



UNIVERSITY *of* CALIFORNIA

Agriculture & Natural Resources

COOPERATIVE EXTENSION • YOLO COUNTY

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SOIL AMENDMENTS

by David R. Giger, Yolo County Master Gardener, 2001

Yolo County is blessed with rich productive soil making us one of the top producers of agricultural products. What the farmer already knows is that adding amendments to the soil gives him the highest production possible from his land. As home gardeners, we too can add amendments to our soil in order to have great looking and healthy plants around our landscape.

Fertilizer

Probably the most common form of soil amendments is granular inorganic fertilizer. The major nutrients are nitrogen (N), phosphorus (P), and potassium (K)(NPK). NPK are always listed in that order on the bag. For example, 10-10-10 on the fertilizer bag is 10% nitrogen, 10% phosphorus, and 10% potassium. Other common formulas are 21-0-0, 0-10-10, and 16-6-8. Nitrogen is the element that is used most often by plants, particularly grass. Phosphorus and potassium are good for roots, bloom, and overall health. Always read the label on the bag. It will help you to choose the right fertilizer and will give you directions for use. When applying fertilizer keep in mind that nitrogen is mobile and can travel down through the soil. Phosphorus and potassium are not mobile and must be physically incorporated near the rooting depth. Inorganic fertilizer also comes in liquid form that you mix and spray over the plant and soil. Inorganic fertilizers are relatively fast acting.

Fertilizer also comes in organic form such as steer and chicken manure. This manure is composted before it is sold. Fresh manure can burn your plants since it is high in salt. Manure has about 2% nitrogen in it and takes longer to break down than inorganic fertilizer. Manure also acts like organic matter (see below).

Gypsum

Gypsum (calcium sulfate dihydrate) comes either as a powder or in pellets. It must be incorporated into the soil for it to work. It is a good product to use in our soils in Yolo County because they are relatively high in clay. The gypsum reacts with the clay to form aggregates. This makes the soil easier to work and allows better water and root penetration. After applying gypsum, sulfuric acid is released which lowers the pH of the soil. This means that the pH can be lowered in soils that are relatively high, or alkaline (7.5-8.0), which are common in Yolo County. Lowering the pH towards neutral (7.0) is important because it makes iron, manganese and phosphorus more available in the soil. The calcium in the gypsum displaces sodium in the soil thereby making salt-laden soils in Yolo County less salty. Read label instructions to determine how much gypsum to add to your soil.

Organic Matter

Organic matter is naturally low (1-2%) in our soil as it is throughout much of California. Adding organic matter to our clay soils will greatly improve the workability. It will also enhance root growth and increase air and water movement. Organic matter is usually sold as organic compost in bags (1-2 cubic feet) or in bulk (cubic yards). It is often applied on the surface of the soil between 2 to 4 inches thick and incorporated with a rototiller. It may also be left on the surface to serve as mulch. Mulch helps to keep in soil moisture and reduces weed growth.

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