

Community Horticulture Fact Sheet #42 3-Way & 5-Way Soil Mixes

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Topsoil, which is the uppermost layer of the earth's surface, is a very valuable resource. Topsoil has been created over the millennia by the physical and chemical action of climate and weather on the earth's parent rock materials and the accumulation of decaying organic matter derived mostly from plants. Depending on where a garden is situated, its topsoil may be anywhere from a few inches to many feet in depth.

Frequently, additional topsoil is needed for gardening and landscaping activities. An increasingly common gardening practice is building mounds (berms) or beds to grow plants above the level of the native soil. This is especially appropriate when the native soil is poorly drained or when there is little or no topsoil. Besides areas where little topsoil has developed naturally, building sites often have no topsoil because it was removed or buried during grading or construction.

Unfortunately, genuine topsoil created by natural forces is often unavailable because it is so scarce. When it can be obtained, it is often very expensive. To make up for this scarcity a combination of materials is often sold as topsoil. They may be called 3-way or 5-way mixes, but no matter what they're called they usually consist of mixtures of subsoil, sand, composted yard wastes, sawdust, manures and biosolids (sewage sludge). Because there are no legal standards for these materials, their makeup varies depending on the preference of the maker or the availability of materials.

A good "topsoil" should have loose and open structure so that it is fast draining. At the

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same time it must be able to retain enough moisture so that plants growing in it are not constantly subjected to drought stress. The above materials, when combined in proper proportions, should provide these physical qualities.

A lack of success when using these mixes may be related to several causes. Often the mix is simply thrown down on top of the ground and no attempt is made to incorporate some or all of it with the native soil. When this is done, a perched water table is created. Water will not move freely across interfaces created by two radically different soils butting up against one another. This area may remain soggy to the point that plant roots are suffocated.

When any mix is added to a garden, it should be incorporated into the native soil. At the very least, a shallow transition zone of the two soils mixed together should be created. Accomplishing this will eliminate the problem of water not moving through them.

Vegetable gardens and areas intended for new lawns should be treated this way. The same precautions should be taken when digging planting holes for shrubs and trees. Never discard the native soil. If a manufactured mix, or even natural topsoil for that matter, is to be used as backfill, it should always be incorporated into the native soil.

For the majority of woody plants, however, amendments to native soils are neither necessary nor desirable. If the soil is very, very sandy or predominately clay, an amendment might be helpful but should

involve as large an area as possible, not just a small planting hole.

An exception to the above might be made in the case of plants in the Ericaceae, or heather, family. This includes rhododendrons, azaleas, heather, blueberries and other similar fibrous rooted plants. They do better in soils with a great deal of organic matter and the incorporation of peat moss, bark, sawdust and composts is usually advised. Again try to amend the entire bed, not just planting holes.

On occasion, manufactured mixes have been found to contain substantial amounts of soluble salts, which have prevented seeds from germinating or caused young plants to be stunted or to die. It's never easy to determine the sources of these salts, but manures and synthetic fertilizers added to the mixes are possible culprits. Before planting in such mixes, it might be prudent to allow rainfall or several irrigations to carry away possible excess soluble salts. Incorporating commercial mixed with the existing soil will also help to eliminate the problem.

If you intend to use a manufactured mix to grow vegetables, you should find out whether biosolids (sewage sludge) have been used as part of it. In the past, many biosolids have been contaminated with heavy metals, which are toxic to humans. Many vegetable crops, especially leafy ones, pick up heavy metals from the soils. If a mix contains biosolids, question the manufacturer about whether it has been tested for heavy metals. Unless low levels can be guaranteed, look for a different mix for your vegetable beds.