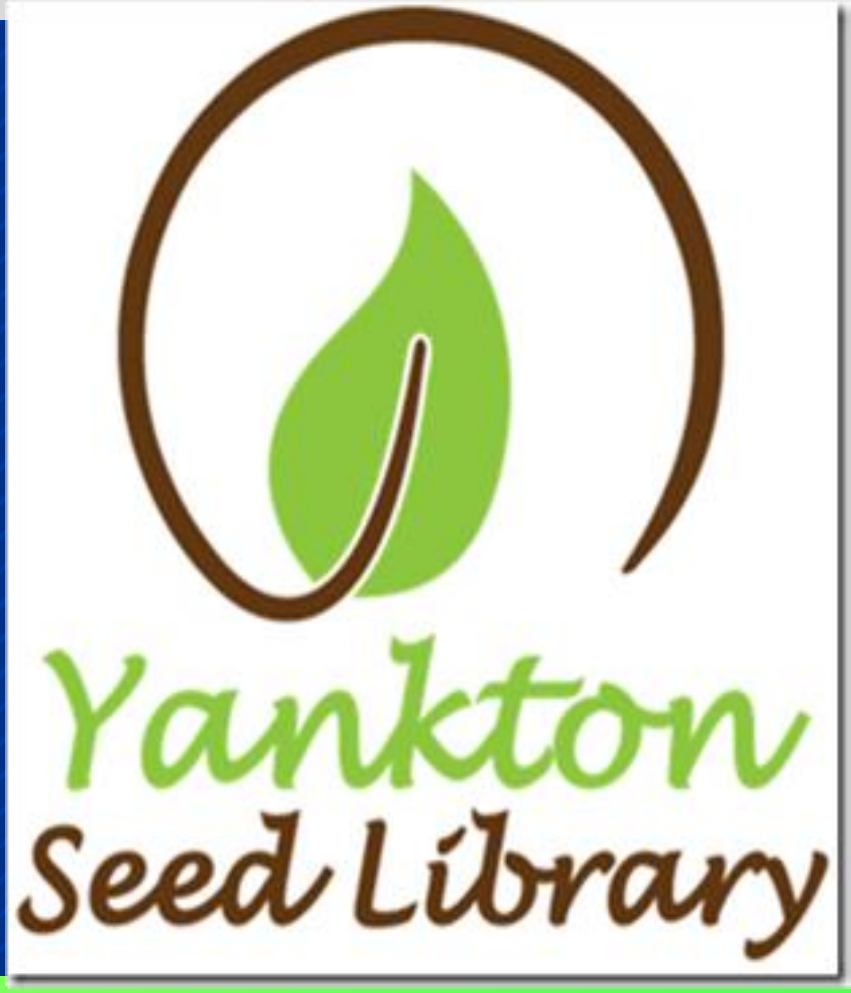
SDSU Extension

VOLUNTEER
Master Gardener Program

Caring for your Plants



Missouri Valley Master Gardeners

Watering: Is it Necessary?

- Water is essential for plants to live
- Overwatering fills the soil spaces and reduces oxygen to plant roots
- Needs to be done at the proper time
- Needs to be done in the proper amount

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Containers

- Plant in pots with drainage holes
- Don’t water until plants need it (when top inch of soil is dry)
- Water thoroughly

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Lawns

- Give good, long soakings (1” per week)
- Water trees at dripline
- Early morning watering is best
- Don’t water during hot, mid-day periods
- Automate with a timer; don’t overwater

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Gardens

- Water when top inch of soil is dry
- Aim for the roots; don’t wet the leaves
- Water slowly so it soaks in
- Water in the morning

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Improper Watering

- Stresses plants
- Contributes to fungus and other disease
- Can cause changes in leaves and roots

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Methods to Water Sprinkler

- Low cost
- Covers large area
- Manual set up and easily movable
- Fun for kids of all ages
- A lot of water wasted

