

*Mona Roy
6th grade*

I'm happy you invited me to be here today and encourage future gardeners. What prompted you to consider planting a garden? I understand you have already heard presentations from other DMGC gardens members? Who? Topics?

Today I'll share with you a little bit about dirt, or as we like to refer to it, soil and how important it is. Think of it as the foundation....constructing a building you need a good foundation....if you're an athlete, your body is the foundation of your performance and duration. It needs to be strong. Same with soil.

Has anybody ever been on a farm or live on a farm? I grew up on a farm....much different back then. We ate what we grew. YES, we ate what we grew. I don't remember going to the grocery store very often. We had cows for milk, beef cattle and pigs for meat, chickens for eggs and meat....and you guessed it! A garden. We had apple trees, strawberries and raspberries. We ate what we grew!! And harvested the veggies and either canned or froze them, and carrots and potatoes were kept in a root cellar, a cool place in the basement, for food in the winter months. We didn't have fresh lettuce, cucumbers, grapes, etc. etc. We ate what we grew.

There are several types of soil, but I'll share information with you about the common types we have in our area: CLAY, SANDY/GRAVEL and LOAM. Healthy soil structure retains water (but with good drainage) and nutrients needed for plant growth.

Just a side note: CONTAINERS—YOUR MOM MAY HAVE POTS OF ANNUALS ON THE PATIO OR HANGING BASKETS...usually is what we call a soilless mixture...a combination of peat moss, perlite, compost and slow release fertilizer. See how light and fluffy this mixture is? Why? No soil! The reason they use this is because it is easy for the roots of the plants to grow. Since it is so light, it doesn't hold water, and needs to be watered every day and on hot days, maybe twice. Why? It dries out soooooo quickly. Is this a good type for a garden? Probably not!

Let's talk first about CLAY, the type of soil on our farm. It is very heavy, which holds moisture, but hard as a rock (or brick) when it is dry. Clay is one of the major ingredients in bricks. Here's some clay soil I dug from my own garden. See, it sticks together which makes it hard to accept water and drainage is very poor. However, if the water is added slowly, it retains moisture for a long time.

Here I have SANDY/GRAVEL soil. Have you ever been to a desert or the sandy beaches of Lake Michigan or another lake? The sand is light when it is dry, not much moisture, and if you add water to it, it runs right through. Not much grows in SAND except cacti and grasses along Lake Michigan.

The third type of soil is LOAM, by far the best, almost perfect. Unfortunately I don't have a sample since it isn't real common in this area. It is a mixture of clay, sand and silt (black soil on river bottoms and in low, boggy areas, often referred to as muck). Don't confuse this with topsoil that you can purchase by the bag or from a Landscape store. Topsoil is just that, the top 6 to 8 inches of soil wherever it is being dug from. If you've seen a gravel pit, they dig deep holes and somehow separate the rock from the sand from the topsoil. Another subject. Loam soil is light, doesn't stick together, holds moisture and has good drainage.

So what can we do to our soil to make it better for our plants? WE can add stuff, called amendments, to it. Some of the common ones I'll share with you today are compost, and peat moss.

COMPOST: is decomposed organic material. Several forms are animal manure, mushroom decay, worm castings, mint mulch, compost at the City of DeWitt on West Main Street by the Fire Station and the kind I make, leaf/grass/kitchen scraps. They are all good, but should be used in moderation.

[I compost all my veggie and fruit scraps, any kind of peels...banana, orange, apple, potato; egg shells (referred to as green) and in the fall, leaves, referred to as brown. If you compost it is important to have an equal mix of brown and green so that the compost is more balanced. I have a pile in my side yard and add scraps to it regularly, even during the winter. For a compost pile to work it needs 4 components, organic matter (the scraps and leaves), moisture, oxygen and bacteria. Wetness should be about the same as a wrung out sponge. If it is too dry it will take longer to decompose. Oxygen is needed to help the bacteria break down the plant material. I take a fork or shovel and turn (dig it up and turn it over). Sometimes a compost pile can get a little smelly and turning it helps with the odor, too. Finally, bacteria, microorganisms which are found naturally such as earthworms and other bugs, the real workers. I let mine set for about a year but if you want to speed up the process you can add fertilizer or topsoil.)]

