

## Materials for Improving Garden Soil Structure

### INTRODUCTION

There are a variety of materials gardeners can use to improve the structure, rooting depth and water infiltration and holding capacities of their soils.

### ORGANIC MATERIALS

#### Peat – (Sphagnum Moss)

- partially decomposed, low in plant nutrients and a very acid (low) pH, high water holding capacity (15-30 times its own weight). Sphagnum peat is lightweight, porous, light brown to tan colour when dry. Sphagnum decomposes at a moderate rate because of high cellulose content. Often used for potting soil or container soil mixtures.

#### Fibrous Peat (Reeds – sedges)

- further decomposed than sphagnum moss, higher in plant nutrients, lower water holding capacities and generally less acid. Reddish to dark brown and almost black when wet or rotted, somewhat resistant to further decay. Some sources of sedge peats may have high calcium and other elements that make it less desirable for container or potting soil mixes. These peats are suitable for lawns and landscaping.

#### Sawdust

Very resistant to decay. Used with other materials to provide porosity and aeration of soils, but have only fair to poor water and nutrient holding capacities. Nitrogen needs to be added to compensate plants when sawdust is added to soil, otherwise nitrogen starvation may occur.

Fresh Western red cedar sawdust and hemlock bark are often toxic to flowers and vegetables grown in containers or restricted areas, but may be tolerated by hardier shrubs when applied at low rates.

#### Composts

Composts are decomposed plant residues, often from a variety of materials. Usually have good nutrient holding capacities and high biological activity.

Spent mushroom compost usually consists of straw, manure, peat or wood, plus a number of other organic materials and agricultural minerals.

Composts provide moderate nutrient and humus contributions.

#### Manures

Manures are best used when rotted and composed to reduce salt content and weed seed contamination. Manures vary in nutrient status according to amount and type of bedding used, type of animal source and degree of rot. Water and nutrient holding capacities of rotted manure are fair.

#### Digested and Composted Biosolids

Biosolids undergo anaerobic or aerobic digestion and are then dried and may be composted and then mixed with other materials. Some biosolids may have elevated levels of heavy metals resulting from industrial sources. Biosolids should be used in a way that meets the requirements of the Organic Matter Recycling Regulation (municipal biosolids) or the Soil Amendment Code of Practice (industrial biosolids).

High quality composted biosolids can be used as a base for other amendments or applied directly to soils to improve structure characteristics.

## **INORGANIC MATERIALS**

### **Vermiculite**

Heated micaceous mineral ore which expands to a lightweight product that can hold water to several times its own weight. There is sufficient air for plant root growth when vermiculite is very wet.

Vermiculite is used for greenhouse container and potting soil mixes.

### **Perlite**

Perlite is a glassy volcanic rock that is heat treated, becoming a white coloured bead like particle of low density. It is used in soil mixes to provide good aeration and drainage. Perlite is often combined with peat for commercial and home use in potting soils. It is inert, water-insoluble and has a pH of 6 to 7.

### **Pumice**

Spongy, light, porous volcanic rock which promotes good water infiltration and aeration. Water and nutrient capacities are fair to poor. Some sources of pumice have very fine pores which results in poor water-releasing properties.

### **Sand**

Sand is low in water and nutrient holding capacities, but is valuable when mixed or composted with other materials. Fine sand (0.1 – 0.25 mm particle size) will pack and cause poor aeration. Medium to coarse sand (0.5 – 2.0 mm) will provide a stable mix where it is not subject to heavy rainfalls or watering. Coarse sand (greater than 2.0 mm) is preferred when amended soils are to be exposed to rain or watering frequently. High volumes of sand are often required when amending soils, and it is not recommended to be the main component to improve fine textured clay soils.

---

#### **FOR FURTHER INFORMATION CONTACT**

Phone: 604.556.3001  
Toll Free: 1.888.221.7141

#### **MINISTRY OF AGRICULTURE**

1767 Angus Campbell Road  
Abbotsford, B.C. V3G 2M3