Soaker Hose

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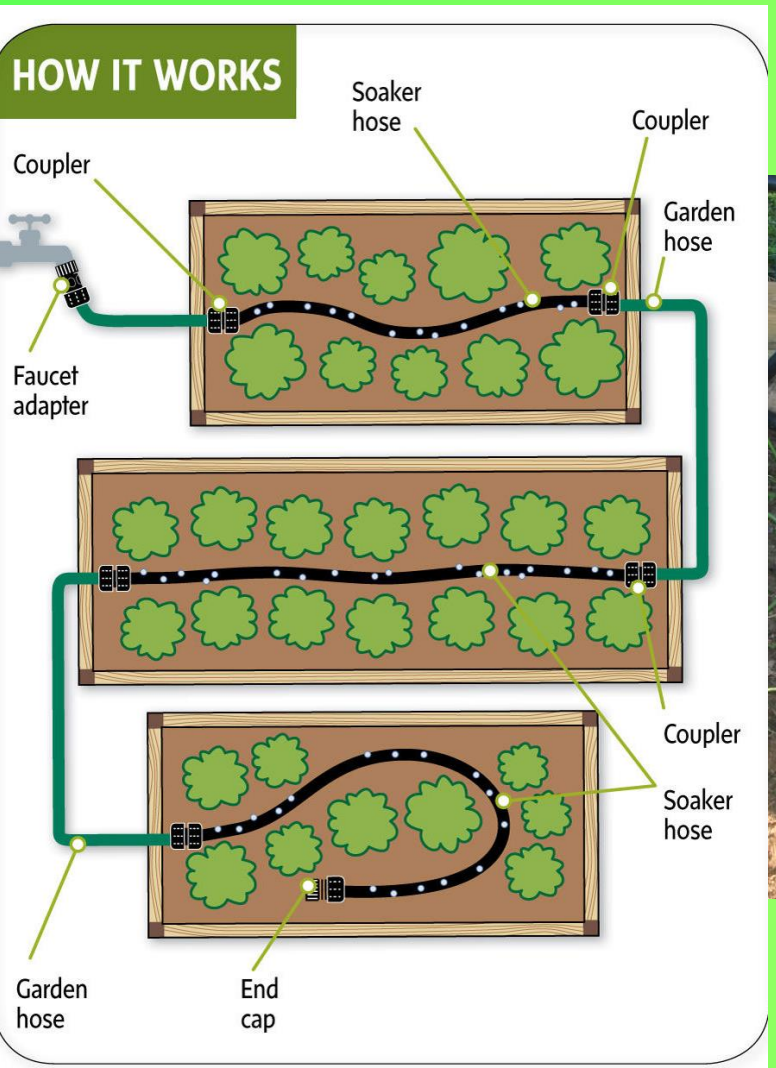
Drippers close to plants

Sprays close to plants

Make your own Soaker Hose

- Hammer or drill holes through both sides of the hose about 2.5 inches apart or directly by the roots of your plants
- Starting roughly 18 inches from the female end of the hose, longer if your bed is away from your faucet
- Purchase a plastic or metal hose cap and attach it to the end of the hose or crimp and duck tape the end of hose

Create a soaker hose system



Drip Irrigation System

Drip Irrigation

- Water is precisely applied to the plant roots
- Eliminate many diseases that are spread through water contact with the foliage
- Slow and even delivery further improves water use efficiency without incurring the expense and complexity of pulsed delivery equipment

Sub irrigation Planter

Make your own

Rain Barrel things to consider

- Spaciousness, how much will it hold
- Flow rates, will in drain at a speed and pressure you can use
- Over flow options
- Stable and child proof
- Spigot in the correct spot to fill container
- Closed system to prevent mosquitoes
  - Drain regularly
  - Add some cooking oil

Make your own

- Use a food grade barrel
- 2" x 3" Flexible Downspout
- Adapter
- 1" Washer
- 3/4" Brass Hose Bib
- 3/4"MHT x 3/4"MIP x 1/2"MP Brass Adapter
- 3/4" Black Iron 90 Degree Elbow

Drill the holes

- A spout in the barrel at the base which will face outwards
- Overflow which will shoot out to the side from the top of the barrel wall, get excess water away from your house
- Downspout adapter at the back of the top of the barrel

What is Mulch?

