Home Composting in the Desert

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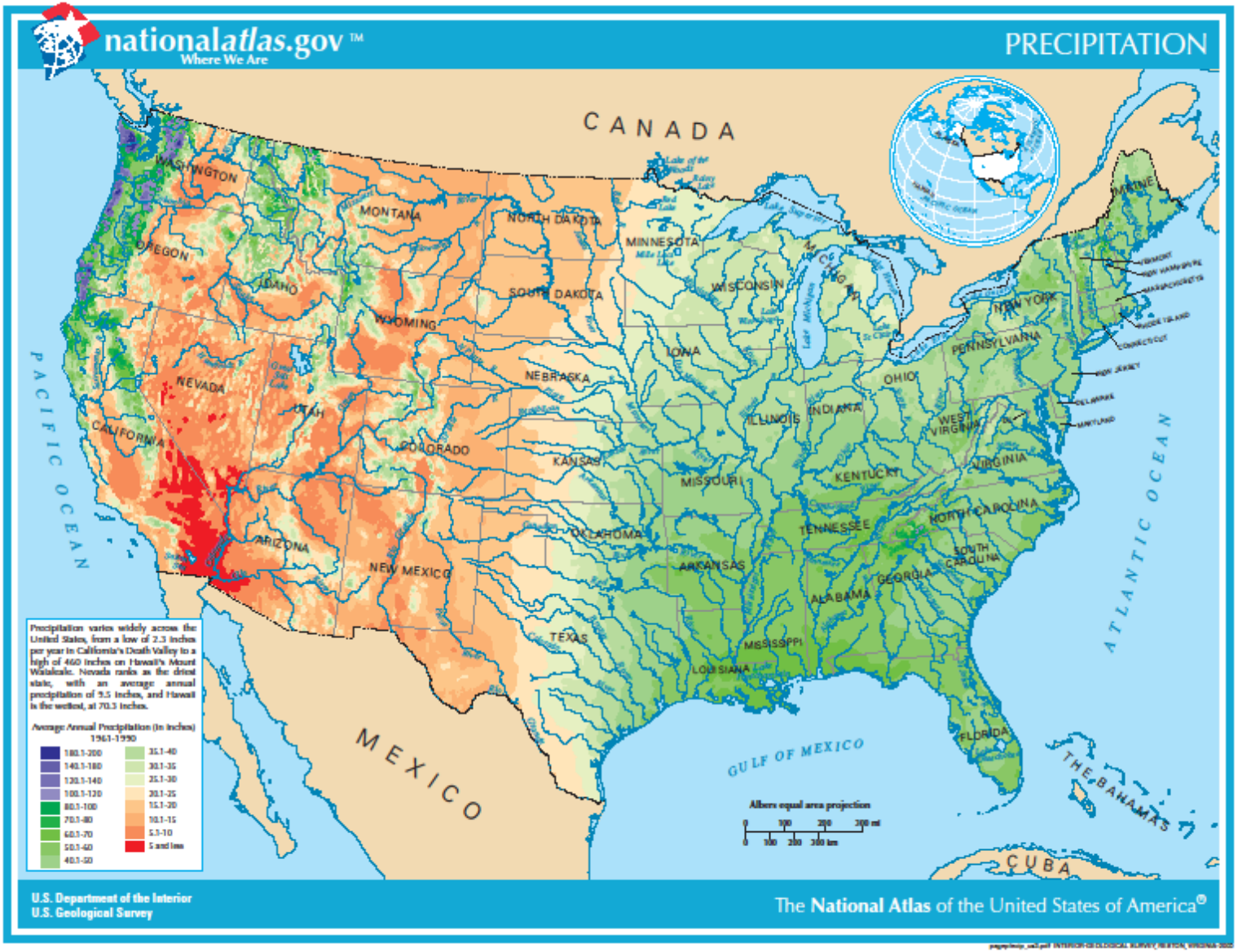
Improving Lives. Improving Texas.