COMPOST...you can get it for free from the City of DeWitt, although it is not screened, which means they've taken out the bigger pieces of organic material, or buy it in a bag or by the yard at a landscape store. It is light and

mixed with sand adds structure to the soil and with clay, breaks it up and makes it easier to work with.

PEAT MOSS....is decayed vegetation in dense patches in wet, boggy or swampy areas. It is a light weight, fluffy, brown material that has been milled, harvested and compressed into bales. It is able to store up to 20 times its dry weight in water and slowly releases it into the plants that surround it. Although it is grown all over the world, 2/3 is in Russia, there are large reserves in Finland, Ireland, Canada and the Northwestern part of the Midwestern states. I think there's one between Elsie and Owosso. You'll find it in stores in 1 or 2 cubic foot bales and called Canadian Sphagnum Moss. In some countries it is used for fuel. Some environmentalists are concerned about peat moss conservation because 10 million cubic yards are harvested from Canada peat bogs each year and it takes the bogs 1,000 years to produce one cubic yard.

Although not compost, you may have heard someone mention HUMUS. It is a long lasting remnant of decaying organic matter, it improves soil structure and increases water retention; however, it doesn't contain the nutrition of compost such as nitrogen and phosphate which we'll hear about a little later.

Now, what can we do with our soil?

CLAY soil is hard and difficult for water to run through it. What do you suggest we add to it?

Sand for better drainage?

Peat Moss, aerates plant roots by loosening the soil.

Compost—makes it easier to work with and gives it natural nutrients.

DeWitt compost, Cow manure, mushroom, worm castings, homemade.

SANDY/GRAVEL soil lets the water run through too quickly and doesn't have much nutrition. What do you suggest? Peat Moss adds body to the sand and helps hold moisture and release nutrients over time. Compost for added nutrients and structure.

LOAM SOIL—really doesn't need anything. Compost and fertilizer might be good.

I use a combination of 1/3 each of peat moss, cow manure and compost to top dress my gardens. That means take a handful and sprinkle on the existing soil around each plant. This is also a good recipe to use when starting your garden.

Garden soil fertility determines the ability of the soil to grow healthy plants. A soil that lacks essential nutrients will produce weak, disease-ridden or small plants. Improving a garden soil requires adding organic matter and nutrients to replace what is used by the plants growing in the soil.

How do we measure the fertility? Minerals.... pH level—a measurement from 0-14. Simply said, pH level refers to the amount of acid and alkaline contained inside of both the water and growing medium (soil) Soil pH affects what nutrients are available in the soil. Plants require a supply of nutrients to stay healthy. A pH of 7.0 is neutral. Any values below 7.0 are acid and any values above 7.0 are alkaline. The ideal pH values for vegetable garden soils are 6.0 to 6.5. Tests are available from the MSU extension office. Simple test kits and meters are available at local gardening stores.

Minerals in the soil.....Soil tests are done to give a farmer or homeowner an accurate picture of the current state of the soil. Recommendations for the amount of fertilizer to use are based on the analysis. Three components are Nitrogen, Phosphorous and Potassium, with the symbols N, P and K, describing the nutrients needed by plants and the ones most likely to be lacking in the soil. How do I remember what N, P and K mean?

Nitrogen, symbol “N” for NICE, green leaves, and is necessary for photosynthesis and other processes of growth and development. Too little nitrogen and leaves will be stunned and yellow while too much causes dark green leaf growth with few flowers and fruit. Some forms of nitrogen are rapidly depleted and often unavailable to plants in the soil. It is renewed from the breakdown of organic matter by microorganisms but may not be assessable in cold spring soils. God and Mother Nature’s way of making nitrogen available to plants is thunder, yes thunder, making the earth shake and move. This releases the nitrogen in the soil so the plants can access it.