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•Mulch is simply a protective layer of a material that is spread on top of the soil. Mulches can either be organic--such as grass clippings, straw, bark chips, and similar materials--or inorganic--such as stones, brick chips, and plastic. Both organic and inorganic mulches have numerous benefits.
•Protects the soil from erosion
•Reduces compaction from the impact of heavy rains
•Conserves moisture, reducing the need for frequent waterings
•Maintains a more even soil temperature
•Prevents weed growth
•Keeps fruits and vegetables clean
•Keeps feet clean, allowing access to garden even when damp
•Provides a "finished" look to the garden

Mulch Materials

Organic mulches also improve the condition of the soil. As these mulches slowly decompose, they provide organic matter which helps keep the soil loose. This improves root growth, increases the infiltration of water, and also improves the water-holding capacity of the soil. Organic matter is a source of plant nutrients and provides an ideal environment for earthworms and other beneficial soil organisms.

While inorganic mulches have their place in certain landscapes, they lack the soil improving properties of organic mulches. Inorganic mulches, because of their permanence, may be difficult to remove if you decide to change your garden plans at a later date.

Mulch Materials

- Lawn clippings
- Newspaper,
- Leaves
- Compost
- Bark chips
- Hay and straw
- Seaweed mulch
- ground corn cobs
- Pine needles
- What else?

When to Apply Mulch

- Depends on what you hope to achieve.
- Vegetable garden or flower garden, apply after the soil has warmed up in the spring.
- Wait until the soil has warmed completely to mulch existing perennial beds
- To help moderate winter temperatures apply late in the fall

Ask Yourself?

- What do I hope to achieve by mulching?
- Weed control?
- Moisture retention?
- Soil improvement?
- Beautification?

Plastic Mulch

Mulch for No-till crops and gardens


JOHN DEERE
4440

Corn Fiber Blankets

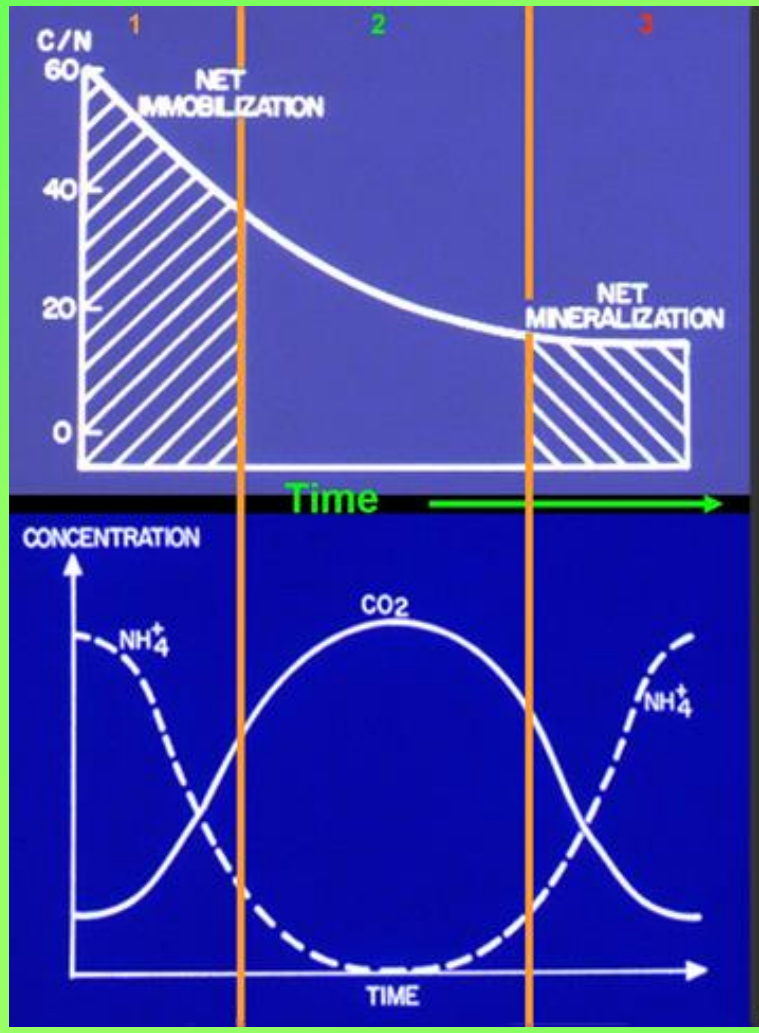
Grass Clippings

Black Plastic

Newspaper

Straw bales

Nitrogen Immobilization



The graphs above show what happens when organic material with high C:N ratio (i.e. rice straw) is added to soil. The graphs have been divided into 3 time periods.