Overview

- **Benefits of composting.**
- **Composting formula & general requirements**
- **What to add; leave out**
- **Composting locations and organization**
- **Methods: Hot / Cold**
- **Soil amending / Compost tea**
- **Particulars of composting in the desert**

Yes We Live in a Desert



Why we need compost here

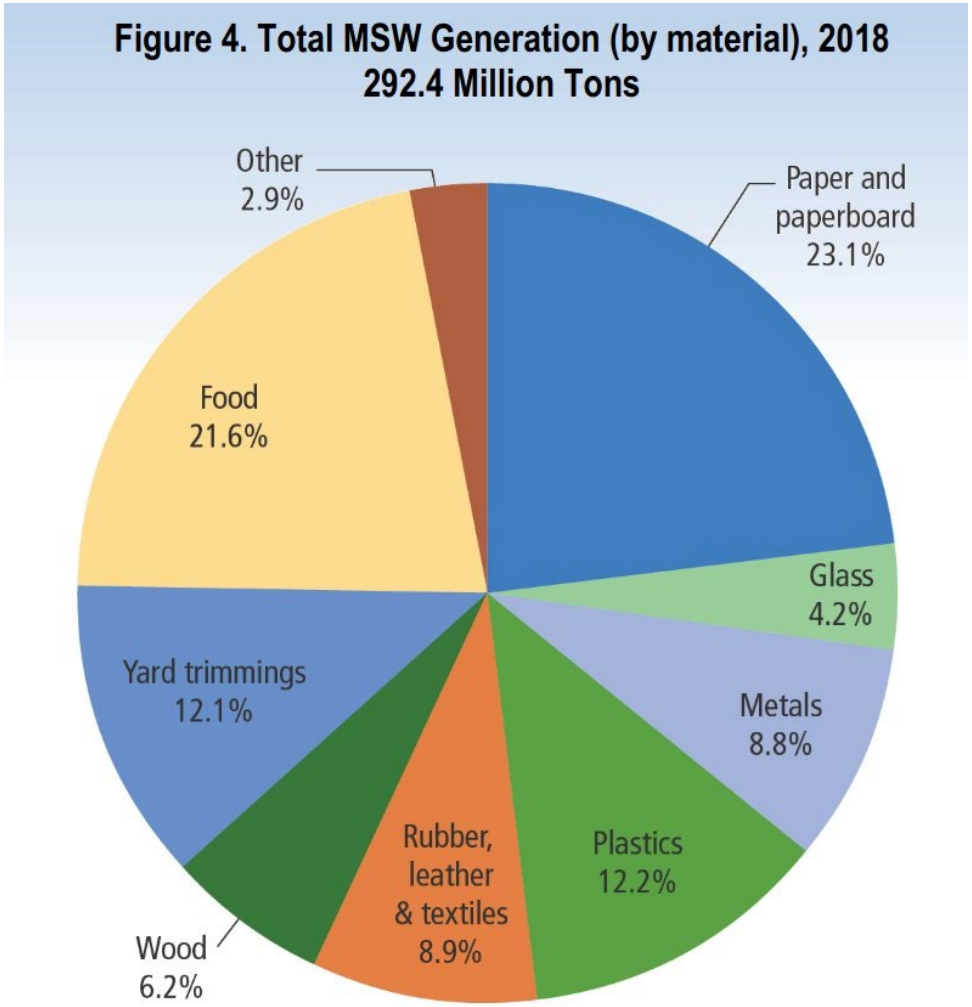
Compost (humus) benefits desert garden soil

- **Especially in drought - improves water retention.**
- **Returns nutrients.**
- **Adds beneficial organisms and "food" for them.**
- **Improves particle aggregation > "fluffy"**

Benefits of Home Composting:

- **Recycles organic material on site: leaves, yard trimmings, kitchen scraps, paper products**
- **Natural recycling of plant nutrients**
- **Desert garden soils benefit from added organic matter. Humus absorbs & releases water.**
- **Economical: decreases water & fertilizer use**
- **Physical & mental satisfaction**

