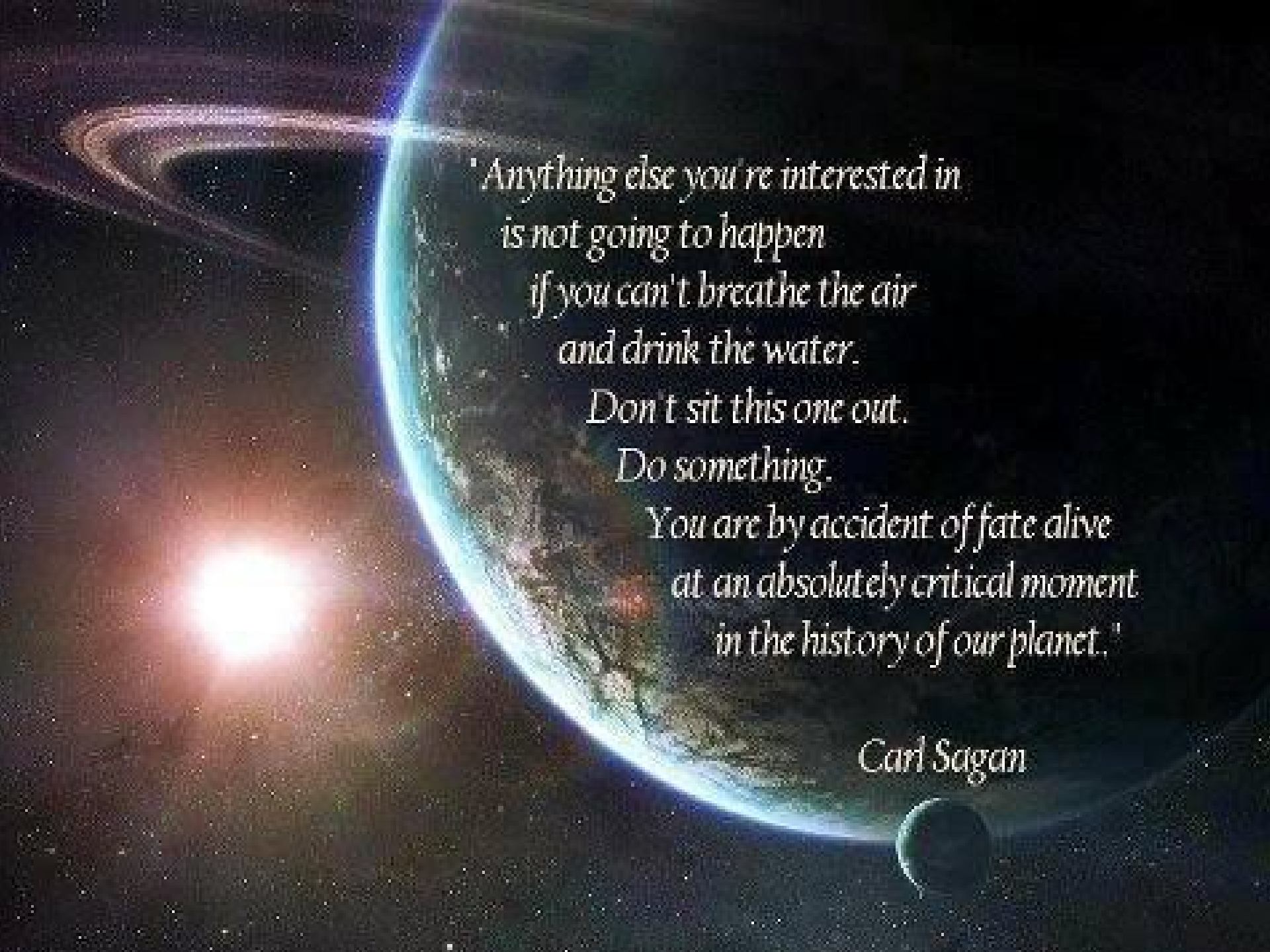


CREATE AN ORGANIC GARDEN



***Mariellen Griffith, Master Gardener and
Master Naturalist***

A composite image of Earth, Saturn, and a bright star in space. The Earth is on the right, showing a blue horizon and a dark, textured surface. Saturn is in the upper left, with its rings visible. A bright, glowing star is in the lower left. The background is a dark, star-filled space.

*'Anything else you're interested in
is not going to happen
if you can't breathe the air
and drink the water.*

Don't sit this one out.

Do something.

*You are by accident of fate alive
at an absolutely critical moment
in the history of our planet.'*

Carl Sagan

NATIVE AMERICAN PROVERB

*WE DO NOT INHERIT THE EARTH
FROM OUR ANCESTORS, WE
BORROW IT FROM OUR CHILDREN.*



BENEFITS OF GARDENING

Nutrition

Non competitive

Exercise

Stress Reduction

Emotional Release

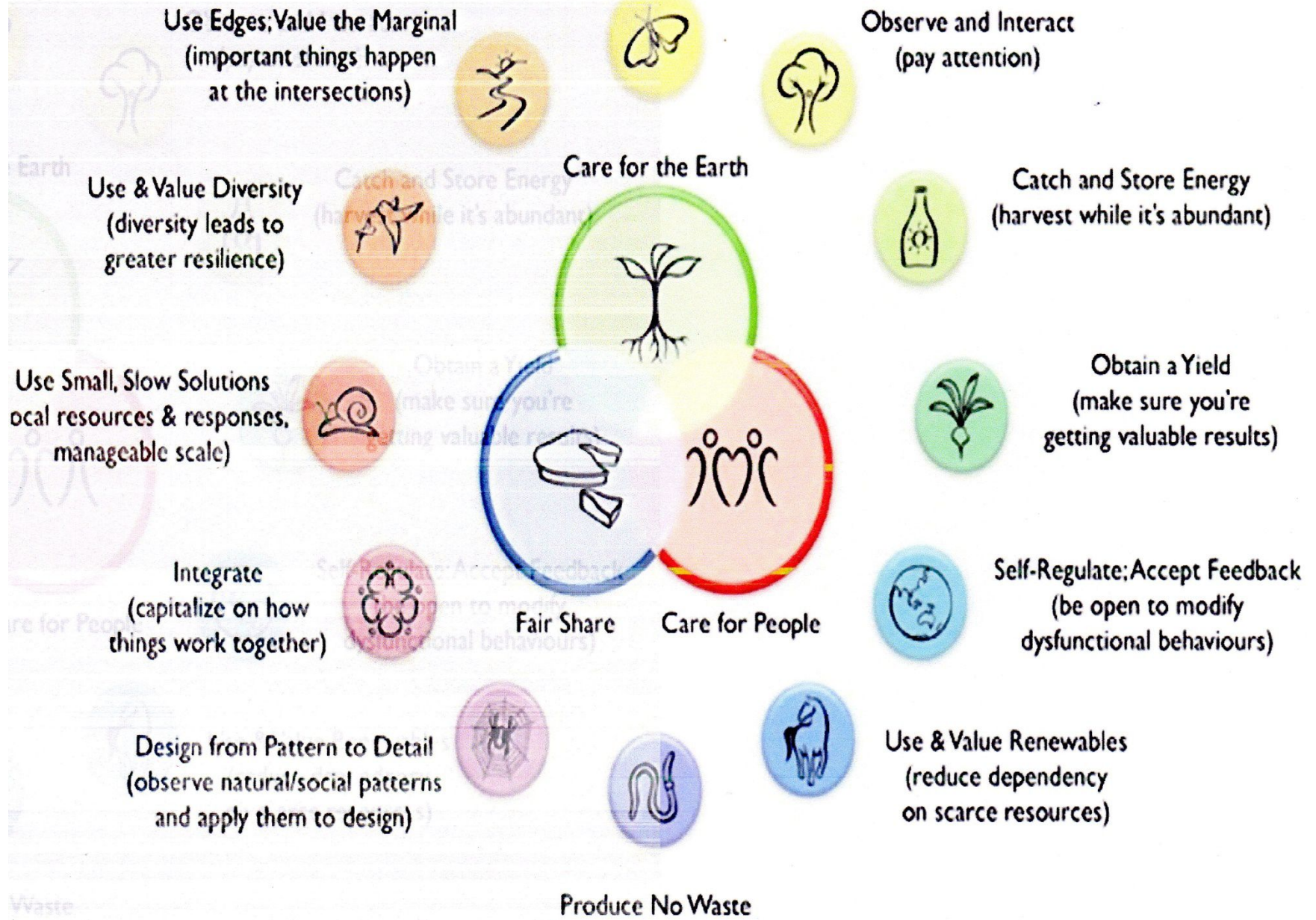
**Re-creative and
Fun**

**Aesthetic and
Senses**

**Meditative and
Spiritual Values**



Creatively Use & Respond to Change
(envision possibilities and
intervene in effective ways)



Biosphere	The part of Earth that contains all ecosystems	 Biosphere
Ecosystem	Community and its nonliving surroundings	 Hawk, snake, bison, prairie dog, grass, stream, rocks, air
Community	Populations that live together in a defined area	 Hawk, snake, bison, prairie dog, grass
Population	Group of organisms of one type that live in the same area	 Bison herd
Organism	Individual living thing	 Bison
Groups of Cells	Tissues, organs, and organ systems	Nervous tissue Brain Nervous system
Cells	Smallest functional unit of life	 Nerve cell

OBJECTIVES

- Gain an understanding of organic gardening
- Add native plants to the garden as companion and pollinator food.