Next is Phosphorous, “P” for PRETTY, as in flowers, fruit and seeds. Too little will produce small flowers, fruit and little seeds. It is a stable element and does not move through the soil easily and overuse may cause run off. Manure is high in phosphorous and environmentalists are concerned with the large dairy farms and how they dispose of their waste and fertilizers containing phosphorous may run off into creeks, streams and rivers and upset the natural ecology.

The last one, Potassium is “K” and I don’t have a key for that letter. However, it is necessary for flowers, fruit seeds and stems. Deficiencies will cause weak plants and smaller flowers and fruit.

SITE SELECTION AND PREPARATION:

Most plants require at least 8 hours of sun a day. Take time to watch the area and mark with stakes areas where the sun shines the longest. Will a building or tree shade the area part of the day? The sun moves to the North in the summer so be aware of more shade on the south side of a building. How about other competition? For moisture? Are there trees close by that suck up the water. A tree's roots spread far beyond the limbs on the trees. Or wind, even a light wind over the course of a summer can

cut yield by as much as 25% and which may dry out the soil or tall plants may need to be staked.

DEER, RABBITS - WEED SEEDS
FROM AN OPEN FIELD

Once you're sure of the site, dig a hole two feet in diameter by one foot deep, with vertical sides and a flat bottom. Look at the cross-section of soil layers down the side--probably a few inches of black topsoil, turning lighter and more rocky towards the bottom. If you have six inches of black topsoil, great. Poke at the sides. What's it like lower down? Any sand? Pebbles or pea gravel? None of that's too bad. Any particles that look non-mineral and might possibly be plant life that died and became soil, also known as organic matter? That's good. Or is it clay? Clay is light brown, looks like clay, squishes like clay, is clay. Small to moderate amounts of clay we're going to deal with--we'll add sand. However if you run into heavy clay, and may want to have it removed by an excavating service. Now fill the hole with six inches of water. Does it drain in less than three minutes? Good.

①

1-2"

The best way to prepare the bed is to first remove sod with a sod cutter (water it first) THEN completely remove the top six inches of soil with a shovel, tossing it onto a tarp spread alongside. Now add coarse, sharp sand, not a lot, fling it out a shovel full to every four square feet. Then add a three- to four-inch layer of organic matter, such as compost, peat moss, composted manure, or all three. Rototill completely to a depth of EIGHT inches. You've just revitalized and prepared your soil down to 14 inches deep.

Next toss the dirt from the tarp back onto the bed. If you aren't planning on raising the bed you won't need all of it, so some goes on the compost pile and some is used to start your very own polite dirt pile next to it. If this dirt is pretty good, black, has some sand particles in it, you probably don't need to add any more sand, although I always do. The

important thing is that you next heap on the organic material, lots of it, to comprise at least one-third of the finished garden soil. ~~Rototill the whole area again as deep as she goes.~~ Arc an unraised bed so the middle is noticeably higher than the edges.

Mulching—mulch with newspapers, shredded bark, grass clippings between rows for weed control

Watering—it it doesn't rain, be sure that your plants get at least one inch of water a week.

Weeding—Pull the weeds when they are small so you don't disturb the soil.

Insects—Watch for critters throughout the year. Take time on your own to study beneficial insects.

Harvesting—hooray!!!

Vegetables

Asparagus	6.0-8.0
Bean, pole	6.0-7.5
Beet	6.0-7.5
Broccoli	6.0-7.0
Brussels sprout	6.0-7.5
Cabbage	6.0-7.0
Carrot	5.5-7.0
Cauliflower	5.5-7.5
Celery	5.8-7.0
Chive	6.0-7.0
Cucumber	5.5-7.0
Garlic	5.5-8.0
Kale	6.0-7.5
Lettuce	6.0-7.0
Pea, sweet	6.0-7.5
Pepper, sweet	5.5-7.0
Potato	4.8-6.5
Pumpkin	5.5-7.5
Radish	6.0-7.0
Spinach	6.0-7.5
Squash, crookneck	6.0-7.5
Squash, Hubbard	5.5-7.0
Tomato	5.5-7.5