

Agronomic Considerations Before Amending Soils with Fill Dirt  
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Generally, the upper part of the soil, which is richest in organic matter, is most desirable for use as topsoil; however, material excavated from deeper layers is also used. There are several soil properties that are used to rate the soil as topsoil. Although all are important this article will address properties that affect plant growth and spreading of the soil material.

The physical and chemical soil properties and qualities that influence plant growth are the presence of toxic substances, soil reaction, and those properties that are inferred from the soil texture, such as the available water capacity and fertility.

Excessive amounts of substances that restrict plant growth, such as sodium, salt, sulfur, copper, and nickel, create problems in establishing vegetation and, therefore, also influence erosion and the stability of the surface.

Materials that are extremely acid or have the potential upon oxidation of becoming extremely acid are difficult and expensive to vegetate. Vegetation is also difficult to establish on soils that have high pH. They also contribute to poor water quality, in runoff or in ground water.

The available water capacity also is important in establishing vegetation. Available water capacity is the volume of water that should be available to plants if the soil, inclusive of fragments, were at field capacity.

Soils that have a low available water capacity may require irrigation for the establishment of vegetation. Depending on their abundance and porosity, rock fragments reduce available water capacity. Nonporous fragments reduce available water capacity in proportion to the volume they occupy, for example, 50 percent nonporous cobbles reduces available water capacity as much as 50 percent. Porous fragments, such as sandstone, may reduce available water capacity to a lesser proportion.

The stability of the soil depends upon its erodibility by water and its strength. Water erodibility is indicated by the K factor. Potential slippage hazard is related to soil texture, and although other factors also contribute, the ratings of soil texture represent one important factor.

Soil texture also influences a number of the properties listed above, such as available water capacity and erodibility by water. Texture also influences soil structure and consistence, water intake rate, runoff, fertility, workability, and trafficability. Loamy materials as opposed to clayey have a very positive effect on the properties mentioned above.

The properties that influence the ease of spreading are the amount of rock fragments, slope, and soil texture. Rock fragments > 3 inches in diameter in excess of 30 percent of the soil by weight have very poor spreading characteristics. Slopes in excess of 15 percent could create stability and erosion concerns. Soil textures with a clay fraction between 18 and 35 percent are easily spread. Soils above 35 percent are considered to clayey.

If you are planning to accept vast quantities of fill dirt on your farm you need to ask yourself .... Will the material used to cover the area improve soil conditions for the establishment and maintenance of adaptive vegetation?