WE WANT LESS OF THIS

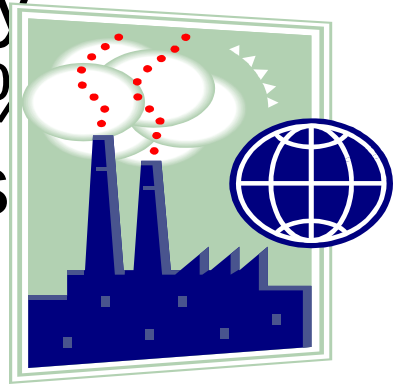


AND MORE OF THIS



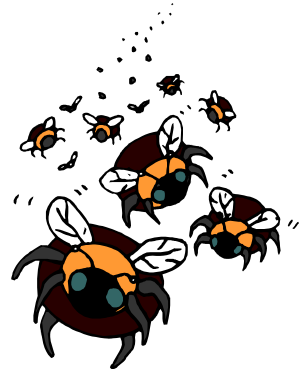
BEING “GREEN”

- The term “Green” originates from the greenhouse effect—a natural phenomenon that regulates the Earth’s temperature with a fragile balance of greenhouse gases. An overabundance of these gases results in global warming.
- Global warming exists primarily because the world has abused its use of energy. Manufacturing accounts for about 80% of industrial energy use and emiss

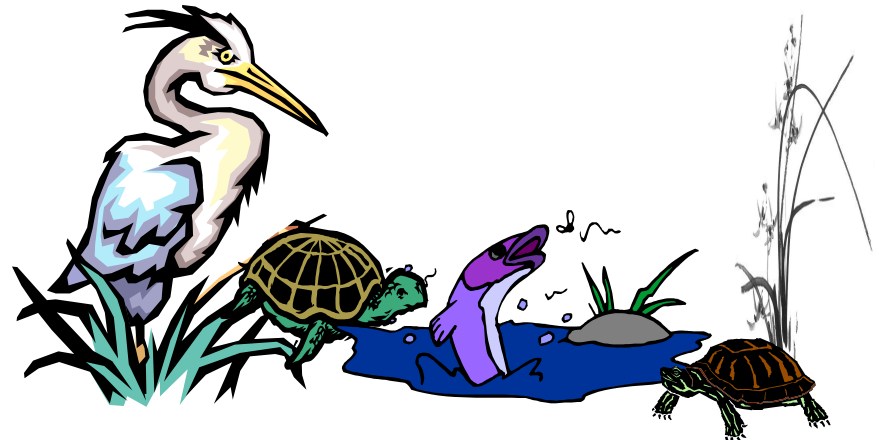


PROBLEMS IN THE ENVIRONMENT THAT CAN UPSET THE BALANCE IN NATURE

- Air pollution
- Water pollution
- Drift of pesticides
- Poor farming habits
- Pesticides and Herbicides
- Lack of conservation



- Draining swamps
- Bird and animal habitats destroyed
- “A throw away society”

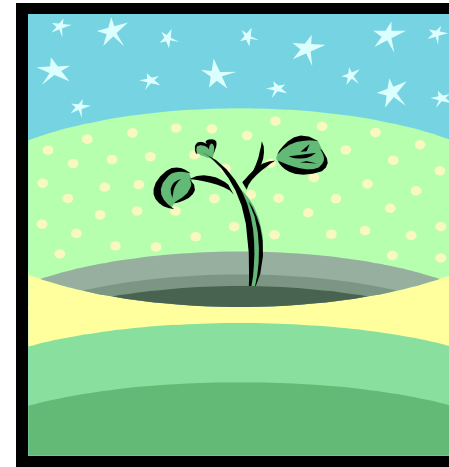




WHAT CAN WE DO?



- Practice ecology and develop a sustainable environment
- Conserve water, soil, and wildlife
- Establish habitats for birds and animals
- Switch to organic gardening





PHILOSOPHY OF ORGANIC GARDENING

- a commitment to a sustainable system of living in harmony with nature, a way of life.
- the potential longevity of vital human ecological support systems, such as the planet's climatic system, systems of agriculture etc., in which they depend in balance with the impacts of our unsustainable or sustainable design.
- part of a larger picture of Conservation Biology, the scientific underpinnings of research on the natural world so that ecosystems can be protected.
- a method of “being green” and decreasing our carbon footprint - **Reduce, Reuse, Recycle**



1934 PRESIDENT ROOSEVELT SIGNED INTO LAW THE TAYLOR GRAZING ACT

- Experiment in Ohio, 1940s – Louis Bromfield, Pleasant Valley, crop rotation, composting
- Tall Prairie Grasslands in Kansas – 10,000 acres
- Grasslands in Texas Hill Counties – 55,000 acres
- Montana Conservation – 30,000 ranch, cattle kept out of habitats
- Chico Basin Ranch in Colorado – 87,000 acres, wildlife, friendly ranching





PART I: HISTORY OF ORGANIC GARDENING



1967 -The Environmental
Defense Fund

1970 -Earth Day

1971 -The Maine Organic Farmers
& Gardeners

1972 -EPA bans DDT

1973 -California Certified Organic
Farmers organized

1980s – Depart. Of Ag gave farmers
incentives to do organic gardening

1990 –Organic Foods Production Act
USDA to define organic

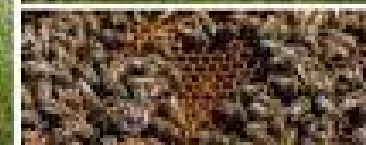
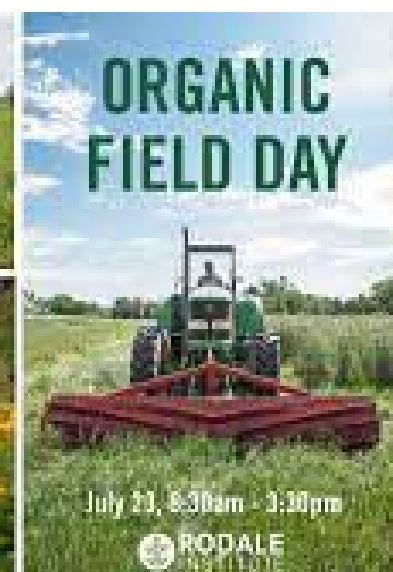
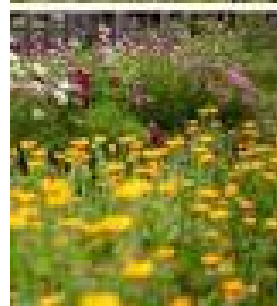
International Federation of Organic Ag
Movements regulates the methods
of growing crops organically.

1931 – Sir Albert Howard Eng.
botanist *An*
Agricultural Testament, 1947.
(composting, soil fertility), “The Law
of Return” – recycling of organic
waste materials

1942-First issue of *Organic Farming
and gardening* published founded
by Rodale (influenced by Rodale
establishes the Soil and Health
Foundation

1948 –*Our Plundered Planet*,
Osborn, DDT

1962 – Rachel Carson, *Silent Spring*



RANGE OF ORGANIC GARDENERS

- Preventive/proactive (composting, build soil)
- Use only natural pesticides that are not harmful to human or animal life
- Plant disease resistant plants and/or native plants unique to the hardiness zone
- Follow the methods of Integrative Pest Management



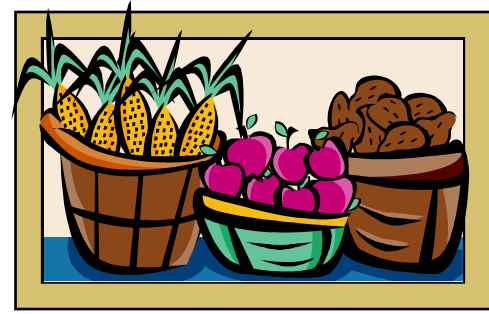
YES, ORGANIC CAN COST MORE BUT HERE ARE 10 REASONS WHY IT'S WORTH IT:

1. Organic farmers get no government subsidies or handouts.
2. You will automatically become an environmentalist without having to show up for a protest or demonstration.
3. You *will* be healthier.
4. You can feel good about your contribution to a better world.
5. You're supporting families and businesses that are making the world better.
6. You're helping to prevent climate change.
7. You'll be helping to prevent drought & floods.
8. You'll be doing your part to leave the world a better place than when you found it.
9. Karma points.
10. It just tastes better!



USDA STANDARDS, (2002)

ORGANIC FOODS



LABELS: ORGANIC OR MADE WITH ORGANIC INGREDIENTS

- 95% ingredients must be organic, the remaining 5% can be non-organic only if no alternatives exist.
- May not be genetically engineered, irradiated, or grown on land fertilized with sewage sludge.
- No chemical fertilizers or herbicides for at least three years before a crop is harvested.
- Label reads “made with organic ingredients,” the food must contain at least 70% percent organic ingredients.



ECOLOGY



- The study of the interrelationships between organisms and their environment (habitats).
- A garden can provide a balance, an ecosystem which has inorganic substances, food makers, living organisms such as animals and decomposers.
- Create habitats in your garden (grasses, trees, water, meadow, sandy areas).
- Create four basic elements to attract wildlife to your garden.

ECOLOGY: The Study of the Place We Live

Ecology examines the relationships between the living and non-living at scales ranging from the individual organism to the biosphere.

Biodiversity

A diverse range of life indicates ecological health and often drives ecological studies.