Municipal Solid Waste (i.e. Landfill trash):



66 % Compostable

www.epa.gov

Home Composting Literature

- **Most often written by authors who do not live in the desert. Sometimes their advice is not appropriate for desert dwellers.**

- **Often does not clearly distinguish between hot and cold composting methods thus causing confusion about organizing & turning compost.**

Home Composting

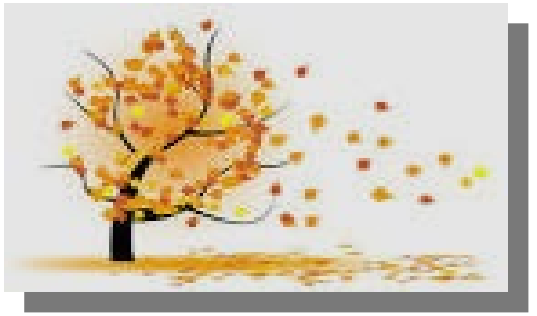
- **Is science based.**
- **Practiced by many so there are *anecdotal* reports and opinions – the art of composting**
- **Practice the science and you will establish your own working style (Art) and recipes.**
- **Goal – produce humus**

What is Composting?

- **The *intentional organization* of organic material so as to support / enhance decomposition.**

Organic Material

- **Anything that was once alive – plant & animal will decompose.**
- **Dead organic material often drops to the soil where it eventually decomposes, but not so easily in desert environment**
- **So we can assist the decomposition process by organizing organic material in a composting operation.**



Aerobic Decomposition

The transformation of organic material by bacteria, fungi and molds which occurs in the presence of air and water.

Finished compost is composed of humus, soluble nutrients and microbes- alive, dormant & dead.

Precautions

- Consider tetanus booster.
- Cover cuts / wounds. Wear gloves.

- Water sprinkle compost pile before turning.
- Mold allergy ? Wear a good quality mask.

- Scrub hands
- Wash garden produce

Brown & Green Organic Material

- ***Browns:*** **usually have a preponderance of carbon which provides microbial nutrition. Often hydrophobic.** ***Alone they decompose slowly.***

- ***Greens:*** **usually have a preponderance of nitrogen which provides protein for cell wall formation >** ***reproduction ! Added to browns they improve the decomposition process.***

Mixing Greens & Browns

- ***Ideal mix approximation***:
- **2 parts brown to 1 part green, by weight >**
- **2 lbs. brown to 1 lb. green**
- **This combo will get the operation in the C:N range of 30:1**
- **For more precision use a compost mix calculator found at nmcomposters.org**

Brown (carbon) Additions

- Dried – leaves, plants, grass, yard trimmings
- Pine needles, cones, straw, hay, nut shells
- Paper – shredded, cardboard, napkins, tissue, paper towel, newspaper, etc.

Brown Additions

- **Dryer lint, vacuum bag contents, cork, leather**
- **Natural textiles: cotton, wool, silk, felt, burlap**
- **Untreated wood products: chips, bark, shavings, dust, tooth picks, match sticks, twigs, sticks, charcoal, pencil shavings**

Green (nitrogen) Additions

- Green leaves, grass, flowers, weeds without seeds. Fresh yard trimmings.
- Fruit & veg. pulp & scraps, pits
- Coffee grounds & filters, tea & bags
- Grains & cereals, egg shells, left over food & beverages.
- Hair, whiskers, fur, feathers
- Beer & wine making leftovers
- Dry (stale) dog and cat food

Green Additions

- **Vegetarian animal manure- horse, cow, rabbit, goat, chicken**
- **Blood meal**
- **Alfalfa pellets & meal**
- **Fish meal & emulsion**

Be Aware

- **Broadleaf herbicides in animal feed will pass thru animals still intact. The herbicide in manures or on plants will persist thru the composting process. This has been called “killer compost”.**

- **It takes 3 years to biodegrade in the environment.**

- **Broadleaf herbicides: Imprelis, Picrolam, Aminopyralid, Clopyralid**

See summary information at nmcomposters.org -

Under persistent herbicides.

