



# Gardener's Notebook

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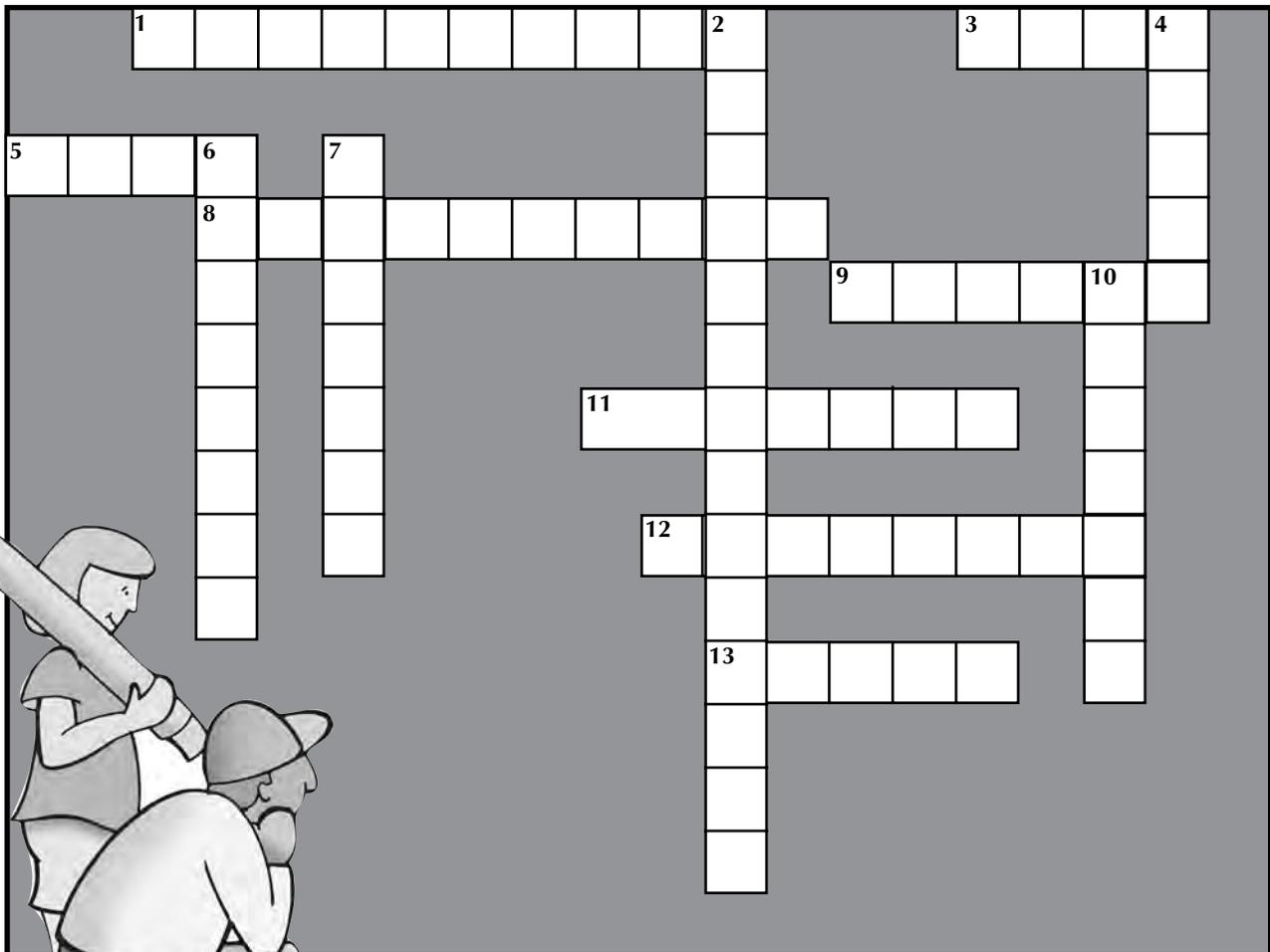
The University of Missouri-Columbia Garden 'n Grow project was developed by:  
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Editing/Design: **Sharon Wood-Turley**

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## Why is there Hunger?

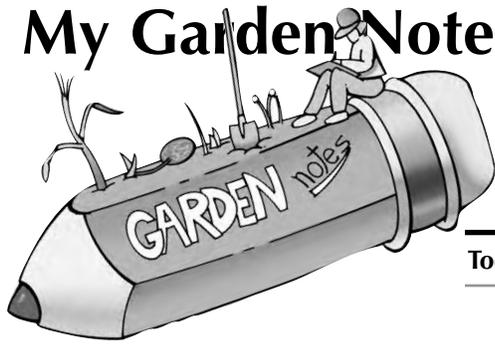
### Across

1. Ruling body of a country
3. Poor growing season; “\_\_\_\_\_ failure”
5. Fighting in or among nations
8. Changing raw products into forms we can use
9. Overflowing of rivers and streams
11. Clean, dry places to keep food
12. Robbing
13. Buying and selling between countries

### Down

2. Ways of moving food
4. Insects and rodents
6. Rotting and molding
7. Too little money
10. Too little rain to grow crops

# My Garden Notes

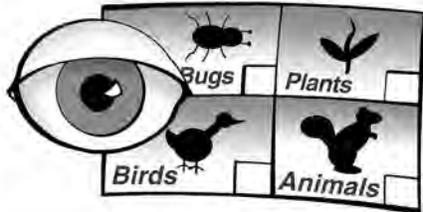


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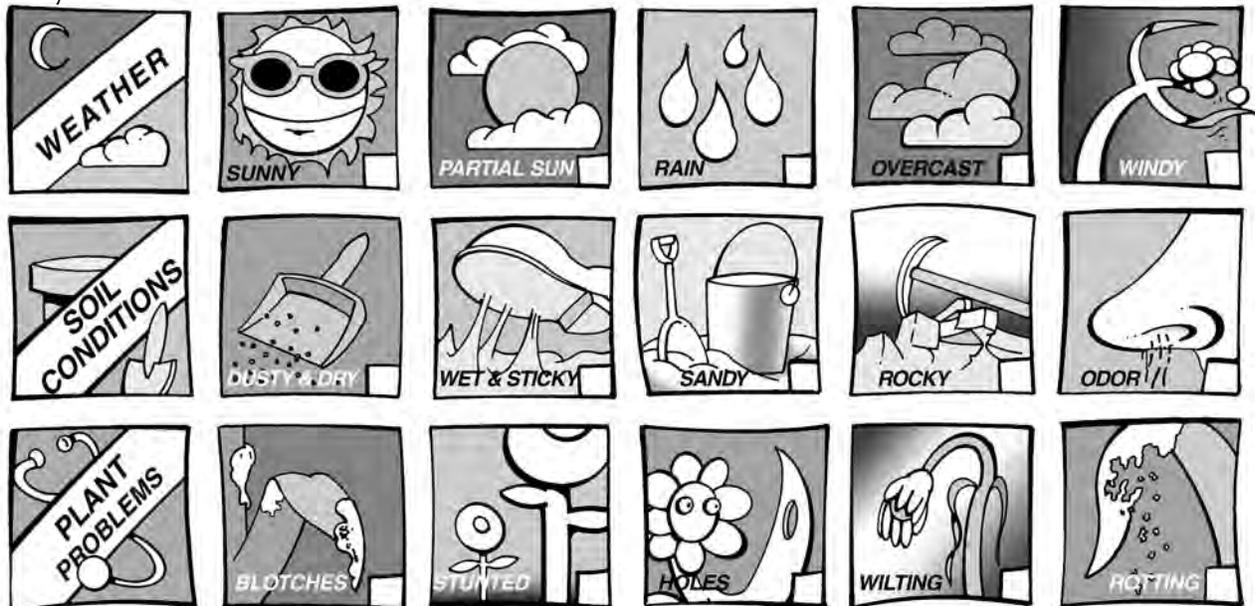


Today I learned:

General observations:



Daily checklist:





Scale: 1 square = 1 foot

# Sunshine Garden

KEY



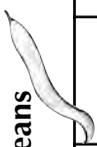
Banana  
Pepper



Red Tomato

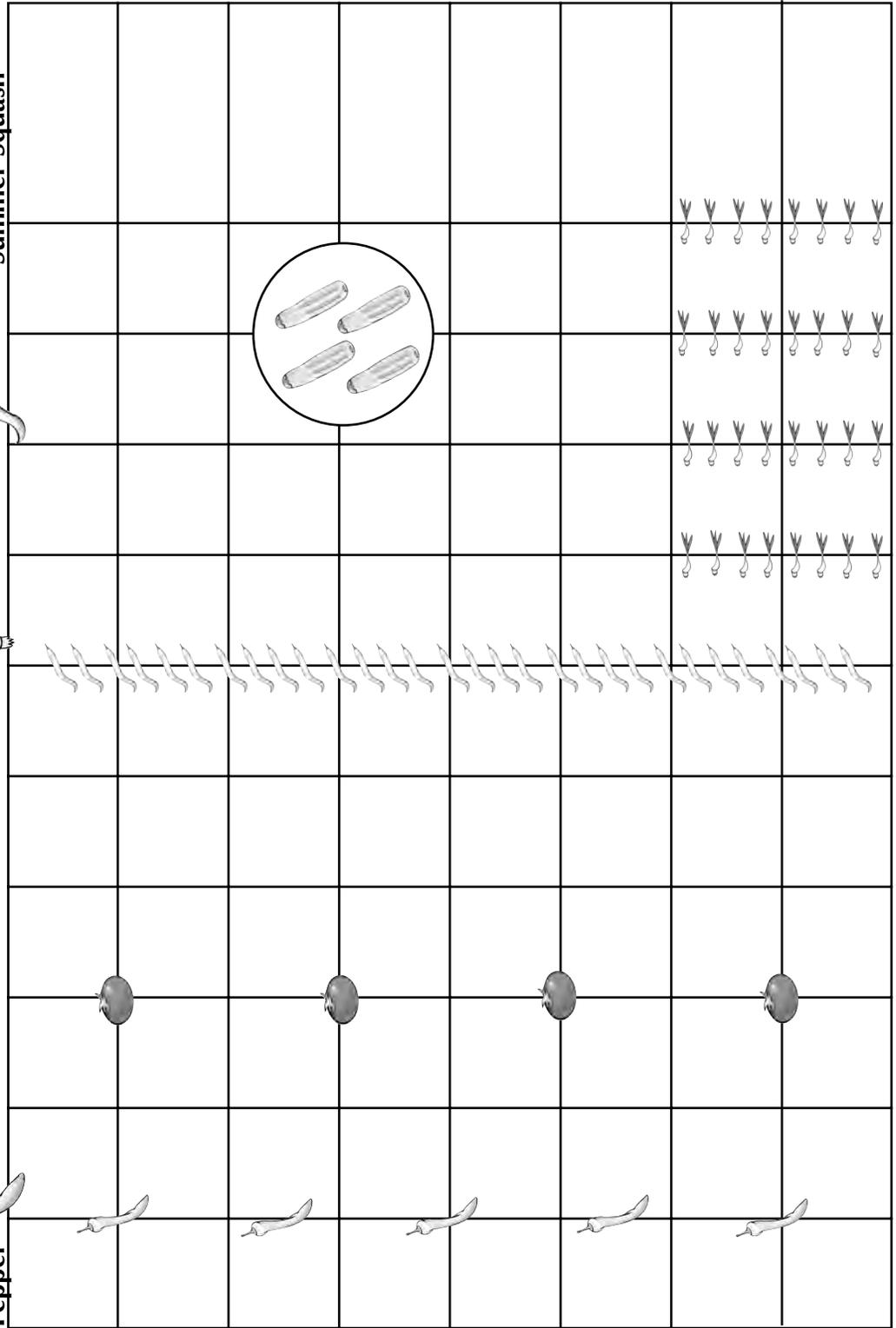


Onion sets



Wax beans

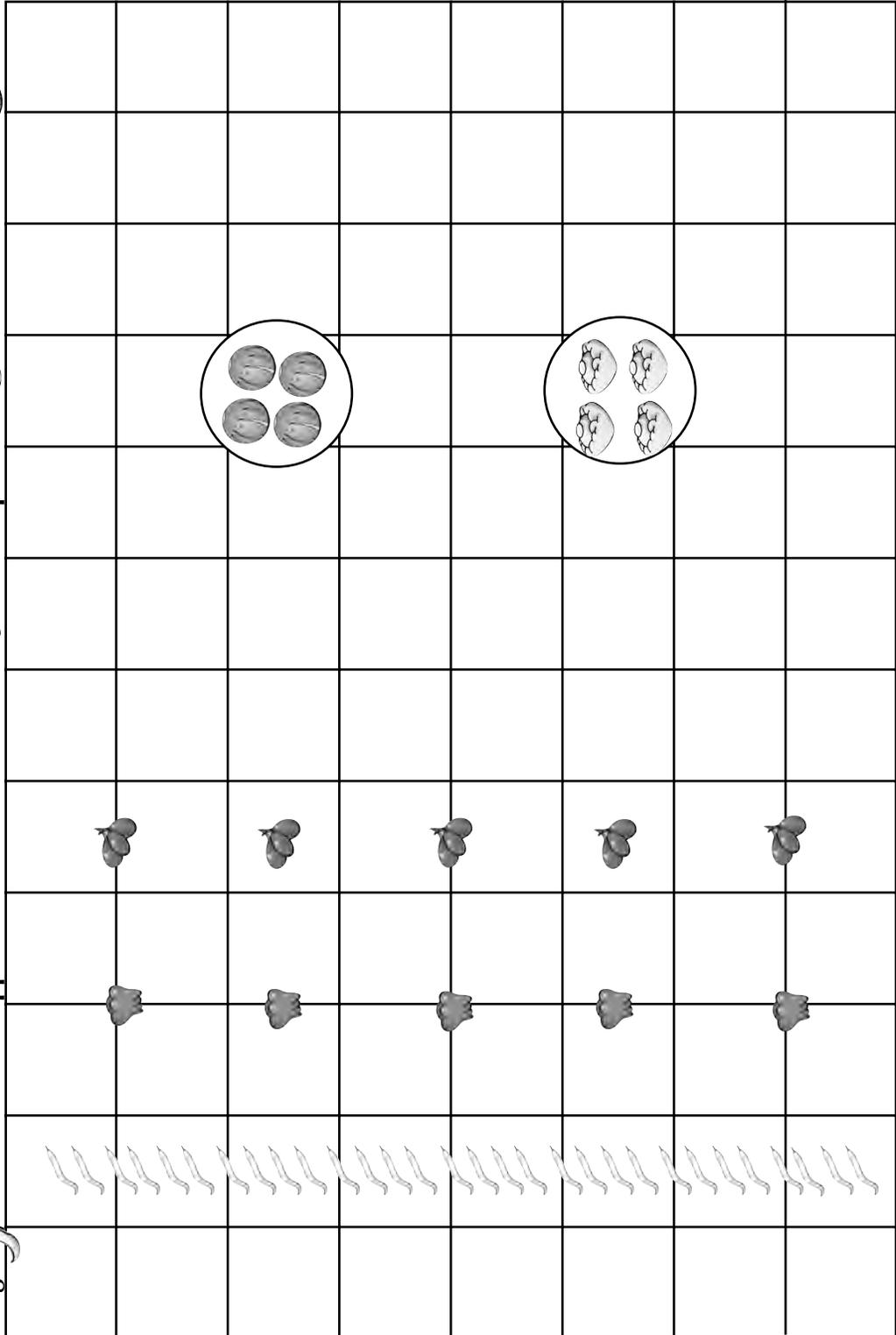
Yellow  
Summer Squash



Scale: 1 square = 1 foot

# Weird Garden

**KEY**





Scale: 1 square = 1 foot

# Relish Tray Garden

**KEY**

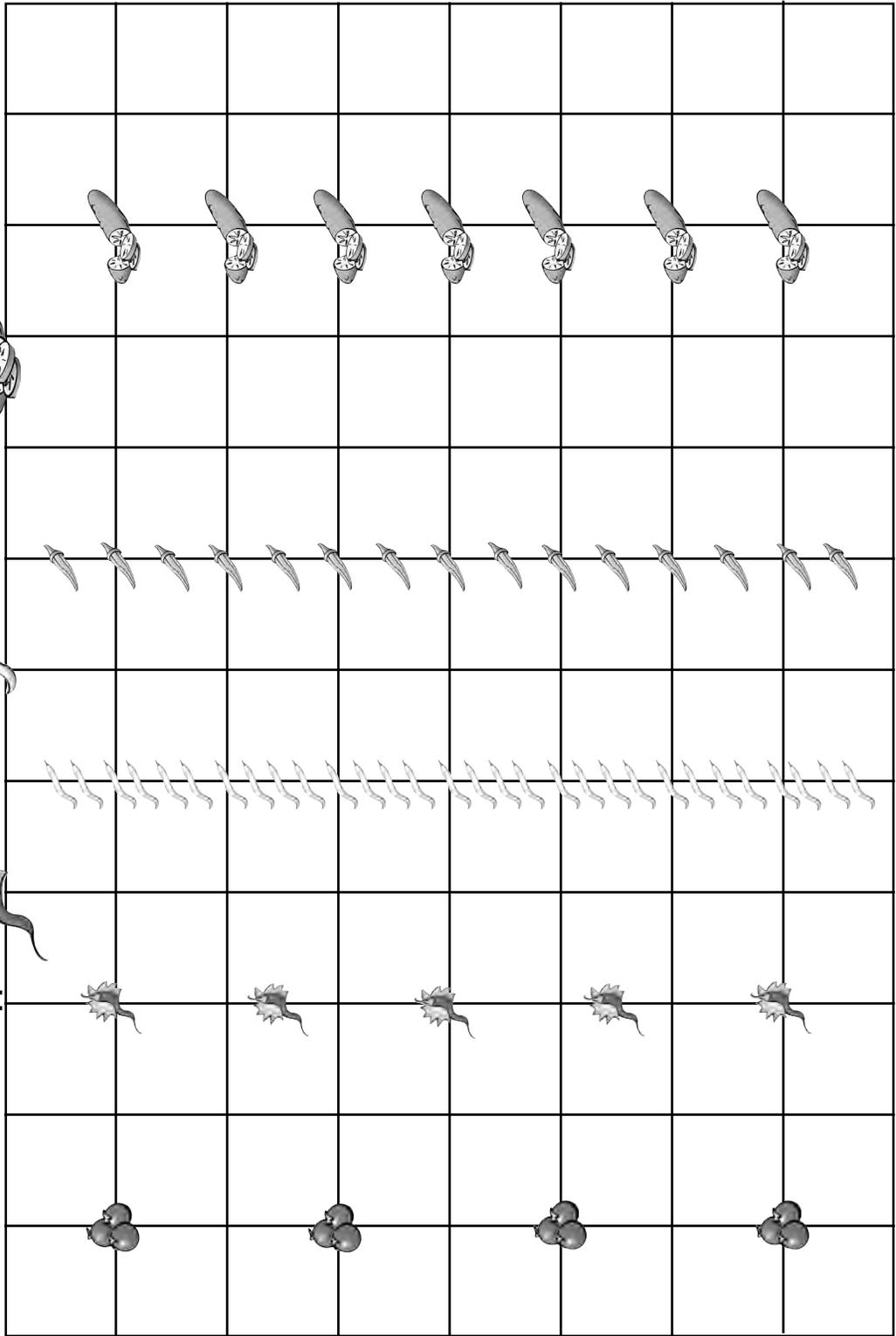
Cherry Tomato

Hot, Red Pepper

Bush Bean

Cucumber

Okra



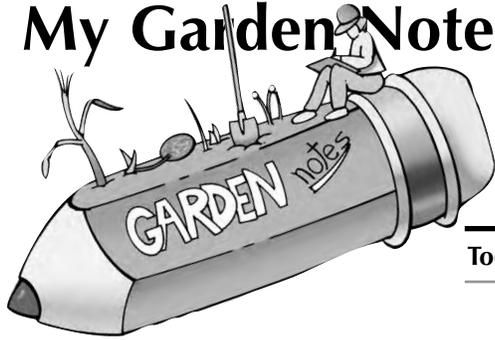
\*After okra seedlings emerge, thin to a distance of 18 inches apart.