Species Interactions

Types of interactions include predation, mutualism, parasitism, commensalism, and competition.

Energy Flow

Energy from the sun is transformed and moves through the ecosystem in a process illustrated by the food web.

Succession

Over time, an ecosystem experiences changes in biodiversity and nutrient availability.

Human Impact

Through construction, agriculture, and pollution, humans make a significant impact on the ecosystem. Modern ecologists focus on measuring this impact.



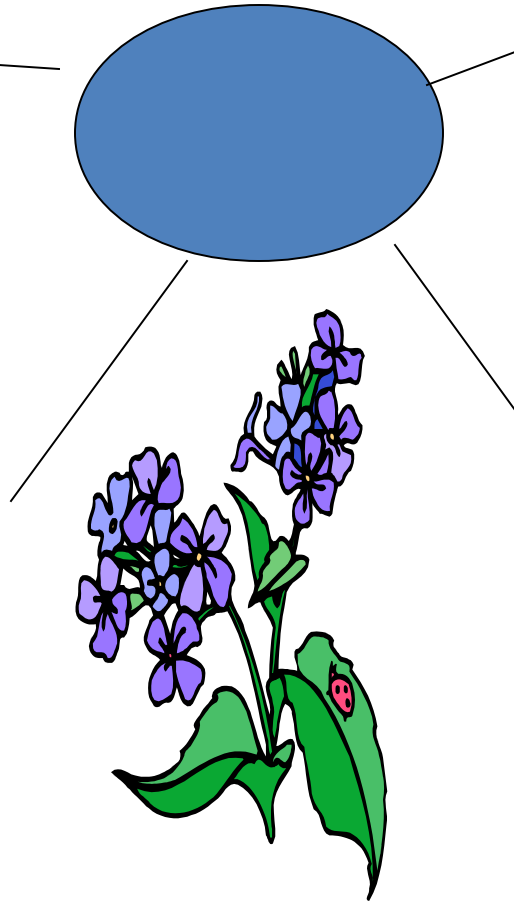
FOUR PARTS OF AN ECOSYSTEM

- Non-living substances

water, carbon dioxide, nitrogen, phosphorous, air & minerals

- Producers or Food makers

Green plants



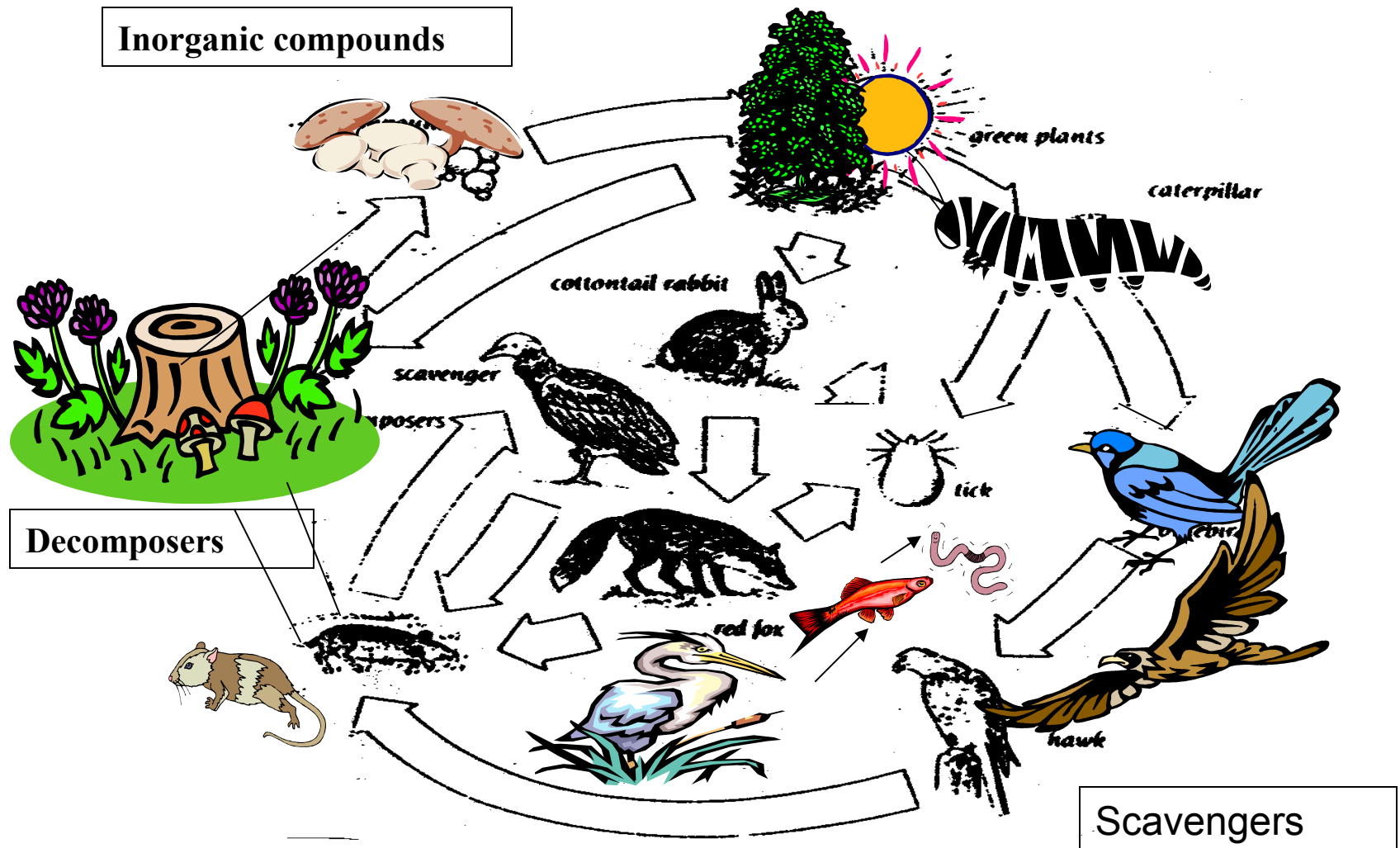
- Decomposers

The organisms break down tissues and excretions of other organisms

- Living Organisms

Animals feed on green plants, serve as food for other consumers

CYCLE OF LIFE



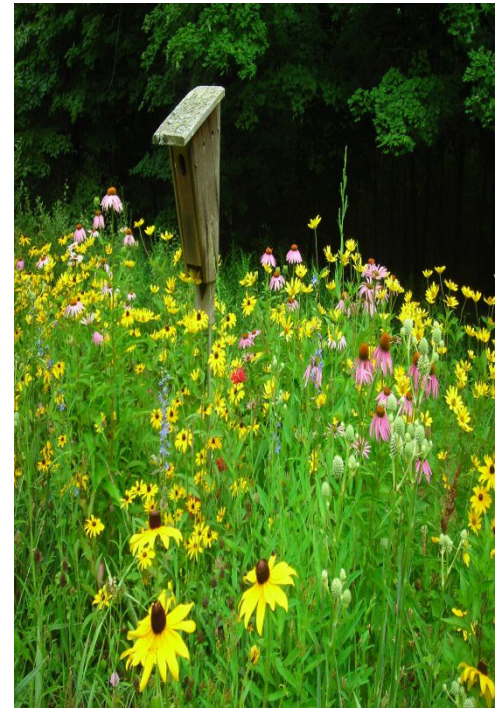
POLLINATORS

Provide a balanced ecosystem and increase biodiversity in the garden

Native plants attract pollinators that fertilize native plants and control natural enemies.

Pollinators are: bees, wasps, butterflies, moths, flies, beetles, and bugs.

Become familiar what host plants pollinators will need to survive. The monarch butterfly needs milkweed plants.



