

Let's Talk About Fertilizer

By: Fermin Rodriguez

Although gardeners generally refer to fertilizer as "plant food," in effect, it really is not. Fertilizer is a combination of different chemical elements that plants absorb, primarily through their roots in the presence of moisture, transport to their leaves, and there, through photosynthesis, miraculously transform them into simple sugars and starches that are the real plant food. But let's not worry about semantics, call it what you wish so long as you understand the principles involved.

Like all plants, roses require nitrogen, phosphorous and potassium as their primary "food," along with secondary nutrients such as calcium, magnesium and sulfur. Additionally, they need minor elements, which consists of iron, zinc, copper, manganese, boron, chlorine, and molybdenum. All of these nutrients can be provided by either organic fertilizers (such as manures, fish meals, etc.) or by chemical fertilizers (such as nitrate of potash, ammonium phosphate, etc.). Roses are not particular about where their nutrients come from — they cannot discern the difference between organic and inorganic. The important thing is to feed them. Now let's look at what these elements do.

Nitrogen is a component of all proteins and helps to control the rate and quantity of growth in a rose bush. It is required in relatively large quantities and when adequately available, the bush will produce a normal amount of stems and leaves. If there is too much nitrogen, the bush will develop excessive vegetative growth at the expense of fewer flowers and will become more susceptible to diseases and insect pests. Not enough nitrogen will cause your rose bush to severely under perform. Nitrogen, while abundantly available as a gas in the air we breathe, is only available to roses in the form of nitrates. Other forms of nitrogen, such as ammonium, or nitrites, must be converted to the nitrate form before the plant can utilize them. This conversion is constantly taking place in the soil due to the action of microorganisms.

Phosphorous aids in the development of root systems, sturdy stems and flower formation. It is also needed for the production of sugars, which are essential to keep the rose bush growing well. Deficiencies of phosphorus will be manifested by stunted growth and possibly a purplish edging on the leaves. Because phosphorous moves slowly through the soil, it is usually applied as super-phosphate or bone meal at planting time; however, most commercial fertilizers contain this element.

Potassium, available to your plants in the form of the oxide (K₂O), generally referred to as potash, is a chemical that aids in the production of sugars, starches and cellulose and consequently helps in the formation of strong stems. Roses deficient in potash may be stunted, weak or have brown edges on the leaves.

Whenever you buy fertilizer, the law requires that the percentage of these three elements be clearly stated on the label. The first of the numbers is always nitrogen, the second one is always phosphorus and the third is always potash. For example, Gro-Mor's 12-6-8 contains 12% nitrogen, 6% phosphorus and 8% potash; Peter's 20-20-20 contains 20% of each of the nutrients; a formulation listed as 0-10-10 has no nitrogen, 10% phosphorus and 10% potash, etc.

Calcium, magnesium and sulfur are called secondary nutrients solely because they are required by the roses in smaller amounts than the primary nutrients. However, this does not mean that they are less important since a deficiency of any of them will cause you much grief. Calcium enhances the production and growth of all of the plant cells, including the root system. Magnesium is a component of chlorophyll, the substance that makes leaves green, and is necessary for photosynthesis to occur. Sulfur contributes to all of the plant proteins, without which your rose bush will decline.

Lastly, the seven minor elements are required in even smaller amounts than the primary and secondary nutrients, but deficiencies thereof may cause problems for your roses. This is especially true with a lack of iron, because this will cause the leaves to become a yellowish color although the veins will remain a darker green, a condition known as chlorosis. Often, there may be enough iron in the soil but it cannot be absorbed by the plant due to either a high or a low pH or because it is chemically tied up by other elements. This is one reason why it is so important to check your soil's pH. Keeping it in the range of 6.2 to 6.8 will insure that all of the plant nutrients will be available to your roses. Although iron chlorosis is quite common, deficiencies of the other minor elements are generally quite rare because these chemicals are not as sensitive to soil conditions as is iron.

Although the minor elements are very necessary to the health of your roses, too much of any of them can be as detrimental as a deficiency. This is especially true of chlorine, which in high amounts can be toxic to your roses. Consequently, avoid any fertilizers that contain more than 2% chlorine.

Now that we have seen what the roses require in the way of nutrients, let us look at how we can best provide them. Basically, you can separate the fertilizers into two main categories: organic and inorganic. Generally, the dry organic fertilizers will be slower acting because they must first be acted upon by microorganisms in the soil to convert them into nutrients, which are then absorbed by the bushes. By their very nature, however, they contribute to the organic content of the soil and tend to improve its structure. In our sandy Florida soil, they tremendously aid in the production of loam. Additionally, if you use too much, it won't do much harm because time is required for them to break down and they break down very gradually.

On the other hand, inorganic fertilizers have a specific amount of nutrients, which are provided immediately and without harm, if used according to directions. If, however, you use them exclusively without adding organic materials to the soil, the soil will gradually deteriorate and in time cause poor plant growth. This is why I prefer to use a combination

of both organics and inorganics. In mid-January, after pruning, I apply liberal amounts of dehydrated manures, alfalfa meal, cotton seed meal, fish meal and Milorganite — this is the so-called "mid-winter smorgasbord." This is then followed by bimonthly applications of a half-cup of Gro-Mor Rose Fertilizer.

In the past, I have experimented with the use of the time-release fertilizers, such as Osmocote and Rose Grow and to be perfectly honest, have had very satisfactory results. If you want the simplest way to fertilize your roses, this may be it. This is especially true if you don't exhibit and grow your roses just for your own personal use. However, I always wonder as time progresses, whether the fertilizer is still there, releasing slowly, or has it all been used up and I don't know it. For this reason, I really don't like the time-release idea. If you use this method and intend to exhibit, you better supplement it with additional liquid fertilizer applied weekly, starting about five weeks before the shows.

Regardless of what type of fertilizing program you follow, be consistent. Apply the fertilizer on a regular basis, being sure to water your bushes very well the day before you apply the plant food and then watering it in thoroughly after applying it. If your program doesn't work as well as you think it should be, the first thing to do is to check the pH of the soil. This can be done through the Cooperative Extension Service for a very nominal charge. If the pH is off and you correct it according to their recommendations and you still experience problems, then the only thing left to do is to have a complete soil analysis. The information obtained from such an analysis will give you the necessary information to rectify your problems.

One final thought — the best fertilization program will only work as well as the quality of the soil in which you plant your roses. Plant your roses in well-prepared beds and maintain the pH at between 6.2 and 6.8. You will be rewarded for your efforts many times over!

About the Author: Fermin has been growing roses for over 40 years and currently has just under a hundred roses of all types. He is Past President of the Tampa Rose Society and is currently serving as its newsletter editor and membership chairman. Fermin is also an ARS Horticultural Judge and Consulting Rosarian. The above article was reprinted with permission from "Tampa Talks Roses," Fermin Rodriguez, Editor.