

The Seacoast Stormwater Coalition

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Organic Fertilizers: Pros and Cons for a Turf Manager

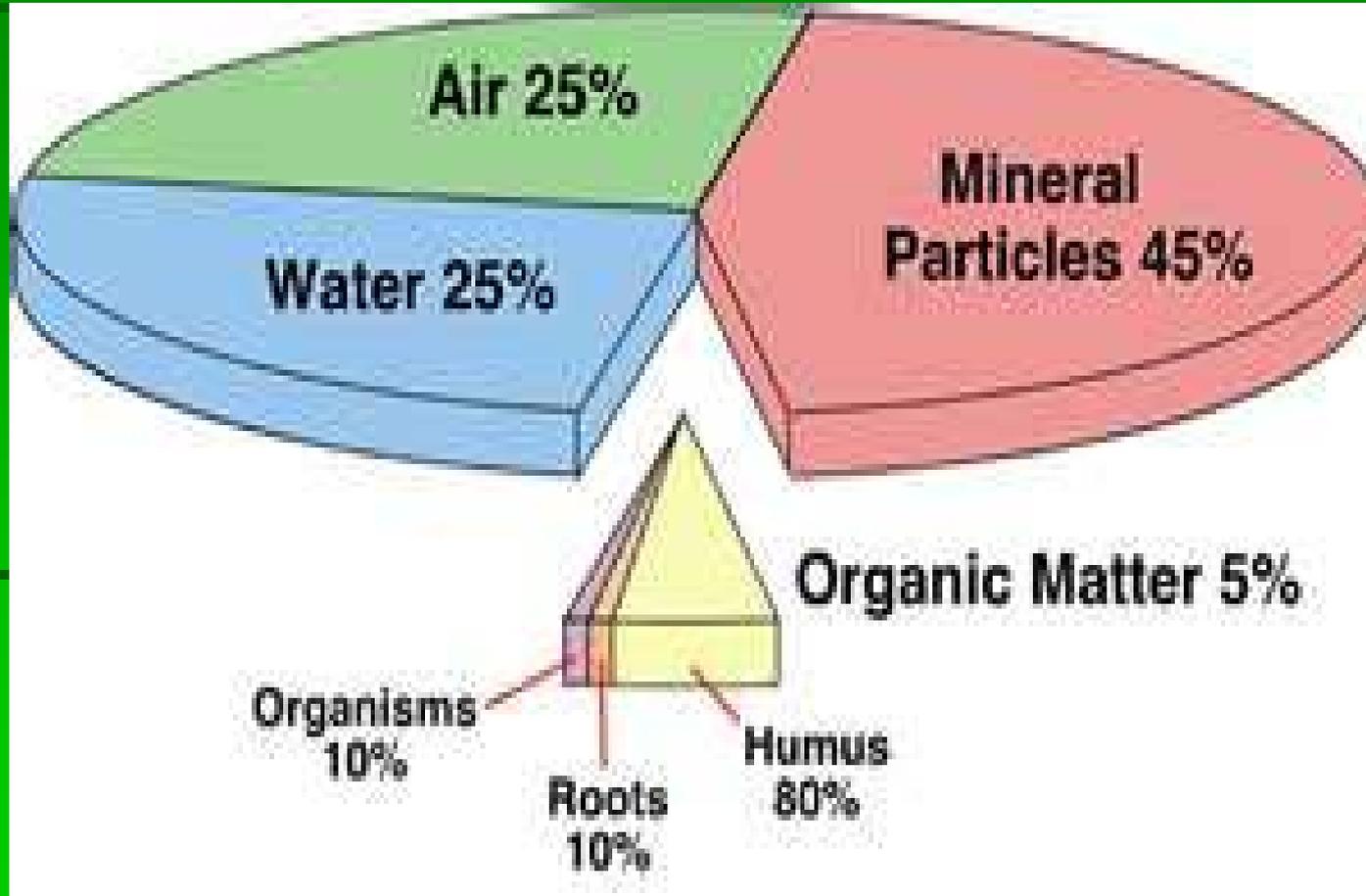
First things First

- Its the Soil
- Levels of Cultural Management
- Expectations

Soil Testing

- Organic Matter
- pH and Potential Acidity
- Nutrient Levels

An Ideal Soil



Levels of Management

- Golf, Athletic Fields and other high end applications
- Functional Turf
- Groundcover