WHY BEES MATTER

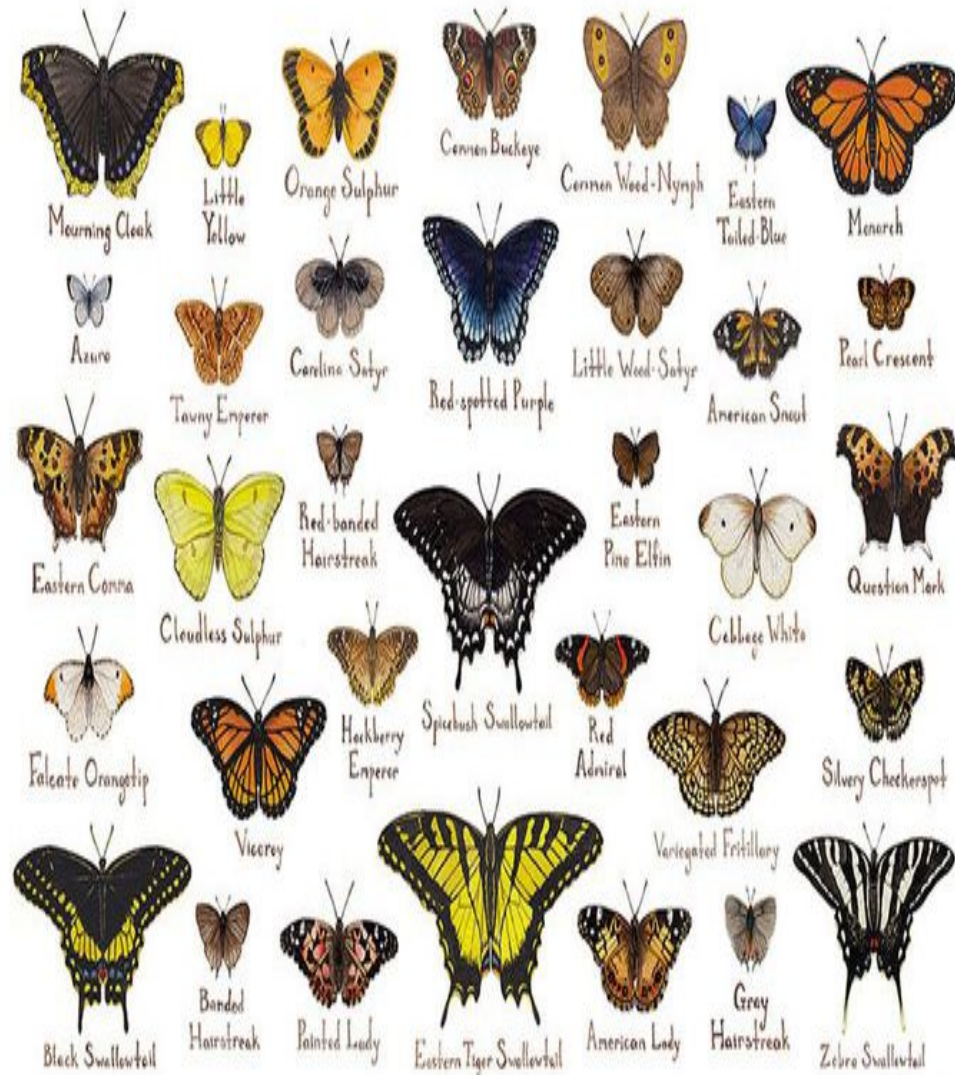
85%
OF PLANTS EXIST
BECAUSE OF BEES



1/3
OF ALL FOOD
WE EAT DEPENDS
ON POLLINATORS

**MORE THAN
100**
TYPES OF CROPS ARE POLLINATED
BY BEES IN THE US—INCLUDING
THE CLOVER AND ALFALFA
THAT FEED OUR COWS

• BUTTERFLIES of ARKANSAS •





SUPPORT NATIVE BEES

NATIVE PLANTS FOR SUN
AND MEDIUM/DRY SOILS



ANISE HYSSOP
Agastache sp.



BUTTERFLY MILKWEED
Asclepias tuberosa



PRAIRIE CLOVER
Dalea sp.



GOLDENRODS
Solidago sp.



WILD BERGAMOT
Monarda fistulosa



GOLDEN ALEXANDERS
Zizia sp.



CUP PLANT
*Silphium
perfoliatum*



BLACK-EYED SUSAN
Rudbeckia sp.



HOARY VERVAIN
Verbena stricta



CONEFLOWERS
Echinacea sp.



SUNFLOWERS
Helianthus sp.



BEARD TONGUE
Penstemon sp.



YELLOW CONEFLOWER
Ratibida sp.



PollinatorsNativePlants.com
facebook: PollinatorNativePlants
© Heather Holm

PLANT NATIVE PLANTS

MOTHS, NIGHT TIME POOLLINATORS



Cecropia



Clouded Border



Scarlet Red



Malachite Moth



Emperor Moth



Bee Hawk Moth



Banded Tussock



Polyphemus Moth



Malaysian Pit Viper



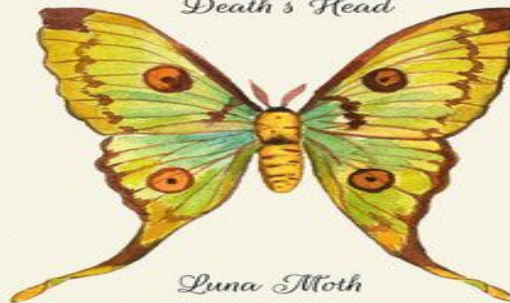
Death's Head



Banded Tiger



Bella Moth



Luna Moth



Chalk Hill Blue



Marbled Green Leuconycta



Garden Tiger



Brimstone Moth



Giant Leopard



Linen Moth

WILDLIFE HELPS THE ENVIRONMENT



Birds

- Eat non beneficial insects
- Pass seeds to other parts of the garden
- Add beauty and music to the environment
- Scavengers
- Owls and hawks eat mice
- The kingfisher eats fish, the fish and frog eat worms and insects in the pond. The snake eats mice.

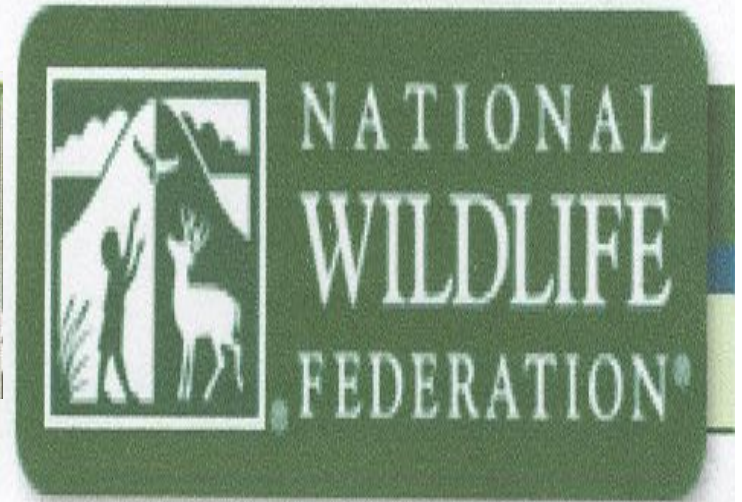
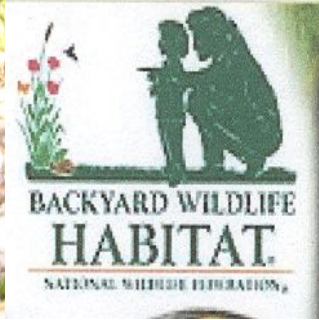


ATTRACT BIRDS AND POLLINATORS

1. **FOOD**: corn, sunflower, safflower, thistle, white millet, peanuts, suet, shortening; plant mountain ash, multiflora rose, crab apple, wild cherry, mulberry
2. **HOME**: nesting boxes, gourds or plant dense bushes
3. **WATER**: bird bath, dripper or a moving water surface, water heater during winter; clean bath frequently
4. **COVER**: Brush, trees, bushes



CERTIFY YOUR GARDEN



Create a habitat by meeting the requirements (provide the wildlife habitat elements (food, water, cover, home) and practice sustainable gardening).

Apply on line to National Wildlife Federation or visit the Ecology Center in Normal.

Purchase a sign for your yard.



SIX GENERAL ORGANIC METHODS

1. **Recycle our organic rural** and urban wastes --do not pollute our environment
2. **Avoid a “zero kill” pest strategy** -killing only produces more resistant pests
3. **Develop plant population that is resistant to insects and disease**
4. **Avoid large monocultures-** they increase the potential for a disaster from a new or more virulent disease or insects
5. **Rotation of crops is an effective** solution to infected soils
6. **Amend the soil-** add compost, allow microbes and earth worms to grow, do not cultivate the soil

PART II: TEN SPECIFIC ORGANIC GARDENING TECHNIQUES

1. Make a plan for the garden

Purpose

Budget

Make an assessment

Consider the environment

Check buried utilities

Amend the soil

Add seeds or plants

Save water – use a water barrel



CONSERVATION PLAN

Plant trees on the North West side of Lot

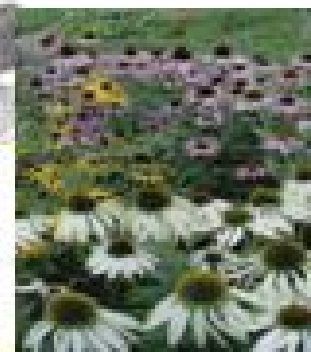
These also produce good soil with wildlife

Attract birds by planting shrubs and trees that provide shelter, Food, and nesting



Attract beneficial Insects and Pest Predators to your yard

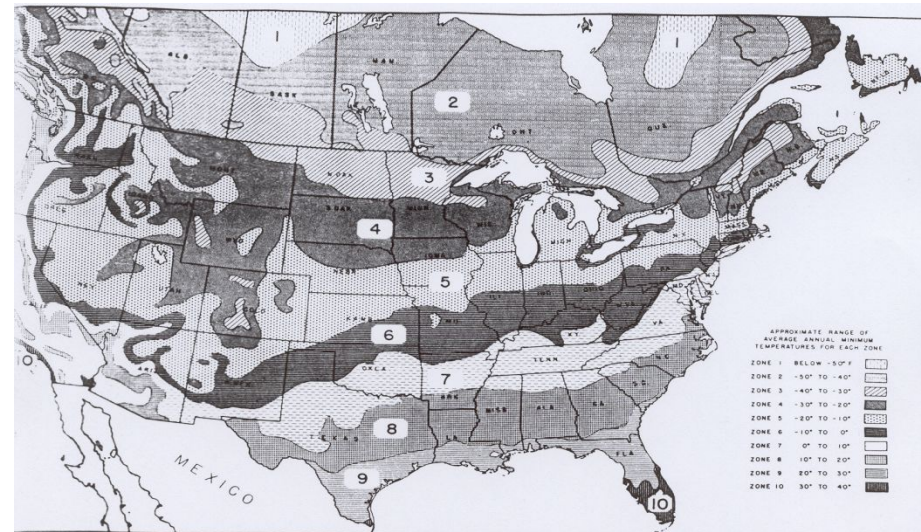
Plant trees near street to blunt the noise