Avoid Adding

- **Diseased plants, weeds with seeds.**
- **Wood ash (inorganic) small amounts OK**
- **Meat, fish, dairy – small amounts OK**
- **Oils, butter, margarine, lard, nut butters, mayonnaise- small amounts OK**

Avoid

- **Non organics: plastic, metal, glass**
- **Chemically treated wood & charcoal products**
- **All the " - cides " herbicides, fungicides, etc.**
- **Dog, cat, pig manure.**
- **Glossy colored paper, waxed paper**

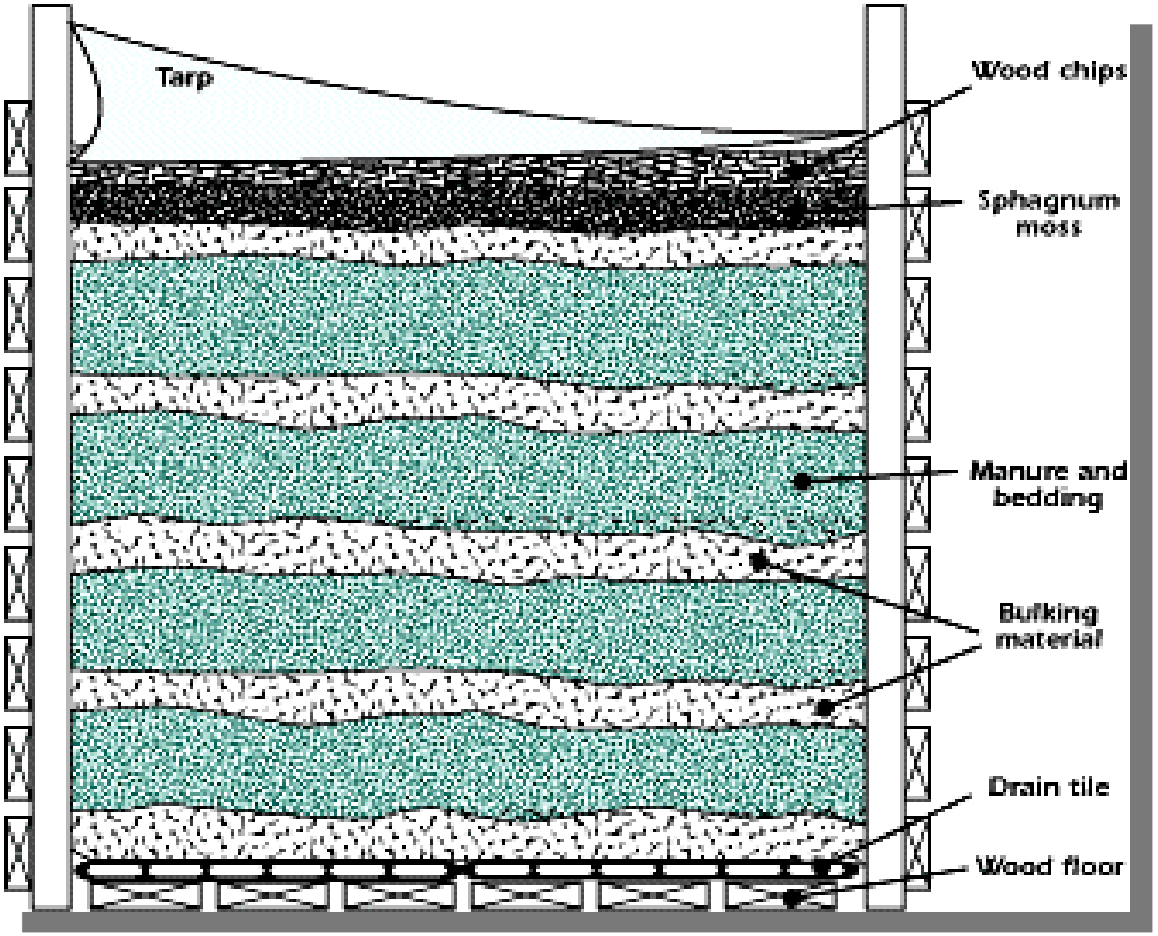
Interdependent Variables

- **Moisture: 50% throughout process**
- **Temperature: warmer = faster, lower = slower**
- **Aeration: sufficient throughout process**
- **Ingredient size: smaller decomposes faster**
- **Brown / Green mix**
- **Insects**
- **Worms**