Cultural Implications

Fertilization

- Timing and Rates of Nitrogen Application
- Application of Other Fertilizer Nutrients

Irrigation

- Frequency and Quantity

Mowing

- Height of Cut/Clippings/Frequency

Cultivation

- Timing of Core Cultivation
- Disposition of Extracted Soil Cores

Clients Expectations

- The Color Green
- Look Healthy
- Density
- Weeds
- Insects/Diseases
- Cost



Compost ***A Soil Amendment***

- Excellent to Use at Establishment Time
- Can be Used as Topdressing
- Compost Tea



Benefits of Compost

- Activates Biology in the Soil
- Improves Structure/Flocculation and Water Management
- Modifies pH and Increases CEC and can Supply Nutrients
- Do not use Compost as a Fertilizer
- Bad Compost?
- Can Compost Pollute?

Organic Matter Amendments

Compost

- Use when needed to add Organic Matter
 - ✓ 1 inch/yr in established gardens/plantings
- Don't use compost as a Fertilizer !
 - nutrient benefit is long-term
 - nutrient content not balanced or complete

- ✓ Will supply most of needed phosphorus
- ✓ Will not supply sufficient nitrogen first year

➤ **Caution: no shellfish compost around acid-loving plants**

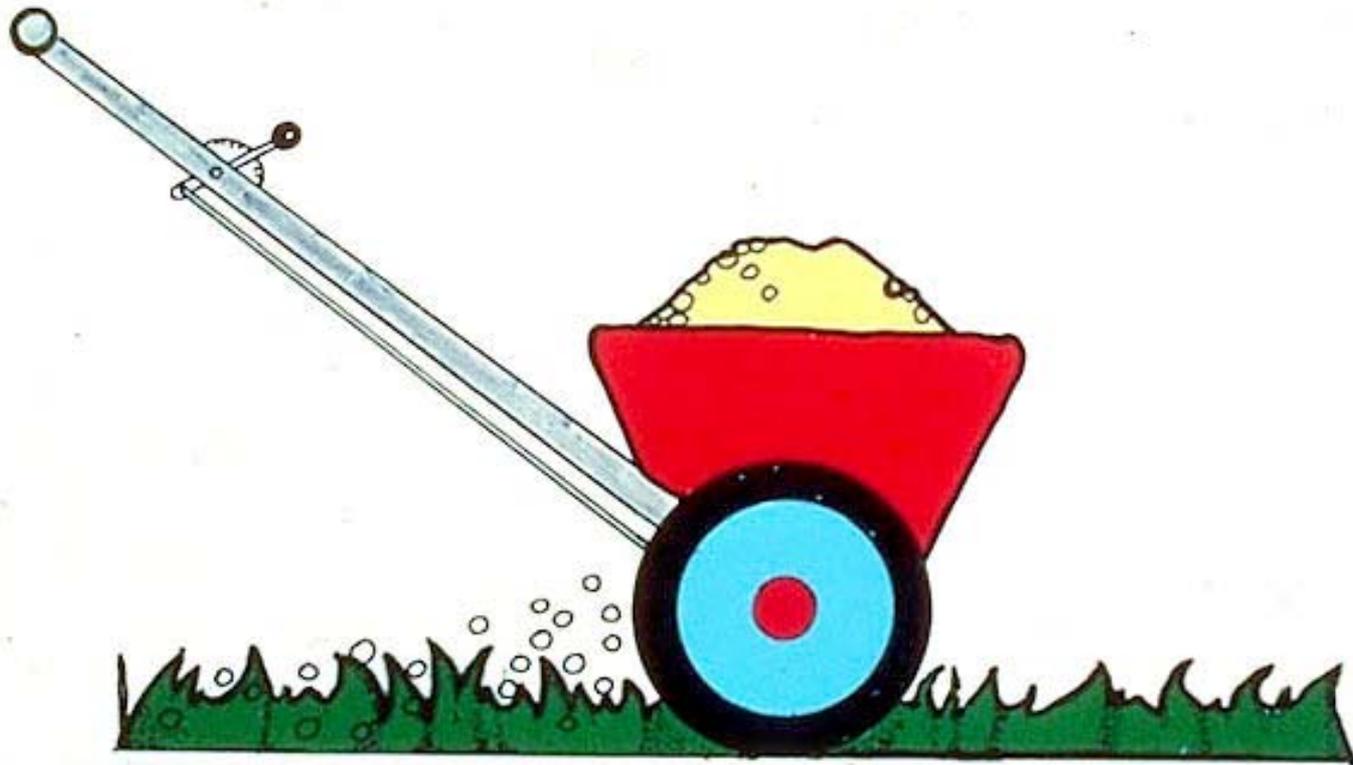
Compost Tea

water extraction of compost

- Primary benefit as a microbial inoculant
 - ✓ beneficial microbes extracted (keep well aerated)
 - ✓ some nutrients extracted (K, NH₄/NO₃)
 - ✓ water-soluble carbon extracted (highly available)
 - ✓ often enhanced with complex sugars (ex: molasses)

- Boosts microbial activity in soil
 - ✓ “Priming Effect” on soil microbial activity
 - ✓ speeds release of existing soil nutrients