1) Initial phase – net immobilization
- number of microorganisms are increasing
- microorganisms consume N (NH_4^+) causing it to decrease
- microorganisms consume C products and release CO_2
- C:N ratio is decreasing

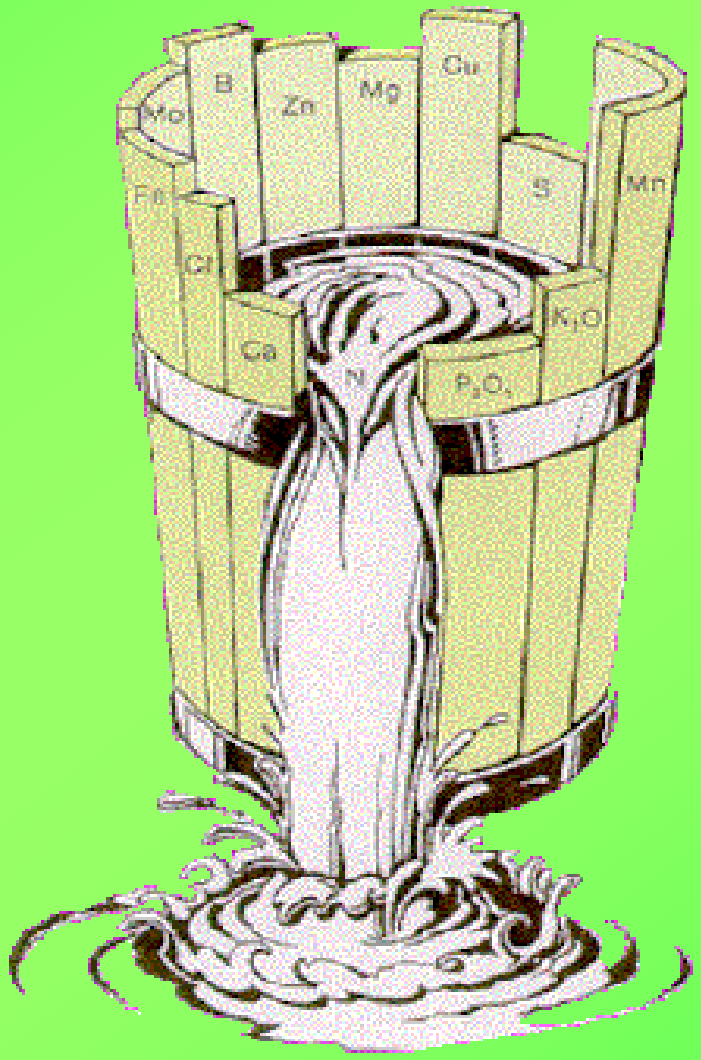
2) Intermediate phase
- microorganisms have consumed most of the available N
- maximum consumption of C products and production of CO_2

3) Final phase – net mineralization
- microorganisms are dying
- NH_4^+ level is increasing – the NH_4^+ that was part of the microorganisms is now available in soil
- carbon compounds are decomposed –CO_2 production is low
- C:N ratio is low

Typical concentrations sufficient for plant growth

Element	Symbol	mg/kg	percent	Relative number of atoms
Nitrogen	N	15,000	1.5	1,000,000
Potassium	K	10,000	1.0	250,000
Calcium	Ca	5,000	0.5	125,000
Magnesium	Mg	2,000	0.2	80,000
Phosphorus	P	2,000	0.2	60,000
Sulfur	S	1,000	0.1	30,000
Chlorine	Cl	100	--	3,000
Iron	Fe	100	--	2,000
Boron	B	20	--	2,000
Manganese	Mn	50	--	1,000
Zinc	Zn	20	--	300
Copper	Cu	6	--	100
Molybdenum	Mo	0.1	--	1
Nickel	Ni	0.1	--	1

Law of the Minimum



Lettuce

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Resources

- http://igrow.org/gardens/gardening/tips-for-proper-watering-do-you-have-a-brown-thumb/
- http://igrow.org/gardens/gardening/garden-peas/

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