



## MULCH CORNER

### OTHER INORGANIC MULCHES

*By John Ferguson*

#### **Crushed Glass**

Many communities are recycling glass bottles. When the bottles are separated by color they can be made into an inorganic mulch. After separation, the glass particles are tumbled in a machine very similar to that used in polishing rocks. The tumbling process rounds off the sharp edges and then the glass pellets are screened into different sizes. The main use is in association with cactus and desert type landscaping.

#### Pros:

This mulch can be very attractive in special applications. It is good for some shady areas, prevents weeds, doesn't decompose, and it can work well around fountains and birdbaths. It also does not blow or wash away, it is a sustainable product (as it is made from recycled material), it is available in a variety of colors for special effects and for its reflective properties that make it useful for disease and insect protection. It has also been found to be very effective in dust control on dirt roads, reducing dust problems by 80% or more (does not have to be colored separated for this usage).

#### Cons:

The following are some of the cons associated with glass mulch:

It can have sharp edges if not produced properly, and it can sink into soil requiring reapplication. Its use also increases the heat index in the area, and it can cause extremes of wet and dry soil. Extra heat can burn or kill shallow rooted plants. It may leach dangerous metals used in the coloring process depending on the type of glass used. This mulch is generally of poor quality except for the special cases noted above. Glass mulch can generally be applied 3-6" deep with some form of weed barrier (fabric, pavers, etc.) underneath it to prevent mixing into the soil.

#### **Gravel**



Pros:

As a mulch, gravel can be good in some shady areas, it prevents weeds and doesn't decompose. It can look very nice in some applications and does not blow or wash away. Sometimes loose gravel can also be used on walkways, under windows and other applications to make the approach of visitors more audible. It's main use is with cactus and desert

type landscaping. Sometimes it used to slow water runoff in dry areas so as to help capture rainfall and allow it to soak into the ground. It also slows down evaporation rates if the layer is thick enough (3-6 inches). Gravel is available in our region in two colors, a basic medium brown (flint rock) or mixed colors (quartz rock) often called Rainbow rock. Gravel is available in several sizes. Pea gravel is often 3/8 to 5/8 inch, River rock is often 5/8 - 2 inch, and Bull rock which is 2-5 inch. If all sizes are mixed together it may be called septic rock. It is always best to go look at the gravel before one purchases as the names and sizes vary with different suppliers. Gravel typically comes from stream beds where the tumbling action of running water has naturally rounded the edges.

Cons:

Gravel is generally a poor quality mulch except for special cases (arid areas). It can be very expensive, hard to apply and can sink into soil requiring reapplication. It also increases heat index, can cause extremes of wet and dry soil. Extra heat can burn or kill shallow rooted plants.

### **Lava Rock**

Pros:

Lava Rock can be good in some for shady areas. It doesn't decompose, breathes better than gravel, porous types offer roots better protection against heat than gravel, and it is sometimes available in various colors that don't fade. Like all inorganic mulches, it is fire resistant and doesn't blow away. It is lighter than gravel and as a result does not sink into the soil as fast as gravel. Most lava rocks are also para-magnetic which new tests are showing is beneficial to many plants. Apply 3-4 inches deep for best results.

Cons:



As a mulch it varies between poor to fair in quality. It can be very expensive as it must be shipped from New Mexico or other western states. It may be hard to apply, can sink into soil requiring reapplication, increases heat index, can cause extremes in wet and dry soil and can look bad in large amounts. Extra heat can burn or kill shallow rooted plants. It must be compatible with garden and landscape design to look good.

### **Flat Rock**

Pros:

There are many types of flat rock, sandstone, limestone, cut granite, etc. These are good for rock gardens, and they do not decompose. Weeds cannot penetrate them, and their use can reduce erosion.

Cons:

Apply a one inch layer thick. Flat rock is best used as a decorative feature. It can be very expensive, hard to apply, increases heat index, can cause extremes of wet and dry soil and it will sink into soil over time due to its weight.

### **Crushed Rock:**

Pros:

Crushed rock may be produced from many forms of rock (granite, basalt, limestone, etc.. Being crushed, it has sharper edges and locks together better than gravels which are rounded and tend to slip when one walks on them. This mulch is good for rock gardens, doesn't decompose, reduces erosion, and can supply nutrients depending on type of rock material. It is best used when applied 3-6 inches thick.

Cons:

It is expensive due to the cost of crushing and shipping into the Gulf coast, it increases heat index, can cause extremes of wet and dry soil,, and extra heat can burn or kill shallow rooted plants. Note that white stone (i.e. limestone, some sandstones, etc.) are light reflective and can be used to brighten shady areas but in sun it also reflects heat increasing plant heat stress and your air conditioning bill if near a house or building.



### **Brick Chips (Crushed Brick):**

Brick chips are popular in some areas. Being crushed, it has sharper edges and locks together well. It is good for rock gardens, doesn't decompose, reduces erosion and is available in several different colors. As with most inorganic mulches, it works best when applied 3-6 inches thick.

Light colored brick chips are light reflective and can be used to brighten shady areas.

#### **Cons:**

It can be expensive, increases heat index and can cause extremes of wet and dry soil. Extra heat can burn or kill shallow rooted plants.

Last week we looked at specialty plastic so this week we are going to review some of the research on plastic mulches.

### **Effects of Colors:**

This is a new area of research that we are beginning to understand. The color of mulch and other materials affects plant growth. Research at Texas A&M University studied trees that were planted in paving bricks (pavers) of three different colors; a light (blond), medium (red-brown), and dark (charcoal). The light and medium colored bricks reflected the most photo synthetically active (growth promoting) radiation. The air temperature above the plants was less for the lighter colors as compared to the darker colors. In the fall and winter on sunny days the air temperature was as much as 35 degrees (Fahrenheit) higher, which could make the trees (plants) more susceptible to damage from sudden cold snaps. In addition, the darker the color the more root growth was decreased in the upper portions of the soil, which resulted in reduced growth above ground. This effect was more pronounced in the shallow rooted species.

### **Genetic Effects:**

The USDA has found that a plant's gene activity changes with the type of mulch applied and with the type fertilizer used. Some of the research was done on tomato plants and they found at least 10 different genes were affected. For example when an organic mulch like mown hairy vetch was used instead of black plastic, the tomato plants lived longer and developed less fungal disease. When the organic vetch mulch was used, two genes for plant defense (immune system) and two genes for regulation of aging greatly increased their activity. The researchers also found that fields mulched with



mowed vetch receiving only half as much fertilizer produced larger yields than conventional plastic mulch fields with the full amount fertilizer. The fields mulched with mowed vetch also provided other benefits such as reduced erosion, decreased disease and the delays in plant aging. One of the genes studied produces chitinase (an enzyme that dissolves the walls of attacking fungi) along with osmontin (another defensive compound) and extra activity of receptors for cytokinins that regulate plant ageing. The mowed vetch mulched tomatoes more developed root systems that allowed for better nutrient absorption.

Note - many gardeners have reported that a one inch later of good compost and topped off with 4-5 inches of hay gave the best results (increased yield and flavor). Dried hay combined with compost would have similar properties to the mowed vetch hence the above research may explain part of their observations.