2. BUILD AND AMEND THE SOIL

- The shape, or soil structure, depends on both the soil's physical and chemical properties.
 - Amount of clay, silt, sand and humus
 - Shrinking and swelling due to weather (wetting and drying as well as freezing and thawing)
 - Root forces
 - Biological influences (animals)
 - Human activity
 - Soil pH
 - Climate zone



SEVEN GARDENING METHODS THAT CAUSE PROBLEMS IN SOIL

Pesticides

Inorganic fertilizer

Exposed to air

Pollution

Rototilling

Double digging

Compacted Soil



BACTERIA AND FUNGI ARE PRIMARY DECOMPOSERS OF ORGANIC MATTER

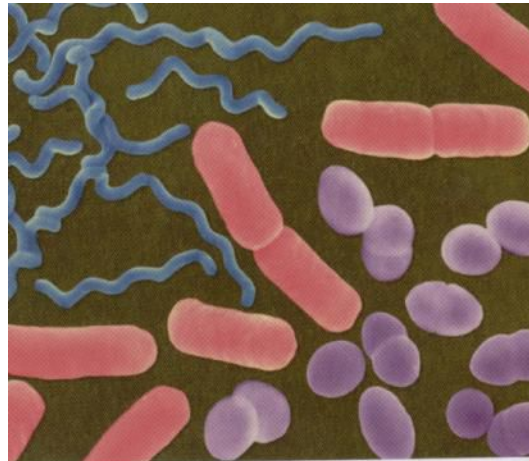
- Bacteria decompose plant and animal material in order to ingest nitrogen, carbon compounds, and other nutrients.
- Nutrients are released (mineralized) only when the bacteria are consumed or die and decayed.

THREE SHAPES:

COCCUS

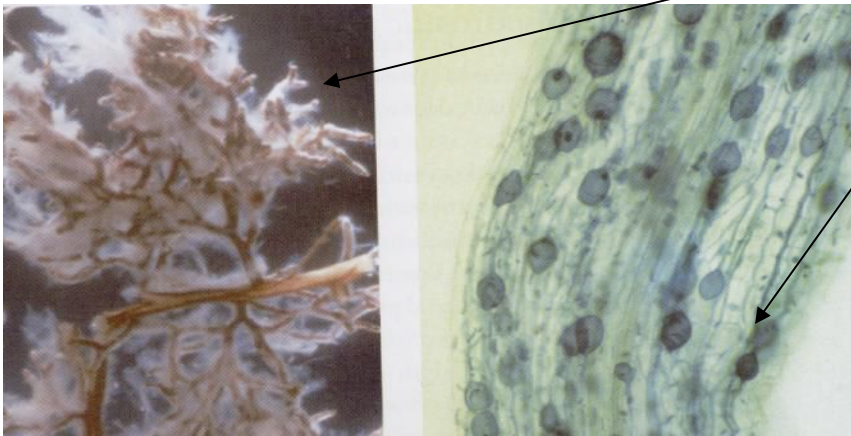
BACILLUS

SPIRAL



MYCORRHIZAE (FUNGUS-ROOT)

- Symbiotic associations between plant roots and fungi. (Seek out water and nutrients and bring them back to the plant)
- 90% of all plants form mycorrhizae, began some 450 million years ago;
- Plants obtain the quantities and kinds of nutrients needed to perform at their best



Ectomycorrhiza –
dense white net around
roots

Endomycorrhizal penetrates
roots



EARTH WORMS

- An acre of good garden soil contains 2-3 million earthworms
- Eat bacteria, fungi, nematodes and protozoa and organic matter
- Vermicastings— waste material are 50% higher in organic matter than soil, 7 times richer in phosphate than soil, 10 times the available potash, 5 times the nitrogen, 3 times the usable magnesium, 1 ½ times higher in calcium



COMPOSTING (SIX STEPS)

1. Make a bin from wire or purchase a high-rise or tumbler composter
2. Choose a shady location
3. Add brown organic matter (hay, straw, old leaves, sawdust)



4. Add green materials (table scraps, grass clippings)
5. Cover pile with a tarp to preserve moisture
6. Do not add meat and fish, diseased plants, weed seeds

3. CONTROL PESTS BY INTEGRATED PEST MANAGEMENT

1. Mechanical Control

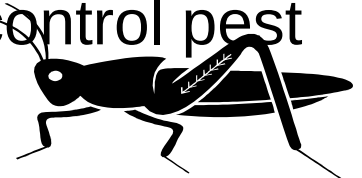
Use hands to get rid of pests, Row covers,
Put up fences, Mulch, Netting,
Recycling

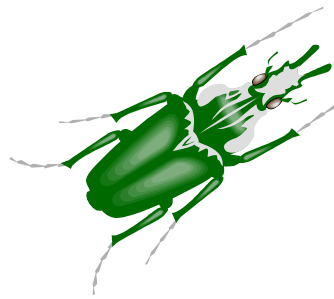


2. Cultural Control

Clean up debris that may house pests,
Plant resistant varieties of trees and vegetables

3. Biological Control The use of living organisms such as predators, parasitoids and pathogens, to control pest insects, weeds, or diseases.





USE NATURAL OR BIOLOGICAL PESTICIDES



Pyrethrin (extracted from a species of chrysanthemum (controls aphids, scales, mites, beetles)

Neem (produced from the bark of a tree native to India) an oily extract that can repel insects, stop their feeding (controls aphids, scales, mites, caterpillars and sawfly)

Rotenone (alkaloid extracted from roots of tropical plant) moderate impact on beneficials.



ATTRACT BENEFICIALS

Kill and consume many prey
Generally larger and faster than prey

Kill & eat prey to survive & reproduc
Many are easily recognized
Built to kill
Removes the evidence

- Lady beetle
- Ant lion
- Parasitic fly
- Assassin bug
- Parasitic wasp
- Brown lacewing
- Praying Mantis



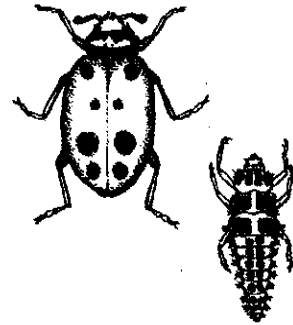
Parasitic fly



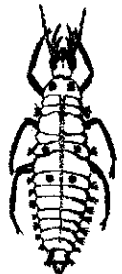
Assassin bug



Parasitic wasp



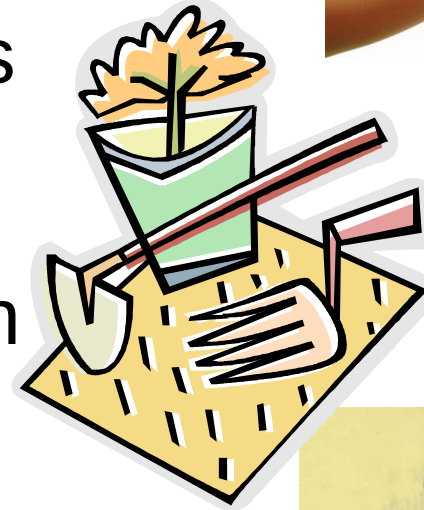
Lady beetle, larva



Ant lion

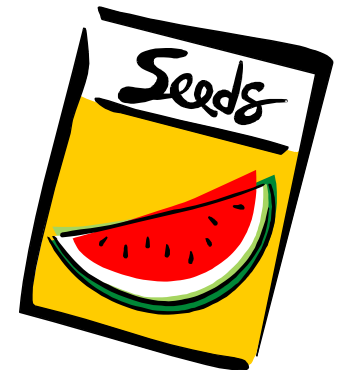
4. METHODS OF GARDENING

1. Plant seeds indoors
2. Transplant seeds outdoors
3. Use and caring for tools
4. Prepare garden soil
5. Care of plants
water, fertilize (modern
compost tea)
6. Maintenance
Pull weeds, dead head
7. Water plants
8. Use organic sprays

