Question: Should you spread fertilizer out evenly on the surface of potting soil in a container or field soil? Or can you just apply the appropriate amount of fertilizer in piles?

Answer: Fertilizer may be more conveniently applied by the applicator in piles, but once the fertilizer dissolves, the salts may produce an inappropriately high concentration of salts in part of the root zone, and limit the potential development of the root system. In addition, the fertilizer may not be effectively utilized by the plant. Some fertilizer might be lost through leaching beyond the root zone. So, in most cases, it would be better to take the time to spread the fertilizer out evenly over the surface of the root zone.

Question: What are some fundamentals of fertilizer placement and movement?

Answer: Fertilizer placement should consider irrigation method, the mobility of the fertilizer nutrient, soil type, and root characteristics. Of course, you should only be applying the amount of fertilizer that correlates with the growth rate or fertilizer-need of the plant. Soluble nutrient salts are released from any fertilizer, be it slow-release, completely soluble, or organic. Phosphorous (P), in the form of phosphate, moves very slowly from the point of placement. Nitrogen salts move with the soil solution, mostly up and down, with the direction of water movement. Of the two principal nitrogen (N) salts, nitrate-nitrogen moves more readily than ammonium-nitrogen. With time and conducive soil conditions, ammonium-nitrogen is converted to the nitrate-nitrogen form. Potassium (K) as a soluble salt is also positively charged and tends to attach to soils, and therefore its movement is restricted. Irrigation method greatly influences movement of soluble fertilizer nutrients. Movement is primarily vertically, up and down; downward with irrigation and rainfall, and possibly upward as the soil surface dries. The extent of movement is influenced by soil texture. With sandy and most good potting soils, there is usually a greater freedom of soluble salt movement, both upward and downward, than with heavy soils. Given the fact that two of three of the principal nutrients (potassium and phosphorus) do not move readily in the soil, the placement of fertilizer should be targeted to where the roots are found or where they could readily grow and develop. When a fertilizer is piled up on the surface, excessively high salt concentrations can inhibit root growth in the area immediately at and below the fertilizer application on the surface.