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Contribution Information Sheet

Functional Area: Rose Care

Title of Article or Material: “Do Your Roses Have Acid Indigestion?”

Type of material: ☐ Word File ■ PDF ☐ PowerPoint ☐ Spreadsheet ☐ Web hot link ☐ Other

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Date Submitted : July 30, 2010 Date Posted: August 3, 2010 Date Last Updated:

Information Source(s): Cindy’s Experience and 3 reference articles (see article)

Target Audience for this information: All Rosarians

Abstract: In this article Cindy covers the often overlooked aspect of soil pH. She tells the story of one of her floribundas gone wrong. She explains how to look at pH and how often it should be tested. She also tells you what to do depending on what you find.

This article is an ARS Award of Merit Winner.

This is a short but effective article for all rosarians. Newer rosarians will find it very useful.

Do Your Roses Have Acid Indigestion?

Cindy Dale, Consulting Rosarian

Last September I finally admitted to myself that there was something seriously wrong with several floribundas that I had planted last spring. They were taking an unusually long time to get established, were abnormally small, the leaf color was pale, and repeat bloom was slow. Knowing the importance of soil structure and pH, I finally did what I should have done much earlier, and tested the soil pH. The mystery of unhealthy rose bushes was solved when I discovered that the soil around those roses had a pH ranging from 3.6-5.8! Rose expert and monthly author for *American Rose* magazine, Dr. John Dickman, once told me that growing roses in a soil pH of 3.0 is like growing roses in lemon juice. In other words, it is a terrific handicap to the plant.

What is this thing called pH? It is a measure of acidity or alkalinity of the soil on a scale of 0-14 with 0-6.9 being acid, 7.0 being neutral, and 7.1-14 being alkaline. As we know, Georgia has heavy clay soil which tends to be significantly acidic and the addition of organic soil amendments can lower the pH even more. Roses thrive in a very slightly acidic soil pH of 6.0-6.5.

The main problem with a pH that is too low or too high is that all the wonderful fertilizers that you've been feeding to your bushes are tied up in the soil and unavailable for use by the plant. For instance, of the major nutrients, growth-stimulating Nitrogen availability decreases at 5.5 and 8.3 and root-strengthening Phosphorus is disabled below 6.0 and above 8.0. Fortunately, Potassium which promotes bloom color, root growth, and overall vigor is the least affected by pH, decreasing very little and only below 5.5. The availability of micronutrients such as Boron and Molybdenum is compromised in acid soil while uptake of Copper, Zinc, Iron and Manganese is inhibited in alkaline soil.

To avoid these problems you should have your soil tested at least annually. Home test kits are available at most garden centers but the most accurate method is to take small soil samples from various places in your bed, mix them together well, and take them to your county extension office where, for a small fee, they will have the sample professionally analyzed. In a matter of days you will receive a report detailing the levels of pH, macro and micronutrients, and solutions for any problems that they have identified. Another testing option is the one that I use, the Kelway pHD meter which is guaranteed to be accurate within plus or minus 0.2. This method allows me to individually test as many roses as I want, as often as I want with confidence, as long as I follow their directions regarding probe cleaning between each measurement.

If you find that your soil is acidic, the problem can easily be resolved by "sweetening" the soil with lime at the rate of two cups per bush for every 0.5 increase in pH that you want to achieve. Dolomitic lime is used if the soil is lacking in magnesium and calcitic lime is used if it has acceptable amounts of magnesium. Remember, granular or powdered lime moves very slowly through the soil so testing and lime application may need to be done as often as every six months to maintain optimum pH levels. In an emergency situation such as my precariously low pH levels described above, you may want faster results. These are achieved through the use of liquid lime. I used *Liquid Flowable Limestone F* from Cleary Chemical Company every two weeks at ¾ ounce per

gallon of water for each needed 0.5 increase in pH. If your soil pH is 7.5 or higher, powdered sulfur can be worked in at 3 pounds per 100 square feet to acidify your garden.

This story has a happy ending. The floribundas responded very well to several short-acting treatments of liquid lime and one long-acting treatment of the granular dolomitic lime. In the few months before they went into dormancy there was a dramatic change in their growth and vigor. Now they looked like they should have much earlier in the growing season instead of being a shovel's-length away from the pile in the woods.

References:

1. Consulting Rosarian Manual. (2001) Shreveport: The American Rose Society.
2. Reddell, R. C. (1998). The rose bible. San Francisco: Chronicle Books.
3. McDonald, E. (1995). Traditional home, rose gardening. Des Moines: Meredith Books.