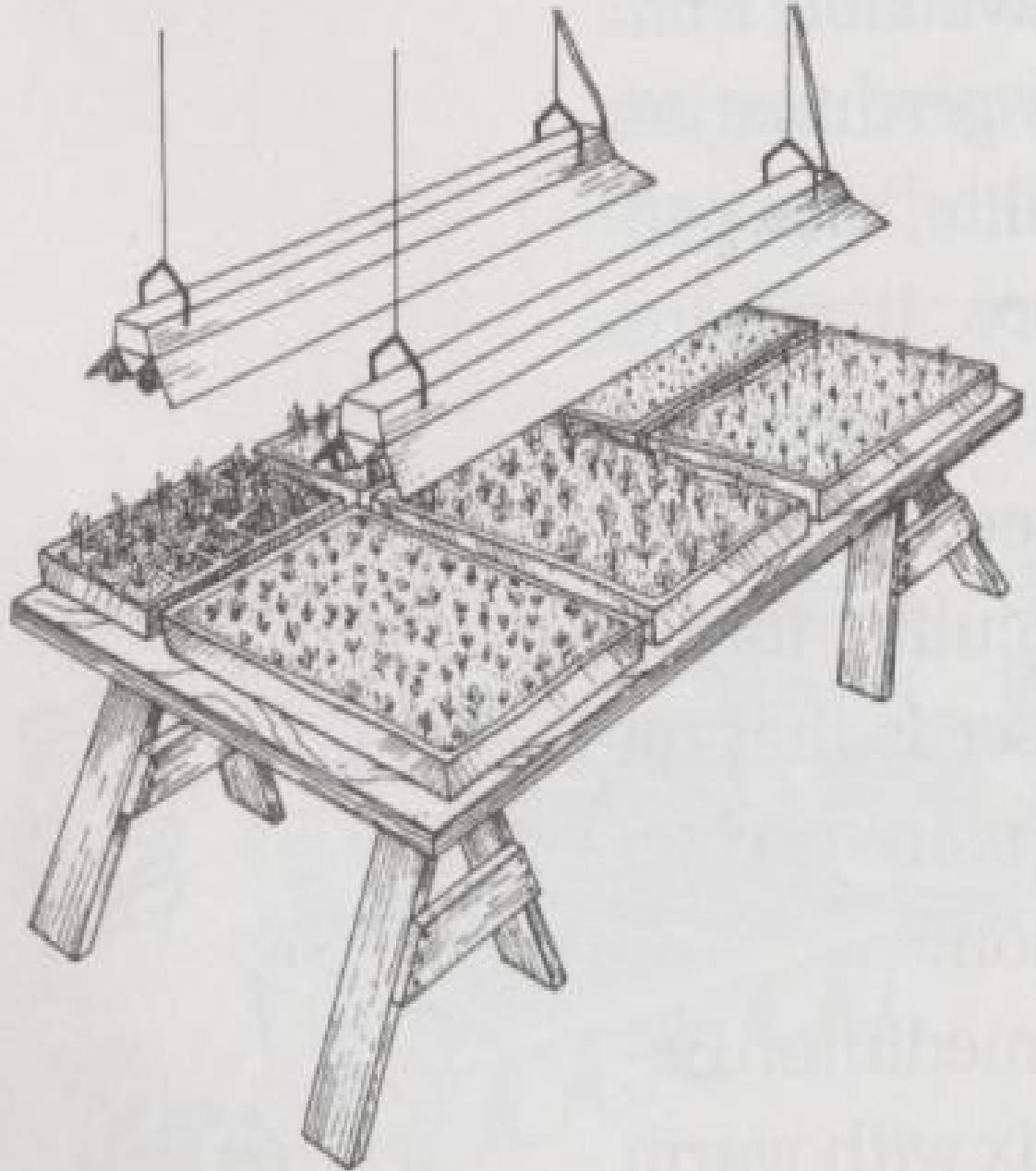
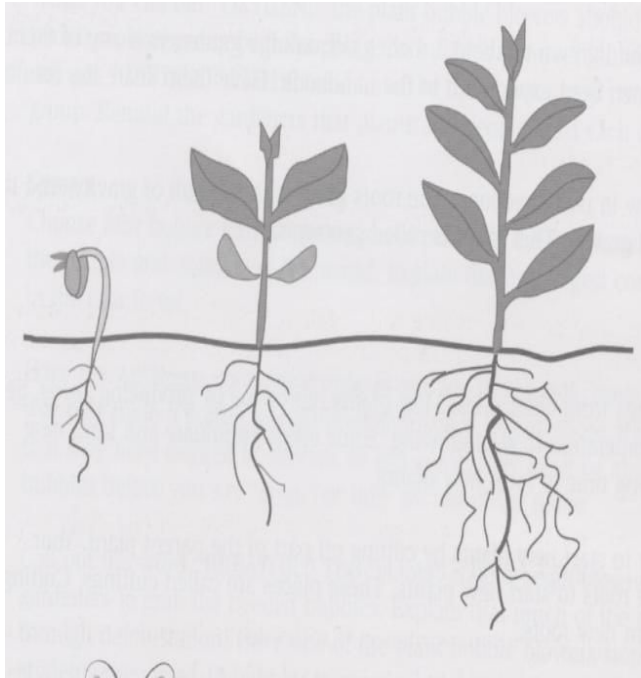


START A VEGETABLE GARDEN

- Choose healthy organic seeds and plants
- Start plants inside
- Plow in the fall –kills many pests that winter in soil, plant a cover crop such as rye
- Shade plants during summer heat
- Rotate crops



EQUIPMENT FOR INDOOR GARDENING



Germination Methods

- **Direct seeding**

- Advantages

- No root disturbance and transplant shock

- Disadvantages

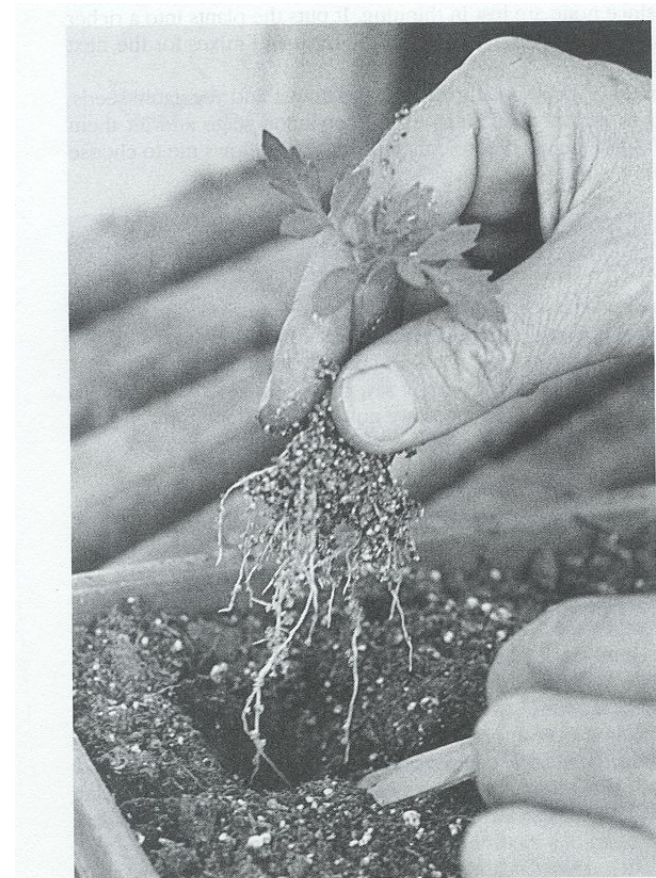
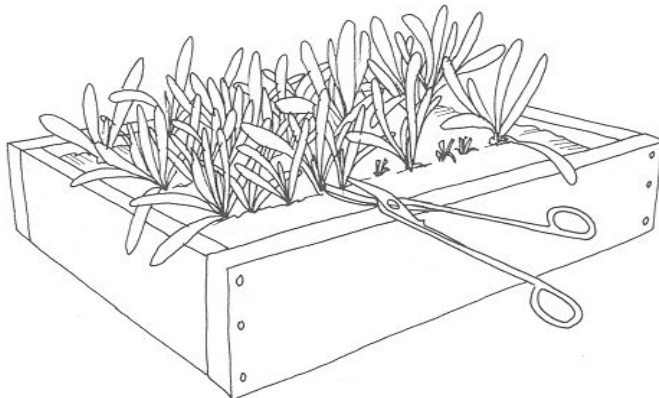
- May not get uniform germination
 - Plant 2-3/cell
 - Germination space

Heating pad or top of refrigerator for germination indoors



5. *Transplanting & Trimming Seedlings*

- Moisten media
- Gently separate seedlings
- Poke hole in media
- Place seedling
- Firm soil
- Trimming



Transplanting a seedling into a new flat provides it with richer soil and more room to grow.



6. ROW COVERS, COLD FRAME AND RAISED BEDS

RAISED BEDS



CLOTHES



FENCED GARDEN



SQUARE FOOT GARDENS



7. USE NATURAL FERTILIZERS

- **Grass clippings on lawn,
adds nitrogen**
- **Manure**
- **Compost**
- **Fish oils**
- **Modern
compost tea**





8. COMPANION PLANTING

1. Native Americans found that corn provides a structure for beans to climb. Beans replenish the soil with usable nitrogen and other nutrients, and the large leaves of the squash provide a living mulch that help conserve water and provide weed control.

2. Trap cropping, for example, cucumber beetles, which transmit bacterial wilt, prefer squash and pumpkin plants over cucumbers and melons.

To protect melons and cucumbers and are willing to sacrifice squash and

COMPANION PLANTING THE OLD FASHIONED WAY WITH A 3 SISTERS GARDEN

corn, pole beans & squash

THE CORN SUPPORTS THE BEANS, THE BEANS ADD NITROGEN
AND THE SQUASH SHADES OUT THE WEEDS

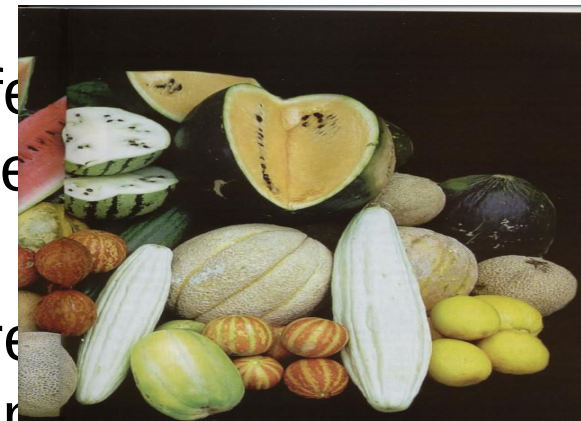
1) Plant the corn after danger of frost has passed.

