



Soil Health in Raised Beds

Raised beds present a unique opportunity for soil health management.

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Raised Beds carlfbagge / Flickr

By selecting the contents of the raised bed, soil properties like texture, drainage, and organic matter content can be controlled. A soil and compost mix is recommended, at a ratio of 70% soil to 30% compost. Make sure that both the soil and compost are good quality and from reputable sources.

Although the initial set-up influences overall soil

health the most, there are several strategies to use throughout the life of the raised bed to both improve and maintain soil health (see [Soil Quality Information](#) for more about soil health). The USDA NRCS outlines four basic soil health principles:

Minimize soil disturbance

This should be easy to accomplish- most growers aren't using a rototiller or other tillage implement in this system. It is common to use a shovel or hoe to mix the soil or incorporate soil amendments - which is a form of soil disturbance - but this is far less damaging. Decreasing soil disturbance conserves soil aggregates (clumps) by not breaking them apart and forcing them to reconstruct. Aggregates form pores that allow water and air into the soil needed by both plant roots and soil organisms.

It is worth noting that plant residue will break down slower without tillage- this is normal, and this is what allows organic matter to accumulate.

Keep soil covered

This principle is focused on protection of the soil habitat. If the soil is left uncovered, it is much more susceptible to erosion, as well as temperature fluctuations that can stress both plants and soil organisms. Cover crops (an unharvested crop grown as part of the rotation plan to provide conservation benefits) can be used to help extend the growing season. Even on such a small scale, cover crops can make a difference- they can increase organic matter, prevent erosion, conserve soil moisture, provide nitrogen for future crops, suppress weeds, and even reduce compaction. Another way to keep the soil covered is by utilizing mulch- this can take many forms including black plastic, plant residues, and compost. Mulch reduces evaporation rates as well as increases the amount of water able to enter the soil from rain or irrigation.

Maximize plant diversity

Every grower should be rotating their crops every year, so this is something most of us are already doing. Having more diverse plants allows for more diverse soil animals and microorganisms. This helps to break up disease cycles as well as stimulate plant growth. Cover crops can work well for this objective also. If the residues are left on the soil surface, organisms decompose the residue and nutrients are released back into the soil. This serves to increase both nutrient availability and organic matter.

Maximize the period of living root growth

This principle is directly related to keeping the soil covered. Ideally, the soil would be covered with living plants that also have living roots. Raised beds are inherently able to grow crops for longer- since they are not insulated by surrounding soil, they warm up faster in the spring which allows for earlier planting and a longer growing season. Other ways to extend the growing season include planting winter-hardy crops, using row covers or cold frames and putting down mulch. The cycle of continuous growth and dieback of plant roots feed the organisms inhabiting the soil. Living roots also reduce erosion and hold soil moisture.

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