

# SULFUR ON TAP

A recent study shows that irrigation water sources across the U.S. rarely provide sufficient sulfur for greenhouse plants. Check out how your state measures up.

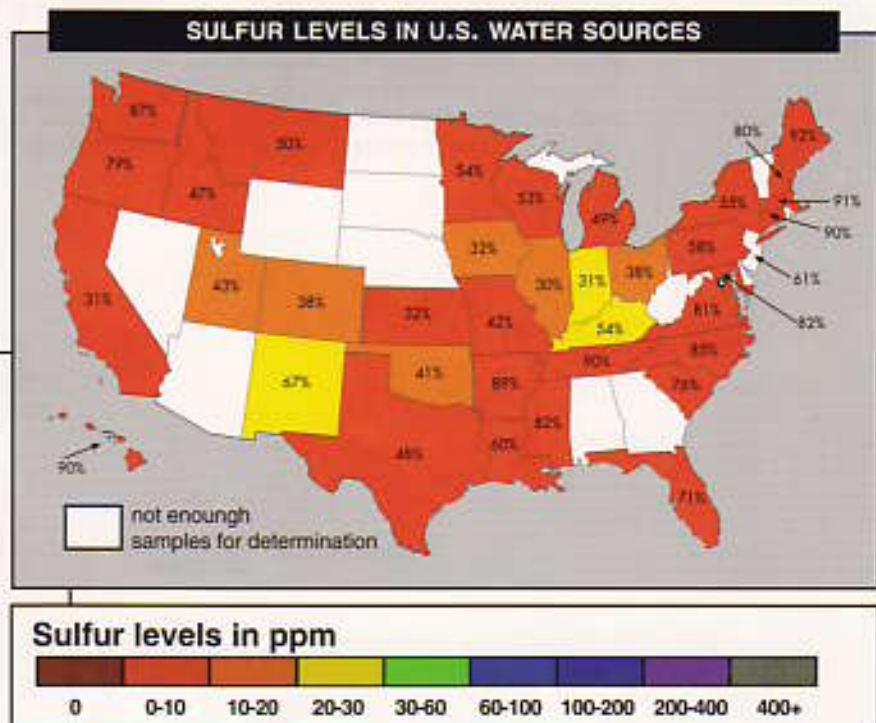
by SHIV K. REDDY

**Y**OUR irrigation water can contain sulfur, an essential nutrient for plants. But you can't always

PROPORTIONAL COMPARISON OF SULFUR LEVELS IN U.S.



Source: San Geo lab database by Michael Madore  
Graphs: All-ison Cooper



be sure just how much is present.

To find out how sulfur (S) levels in water vary in different regions in the country, we searched our lab database, which contains analyses of water samples from all across the U.S. The results showed that 4% of the water samples had no S, while about 65% had less than 10 ppm – that's low from a plant requirement point of view! On the other hand, 11% of the waters exceeded the sufficient level of 30 ppm S.

Our work, synthesized in the map above, is based on thousands of water samples. In fact, the map – akin to a plant hardiness zone map – represents results from the most comprehensive survey to date on sulfur in greenhouse water.

A high number of water sources in the Northeast, the Pacific Northwest, the Atlantic states (including Florida), and Hawaii had low levels, less than 10 ppm S.

In the eastern Corn Belt states, more water sources had higher levels – above 10 ppm. Take the example of Ohio where 38% of greenhouse waters have a sulfur level of 10-20 ppm – the predominant level in the state. The rest of the water sources have different levels, but no level is as dominant as 10-20 ppm. Another way to put it: If you're in Ohio, there's a 38% chance of your water having a 10-20 ppm sulfur.

Be careful when making generalizations for your state, however. For instance, we found that one water source in Texas had 0 ppm while another had

510 ppm. Your best bet for determining sulfur levels in your water is to test it.

## Do You Have Enough?

How much sulfur do your plants want? Levels of 0-10 ppm just aren't enough. We have found a level of 10-20 ppm in your water supply is adequate for slow-growing species, but not enough for many crops. A level of 20-30 ppm is best for many species.

Unfortunately, a deficiency isn't easy to diagnose. Symptoms are similar to those for nitrogen deficiency: light green or yellow leaves, reduced leaf size, rolled-down leaf margins, red or purple coloration, shortened internodes, and stunted growth. One clue to watch for is that sulfur problems will start in younger leaves, while nitrogen shortages begin in

older leaves. In any case, tissue analysis is the best way to diagnose the problem.

What to do if there's a shortage? Don't count on your media to make up for deficiencies. Peat, vermiculite, perlite, bark, and other components contain little to no sulfur. Instead, try adding gypsum or single superphosphate to your potting mix. (Check the label on your premixed media. Today some companies are adding the nutrient.) These sources are only helpful for

a short time, though, because sulfate ions are leached in a few weeks. Also, don't use elemental sulfur because it may hurt plants by lowering pH.

Your best bet is to choose a fertilizer that contains sulfur – plus the other assorted nutrients your plants need. Provide it as a continuous liquid feed through your irrigation system. **GG**

**About the author:** Dr. Shiv K. Reddy is research scientist, Sun Gro Analytical Lab, 177 Sanfordville Rd., Warwick, NY 10990.

Reprinted from **GREENHOUSE GROWER** January 1996