# Planting 1, 2, 3...

VEGETABLE PLANTING GUIDE									
					Dates to Plant (day/month)				
Vegetable	Inches between rows	Inches between plants	Seed depth	Days from planting to harvest	South Missouri	Central Missouri	North Missouri	Warm (W) or Cool (C) Season	Recommended varieties
Beans, green	24"	3"	1-2"	60-70	4/5-5/10	4/15-5/20	4/25-5/30	W	Topcrop, Royalty Burgundy, Provider, Contender, Derby, Tendercrop, Hialeah, Bronco, Daytona
Beans, pole	24"	3"	1-2"	5-60	4/20-5/15	5/1-20	5/10-20	W	Kentucky Wonder, Bluelake
Beans, yellow	24"	3"	1-2"	60-70	4/5-5/10	4/15-5/20	4/25-5/30	W	Gold Crop, Slenderwax, Kinghorn Wax, Klondyke, Gold Rush
Beans, lima bush	24"	3"	1-2"	70-80	4/25-5/20	5/5-5/25	5/10-5/25	W	Henderson Bush, Fordhook 242
Beans, lima pole	24"	3-4"	1-2"	85-90	5/1-5/15	5/10-5/15	5/15-5/25	W	King of the Garden, Speckled Christmas
Beets	18"	3"	½-¾"	55-65	3/1-3/25	3/15-4/15	4/1-4/15	C	Detroit Dark Red, Ace, Formanova, Ruby Queen, Rosette
Broccoli (plants)	24"	12-18"	½"	70-80	3/1-3/25	3/15-4/15	4/1-4/15	C	Premium Crop, Green Comet Hybrid, Packman, Pinnacle, Arcadia, Brigadier
Brussels Sprouts (plants)	24"	16-24"	½"	85-95	3/10-3/30	3/20-4/10	3/25-4/5	C	Jade Cross Hybrid
Cabbage (plants)	24"	10-24"	½"	70-80	3/5-4/5	3/20-4/20	4/1-4/20	C	Stonehead Hybrid, Golden Acre, Market Prize, Royal, Savoy Ace Fortuna, Gourmet, Conquest, Bravo
Cantaloupe (muskmelon)	48"	18-36"	1"	80-90	4/20-5/15	5/1-5/20	5/10-5/20	W	Burpee Hybrid, Supermarket Hybrid, Saticoy, Hybrid, Ambrosia, Pulsar, Athena, Eclipse
Carrot	18"	1-2"	¼"	70-85	3/5-3/25	3/15-4/5	3/25-4/10	C	Nantes Improved, Royal Chantenay, Thumbelina, Amina
Cauliflower (plants)	24"	24"	½"	55-65	3/5-4/5	3/20-4/20	4/1-4/20	C	Snowcrown, Snowball
Corn, sweet	36"	9"	1-2"	70-85	4/15-8/15	4/25-8/1	5/1-7/20	W	Early Sunglow, Stardust, Apollo, Ambrosia, Autumn Star, Miracle, Golden Cross, Bantam, Lochief, Kandy Corn, Lancelot, How Sweet It Is, Silver Queen, Kandy Korn
Cucumber	30"	12" or 4 seeds per hill	1"	65-70	4/25-5/30	5/5-5/30	5/10-5/30	W	Dasher II, Marketmore 76, Orient Express, Superset, Sweet Slice, Calypso, Homemade Pickle, Fanfare, Little Leaf (H-19), Salad Bush
Eggplant	24"	24"	¼-½"	80-90	5/1-5/20	5/10-5/25	5/15-5/25	W	Dusky, Black Bell
Lettuce	18"	thin to 4"	¼-½"	35-50	3/10-5/1	3/15-5/10	4/1-5/15	C	Black-Seeded Simpson, Salad Bowl, Red Fire

VEGETABLE PLANTING GUIDE									
					Dates to Plant (day/month)				
Vegetable	Inches between rows	Inches between plants	Seed depth	Days from planting to harvest	South Missouri	Central Missouri	North Missouri	Warm (W) or Cool (C) Season	Recommended varieties
Okra	30"	6" thin to 18"	¾-1"	55-60	4/20-5/10	5/1-5/25	5/10-5/25	W	Annie Oakley II, Lee, Clemson Spineless 80
Onion sets	12"	2"	1-4"	25-35	3/10-3/30	3/15-4/15	3/25-4/15	C	Yellow Sweet Spanish, White Sweet Spanish, Sweet, Copra Sandwich Hybrid, Red Hamburger, Copra, Burgos, Lakota, Nitro, Spirit
Peas, snap	24"	2"	1-2"	65-75	3/1-3/30	3/15-4/10	3/25-4/10	C	Sugar Bon, Sugar Ann, Super Sugar Snap
Peas, English	24"	2"	1-2"	65-75	3/1-3/30	3/15-4/10	3/25-4/10	C	Little Marvel, Green Arrow, Spring, Knight, Bolero, Lincoln
Pepper, sweet (plants)	24"	18"	¼-½"	70-80	5/1-5/25	5/10-5/30	5/15-5/30	W	Marengo, Gypsy, King Arthur, Golden Bell, Canape, Paladin, Merlin
Pepper, hot (plants)	24"	15-18"	¼-½"	70-80	5/1-5/25	5/10-5/30	5/15-5/30	W	Hungarian Yellow, Jalapeno, Habanero, Charleston Hot, Scotch Bonnet
Potato	30"	10-12"	4"	100-120	3/10-3/30	3/20-4/10	4/1-4/15	C	Irish Cobler, Kennebec, Norland, Red Pontiac, Norgold Russet, Superior, Yukon Gold
Pumpkin	48"	60"	1-1½"	110	5/1-5/15	5/15-5/25	5/20-5/30	W	Howden Biggie, Spirit, Jack-O-Lantern, Jack-Belittle, Lumina, Small Sugar, Wizard, GoldRush, MotherLode
Radish	18"	1"	½"	25-35	3/10-5/10	3/15-5/1	3/20-5/1	C	Cherry Belle, Champion, Easter Egg, White Icicle, Snowbele
Spinach	18"	3"	1-2"	40-50	3/10-4/20	4/1-4/25	4/10-5/1	C	Bloomsdale, Long Standing, Melody, Medania, Tye
Squash, winter	48"	48"	1-1½"	100	5/1-5/30	5/10-5/30	5/15-5/30	W	Table Queen, Table Ace, Sweet Mama, Early Butternut Hybrid, Vegetable Spaghetti
Squash	36"	36" or 4 seeds per hill	1-1½"	80-90	5/1-5/30	4/1-4/20	4/10-4/20	W	Straightneck types, Crookneck types, Peter Pan, Zucchini varieties
Tomato (plants)	24"	24"	¼-½"	75-90	4/20-5/10	5/10-5/20	5/15-5/30	W	Avalanche, Beef Master, Better Boy, Big Beef, Celebrity, Conquest, Jet Star, Lemon Boy, Mountain Delight, Pink Girl, Show-Me
Watermelon	96"	96"	¾-1"	85-95	4/20-5/15	5/1-5/20	5/10-5/20	W	Jubilee, Crimson Sweet, Sangria, Sugar Baby, Yellow Doll, Chiffon, Jack of Hearts, Fandango, Royal Sweet, Stars and Striped, Nova

# My Garden Notes

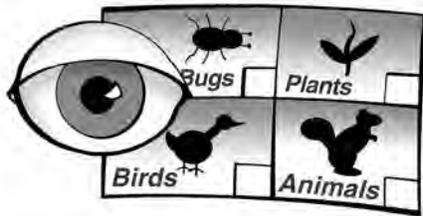


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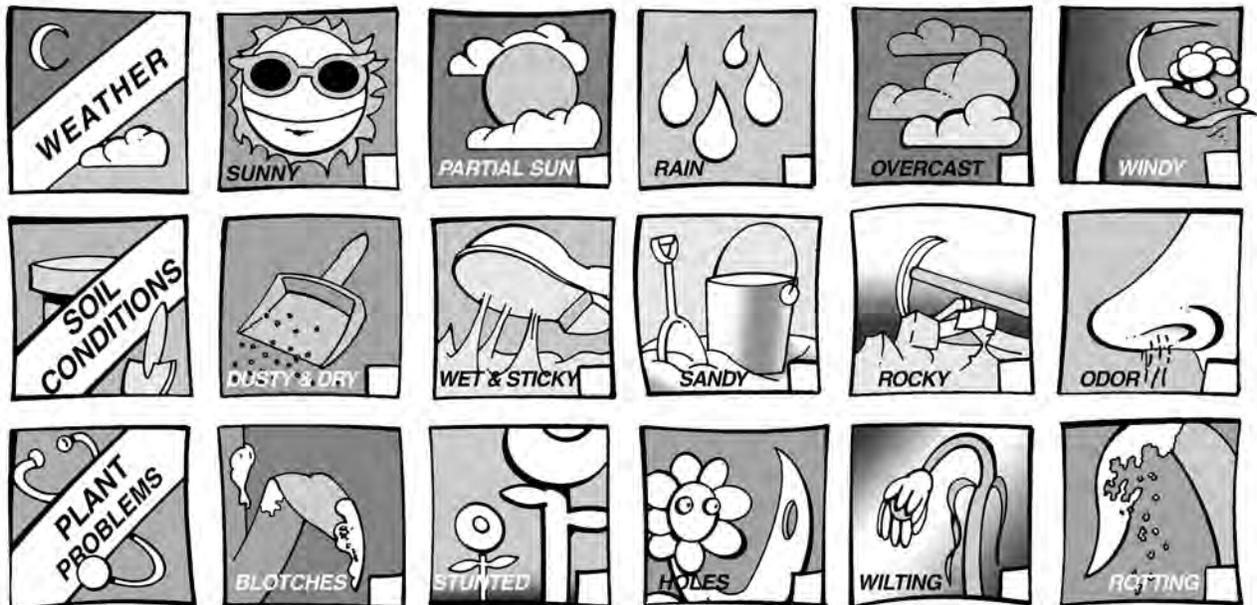


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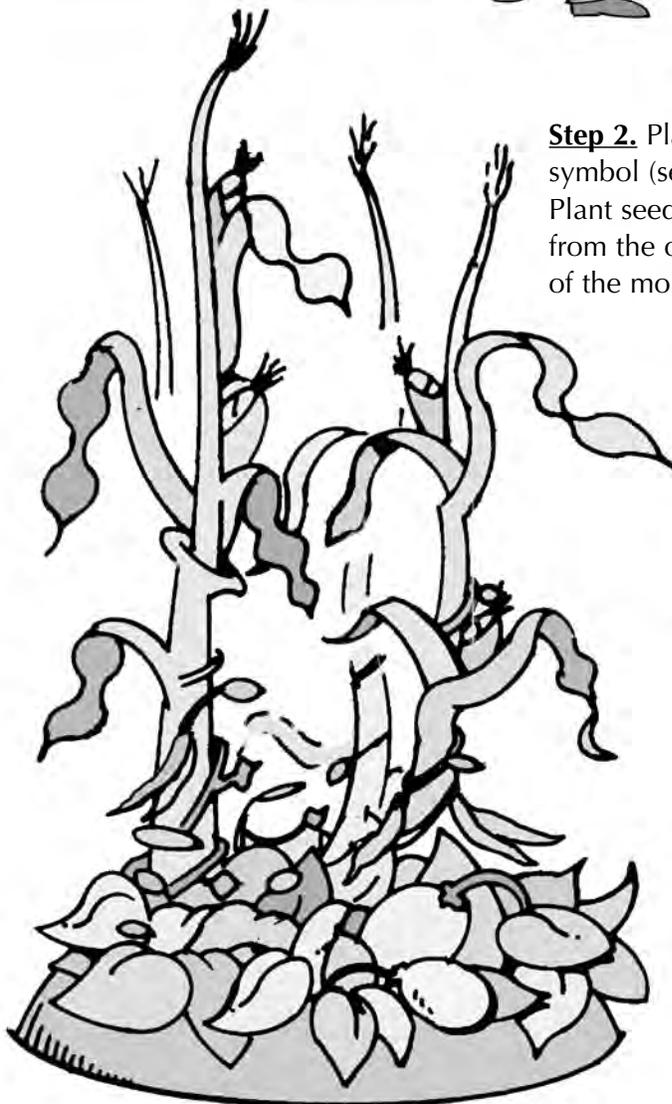
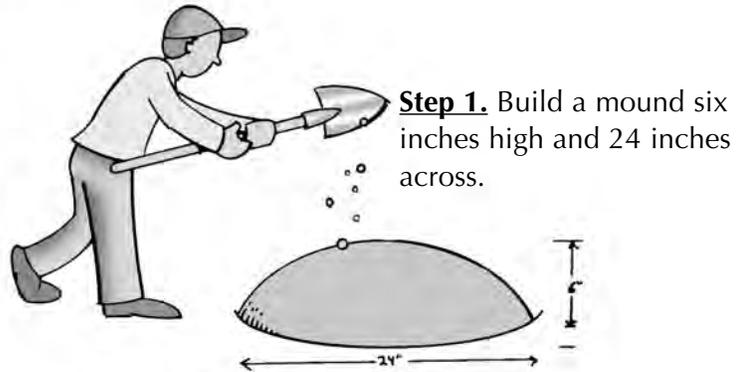
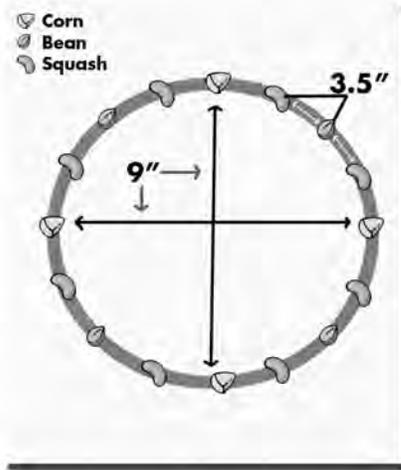
General observations:



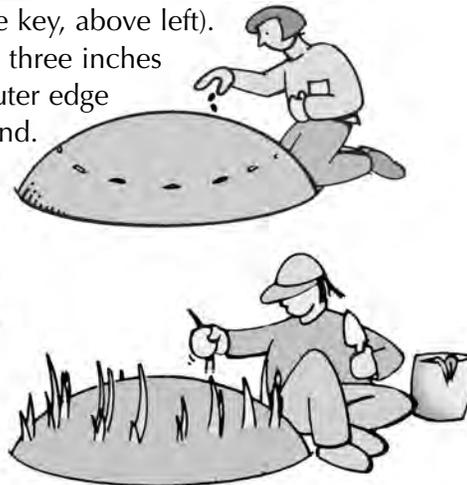
Daily checklist:



# Planting Diagram

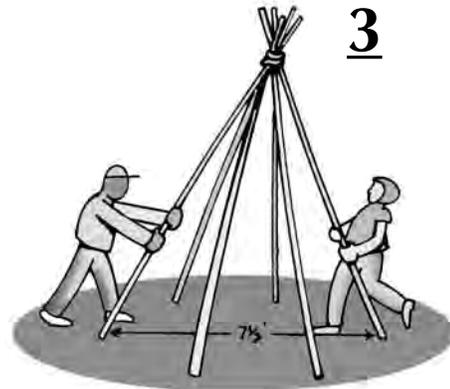
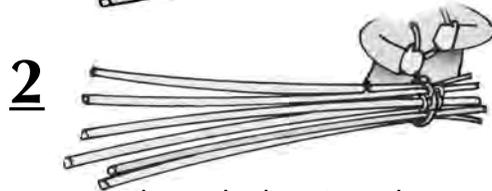
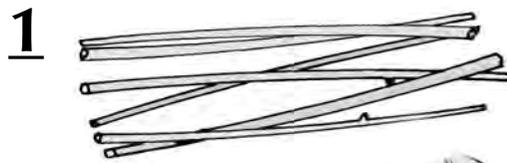


**Step 2.** Plant two seeds at each symbol (see key, above left). Plant seeds three inches from the outer edge of the mound.



**Step 3.** After seeds have germinated, thin to one plant per symbol.

# Bean Tepee Construction



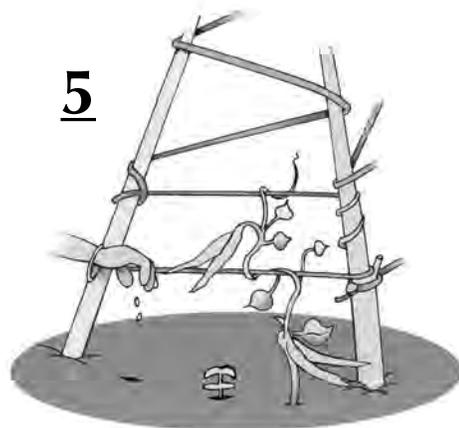
**Step 1.** Gather your poles at the location where you are going to build your tepee. You will need six poles. Each pole should be eight to 10 feet in length.

**Step 2.** Place the poles on the ground in a bundle. About one and one-half feet from one end, lash the poles together securely with rope.