2) Plant the pole beans when the corn is 5 inches high.

3) Plant squash seeds one week later.



www.gmofreeusa.org
www.facebook.com/gmofreeusa
www.facebook.com/gmofreecanadagroup



DID YOU KNOW?

Native Plants Help Fruits and Vegetables Thrive

Did you know native companion plants facilitate pollination of fruits and vegetables?

We depend on pollinators for most of the vegetables and fruits we enjoy from farms and our own gardens. By transferring pollen among the flowers of the same species of fruits and vegetables, fertilization occurs and makes fruit and seed development possible.

■ Non-native honeybees are important pollinators of many of our food crops, but numerous species of native bees and other pollinating insects are significant as well. In fact, many native bees—of a variety of sizes and shapes—are the only insects that pollinate certain species. For example, squash bees are vital for squash flower pollination.

■ Native bees need not only nectar and pollen from fruit and vegetable flowers, but also from many native flowers. You can help support native bees and other pollinators by planting a variety of native wildflowers and native flowering shrubs and trees, including ones listed here.

■ Sustaining and increasing native bee populations with native plants helps ensure there are plenty of pollinators for the fruits and vegetables you grow!



Clockwise from top left are a native spring polyester bee (*Colletes laevis*) on redbud flowers, southeastern blueberry bee (*Habropoda laboriosa*) on blueberry flowers, and a small carpenter bee (*Ceratina* sp.) in a strawberry blossom.

This list was created by native bee specialist Mike Arduser for the Grow Native! program ■ Photos by Ed Spevak

GARDEN PLANT	NATIVE POLLINATORS	NATIVE COMPANION PLANTS
strawberries	small-medium sized bees <i>Augochlorella</i> , <i>Augochlora</i> , <i>Lasioglossum</i> , <i>Halictus</i> , <i>Osmia</i> , <i>Ceratina</i> , <i>Andrena</i>	New Jersey tea, ragworts (<i>Packera</i> spp.), <i>Phacelia</i> spp., pale beard-tongue, wild hyacinth, common cinquefoil, golden alexanders
blackberries and raspberries	small-medium-large bees <i>Andrena</i> , <i>Halictus</i> , <i>Lasioglossum</i> , <i>Augochlorella</i> , <i>Augochlora</i> , <i>Hoplitis</i> , <i>Osmia</i> , <i>Ceratina</i> , bumblebees	New Jersey tea, indigo bush, hawthorns, wild hyacinth, Jacob's Ladder, pale beard-tongue
blueberries	medium-large bees <i>Andrena</i> , bumblebees, <i>Colletes</i> , <i>Augochlora</i> , <i>Augochloropsis</i> , <i>Lasioglossum</i> , <i>Osmia</i> , <i>Habropoda</i> , <i>Eucera</i> , <i>Anthophora</i>	redbud, plums, blue star, blue-eyed Mary, wood betony, Virginia bluebells, wild hyacinth, wild geranium, horsemint
apples, peaches, pears, and plums	medium-large bees <i>Andrena</i> , <i>Colletes</i> , <i>Halictus</i> , <i>Lasioglossum</i> , <i>Augochlora</i> , <i>Augochlorella</i>	major attractions on their own because of their size and conspicuousness

COMPANION PLANTING WITH NATIVE PLANTS

GARDEN PLANT	NATIVE POLLINATORS	NATIVE COMPANION PLANTS
tomatoes	medium-large bees bumblebees, <i>Augochloropsis</i> , <i>Lasioglossum</i> , <i>Anthophora</i>	foxglove beardtongue, pale purple coneflower, blue wild indigo, wild bergamot, purple prairie clover, germander, leadplant, tall coreopsis, obedient plant
peppers	medium-large bees <i>Halictus</i> , <i>Agapostemon</i> , <i>Augochlora</i> , <i>Augochlorella</i> , <i>Melissodes bimaculatus</i> , bumblebees	same as tomatoes (above)
eggplant	medium-large bees bumblebees, <i>Augochloropsis</i> , <i>Lasioglossum</i>	same as tomatoes (above)
green beans	medium-large bees <i>Megachile</i> , bumblebees	leadplant, purple prairie clover, butterfly milkweed, common milkweed, germander, prairie blazing star, wild bergamot
squashes	large bees squash bees (<i>Peponapis</i> , <i>Xenoglossa</i>), bumblebees, <i>Melissodes bimaculatus</i>	leadplant, purple prairie clover, germander, butterfly milkweed, common milkweed, wild bergamot, native thistles, sunflowers, tall coreopsis
cucumbers	medium-large bees <i>Halictus</i> , <i>Agapostemon</i> , <i>Augochlora</i> , <i>Augochlorella</i> , <i>Melissodes bimaculatus</i> , bumblebees	same as squashes
zucchini and melons	medium-large bees squash bees (<i>Peponapis</i> , <i>Xenoglossa</i>), bumblebees, <i>Melissodes bimaculatus</i>	same as squashes
okra	medium-large bees bumblebees, <i>Melissodes bimaculatus</i> , <i>Ptilothrix bombiformis</i>	ironweeds, prairie blazing star, woundwort, common milkweed, native thistles, sunflowers, tall coreopsis, native hibiscus



ANNUAL PLANTS THAT HELP



1. **Four-O'Clocks** draw Japanese beetles which eat the foliage. The foliage is poisonous and kills them. But plant them away from the roses to draw them.
2. **Garlic** repels aphids and is good to plant among your roses. Garlic also repels Japanese beetles, root maggots, and carrot root fly.
3. **Basil** helps repel mosquitoes and flies. Plant it near your door or patio.
4. **Catnip** deters flea beetles, Japanese beetles, squash bugs, ants, weevils and mice.
5. **Marigolds** help deter whiteflies when planted around tomatoes.
6. **Nasturtiums** deter woolly aphids, whiteflies, squash bug, and cucumber beetles. Plant them as a barrier around tomatoes and cucumbers.



COMPANION PLANTS CHART

PLANT	COMPANIONS / EFFECTS	PLANT	COMPANIONS / EFFECTS	PLANT	COMPANIONS / EFFECTS	PLANT	COMPANIONS / EFFECTS
<i>Asparagus</i>	Tomatoes, parsley, basil.	<i>Chervil</i>	Radishes (improves growth and flavor).	<i>Marjoram</i>	Here and there in garden.	<i>Rue</i>	Roses and raspberries; deters Japanese beetle. Keep it away from basil.
<i>Basil</i>	Tomatoes (improves growth and flavor); said to dislike rue; repels flies and mosquitoes.	<i>Chives</i>	Carrots; plant around base of fruit trees to discourage insects from climbing trunk.	<i>Mint</i>	Cabbage family & tomatoes, deters cabbage moth.	<i>Sage</i>	Rosemary, carrots, cabbage, peas & beans; deters some insects.
<i>Beans</i>	Potatoes, carrots, cucumber, cauliflower, cabbage, summer savory, most other vegetables and herbs, & around houseplants when set outside.	<i>Corn</i>	Potatoes, peas, beans, cucumbers, pumpkin & squash.	<i>Nasturtium</i>	Tomatoes, radishes, cabbage, cucumbers; plant under fruit trees; deters aphids and pest of cucurbits.	<i>Southern-wood</i>	Cabbage; plant here and there in garden.
<i>Beans (bush)</i>	Sunflowers (beans like partial shade, sunflowers attract birds and bees), cucumbers (combination of heavy and light feeders), potatoes, corn, celery, summer savory.	<i>Cucumbers</i>	Beans, corn, peas, radishes, & sunflower.	<i>Onion</i>	Beets, strawberries, tomato, lettuce (protects against slugs), beans (protects against ants), summer savory.	<i>Soybeans</i>	Grows with anything, helps everything.
<i>Beets</i>	Onions & kohlrabi.	<i>Dill</i>	Cabbage (improves growth and health), carrots.	<i>Parsley</i>	Tomato & asparagus.	<i>Spinach</i>	Strawberries.
<i>Borage</i>	Tomatoes (attract bees, deters tomato worm, improves growth, & flavor), squash, strawberries.	<i>Eggplant</i>	Beans.	<i>Peas</i>	Squash (when squash follows peas up trellis); grows well with almost any vegetable; adds nitrogen to the soil.	<i>Squash</i>	Bean &, onions; deters bean beetles.
<i>Cabbage family</i>	Potatoes, celery, camomile, sage, thyme, mint rosemary, lavender, beet & onions.	<i>Fennel</i>	Most plants dislike it.	<i>Petunia</i>	Protects beans, beneficial throughout the garden.	<i>Strawberries</i>	Bush beans, spinach, borage, lettuce (as border).
<i>Carrots</i>	Peas, lettuce, chives, onions, leeks, rosemary, sage & tomatoes.	<i>Flax</i>	Carrots & potatoes.	<i>Pot Marigold</i>	Helps tomato, but plant throughout garden as deterrent to asparagus beetle, tomato worm and many other garden pests.	<i>Summer Savory</i>	Beans, onions; deters bean beetles.
<i>Catnip</i>	Plant in borders; protects against flea beatles.	<i>Garlic</i>	Rose and raspberries (deters Japanese beetle); helps herbs with their production of essential oils, plant liberally throughout garden to deter pests.	<i>Pumpkin</i>	Corn.	<i>Sunflower</i>	Cucumbers.
<i>Celery</i>	Leeks, tomatoes, bush beans, cauliflower & cabbage.	<i>Geraniums</i>	Near grapes (discourages Japanese beetles).	<i>Radish</i>	Peas, nasturtium, lettuce, cucumbers; as a general aid in repelling insects.	<i>Tansy</i>	Plant under fruit trees; deters pest of roses and raspberries; deters flying insects; also Japanese beetles.
<i>Camomile</i>	Cabbage & onions.	<i>Horseradish</i>	Potatoes (deters potato beetle), around plum trees to discourage curculios.	<i>Rosemary</i>	Carrots, beans, cabbage, sage; deters cabbage moth, bean beetles and carrot fly.	<i>Tarragon</i>	Good throughout garden.
		<i>Leek</i>	Onions, celery & carrots.			<i>Thyme</i>	Chives, onion, parsley, asparagus, marigold, nasturtium, carrots & limas.
		<i>Marigolds</i>	The workhorse of pest deterrents! Keeps soil free of nematodes; discourages many insects. Plant freely throughout the garden.			<i>Turnip</i>	Peas.