Constructing a Compost Pile:

Bulking Decreases Compaction & Allows Air Flow

Cover the Top > > >



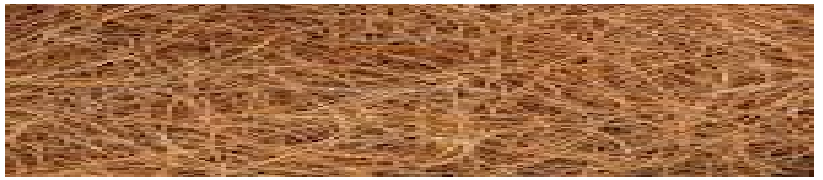
More Bulking >>

Mixed Greens & Browns >>

Bulking: 12” at bottom >>>

Coarse Bulking Material

- *By decreasing compaction provides for air flow*



Choice of Methods

- **HOT: Specific intention to generate heat – turning required – time & labor intense.**

- **COLD: No intention to generate appreciable heat – many technique choices. May remain static. Easy. Common in nature.**

Hot Composting Method Requirements

- **The *intention* is to create heat in the operation.**
- **A *batch* method where all ingredients are mixed at the same time.**
- **The minimum size is a cubic yard, 3'x3'x3' up to 5'x5'x5'- this mass insulates generated heat.**
- **The batch must be turned & churned to provide oxygen & moisture for a high energy process- about every 7 -14 days**

Hot Composting

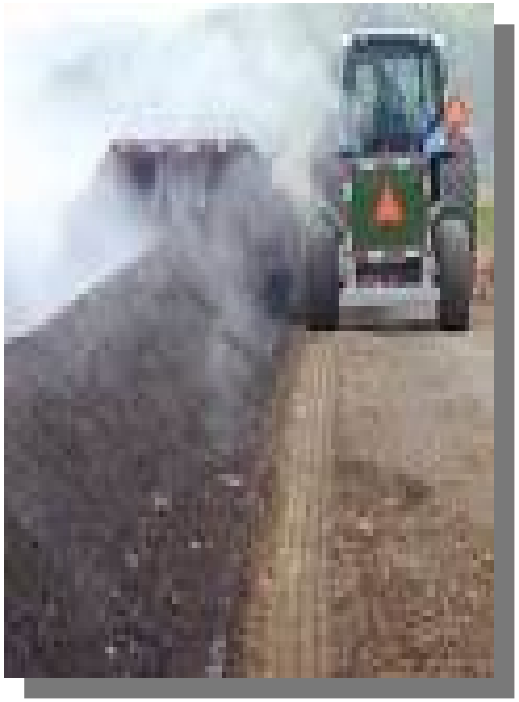
- **As the microorganisms proliferate, then produce enzymes which break the carbohydrate bonds heat energy is produced.**

- **Temperatures of 100 – 150F, which over time will destroy seeds and pathogens.**

Hot Composting

- **Process: 2 - 6 months depending on management.**
- **Often organized in a 2 - 3 bin system.**
- **A cold curing phase for 2 - 4 weeks after the hot.**
- **Pile will decrease to about ½ original volume**

Hot Composting



Large Scale Windrows

Cold Composting

- **As the microorganisms proliferate, then produce enzymes which break the carbohydrate bonds heat energy is produced.**

- **Temperatures may increase but not required or expected.**

Cold Composting

- **Process: 9 - 18 months depending on management.**
- **Often organized in a single bin.**
- **Bulking material not usually used**
- **Pile will not decrease much**

