Chapter 1

Characteristics of Various Soil Amendments: Soil Sustainability

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ABSTRACT

Nutrients play a key role in maintaining soil fertility. Regular use of chemical fertilizers has great impact on soil infertility. Nutrient supply for soil sustainability is the most important step to maintain the fertility and integrity. The enrichment of soil with organic matter could reduce the content of bioavailable metal species as a result of complexation of free ions of heavy metals. The NPK ratio in the soil should be maintained for the good crop yield. There are various organic and inorganic materials available to mix with soil to enhance the soil fertility. Misuse of soil amendment can result not only in damage to crops but can also cause negative impact on soil fertility.
BACKGROUND

The primary role of soil amendments is to provide nutrients for crop growth or to provide materials for soil improvement. Misuse of soil amendments can result not only in damage to crops but can also cause negative impacts on the receiving soil, water, air or habitat environment. A soil amendment is any material added to a soil to improve its physical properties, such as water retention, permeability, water infiltration, drainage, aeration and structure. The goal is to provide a better environment for roots. To do its work, an amendment must be thoroughly mixed into the soil. If it is merely buried, its effectiveness is reduced, and it will interfere with water and air movement and root growth. Amending a soil is not the same thing as mulching, although many types of mulch also are used as amendments. Mulch is left on the soil surface. Its purpose is to reduce evaporation and runoff, inhibit weed growth, and create an attractive appearance. Mulches also moderate soil temperature. Organic mulches may be incorporated into the soil as amendments after they have decomposed to the point that they no longer serve their purpose. Common sources of micronutrients and metals are manure and chemical fertilizer. Some metals are plant micronutrients while some can become contaminants (toxic to soil microorganisms or plants). The availability of these elements varies, depending on soil type and soil pH. The major micronutrients and metals found in manure are iron, manganese, boron, chlorine, zinc, copper and molybdenum. Under both neutral soil pH and average organic matter conditions, most micronutrients in manure are available to the crop.

AMENDMENTS IN SOIL

Organic vs. Inorganic Amendments

There are two broad categories of soil amendments: organic and inorganic. Organic amendments come from something that was alive. Inorganic amendments, on the other hand, are either mined or man-made. Organic amendments include sphagnum peat, wood chips, grass clippings, straw, compost, manure, bio-solids, sawdust and wood ash. Inorganic amendments include vermiculite, perlite, tire chunks, pea gravel and sand. Wood ash, an organic amendment, is high in both pH and salt. It can magnify common soil problems and should not be used as a soil amendment. Organic amendments increase soil organic matter content and offer many benefits. The organic matter improves soil aeration, water infiltration, and both water- and
Imbalances in the Cadastre and Land Book: Impediment to the Economic Development of Agriculture and Rural Area Overall
Ramona Dobre (2014). International Journal of Sustainable Economies Management (pp. 41-49).
www.igi-global.com/article/imbalances-in-the-cadastre-and-land-book/115851?camid=4v1a

21ST Century Democratic Capitalism: A Time for Action and a Time to Lead
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