Combination of vegetables, herbs, flowers and weeds that are **mutually beneficial**, according to current reports compiled from Organic Gardening and Farming.





NATIVE PLANT SELECTION

1. Before selecting plants become familiar with plants native to your region and site.
2. Learn their basic cultural requirements.
3. Know what plants like sun, shade, wet or dry.
4. Plant diversity is essential for season-long bloom and for providing the best habitat for wildlife.
5. Also, select plants that bloom in the spring, summer and fall.



6. Know each plant's ultimate height and spread at maturity.
7. Avoid planting in straight lines or perfect circles.
8. Plant in groups of three, five, or more.
9. Do not use too many species in small areas.
10. Select plants that will grow in the region, soil conditions, microclimate and plant community.

9. *MAINTAIN HEALTHY PLANTS*

- Water plants during the morning
- Remove diseased leaves
- Use mulch around plants
- Provide air circulation by not crowding the plants
- Disbud and deadhead



10. CONSERVE WATER

- Drip hose
- Rain barrel
- Rain garden



HAGELKUTUR “HILL CULTURE”

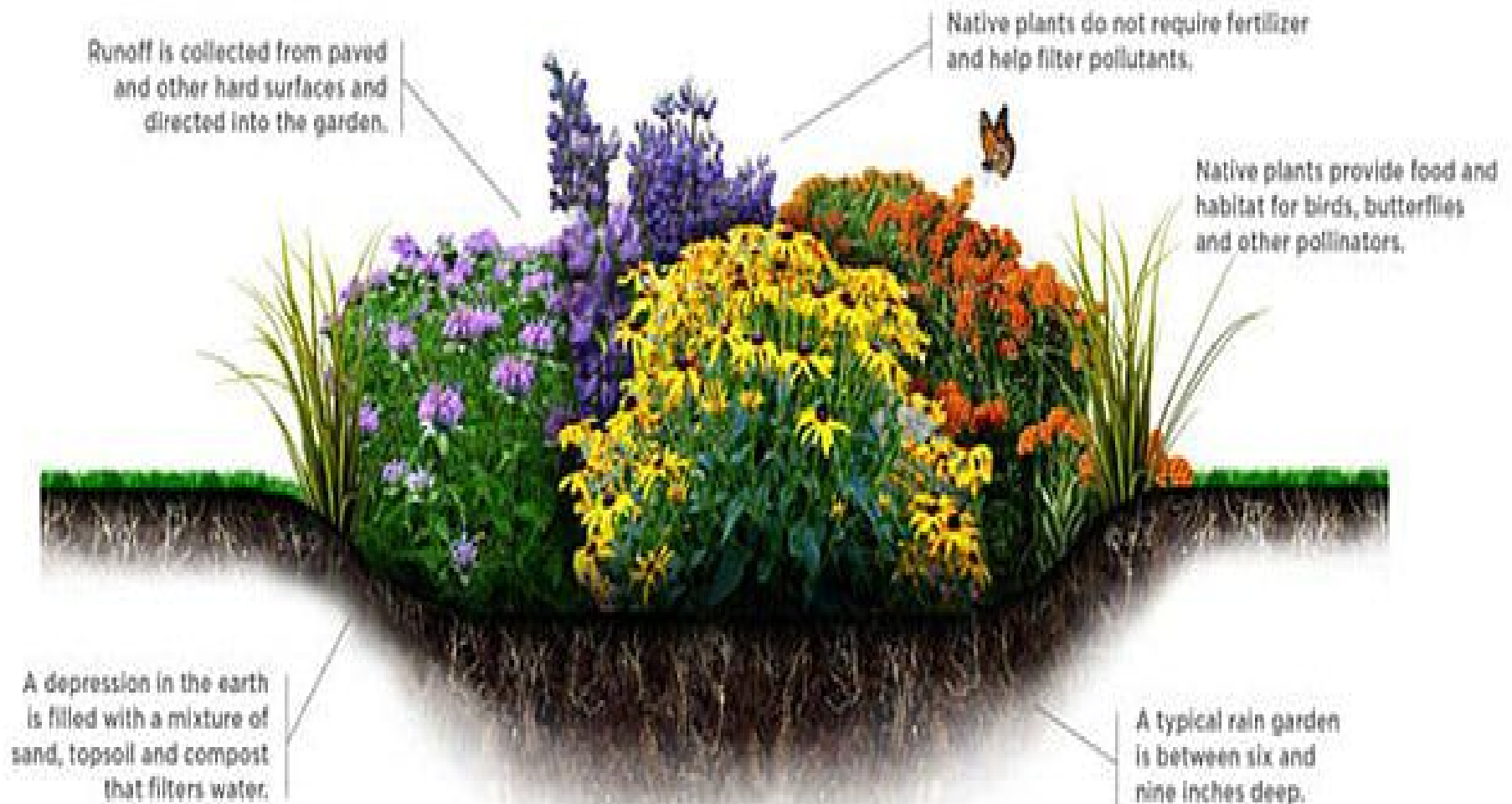
A technique whereby large amount of wood is buried to improve the water retention abilities of the soil.





What is a Rain Garden?

Nature's Water Filter: Rain gardens are shallow landscaped depressions that capture, clean and absorb stormwater runoff from roofs, parking lots and roads.





Remember to:

Practice sustainability of environment

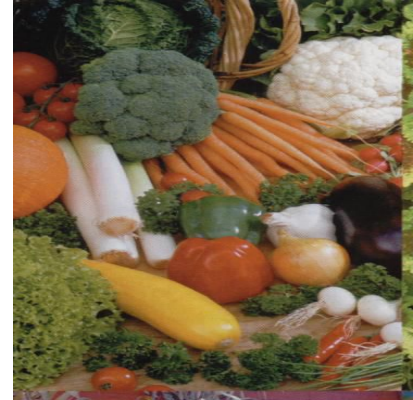
Organic gardening can become a daily routine (Enrich the soil, add compost)

Understand the principles of IPM,

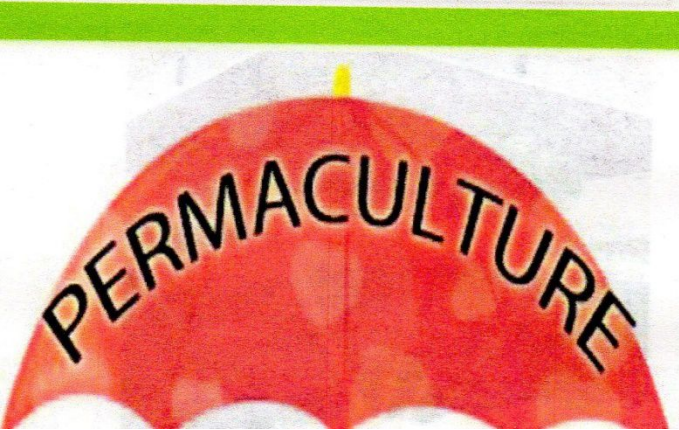
Integrated Pest Control

(mechanical, cultural, biological)

Try using companion planting in your vegetable and native plant gardens



NORTH WEST ARKANSAS PERMACULTURE STUDY GROUP



FIELD TRIP TO ANDREW' FARM

Organic Gardening
Seed Saving
Environment Solutions
Water Conservation
Energy Conservation
Eco Building
Agro Forestry
Aquaculture

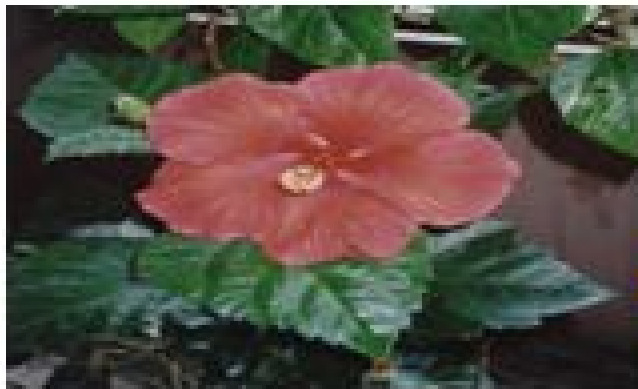
Jerry Landrum 479 244-0377



I PLEDGE ALLEGIANCE
TO THE EARTH
OF OUR BELOVED SOLAR SYSTEM



ONE PLANET
UNITED IN HARMONY
WITH UNIVERSAL LOVE
& COMPASSION FOR ALL.



**“Where flowers bloom
So does hope.”**

-- Lady Bird Johnson