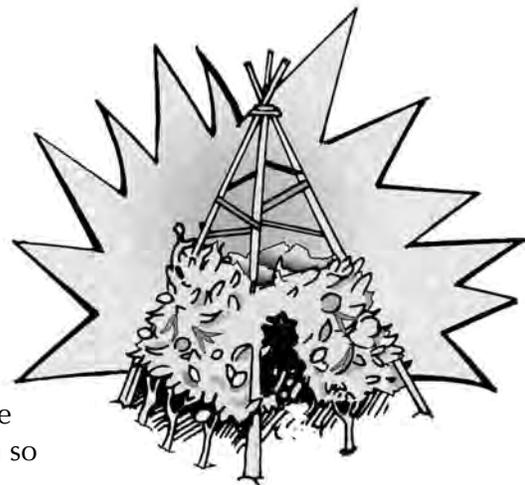
**Step 3.** Stand the poles upright and space them an equal distance apart in the permanent spot where you want the tepee. The base of the tepee should form a circle about seven and one-half feet in diameter.



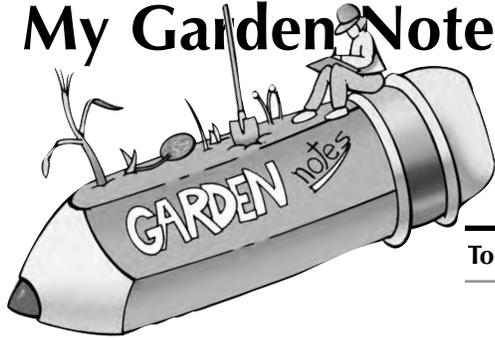
**Step 4.** Fasten string at the bottom of a pole and run the string back and forth (like a ladder) between one pole and the one beside it, covering the area up to where the poles come together. Each gardener can take two poles and run the string from ground level to the top of the tepee. Make sure to leave an opening between two of the poles to walk into the tepee to harvest beans later.



**Step 5.** Plant beans three inches apart around the base of the tepee. After the seeds germinate, place the bean vines on the string and poles. Direct the growth so the structure is covered with vines.



# My Garden Notes

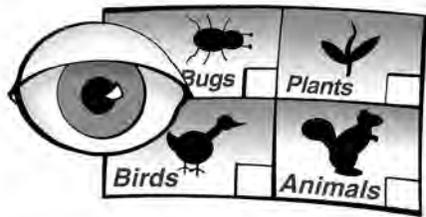


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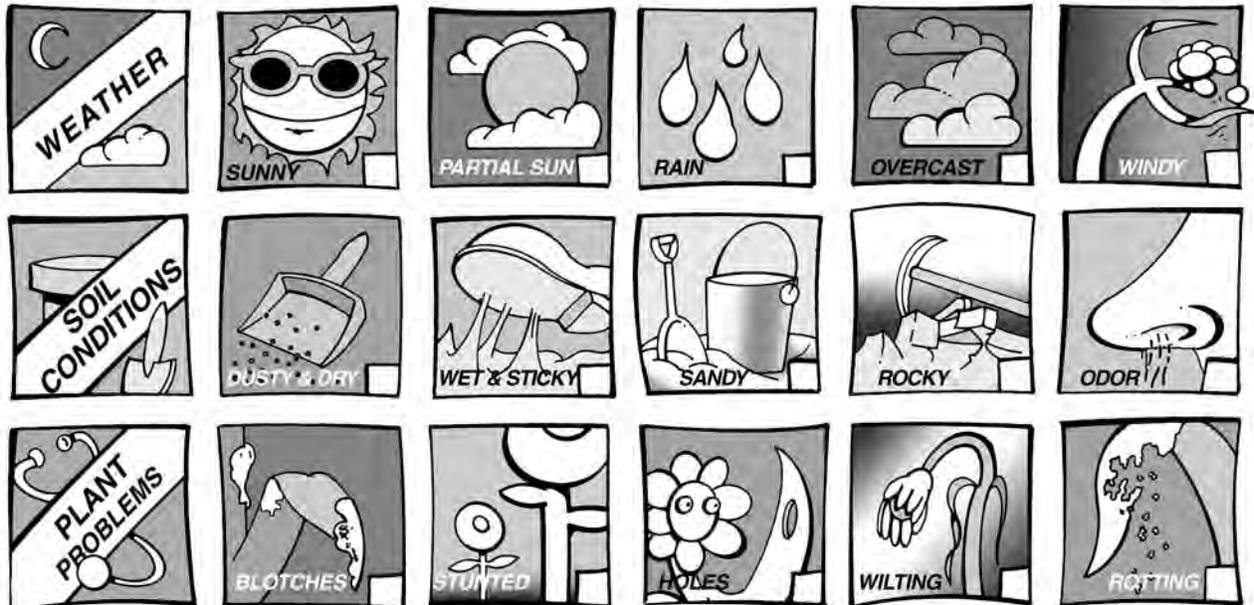


Today I learned:

General observations:



Daily checklist:



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# Seed or Weed?

1. What is a weed?

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2. What kind of seedlings are these? Label them.



a. \_\_\_\_\_



b. \_\_\_\_\_



c. \_\_\_\_\_



d. \_\_\_\_\_

3. Why do gardeners keep weeds out of their garden?

They compete for:

---

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4. How is mulch used to prevent weed growth?

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5. What materials can be used as mulch?

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6. When do we apply mulch?

---

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7. What are two ways to control weeds in our garden?

1. \_\_\_\_\_

2. \_\_\_\_\_



# Weed Scavenger Hunt

**Directions:** Read each item carefully and follow the instructions. When you find the weed you are looking for, collect the entire plant (roots, stem, leaves, etc.). Label the plant with the number of the corresponding question.

1. Find a weed with grass-like leaves and a triangular stem.
2. Find a weed with grass-like leaves and long fluffy tail-like spikes with many seeds.
3. Find a weed that has hairy, grass-like leaves and a seed head with three to 10 “fingers.”
4. Find a vining weed with leaves with three lobes.
5. Find a weed that makes some people sneeze and has fern-like leaves.
6. Find a weed with yellow flowers that often grows in lawns.
7. Find a weed that is low-growing and has leaves of three and has white flowers.
8. Find a vining weed with white flowers and leaves shaped like arrowheads.
9. Find a low-growing weed that exudes sticky white “milk” when a leaf or stem is picked.
10. Find a low-growing weed with whorls of leaves shaped like a spatula.

# Weed Identification



Dandelion



Carpetweed



White Clover



Bindweed



Bindweed



Large Crabgrass



Crabgrass



Common Ragweed



Prostrate Spurge



Yellow Nutsedge



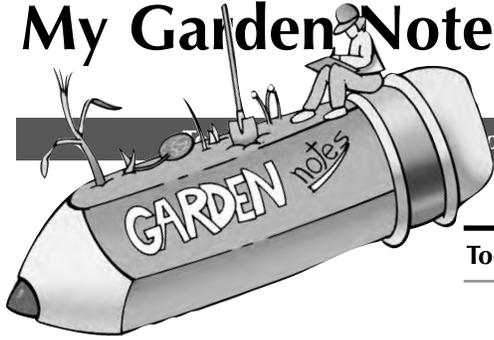
Ivy Leaf Morning Glory



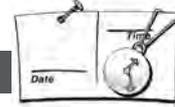
Giant Foxtail

Photos courtesy: Fred Fishel, Extension Assistant Professor, Plant Sciences,

# My Garden Notes



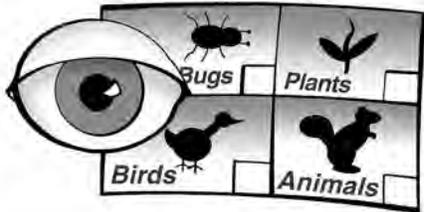
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Content Outline and Procedures

Today I learned:

General observations:

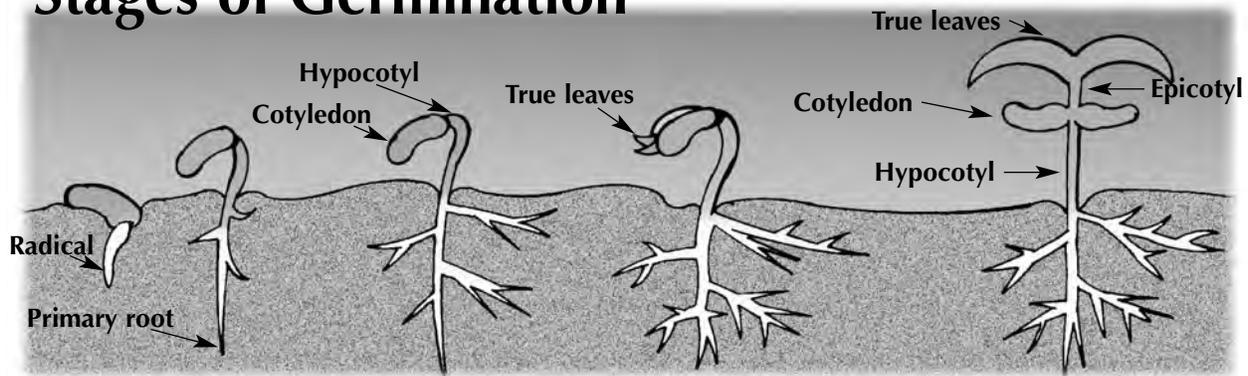


These seeds had germinated in my garden:

Daily checklist:



## Stages of Germination



1. When conditions are favorable for germination, the seed absorbs water and the **seed coat** or testa ruptures.
2. The **radical** and the **cotyledons** begin to emerge from the seed coat. The seed uses food stored in the cotyledons to grow.
3. The radical grows out of the seed into the soil (even if the seed is upside down). The shoot or **hypocotyl** elongates upward out of the seed and lifts the cotyledons and the **epicotyl** out of the ground. The epicotyl is the part of the shoot above the cotyledons.
4. The small plant, called a **seedling**, begins to absorb nutrients from the soil and to make its own food by the process of **photosynthesis**. The leaves that develop after the cotyledons are **true leaves**. Once true leaves develop, the cotyledons turn yellow and die as the true leaves take over producing food for the plant.

# Gardener's Page

Item	Seed or Not a Seed	Special Quality
1. Peanut		
2. Dandelion		
3. Avocado		
4. Popcorn		
5. Pea		
6. Bean		

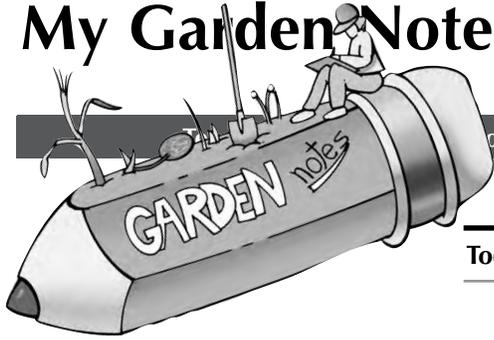
## The Five Parts of a Bean Seed

Draw and label the parts of a bean seed.

### Fill in the blank:

Part of the Seed	Function of Seed Part
1. _____	Protects the seed from injury and prevents drying.
2. _____	Stores food for use by embryo during germination.
3. _____	Lifts the cotyledons out of the seed.
4. _____	Connects the cotyledons to the first true leaves.
5. _____	Absorbs water, oxygen, and nutrients needed for plant growth.

# My Garden Notes



Date and time: \_\_\_\_\_



Content Outline and Procedures

Today I learned:

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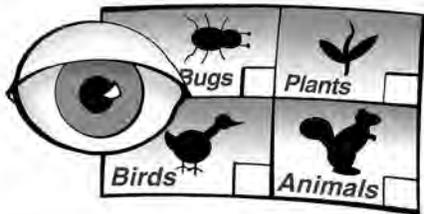


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General observations:




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These seeds had germinated in my garden:

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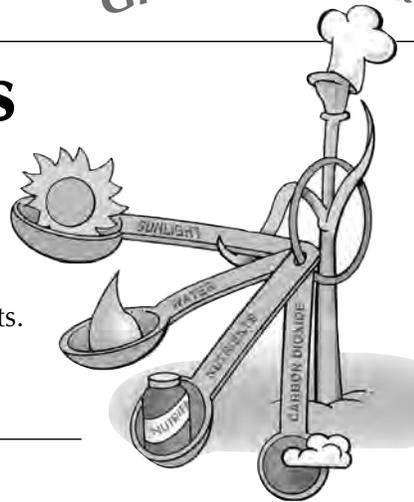
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Daily checklist:



# Ingredients for success

Choose one of the ingredients for growing plants (light, water, soil, nutrients, air). Design an experiment to determine how a certain ingredient affects the growth of your bean plants. Be creative and have fun!



Which ingredient you will study: \_\_\_\_\_

How will you conduct your experiment?

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Our Prediction: Which pot of beans will grow the best?

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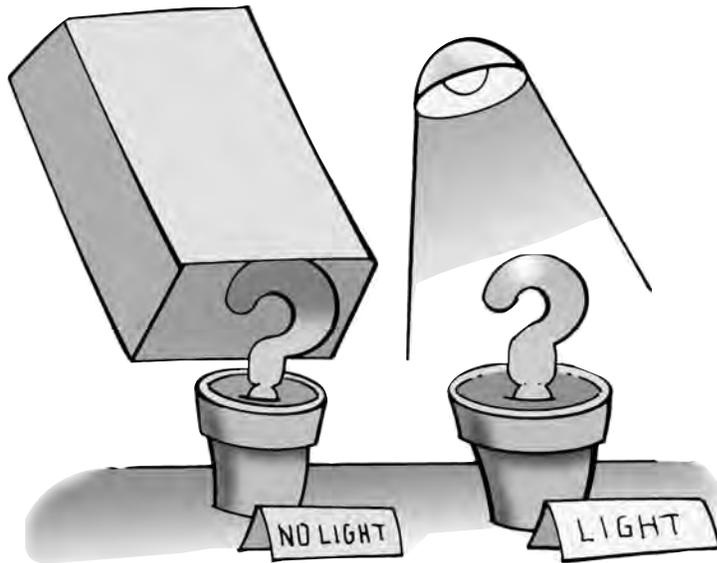
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How will you gather your data?

Suggestion: Every two days measure your plants with a ruler. Record your measurements each time and make a graph using these numbers. At the end of two weeks, illustrate on the graph how many leaves the plant grew during this time. For example:

Day	Pot 1 — Light			Pot 2 — No Light		
	No. of leaves	Plant height (cm)	Other notes	No. of leaves	Plant height (cm)	Other notes
Day 2	0	0	No germination	0	0	No germination
Day 4	0	5		0	1	
Day 6	2	8	Leaves appeared	1	3	Leaf is yellow
Day 8	4	10		1	5	
Day 10	4	14		2	6	
Day 12	6	16		3	7	
Day 14	8	18		5	9	

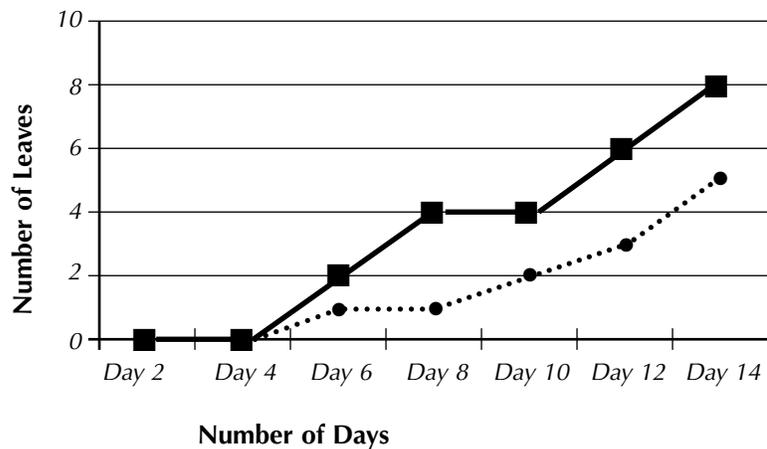
# Show your results



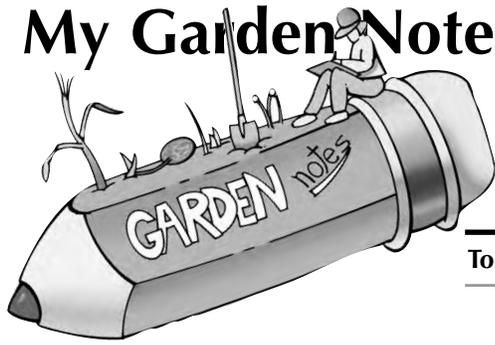
After two weeks, you will present a brief TV news broadcast to the other gardeners.

You may wish to use your graphs to report your discoveries. The graph below shows how the data in the table on the previous page would look.

### Comparison of light vs. no light



# My Garden Notes



Date and time: \_\_\_\_\_



Today I learned:

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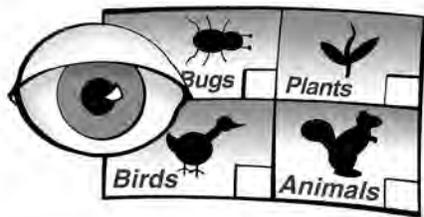


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General observations:




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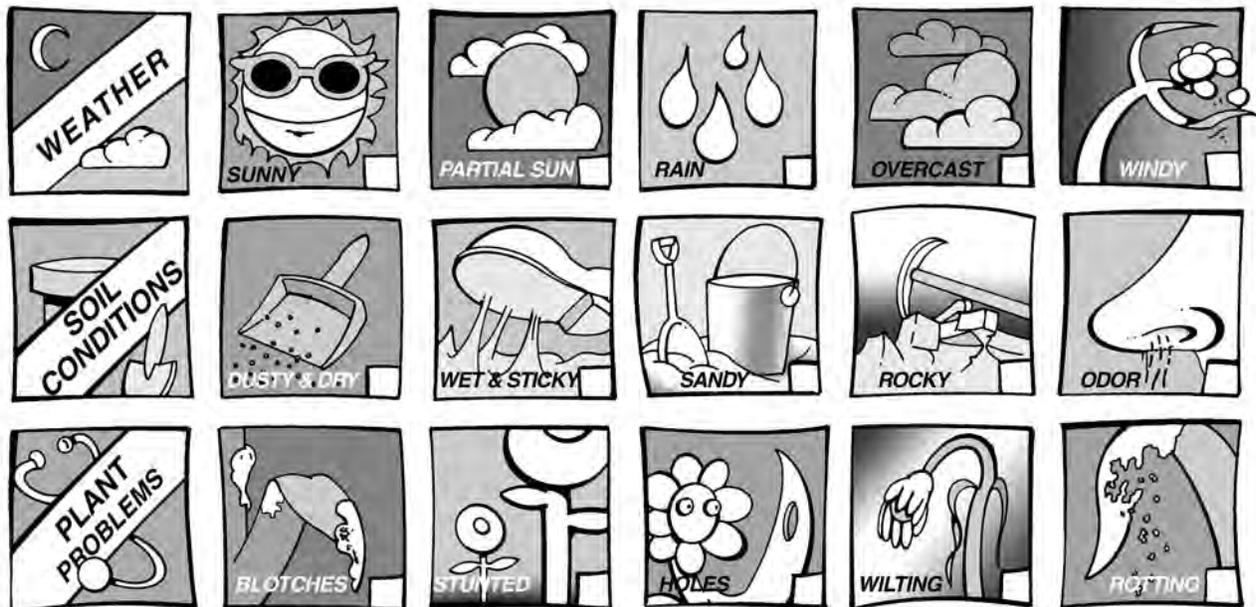
These seeds had germinated in my garden:

---

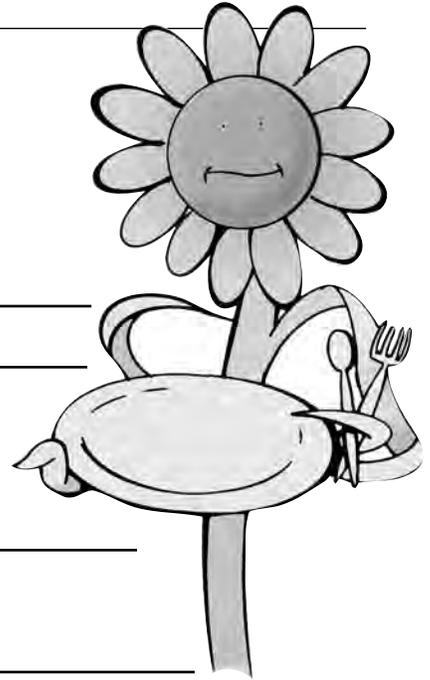


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Daily checklist:



# Shine On!



1. Where do plants get their food?

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2. How does photosynthesis begin?