Fertilization



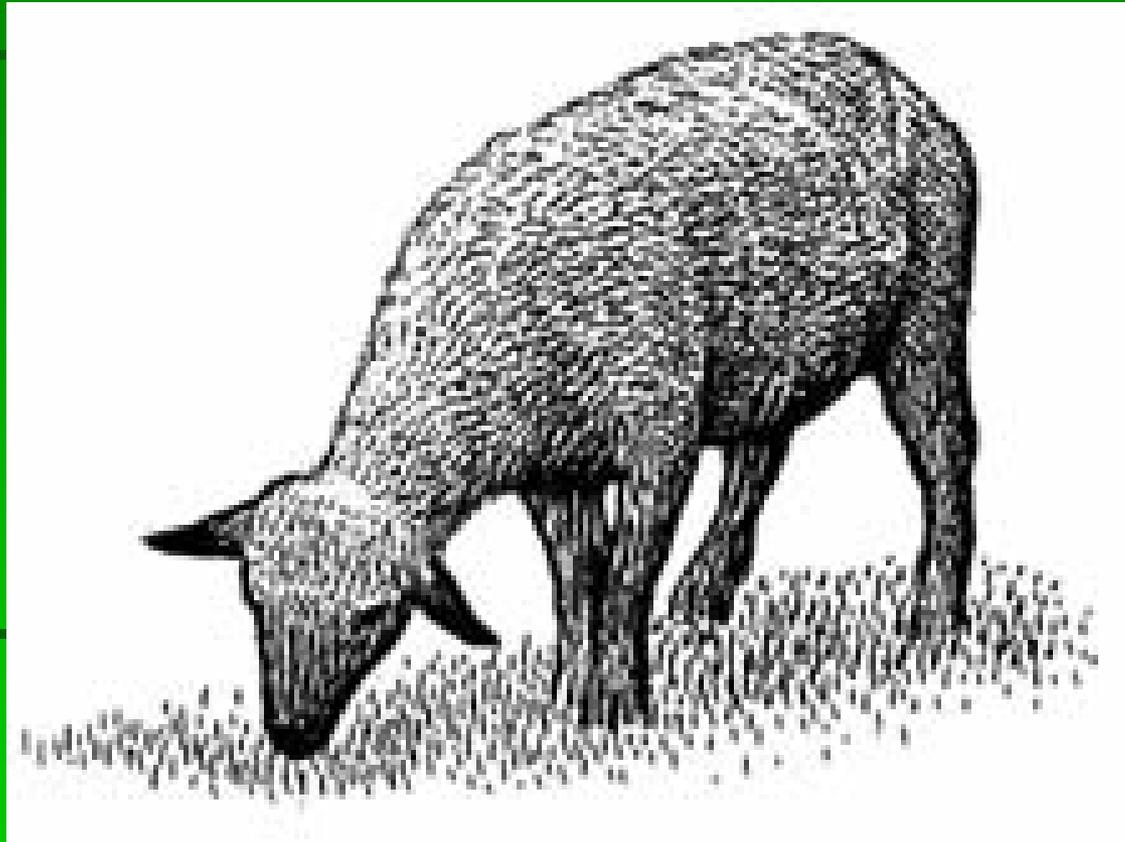
Fertilizer

- Fertilizer is not 'PLANT FOOD'
- What is plant food?

Photosynthesis in the presents of sunlight creates simple sugars which is plant food

- N,P and K are nutrients for plant growth
- Organic/Chemical Fertilizers nutrients are are the same to a plant

Natural “Fertilizing”



Things to Consider

- **Why**

 - Levels of Management

- **What**

 - Bluegrass/Fescue – Organic/Inorganic

- **Where**

 - Shaded/Sandy Soil

- **How and How Much**

 - Equipment/ Calibrated

- **When**

 - Phenology / Weather

What is Organic ??

➤ Derived from natural sources

- ✓ plant byproducts
- ✓ animal byproducts
- ✓ natural mineral deposits

➤ Minimal processing

- ✓ no added chemicals
- ✓ no chemical alteration

❖ Organic Materials Review Institute (OMRI.org)

Organic vs Chemical Fertilizers

➤ Chemical fertilizers

- ✓ Purified simple salts – easily dissolve in water
- ✓ rapid availability => rapid uptake (or loss)
- ✓ high “salt effect” => desiccation/fertilizer burn
- ✓ no organic matter (food for beneficial microbes)
- ✓ Chemical nitrogen tends to lower soil pH

❖ Exceptions

- ✓ slow-release (coated) fertilizers
- ✓ Urea: simple organic compound, not a salt



Organic vs Chemical Fertilizers

➤ Organic fertilizers

- ✓ complex materials – more than 1 nutrient
- ✓ Slow(er) to very slow availability
- ✓ plant and animal byproducts add organic matter
- ✓ food for microbial growth and activity
- ✓ tend to moderate soil pH

❖ Exceptions

