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The Myth of Phosphate, Part II
“Roses need phosphate fertilizer for root and flower growth”

The Myth

Last month, I spoke at the Northwest Flower and Garden Show on healthy landscape practices. Among my recommendations was avoidance of phosphate fertilizers, especially at transplant time. After my talk, I was asked if this advice applied to roses, too. Not being an expert on roses, my less-than-satisfactory answer was “non-agricultural soils aren’t usually deficient in phosphate.” The question continued to bother me, however, so I searched the popular and scientific literature for the rose-phosphate connection.

In the popular literature, recommendations are generally like this one: “Dump in a cup of phosphate fertilizer (bone meal, rock phosphate, superphosphate 0-15-0, or triple phosphate 0-45-0 (when planting roses).” Books and web sites alike state that phosphate is required for root establishment and flower production; unfortunately, a great many of these are dot-edu sites. The number of chemical additives recommended for growing roses in the home landscape is simply astonishing.

The Reality

I was very interested to find no scientific evidence that suggests roses need high levels of phosphate for any reason. As I’ve mentioned in this column previously, perennial landscape plants in urban areas are rarely deficient in any nutrient other than nitrogen. In our landscape restoration projects at the University of Washington, soil tests have routinely shown that phosphate levels are at least adequate and sometimes more than adequate for normal plant growth. Addition of any non-deficient nutrient to a landscape is a waste of time and money, and can injure soil organisms. This is particularly true of the mycorrhizal associations that occur between various fungi and plant roots.

Numerous studies have demonstrated that roses, like most terrestrial plants, maintain symbiotic relationships with beneficial fungi. If you add phosphate to your rose plants, you will decrease the ability of mycorrhizal fungi to colonize the rose roots. Without these fungal partners, rose roots must work harder to extract water and nutrients from the soil. Moreover, this excess phosphate is injurious to other soil organisms. With increased fertilizer additions, soil salinity increases. You have now created an artificial system in which soil health is so impacted that you must continue to add fertilizer for your plants to survive.

I believe this is what has happened in many landscapes that feature roses. Well-intentioned, yet misguided, homeowners overapply phosphate and other fertilizers, insecticides, and fungicides until the soil system is so impacted that it becomes non-functional. Without the beneficial soil organisms, roses become more susceptible to nutrient deficiencies and opportunistic diseases, causing rose aficionados to add even more of these chemicals.

The Bottom Line

- Non-agricultural soils generally have adequate amounts of phosphate.
- Addition of excess phosphate fertilizer decreases mycorrhizal activity and overall soil health.
- A healthy soil system is better able to support healthy rose growth than one that is impaired by overuse of fertilizers and pesticides.

For more information, please visit Dr. Chalker-Scott’s web page at <http://www.theinformedgardener.com>.