ROTOTILL SPARINGLY
Ron Dudley, Frederick County Master Gardener

Plants do best in loose aerated soils. In a healthy soil there are spaces between the soil particles directing the flow of air and water through the soil and allowing the plant’s root system to expand. At the tip of the roots are fine root hairs that absorb nutrients for the plant. As the root hairs slough off every few days, new root hairs appear and go ever deeper and wider through the soil in search of air and nutrient rich water. If space is available, the plant’s root system never stops expanding during the growing season.

Earthworms and other organisms in the soil, both visible and microbial, create the vital spaces between the soil particles. Without these organisms, your soil will not be healthy. In a healthy soil, the particles of sand, silt, clay and organic matter are bound together by aggregates, the waterproof by product of the feeding activity of millions of soil organisms. It is the waterproof aggregates binding the soil particles together that preserve the space within the soil for air, water and roots to travel.

Disturbing the soil organisms and their network of tunnels, aggregates and capillaries destroys the healthful soil balance. Rototilling accomplishes this destruction very efficiently.

Rototilling of new or fallow garden beds to incorporate organic matter into the soil may be fine for new or fallow garden beds, but the continued rototilling, season after season, is destructive to the organisms within the soil and therefore the soil structure itself leading to the need for more rototilling.

To start, the rototilled soil is nice and fluffy, but the destruction of the soil structure created by the soil organisms’ results in a fragile temporary conditioning of the soil that soon collapses, leaving you with a soil with few spaces for air, water or roots. The soil becomes hard and compressed – time to rototill again!

An additional problem with rototilling is “Tiller Pan.” As the tiller’s tines are reaching, their maximum depth in the soil the tiller’s tines compacts the soil beneath. This compacted layer of subsoil creates a hard to penetrate barrier for worms, water and plant roots.

The best time to create a new garden is in the fall; however, you may use this method to create a new garden space any time of the year:
If your garden area is low in organic matter, add 3 to 6 inches of compost and/or a mix of mulched grass clippings, dry leaves, garden waste, to the area before you Dig or Rototill (The Last Time). Cover the just tilled area with cardboard and/or newspapers. Place a three to four inch deep layer of mulched organic matter and finished compost on top of the cardboard/newspapers. Now let the worms and other critters do their work. When you are ready to plant, only work the area where
you are planting your seeds and seedlings leaving the rest of the garden undisturbed. Once your
garden is established you water, fertilize and weed less.

In subsequent years, place an inch or two of compost on top of your garden in the fall. No work,
no fuss, no muss, just plant in the spring.

Remember, the healthiest soil is the least disturbed soil.

For more information about the Frederick County Master Gardener/Horticulture Program,
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