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3. What in the leaves absorb the light?

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4. What do the roots contribute to photosynthesis?

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5. What is the name of the sugar produced during photosynthesis?

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6. What is the equation for photosynthesis?

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7. What happens when a plant produces more food than it needs?

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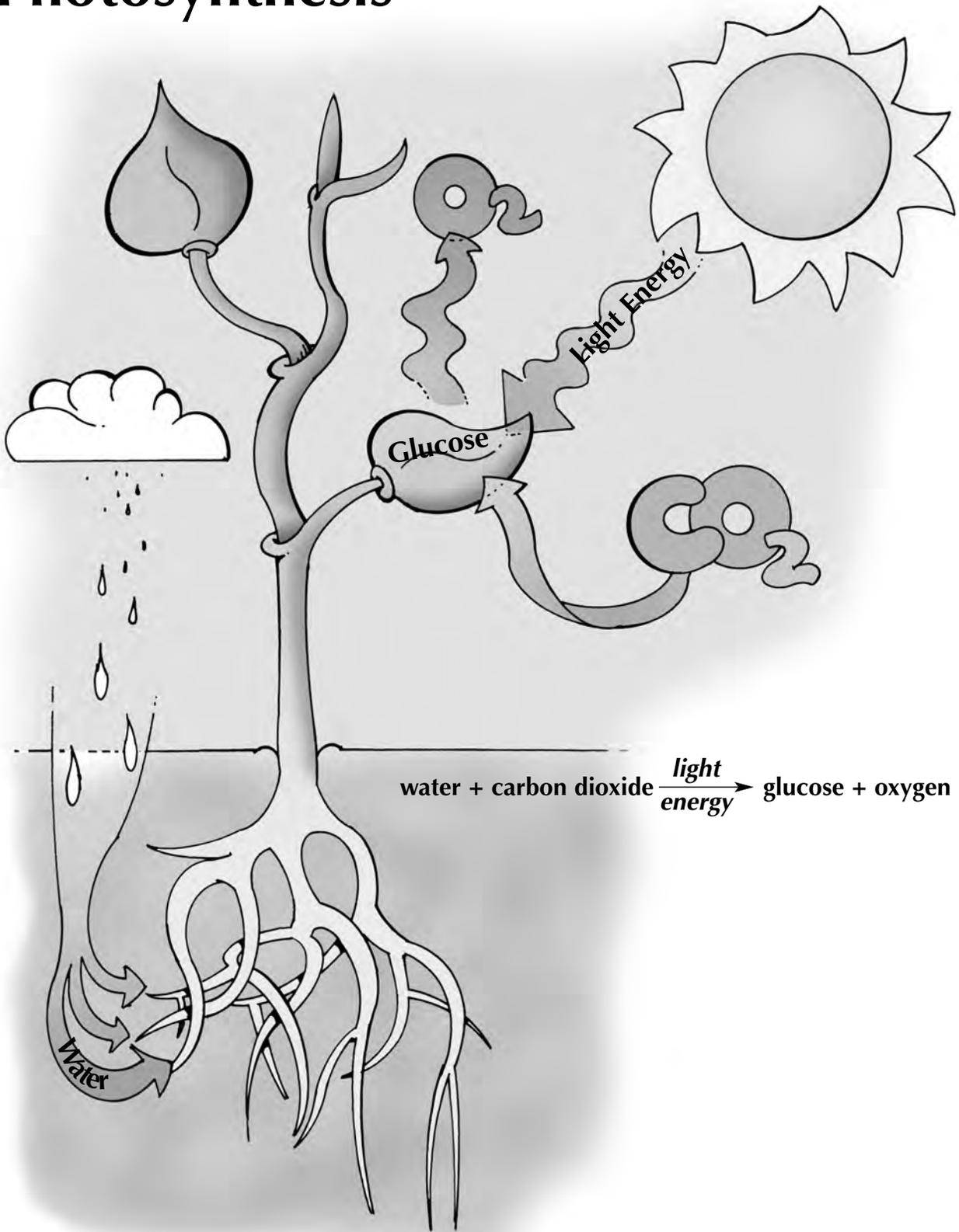
---

8. What does the plant release during photosynthesis?

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# Photosynthesis



# Lights Out!

**Directions:** Cut out three or four shapes from cardboard. Make sure your shapes are large enough to cover nearly half of a plant leaf. Paperclip each shape to a different leaf on a plant in your garden.

**Today:**

What is the weather like?

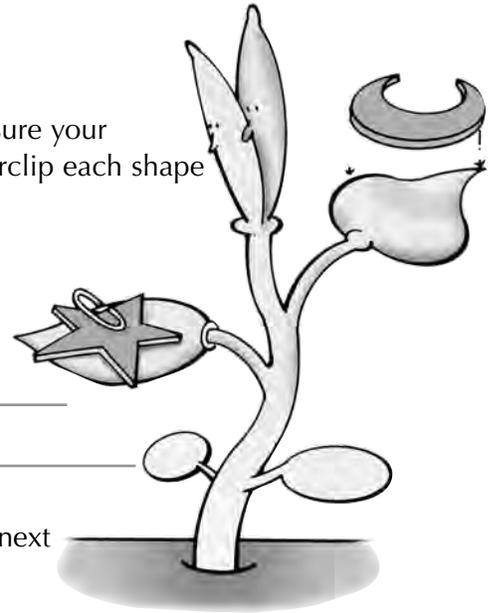
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What do you think will happen to the covered leaves during the next two weeks?

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**Following Days:**

What was the weather like during the days leaves were covered?

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**Two Weeks Later:**

What happened to the leaves covered with cardboard?

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What happened to the chlorophyll on the covered leaf?

---

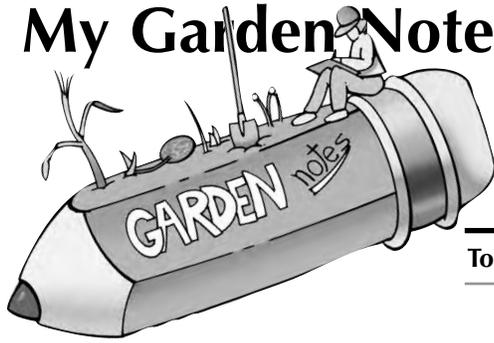
---

Why did this occur?

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# My Garden Notes

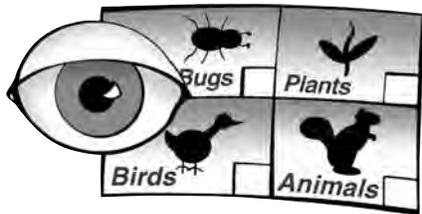


Date and time:

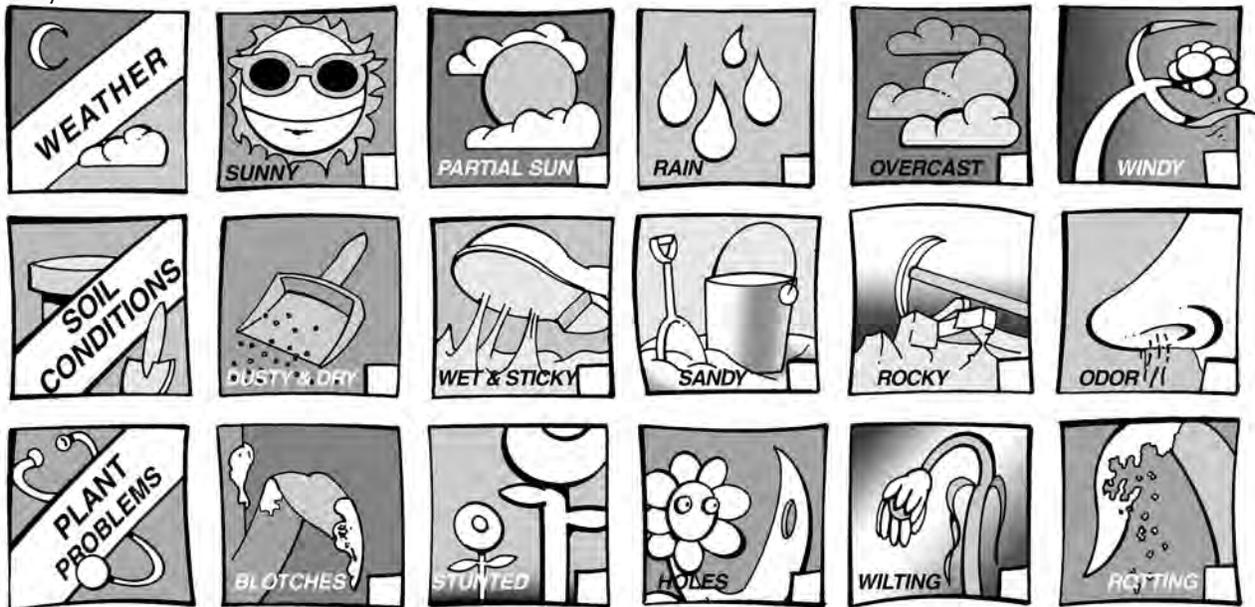


Today I learned:

General observations:



Daily checklist:



# Sand, Silt, or Clay?

1. What is soil and what is it made of?

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2. What are some functions of soil?

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3. What is soil texture?

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4. Why is soil texture important?

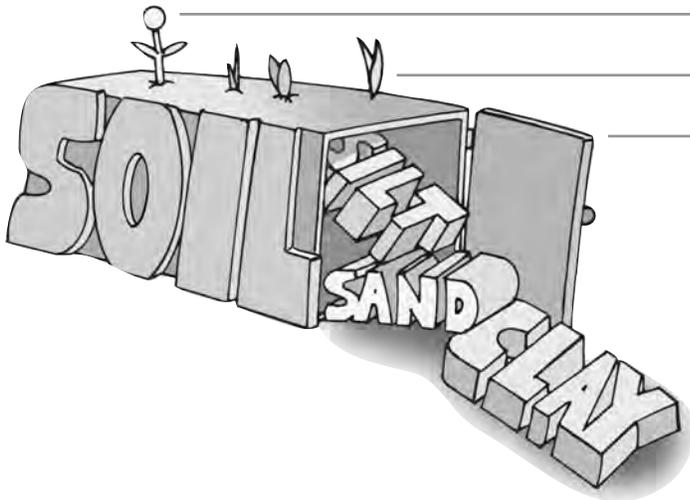
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5. What is soil structure and why is it important?

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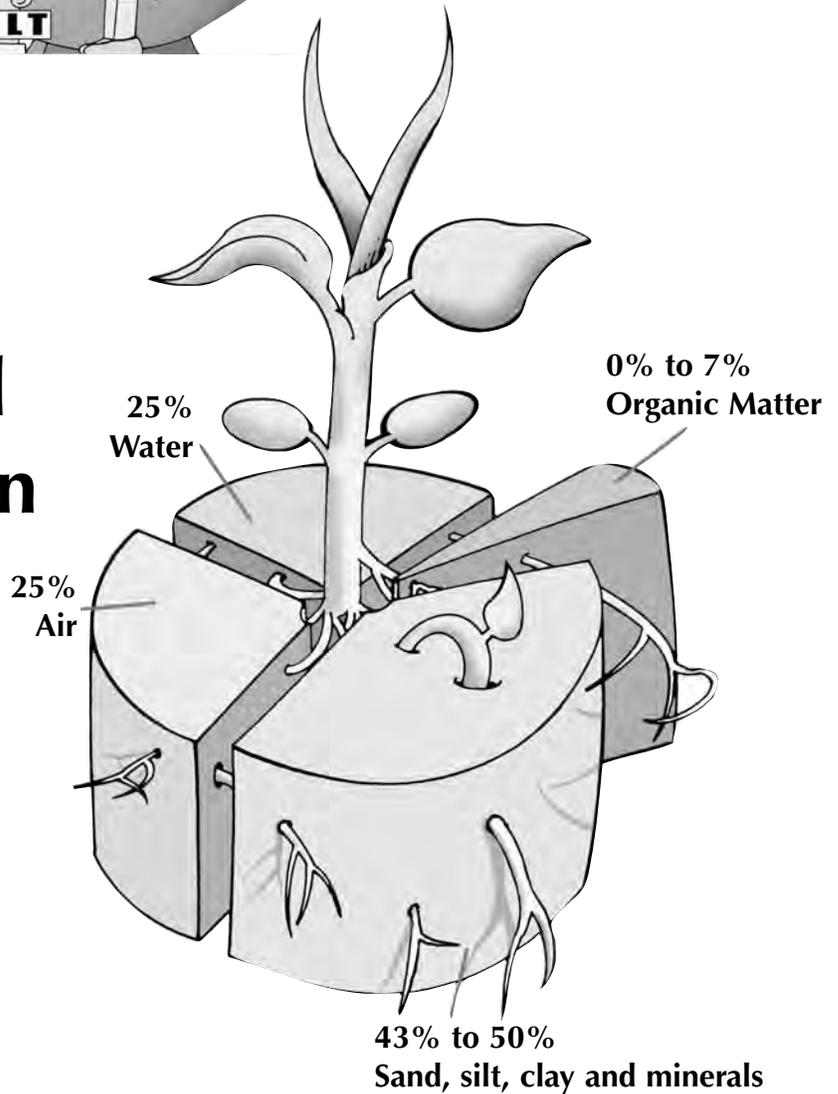
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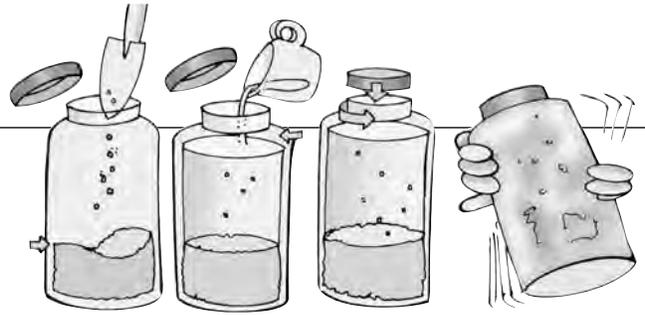


## Relative Particle Sizes

## Garden Soil Composition



# Bottles Up!



Fill a clear jar that has a lid one-third full of soil, then add water until the jar is nearly full. Make sure the lid is screwed on tightly, then shake your jar. Place your jar in a place where it will not be disturbed until the next garden session.

1. When you return, observe, measure, and sketch the layers.  
Label the layers of particles on your diagram.

2. Why are there different layers in the jar?

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3. How do the layers of soils from different locations compare?

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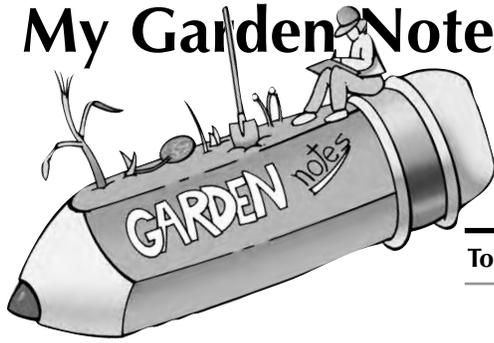
---

4. What problems might you face if you had a garden with a lot of clay or sandy soil?

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# My Garden Notes



Date and time:



Today I learned:

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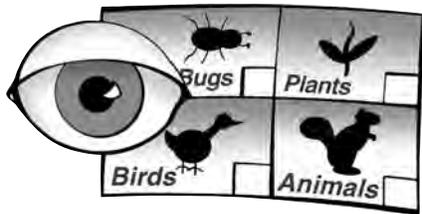


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General observations:




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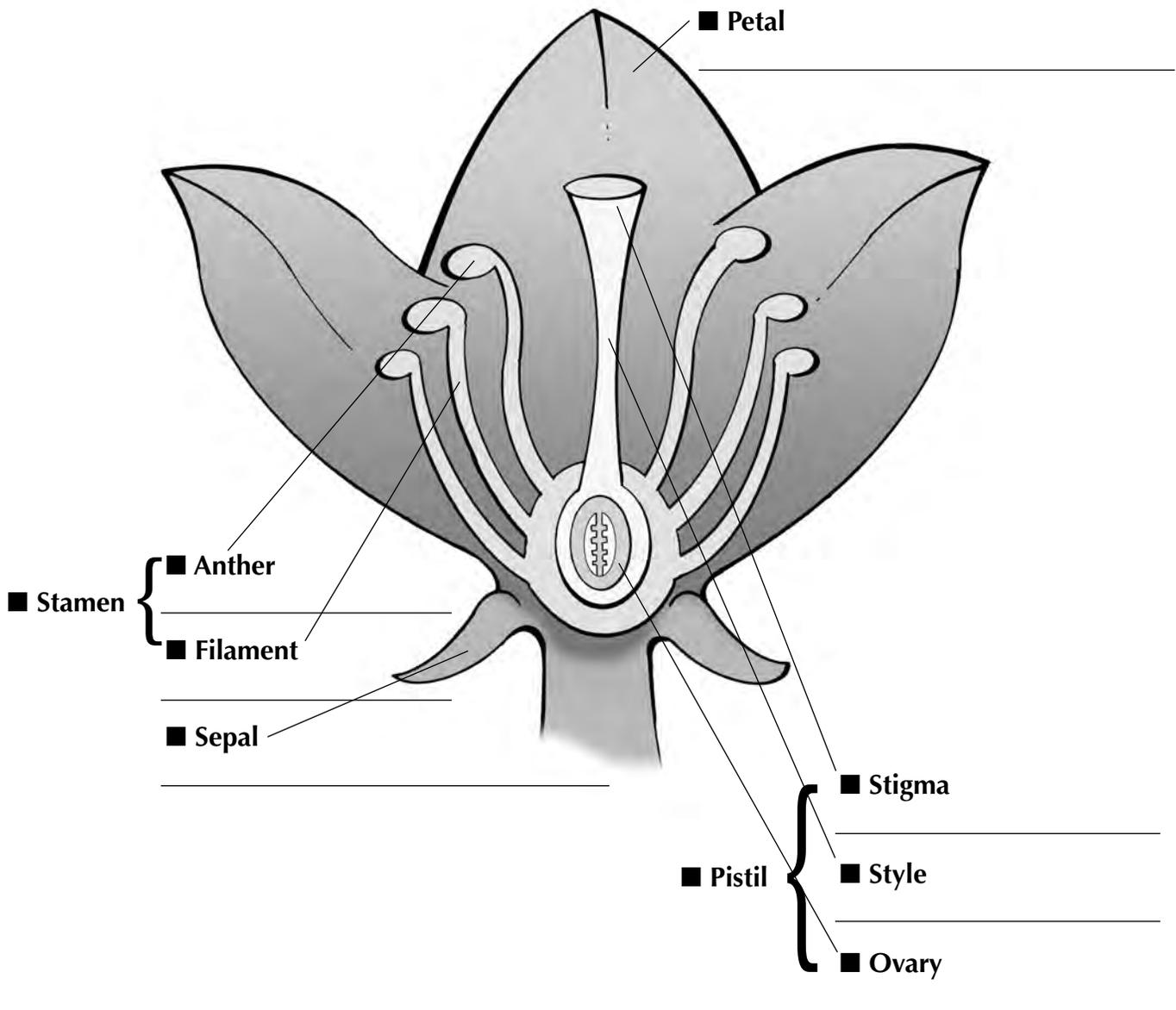
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Daily checklist:

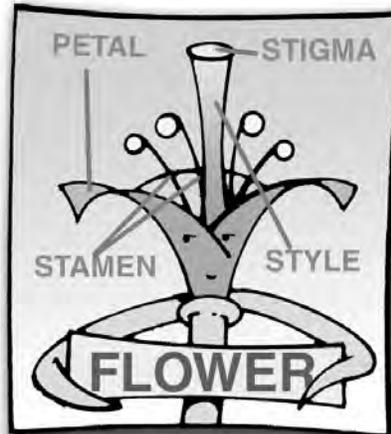
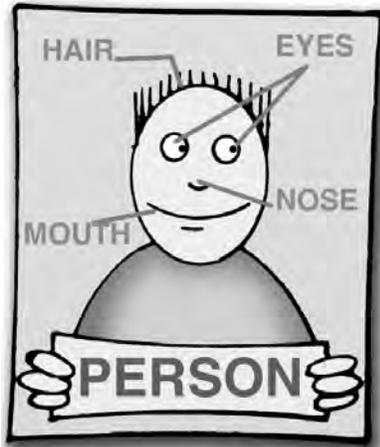


# Parts of a Solitary Flower

Write in the function of each flower part in the space provided.

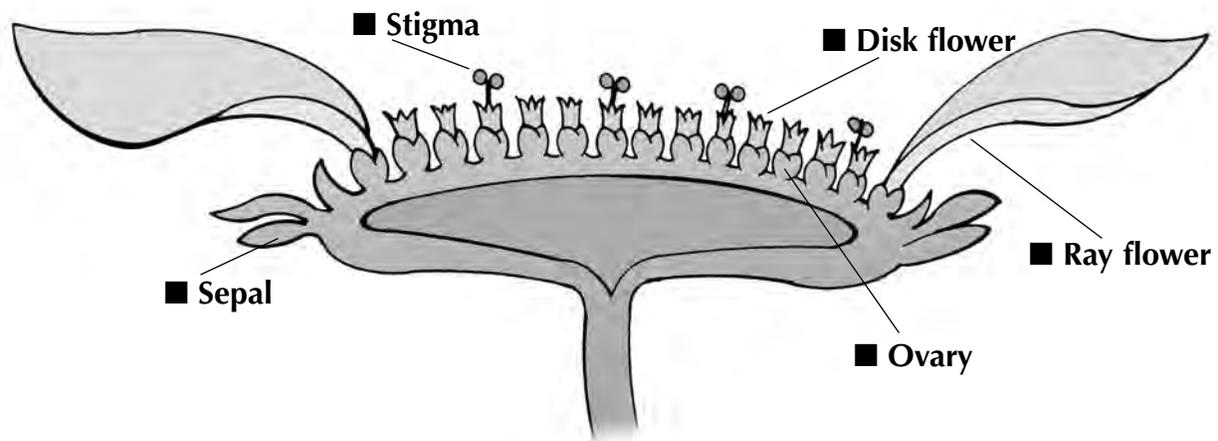


# My Solitary Flower and Its Parts



Examine your flower closely with the hand lens. Draw a picture of it, and label its parts (use the "Parts of a Solitary Flower" Gardener's Page as a reference).

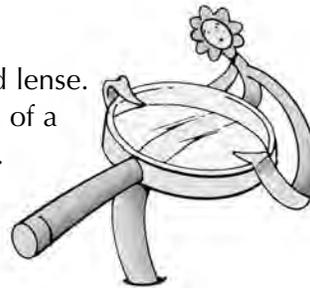
# Parts of a Composite Flower



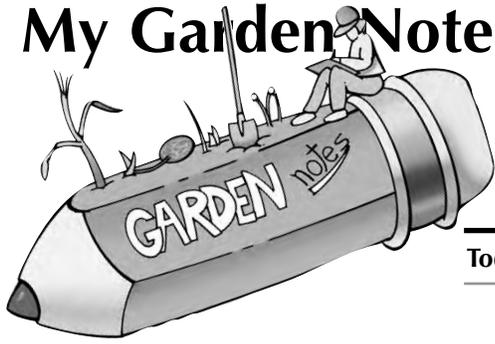
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## My Composite Flower and Its Parts

Examine your composite flower closely with the hand lens. Draw a picture of it, and label its parts (use the "Parts of a Composite Flower" illustration, above, as a reference).



# My Garden Notes



Date and time: \_\_\_\_\_



Today I learned:

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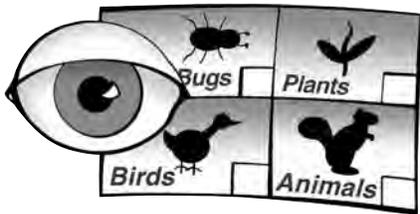


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General observations:




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Daily checklist:



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# Fruit or Veggie?

1. Mark each of the following with a **F** for fruit or **V** for vegetable. After each vegetable name identify whether or not it is a **leaf (l)**, **stem (s)**, **root (r)**, or **petiole (p)**.

- |  |  |  |  |
|--|--|--|--|
| <input type="checkbox"/> Lettuce ____  | <input type="checkbox"/> Cucumber ____ | <input type="checkbox"/> Pepper ____       | <input type="checkbox"/> Watermelon ____ |
| <input type="checkbox"/> Tomato ____   | <input type="checkbox"/> Carrot ____   | <input type="checkbox"/> Potato ____       | <input type="checkbox"/> Radish ____     |
| <input type="checkbox"/> Eggplant ____ | <input type="checkbox"/> Zucchini ____ | <input type="checkbox"/> Cabbage ____      | <input type="checkbox"/> Pumpkin ____    |
| <input type="checkbox"/> Celery ____   | <input type="checkbox"/> Squash ____   | <input type="checkbox"/> Green Beans ____  | <input type="checkbox"/> Spinach ____    |
| <input type="checkbox"/> Beets ____    | <input type="checkbox"/> Broccoli ____ | <input type="checkbox"/> Sweet Potato ____ | <input type="checkbox"/> Collards ____   |

2. What is a true fruit?

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3. What is a true vegetable?

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4. List everything you had to eat or drink yesterday.

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5. What vegetables are good sources of vitamins A and C?

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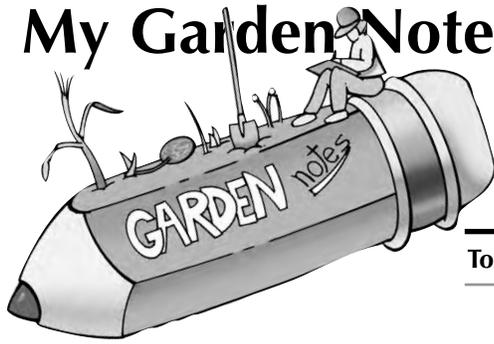
6. What vegetables are good sources of fiber?

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# My Garden Notes

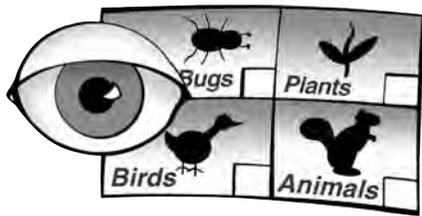


Date and time: \_\_\_\_\_

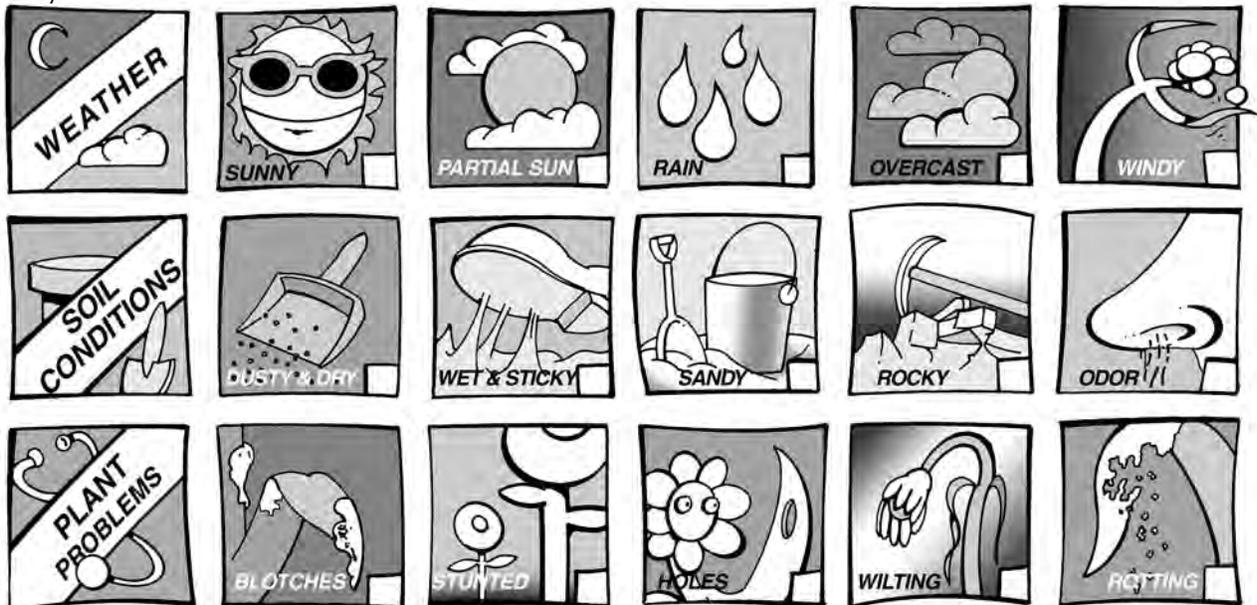


Today I learned:

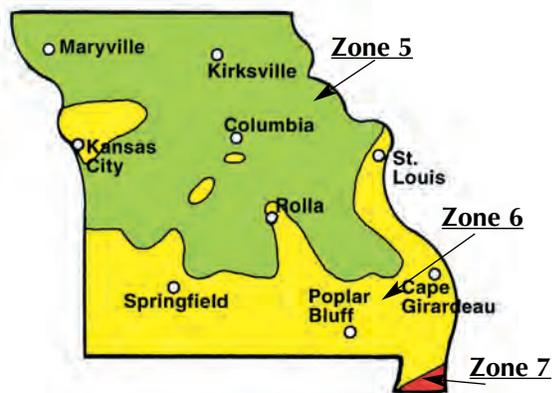
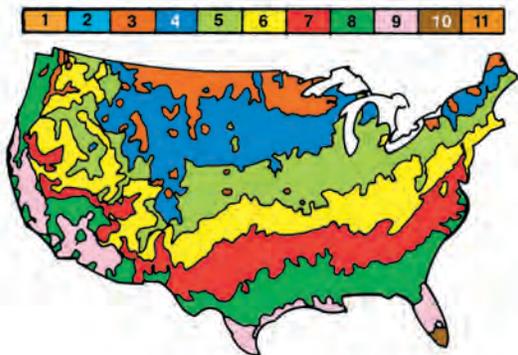
General observations:



Daily checklist:



# Hardiness Zones



City	Spring frost free date	Fall first freeze date	Approximate length of growing season (days)
Cape Girardeau	May 18	Oct. 21	180
Columbia	May 10	Oct. 17	164
Kansas City	May 4	Oct. 18	163
Kirksville	May 11	Oct. 12	157
Maryville	May 22	Oct. 5	149
Poplar Bluff	May 19	Oct. 28	190
Rolla	May 9	Oct. 11	153
Springfield	May 10	Oct. 18	165

The frost free date for our garden is \_\_\_\_\_.  
 This is usually the latest date in the spring your area has a frost.

The earliest date of frost for our garden is \_\_\_\_\_.  
 This is usually the earliest date in fall your area has a frost.

The approximate length of our growing season is \_\_\_\_\_ days.

**Warm season** crops grow best at daily temperatures above 70 degrees F.  
 Examples of warm season crops are: \_\_\_\_\_

**Cool season** crops grow best at average daily temperatures below 70 degrees F.  
 Examples of cool season crops are: \_\_\_\_\_

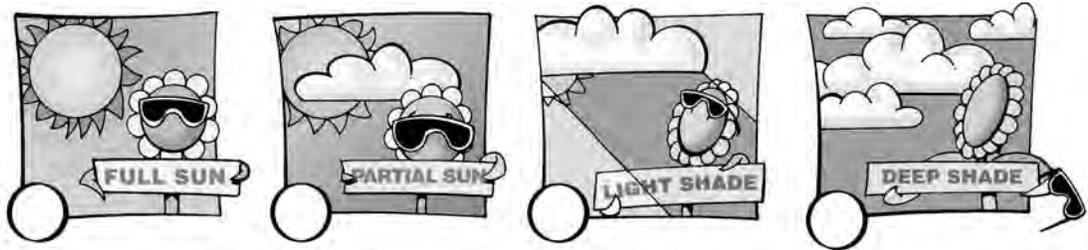
# Garden Plan

1. Our garden zone:

2. Our frost dates for

Spring: \_\_\_\_\_ Fall: \_\_\_\_\_

3. The amount of sunlight on our garden site:



4. Drainage of our site:



5. Plants I'd like to grow in my garden next year:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

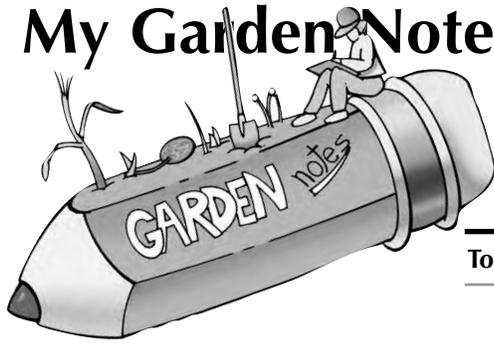
\_\_\_\_\_

\_\_\_\_\_





# My Garden Notes

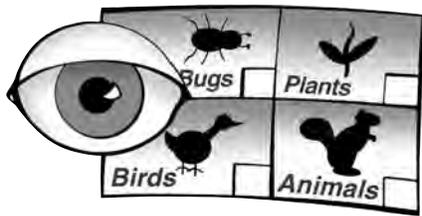


Date and time: \_\_\_\_\_

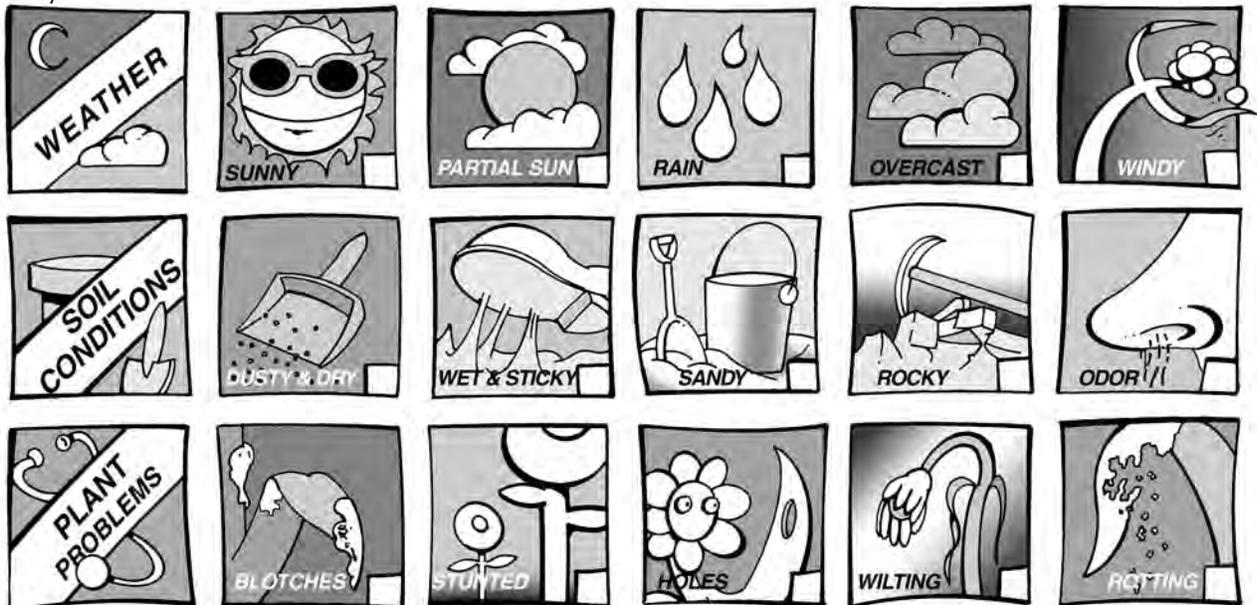


Today I learned:

General observations:

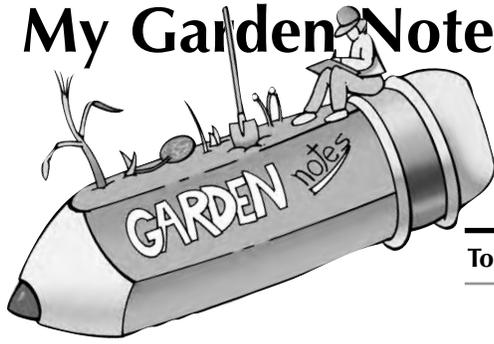


Daily checklist:





# My Garden Notes



Date and time: \_\_\_\_\_



Today I learned:

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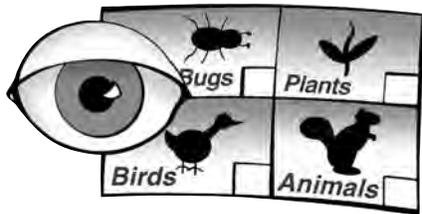


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General observations:




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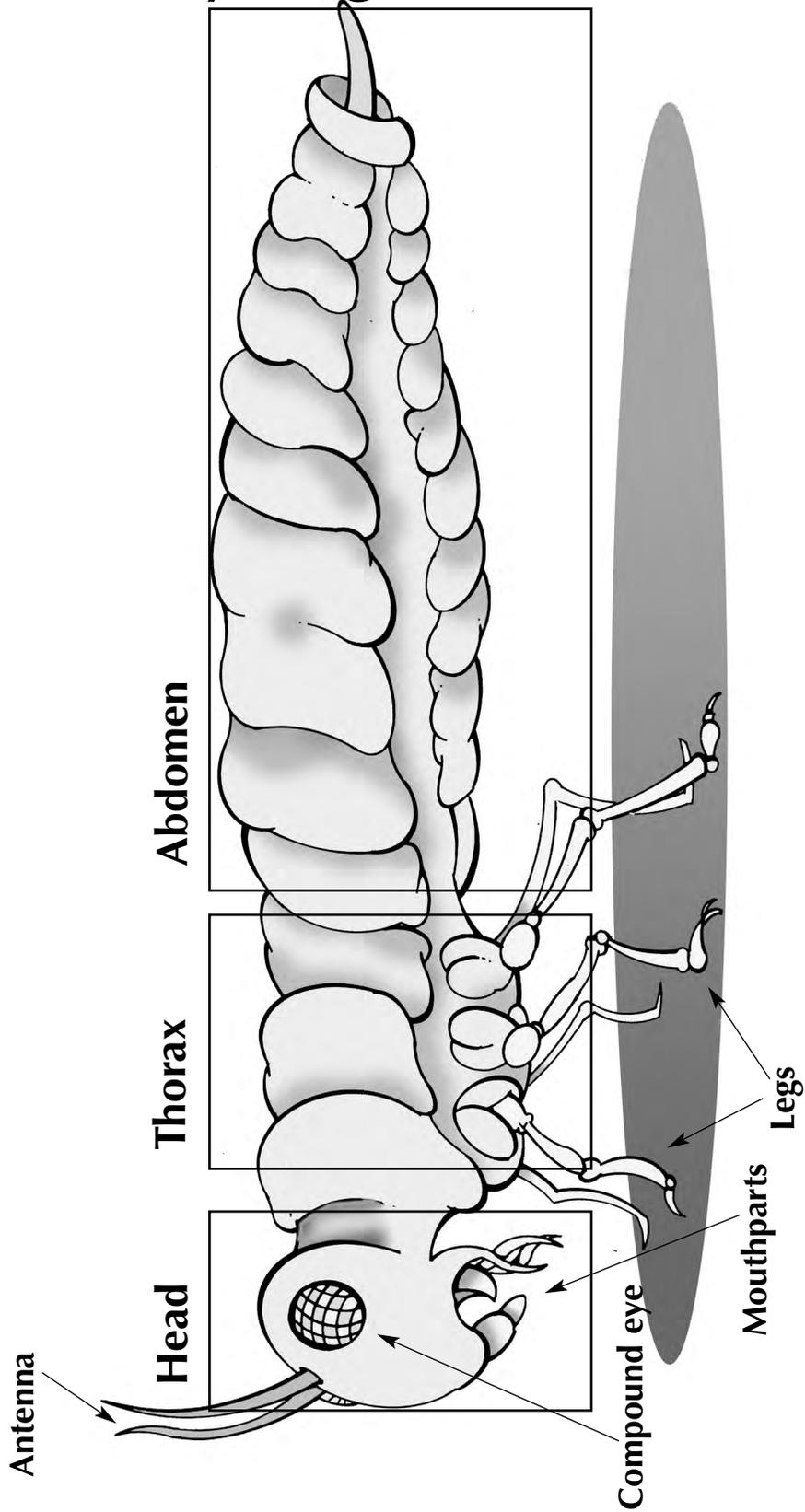


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Daily checklist:

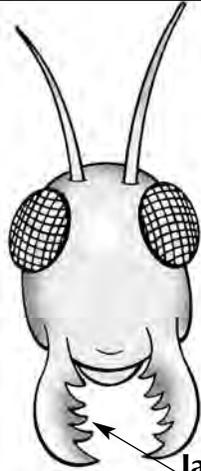


# Insect Body Regions



# Insect Mouthparts

## CHEWING



Types of insects with chewing mouthparts:

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Jaw or mandible

## PIERCING-SUCKING



Types of insects with piercing-sucking mouthparts:

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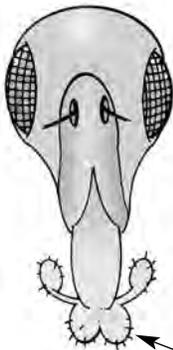
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Beak

## SPONGING



Types of insects with sponging mouthparts:

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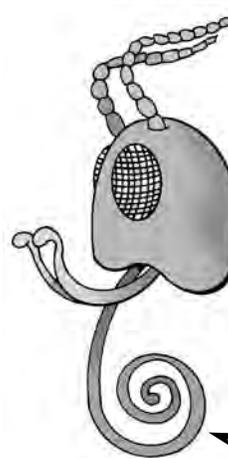
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Sponging part

## SIPHONING



Types of insects with siphoning mouthparts:

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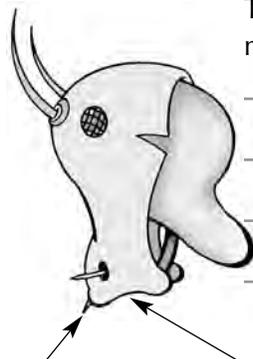
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Proboscis

## RASPING-SUCKING



Types of insects with rasping-sucking mouthparts:

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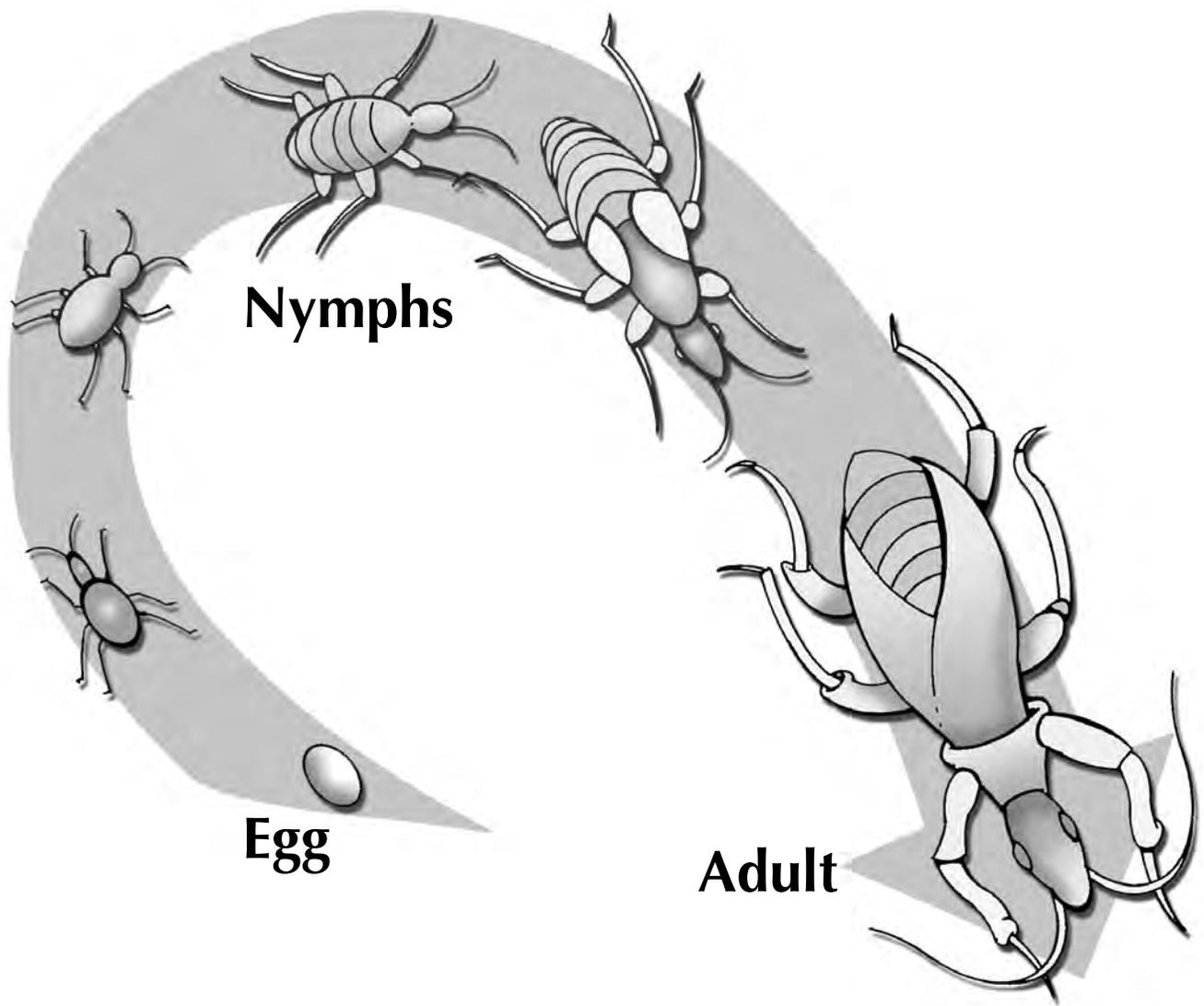
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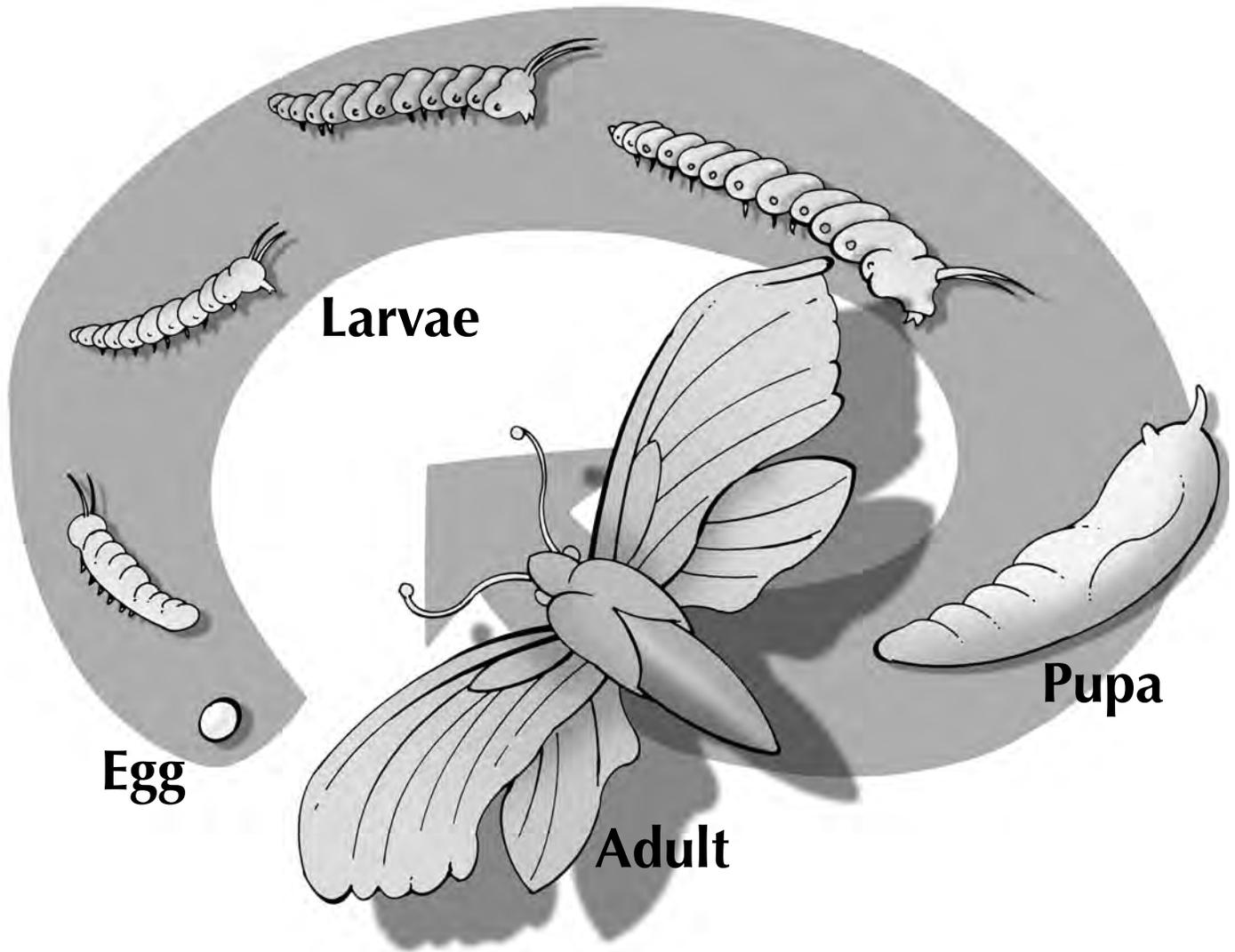
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Proboscis and rasping mandibles

# Incomplete Metamorphosis



# Complete Metamorphosis



**WANTED**

**DEAD OR GONE!**

**Name:**

**Distinguishing features:**

**Crime:**

# The Good Guys



• **Ladybird beetle:** adult feeds on aphids, mites, and other soft-bodied insects.

(Wayne Bailey photo)



• **Ladybird beetle larvae:** also feeds on aphids, mites, and other soft-bodied insects.

(Wayne Bailey photo)



• **Green lacewing adult:** feeds on nectar, pollen, and honeydew.

(Lee Jenkins photo)



• **Green lacewing larvae:** feeds on mites, aphids, hornworms, mealybugs, whiteflies, and psyllids.

(source unknown)



• **Honeybees:** the primary insects that pollinate flowers, fruits, and vegetables.

(Lee Jenkins photo)



• **Praying mantis:** feeds on any insect it is capable of catching.

(Lee Jenkins photo)



• **Spined soldier bugs:** attack many harmful insects including corn earworm, cucumber beetles, and Mexican bean beetle.

(source unknown)



• **Assassin bugs:** attack many harmful insects including caterpillars and beetles.

(Lee Jenkins photo)



• **Butterflies and moths:** important pollinators of flowers, fruits, and vegetables.

(Lee Jenkins photo)



• **Flower flies:** important pollinators of flowers, fruits, and vegetables.

(Lee Jenkins photo)

# The Bad Guys



• **Tobacco hornworm:** feeds on eggplant, pepper, potato, tobacco, and tomato.

*(Lee Jenkins photo)*



• **Corn earworm:** feeds on tobacco, tomato, geranium, impatiens, marigolds, and petunias.

*(Lee Jenkins photo)*



• **Flea beetles:** chew leaves of many garden vegetables, black-eyed Susan and marigolds.

*(Lee Jenkins photo)*



• **Mexican bean beetle:** feeds on most varieties of bean plants.

*(Lee Jenkins photo)*



• **Striped cucumber beetles:** feed on cucumber, cantaloupe, muskmelon, and squash.

*(Lee Jenkins photo)*



• **Spotted cucumber beetles:** feed on cucumber, cantaloupe, muskmelon, squash, corn, and ornamentals.

*(Lee Jenkins photo)*



• **Squash bug:** feeds on cucumber, gourd, melon, pumpkin, and squash.

*(Lee Jenkins photo)*



• **Stinkbug:** feeds on vegetables, fruits, and nuts including beans, broccoli, cabbage, corn, peaches, strawberries, and tomato.

*(Lee Jenkins photo)*



• **Aphids:** feed on a wide range of plants including shrubs, trees, fruit, vegetables, and ornamentals.

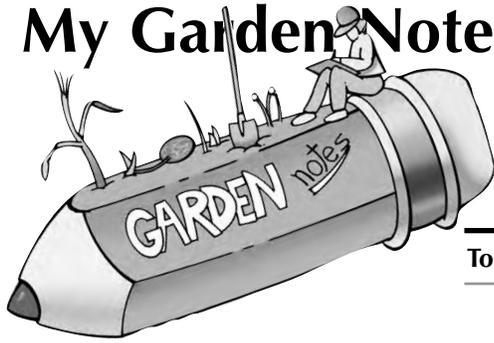
*(Lee Jenkins photo)*



• **Leafhoppers:** primarily affect bean, beet, carrot, grape, potato, roses, and apples.

*(Lee Jenkins photo)*

# My Garden Notes



Date and time: \_\_\_\_\_



Today I learned:

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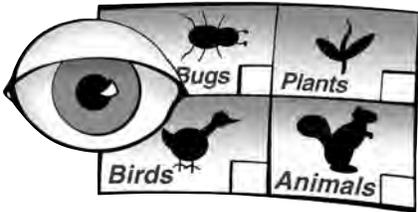


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General observations:




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Daily checklist:



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# Fix It, Doc!

## ***Defining the problem***

What type of plant is this?

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What does the normal condition of the plant look like?

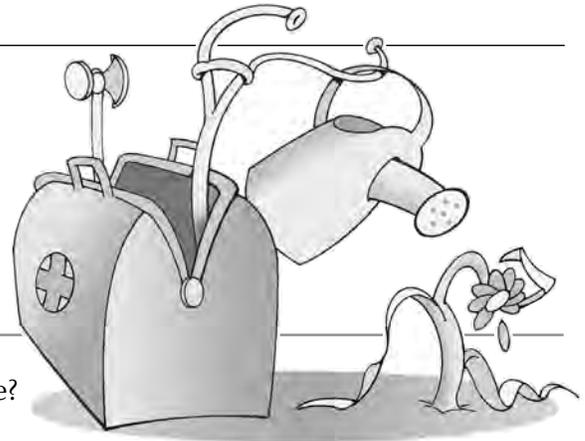
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What is abnormal about this plant? List any signs or symptoms that you observe.

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Examine the entire plant and those around it. Where did the initial damage occur?

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## ***Finding patterns***

Is the abnormality scattered on one or only a few plants?

If so, the problem is likely caused by living factors.

Yes

No

Is the abnormality visible on several different types of plants in the area?

If so, the problem is likely caused by non-living factors.