- ✓ rock powders & minerals supply no organic matter
- ✓ Some minerals are salts – KMag, Chilean nitrate
- ✓ Some materials breakdown rapidly
- ✓ Bloodmeal & fishmeal can burn plants (ammonia)

Natural Organic Materials



- Activated sewage sludge from the Milwaukee Sewage Commission
- Analysis: 6-4-0 plus 4% iron
- Must be supplemented with potassium
- Objectionable odor sometimes evident

Soil Nitrogen Management

N-Transformations

- Soil N forms: organic, ammonium, nitrate
 - ▣ Soil microbes convert N between forms

- Organic N → Ammonium → Nitrate
 - ▣ nitrogen mineralization sequence
 - ▣ ammonium to nitrate step produces acidity

- Factors interfering with complete mineralization
 - ▣ low pH, wet/saturated soil (low O₂), cold soil
 - **any of these can greatly limit N availability****

Soil Nitrogen Management

- Greatly complicated by climate during season
 - Organic matter most stable N, but not available
 - Ammonium-N stable, but is rapidly converted
 - Nitrate-N most available & most easily lost

- **BMP's**

 - ✓ Use slow-release sources for season-long
 - ✓ Supplement at mid-season if needed
 - cold soils and/or excess rainfall
 - may not be needed in warm/dry years
 - ✓ Comprehensive test during season as a direct check

Turf Manager's Choice

Organic Fertilizers – Pro

Helps feeds the soil microbes

Stable form of Nitrogen

Use of animal and plant by products

Organic Fertilizers – Con

Slow release of Nitrogen

Possible Phosphorus Loading

Tends to be more expensive

Thanks For Listening

And Good Luck!

