaluated a number of times recently. Overall, Phytophthora-infested irrigation water did not act as a primary source of infection. Some researchers have suggested that using Phytophthora-infested irrigation water as a primary water source may not be a big risk to susceptible plants. One reason was that many fungicides are routinely applied to ornamental crops which combat diseases that might originate in irrigation water.

Making a general conclusion at this point is dangerous since we have so many unanswered questions. Thus, we end up with a push to treat water to kill everything we can detect. This reminds me of the broad use of methyl bromide as a soil fumigant. Wiping the slate clean (soil or water) is not necessarily the answer to preventing disease outbreaks. It can set up a biological vacuum that is easily invaded by one of the bad guys.

There are two major gaps in current knowledge of waterborne fungi and Oomycetes (Pythium and Phytophthora) – the lack of information on their epidemiology, including their biology and ecology and the lack of knowledge on their pathogenicity. Further research is required to assess the impact of new "pathogens" to plants, and how they may survive in irrigation water. Until we can answer some of these questions, the risk of plant pathogens in irrigation systems cannot be appropriately assessed, and choosing what to do to prevent a waterborne disease is tough. gpn