Yes

No

## ***Development or spread of the damage***

Is there a progressive spread of the abnormality on one plant, nearby plants over time?

If so the problem is likely caused by a living organism.

Yes

No

Did the abnormality appear to happen at one time (not spread progressively) and is there a clear boundary between damaged and undamaged tissues?

If so the problem is likely caused by a nonliving factor.

Yes

No

# Fix It, Doc! (continued)

## Determining the cause of the abnormality

Was the abnormality caused by a living organism?

- Yes                       No

Do you see symptoms or signs of pathogens?

- Yes                       No

Do you see symptoms or signs of insects, mites, or other animals?

- Yes                       No



## Was the abnormality caused by a nonliving factor?

Do you see any evidence of mechanical injury (breakage or wounds from a hoe)?

- Yes                       No

Could the damage be caused by temperature, light, moisture, or oxygen extremes?

- Yes                       No

Could the damage be caused by a misapplied pesticide, a pollutant, or a nutritional disorder?

- Yes                       No

My diagnosis of the abnormality is:

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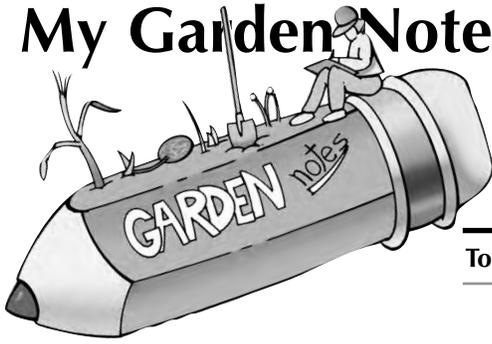
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I recommend treating the problem in the following way:

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# My Garden Notes



Date and time: \_\_\_\_\_



Today I learned:

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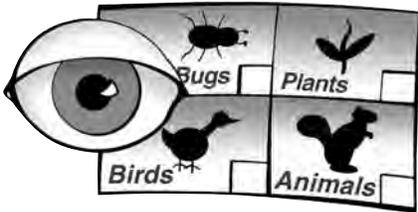


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General observations:




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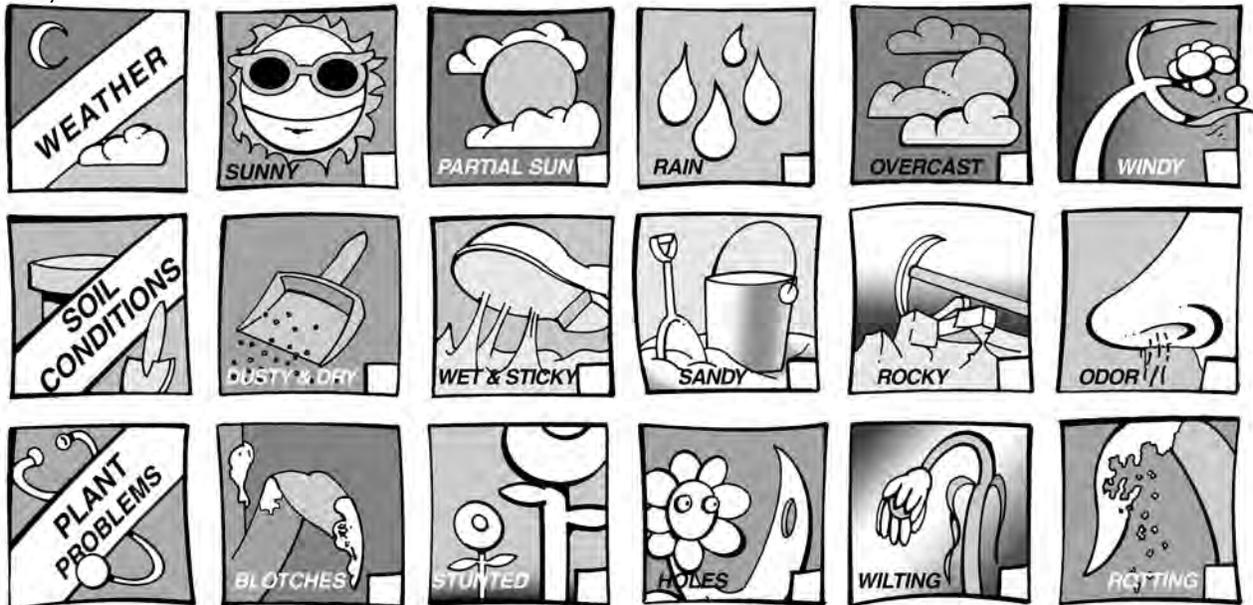


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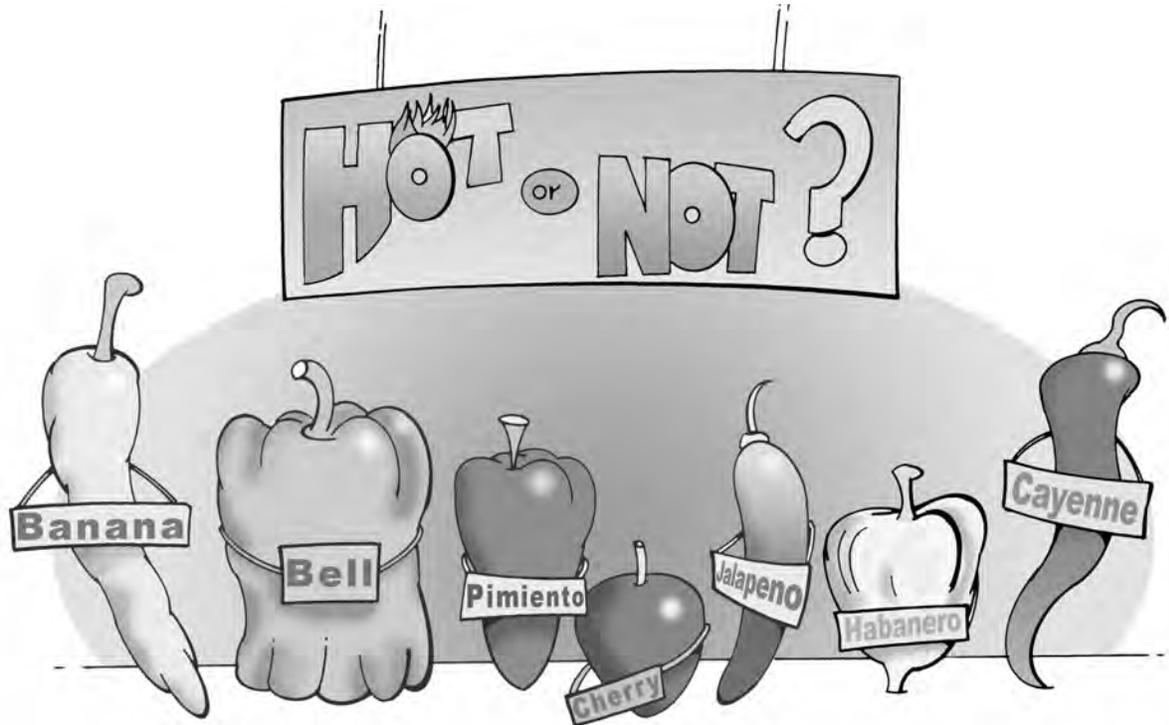


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Daily checklist:



# The Heat Index

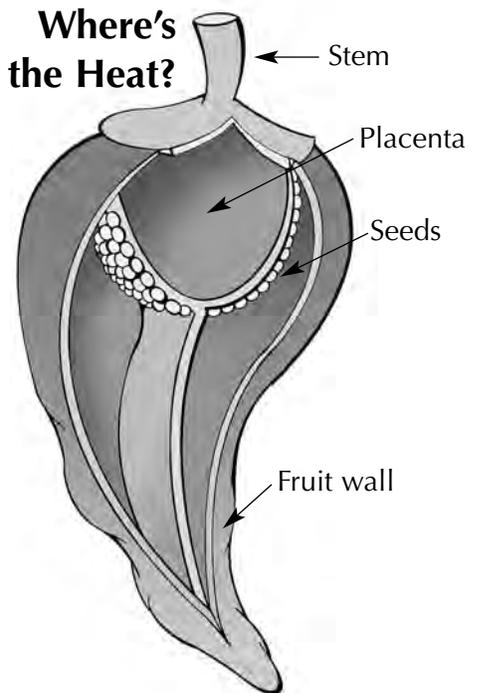


## How Hot are Your Peppers?



Name	Scoville Heat Units
Pure Capsaicin	16,000,000
Habanero	100,000 to 300,000
Scotch Bonnet	100,000 to 250,000
Jamaican Hot	100,000 to 200,000
Thai	50,000 to 100,000
Cayenne	30,000 to 50,000
Serrano	10,000 to 23,000
Wax	5,000 to 10,000
Jalapeno	2,500 to 5,000
Rocotillo	1,500 to 2,500
Anaheim	1,000 to 1,500
New Mexico	500 to 1,000
Pepperoncini	100 to 500
Bell Pepper	0

## Where's the Heat?



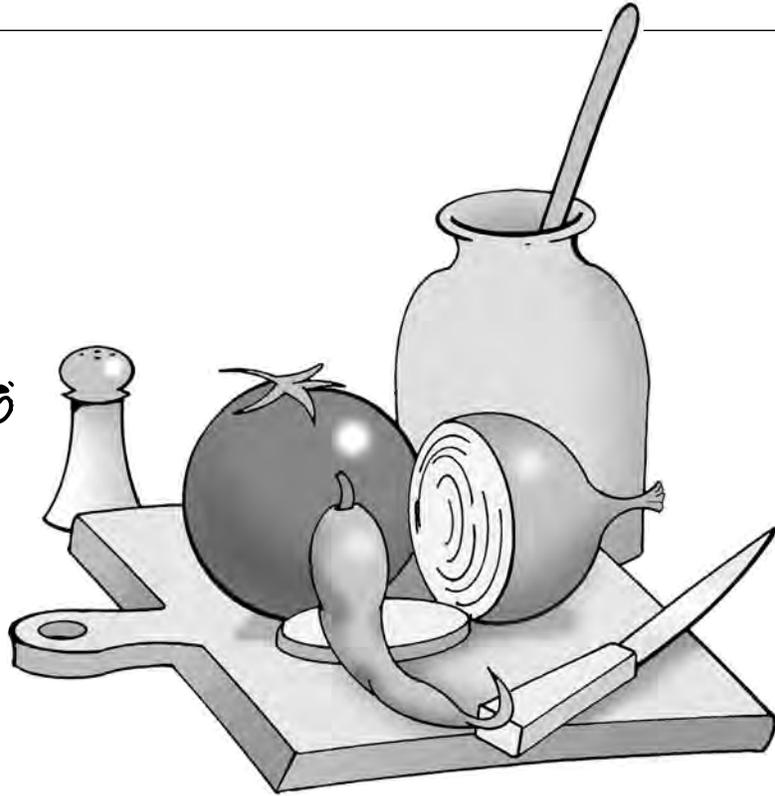
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# Salsa Recipe

## Salsa to Go

- 1 lb. fresh tomatoes
- 1 8-oz. can tomato sauce
- $\frac{1}{2}$  to  $\frac{3}{4}$  onion
- 1 clove garlic
- 1 to 2 jalapeno peppers

Chop and mix ingredients.  
Store in refrigerator.



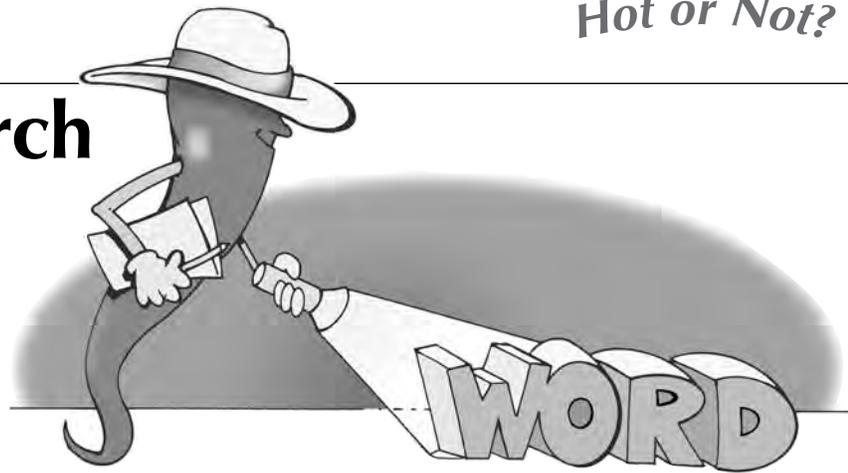
## Salsa for the Masses

- 6 lbs. peeled tomatoes
- 6 Tbsp. of jalapeno peppers (sliced)
- 1 Tbsp. garlic powder
- 3 tsp. salt
- 1 white onion

You can simmer this on the stove for 30 minutes to an hour.  
Then pour into blender and blend to desired consistency.  
Or pour directly into blender, chop, and serve.

Store in refrigerator.

# Word Search

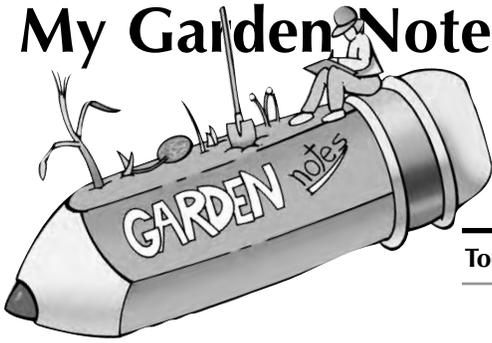


Circle the following words contained in the puzzle:

- |           |           |            |          |           |
|-----------|-----------|------------|----------|-----------|
| CAPSAICIN | CHOCOLATE | NUTRITIOUS | JALAPENO | PUNGENT   |
| HABANERO  | BANANA    | CAYENNE    | PIMIENTO | VITAMIN C |
| FRESH     | CHERRY    | HOT        | CHILI    | PLACENTA  |
| GREEN     | RED       | YELLOW     | BELL     | PEPPER    |
| SEED      | CRISP     | SCOVILLE   | ORANGE   | MILK      |

V A B W O L L E Y C H C  
O R A N G E W O E H N R  
S C N T M J F R B I U I  
E T A L O C O H C L T S  
L V N O D H R I A I R P  
L B A E T E A V Y U I A  
I H E L P S I A E P T T  
V S J P P T H C N U I N  
O P E A A I D S N N O E  
C P C M L L M R E G U C  
S M I L K A L I R R S A  
T N E G N U P E E J F L  
C H E R R Y E E B N O P  
G R E O T N M S N B T C  
H D H A B A N E R O P O

# My Garden Notes



Date and time:



Today I learned:

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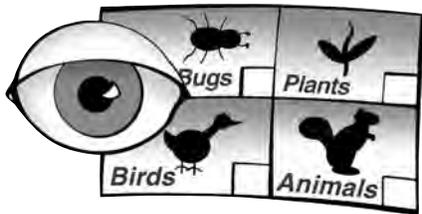


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General observations:




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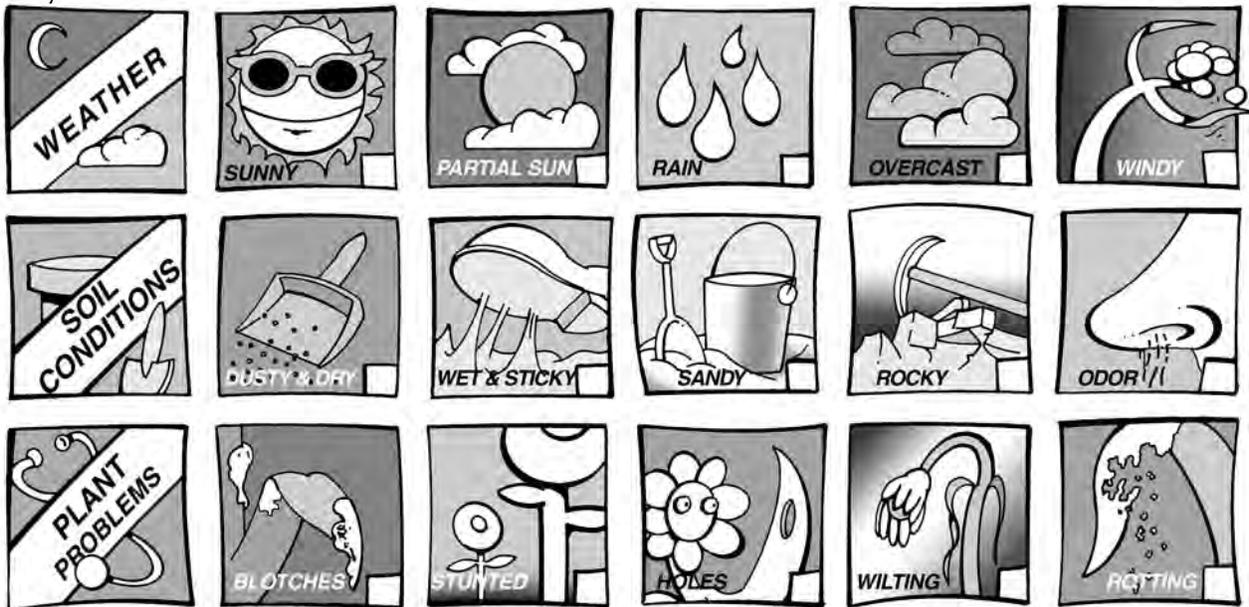


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Daily checklist:



# To Pick, or Not to Pick



## We harvest these crops when:

<b>Beans</b>	<ul style="list-style-type: none"><li>•Pods are firm, crisp and not wrinkled.</li><li>•Seeds are not bulging.</li></ul>
<b>Corn</b>	<ul style="list-style-type: none"><li>•Ears of corn are well-filled with dark green husks and brown silks.</li><li>•Kernels have milky fluid when punctured with a fingernail.</li></ul>
<b>Cucumbers</b>	<ul style="list-style-type: none"><li>•Any stage before they turn yellow.</li><li>•Small cucumbers are generally used for pickles.</li><li>•Larger ones (less than 8 inches) are for slicing.</li></ul>
<b>Okra</b>	<ul style="list-style-type: none"><li>•Pods are 2-3 inches long. Okra gets tough and woody quickly.</li><li>•Short hairs on the pods can irritate bare skin.</li><li>•A knife is useful to cut the pods off the plant.</li></ul>
<b>Onions</b>	<ul style="list-style-type: none"><li>•Green onions are ready for harvest at any size.</li><li>•Bulb onions are harvested when the tops fall over and are yellowish.</li><li>•After digging bulb onions, leave them out in the sun to dry for a few days to toughen the skin.</li></ul>
<b>Peppers</b>	<ul style="list-style-type: none"><li>•Any size while they are firm, crisp, and unwrinkled.</li><li>•Leave them on the plant to mature and develop a color.</li><li>•Use rubber gloves when harvesting hot peppers to protect skin from irritation.</li></ul>
<b>Summer Squash</b>	<ul style="list-style-type: none"><li>•Squash is 6 to 8 inches long.</li><li>•Pick often as they grow quickly in hot weather.</li><li>•If squash gets too big, it is tough and seedy, but can be grated for baked breads.</li></ul>
<b>Tomatoes</b>	<ul style="list-style-type: none"><li>•Fruit are firm with some color.</li><li>•They have the best flavor when they fully develop color on the plant.</li></ul>

## Answer these questions:

1. Which vegetables were too big today?

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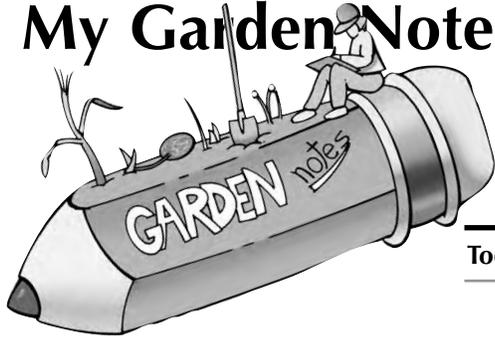
2. Which vegetables need to be harvested often so they don't get too large?