Fragrances in Composting

- **Anaerobic areas in a pile will produce unpleasant smelling gases: methane, hydrogen sulfide – putrescent (putrefaction)**

- **Avoid compaction of wet organic material by adding bulking materials regularly.**

- **50% moisture is adequate. Too compact, too wet = unpleasant odor**

Compost bins in the Desert:

- **Organize and hold organic material.**
- **Neat appearance.**
- **Easy to add to and harvest from**
- **Facilitates moisture and airflow management**
- **Decreases animal and flying insect attraction**

Managing air flow to decrease evaporation in the desert:

- **Use a low porosity bin (container)- fewer air holes.**

- **The first addition is 5 – 10” of bulking material, then continue to add bulking as more material is added to the bin. This will decrease compaction and allow air flow to all layers.**

Bins for Desert Composting: Over tape some of the holes.

Bins for desert composting:

Cover the top of bin.

Bales eventually decompose

- Size to suit your needs
- Cold or Hot

Large 3 bin system for hot composting – Corrales, NM

New Zealand box

Tight 3 bin system useful for cold/ hot composting method in the desert.

Fence Wire Round Bin

Unlined = total evaporation

Lined wire round bin

Roller / tumbler

Too Porous for Desert

When is decomposition complete?

- **Appearance – nearly everything transformed to humus. Can't identify original ingredients.**

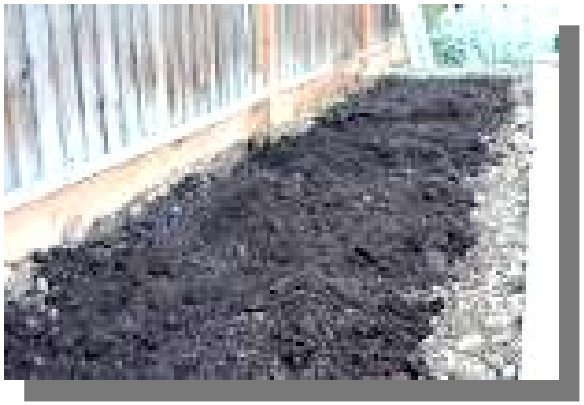
- **No heat generation from hot method.**

- **Fragrance – "earthy"**

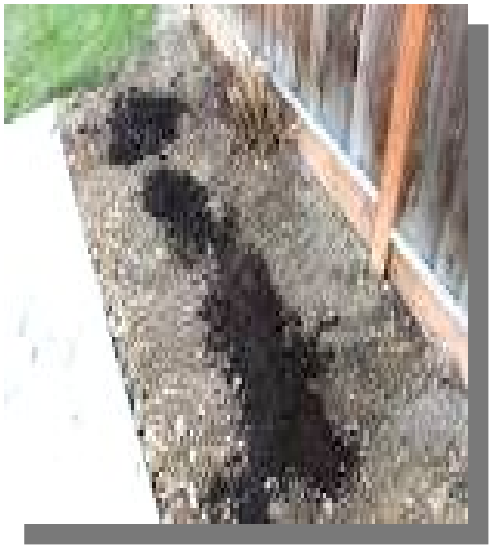
Screening Compost: Recycle Bulking Material

Soil amending with compost

- **Topical application, mulch after**



- **Digging in**
- **Compost plugs**



- **Compost tea**

Amending garden soil

1 cu. ft. of compost will cover 12 sq. ft. to a depth of 1”

Compost Tea

- **Water extraction of nutrients and microbes from finished compost and /or worm castings.**
- **Maintain aerobic conditions in the brew.**
- **Use the end product when it's done brewing as irrigation and / or foliar spray- right away.**

Summary

- **Chop, shred, cut materials before adding.**
- **Add greens to browns.**
- **Add water / sprinkle as necessary to maintain 50% moisture throughout the process. Sprinkle a pile before turning.**
- **Cover the top to reduce evaporation & flying insects.**

QUESTIONS?

www.bcmgtx.org

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