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3. What happened when tomatoes were frozen?

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# My Garden Notes



Date and time: \_\_\_\_\_



Today I learned:

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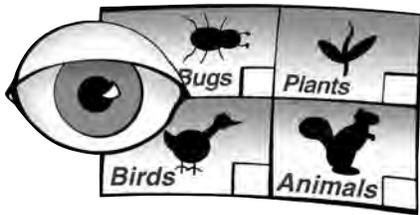


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General observations:




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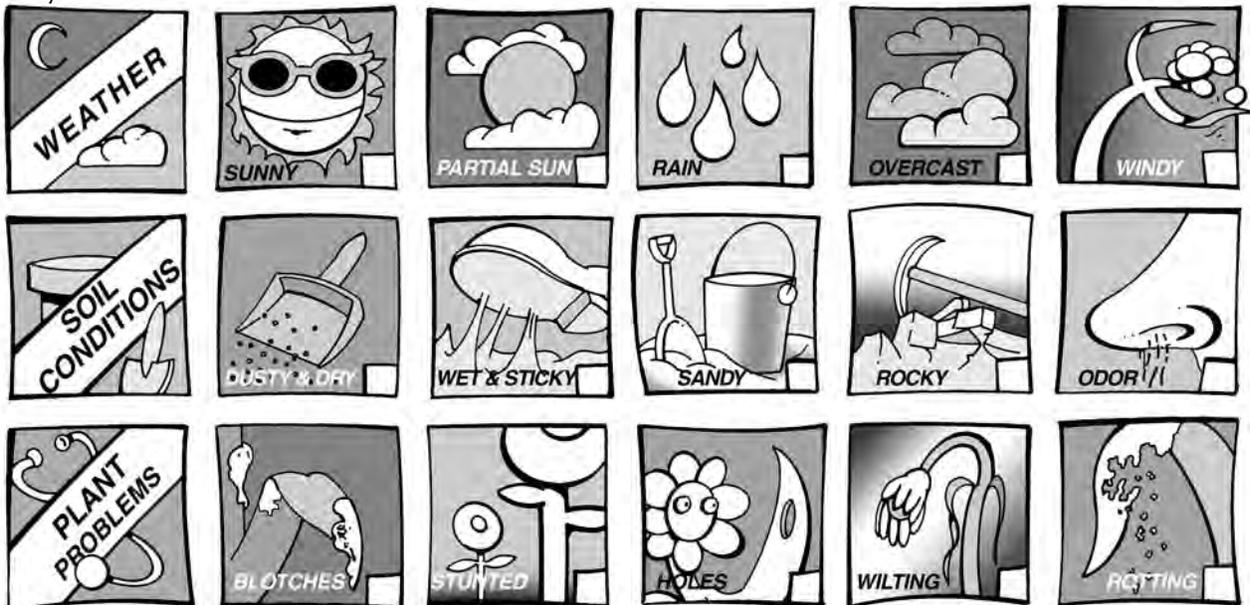


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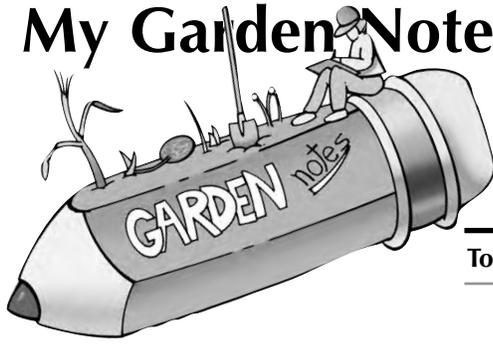
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Daily checklist:





# My Garden Notes



Date and time: \_\_\_\_\_



Today I learned:

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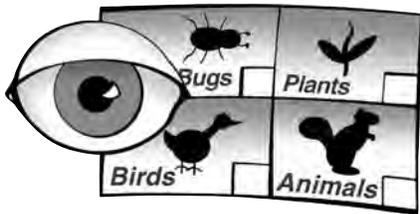


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General observations:




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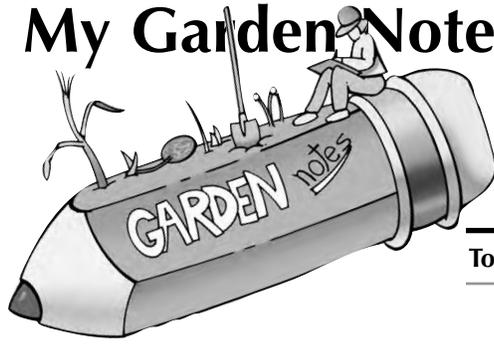


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Daily checklist:



# My Garden Notes



Date and time: \_\_\_\_\_



Today I learned:

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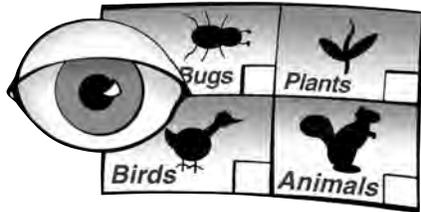


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General observations:




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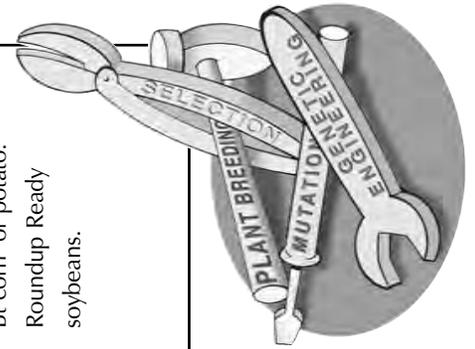
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Daily checklist:



# Developing a Better Plant

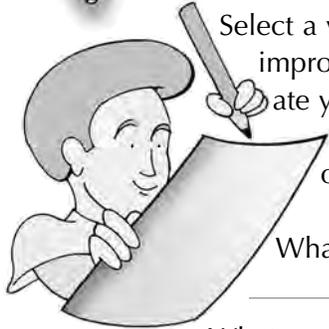
Method	Description	Possible Advantages	Possible Disadvantages	Examples
<b>Selection</b>	Save seeds with the traits wanted to plant the next season.	<ul style="list-style-type: none"> <li>• Low labor and cost.</li> <li>• Seeds can be saved from year to year.</li> </ul>	<ul style="list-style-type: none"> <li>• The plants are less uniform.</li> <li>• May not always be successful.</li> </ul>	Seed from self-pollinated vegetables (tomatoes, peppers, beans, etc.).
<b>Plant Breeding</b>	Transfer of pollen to get different traits.	<ul style="list-style-type: none"> <li>• May get the result you want faster.</li> <li>• Can create disease-resistant plants.</li> <li>• May get plants with many useful traits.</li> </ul>	<ul style="list-style-type: none"> <li>• Some good traits may be lost.</li> <li>• Requires lots of time and labor.</li> <li>• Saved seed may not produce the same traits next year.</li> <li>• May not always be successful.</li> </ul>	Most of the varieties of plants listed in seed catalogs.
<b>Mutation</b>	A change in a gene or a group of genes that can be passed on to offspring. They may occur naturally or can be induced by man.	<ul style="list-style-type: none"> <li>• May get plants with useful traits.</li> <li>• Mutations can be passed on to offspring.</li> <li>• Can be found in nature on existing plants.</li> </ul>	<ul style="list-style-type: none"> <li>• Results may be unpredictable.</li> </ul>	Potatoes, apples, nectarines, thornless blackberries, several plants with variegated flowers or leaves.
<b>Genetic Engineering</b>	Transfer of genes from one organism to another without harming the environment.	<ul style="list-style-type: none"> <li>• May produce a safer or more nutritious food</li> </ul>	<ul style="list-style-type: none"> <li>• May not always be successful.</li> <li>• Controversial.</li> </ul>	FlavrSavr tomato. Bt corn or potato. Roundup Ready soybeans.



# Super-Dooper Veggie



You are a scientist who is developing a new variety of a crop with new and different traits. Your goal is to create a crop that will be easy to grow, harvest, pack and ship, plus it will be something that kids will want to eat!



Select a vegetable of your choice and think about why this vegetable needs to be improved. Assume that you can include traits from any other organism to create your new crop. List the qualities you want your vegetable to have and where you might find each quality (what other fruit, vegetable, or other organism).

What is the name of your new vegetable?

\_\_\_\_\_

What are the traits of your new vegetable? (size, shape, color, smell, texture, etc.)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Where and how does it grow?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What improvements will be made for harvesting, shipping and storage?

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How will it resist diseases and insects?

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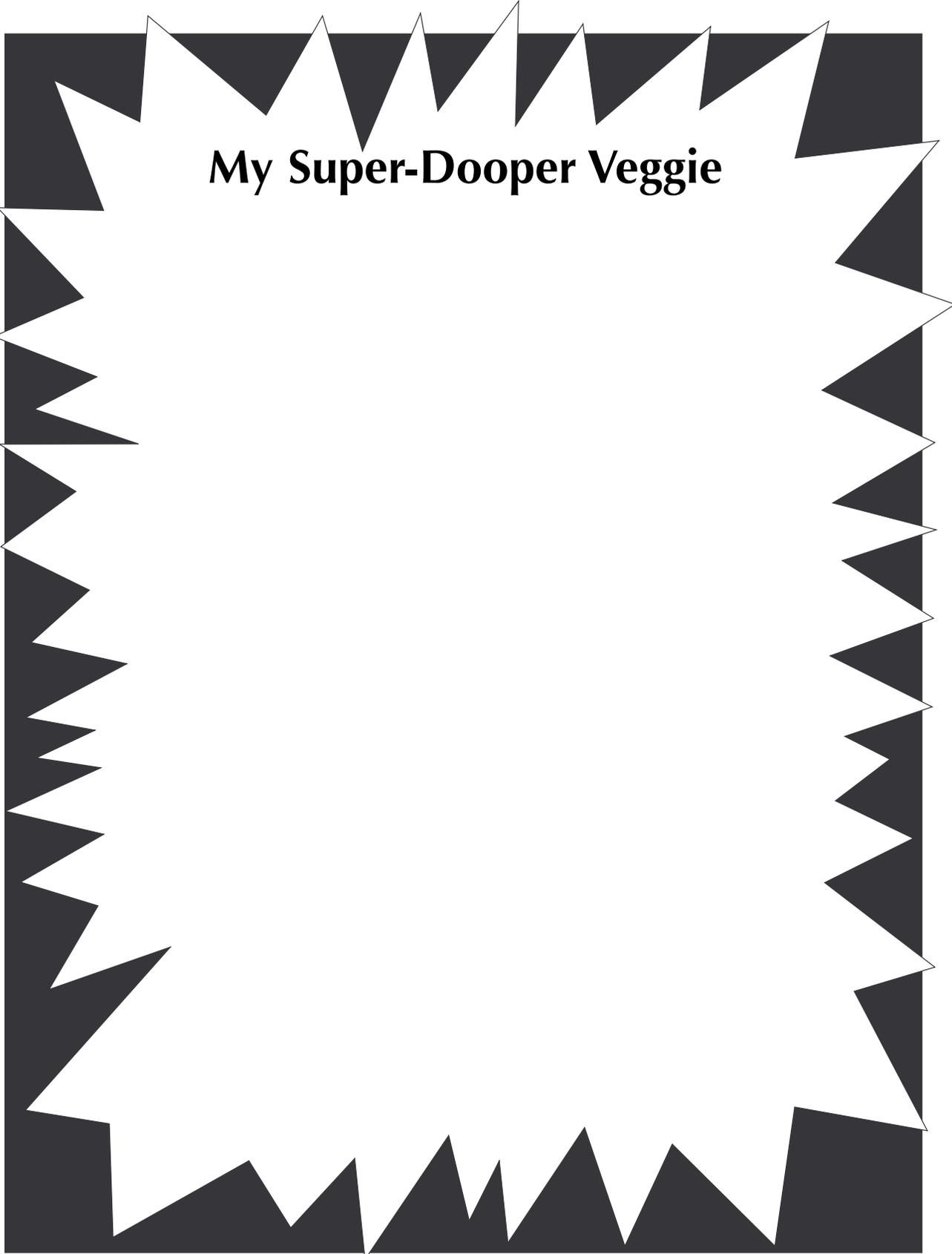
Describe the nutrients in your "super veggie"

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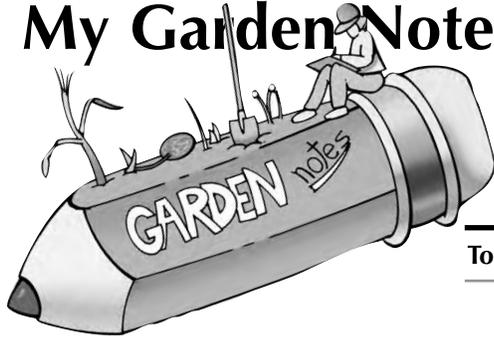
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**My Super-Dooper Veggie**



# My Garden Notes



Date and time: \_\_\_\_\_



Today I learned:

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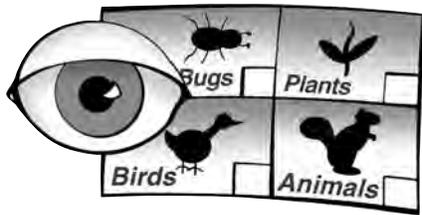


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General observations:




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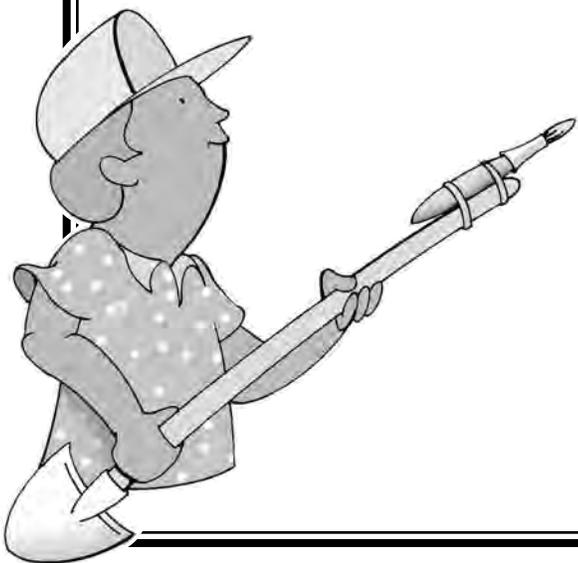
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Daily checklist:



*Help is on its Way!*

# Draw a Scientist



# A Method to this Madness!

What is the “scientific method,” and why do scientists use it?

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Name the steps of the scientific method, and explain each step.

Step 1.

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Step 2.

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Step 3.

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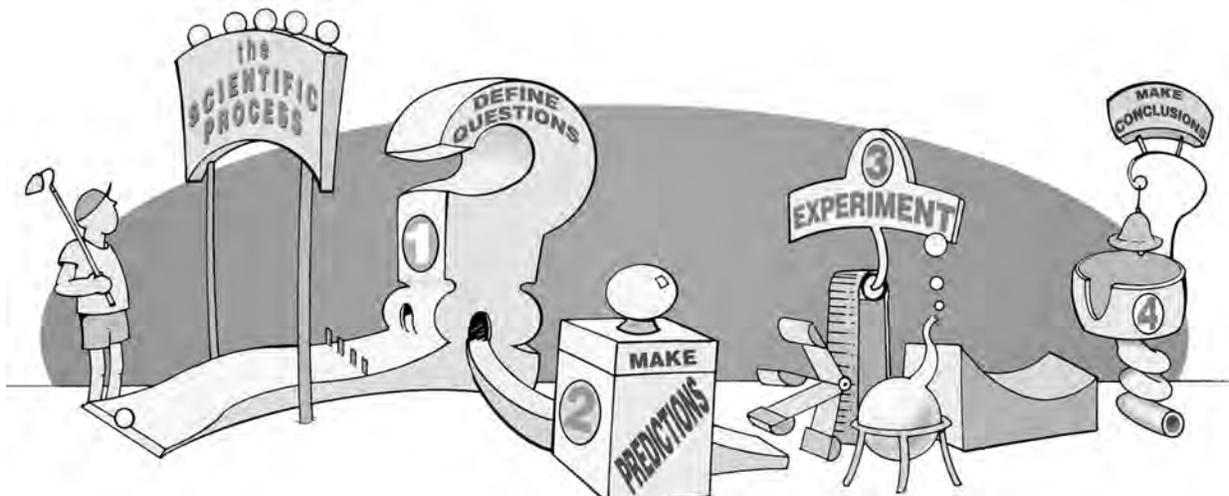
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Step 4.

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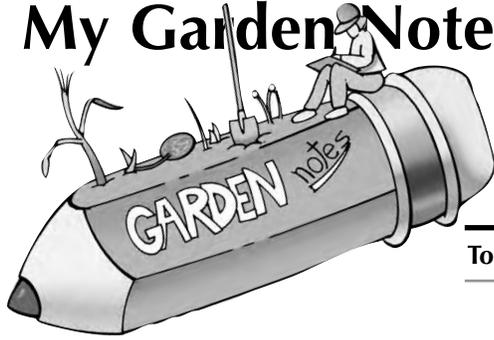


*Help is on its Way!*

# Draw You as a Scientist



# My Garden Notes



Date and time: \_\_\_\_\_



Today I learned:

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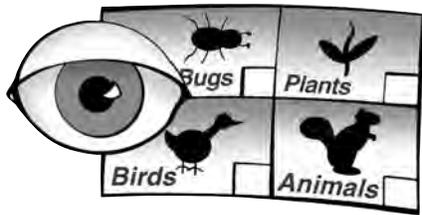


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General observations:




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Daily checklist:

