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Planting the seeds of healthy living

# 2022-2023 Garden Guide & Handbook For Interns

# *Growing Lunch*

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# Intern Guide 202-23
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Civic and Community Engagement

As a student learning assistant in these school gardens, you will have the opportunity to spend quality time with teachers and students, and learn how to collaborate with them to create a welcoming and usable space.

*School gardens are a great metaphor for the success or failure of direct action and civic engagement for the common good.*

**Conversation with Fellows:**

1. 1 page journal prompt
2. Start discussion with prompt and question
3. Allow 2-3 minutes to write down answer
4. Share with partner
5. Revise original statement
6. Share out with group
7. Group discussion on specific activities they will engage with YF2F that qualify as Service Learning and Civic Engagement
    a. Working with student gardeners at school sites
    b. Helping with field trips to LaT farm
    c. Helping with Swirl & Slice and other community events like TANA
    d. Helping organize and implement special garden events during the school year
    e. Working with teachers, staff, students, and families to engage in garden activities

**Journal Prompts**

1. Who knows what civic and community engagement mean?
2. How will your work service work with Yolo Farm to Fork benefit your career goals and life goals?

**Discussions**

*A lot of our conversations and language we use incorporate these concepts. Keep these in mind as we navigate through this year.*

- Sense of community. Especially because you all will have long term assignments, and will connect with the Woodland community + these school districts. (Teachers, Students, Parents) This can help with post-grad plans and networking for you all. Understand what it means to organize within a community and how to meet the needs.
- Hands on experience with working with youth, bilingual youth, sharing a cultural background/experiences as you facilitate conversations about what is being grown, who usually grows the food we eat, how we see these foods being made in recipes in our own kitchens, and helping students explore new foods/ plates
- Understand food insecurity + lack of access to fresh foods, the concept of food deserts.

**Definitions**

*Language that we use in our organization that is helpful to know and for you to think about*

- Farm to Fork: Locally sourced produce direct to customers or (students)
- Civic engagement: Individual and collective actions to identify and address issues of public concern
- Community development: A process where community members are supported by agencies to identify and take collective action on issues which are important to them
- Service learning: Integrated academic learning with service work to deepen their understanding of what is being taught
- Direct Action: goal is to achieve an end directly and by the most immediately effective means


# Section 1

# -

# Garden Calendars

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# Yolo Farm to Fork
# Edible School Garden Guide
# for the
# 2022-23 School Year

Need help with your garden?
Email:
Program Manager: Anya.Burdick@yolofarmtofork.org
Program Coordinator: Jewelia.Flores@yolofarmtofork.org

Yolo Farm to Fork
1280 Santa Anita Court, Suite 100
Woodland, CA 95776

# August

## What should we plant?

| | |
|---|---|
| Direct sow | Beets, broccoli, cabbage, collards, celery, **carrots**, cauliflower, endive, kale, fennel, **radish**, squash, **swiss chard**, leeks, mustard, turnips, parsnips, parsley, celeriac, **lettuce**, rutabaga, onion, **potatoes**, turnips |
| Start seed indoor | Micro-greens, broccoli, bok choy, brussels sprouts, celery, fennel, kohlrabi, onions, **peas**, cabbage, cauliflower |
| Transplant | None |
| Cafeteria Harvest | Melons, tomatoes, peppers |

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# August Activities

**To be sustainable, the garden needs people to**

- Check with your school, PTA/PTO or YF2F for a garden budget
- Organize a School Garden Team to set goals and plans for the coming year
- Check and repair irrigation
- Dig planting beds and add organic compost
- Make sure you have the garden tools and gloves you need for the year
- Weed garden paths and open area; cover with deep layers of wood chips or other materials
- Control the weeds by pulling them out by the roots
- **Check in with Yolo Farm to Fork** (info@yolofarmtofork.org) to get mulch, seeds and transplants for fall, AND for UCD Interns who can help manage your garden for the school year

**Garden learning suggestions**

- Have students draw a map of the garden and plan spring plantings of veggies and flowers
- Save seeds from summer flowers and veggies for future plantings
- Make seed tapes for carrot and lettuce seeds – they won't need thinning later
- Have students identify flowers and veggies to plant for fall and winter; map the plantings
- Plant the fall garden, charting its growth in future months
- Have students begin a Garden Journal to log their observations and tasks accomplished

**Fun Activities:**

- Have a scavenger hunt in teams of two students each to find and bring back at least one of each category: root, stem leaf, flower and seed. (Young children like to make "garden bracelets" with these items using a "bracelet" of masking tape with the sticky side out)
- Harvest and eat some produce from the garden
- Make artistic plant labels

**My Notes:**

# September

Fall

## What should we plant?

| | |
|---|---|
| Direct sow | Beets, **bok choy, broccoli**, broccoli rabe, cabbage, collards, celery, **carrots, cauliflower**, kale, fennel, radicchio, **radish**, squash, **swiss chard, leeks**, mustard, turnips, parsley, **lettuce**, potatoes, garlic bulbs, **peas,** shallots, **spinach** |
| Start seed indoor | Micro-greens, broccoli, bok choy, celery, fennel, kohlrabi, peas, cabbage, cauliflower, kale |
| Transplant | Broccoli, bok choy, brussels sprouts, celery, fennel, kohlrabi, onions, **peas**, cabbage, cauliflower |
| Cafeteria Harvest | Melons, tomatoes and peppers |

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# September Activities

**To be sustainable, the garden needs people to**

- Keep up your gardening schedule with students, staff and volunteers
- Continue to dig planting beds and add organic compost to support the fall plantings
- Weed garden paths and open area; cover with deep layers of wood chips or other materials
- Control the weeds by pulling them out by the roots
- Patrol for bugs and other pests; hand-picking the “bad guys” and dropping them in soapy water (https://savvygardening.com/guide-to-vegetable-garden-pests/ or http://davesgarden.com/guides/bf/ can help you identify garden friends and foes)
- Plant the fall garden, charting its growth in future months
- Check in with Yolo Farm to Fork (info@yolofarmtofork.org) to get seeds and transplants for fall

**Garden learning suggestions**

- Make seed tapes for carrot and lettuce seeds – they won’t need thinning later.
- Have the students draw maps of the garden and label its fall plantings
- Save seeds from summer flowers and veggies; save them in paper envelopes (not plastic)
- Have students identify flowers and veggies to plant for fall and winter; map the plantings
- Plant the fall garden, label plantings, and chart growth in future months
- Start a chart of “garden friends” and “garden foes” with pictures to identify each (https://davesgarden.com/guides/bf/ can help you identify garden friends and foes)
- Continue Garden Journals in which students record their garden observations and tasks
- Weigh, count, record and track your harvest produce data

**Fun Activities:**

- Harvest and eat some garden treats
- Dry garden flowers (under paper and heavy books) to use in making bookmarks, note cards and other decorative items
- Make artistic plant labels
- Plant “salad beds” of carrots, lettuces chard for winter harvest
- Plant some winter blooming flowers like pansies, snapdragons and English daisies

**My Notes:**

# October

Fall

## What should we plant?

| | |
|---|---|
| Direct sow | **Fava beans, beets**, bok choy, broccoli rabe, collards, **carrots**, endive, radicchio, **radish**, squash, swiss chard, leeks, mustard, turnips, parsley, **lettuce**, turnips, garlic bulbs, **peas**, shallots, spinach |
| Start seed indoor | Micro-greens, broccoli, bok choy, celery, fennel, kohlrabi, peas, cabbage, cauliflower, kale |
| Transplant | Broccoli, bok choy, celery, fennel, kohlrabi, onions, peas, cabbage, cauliflower, kalé |
| Cafeteria Harvest | Melons, tomatoes, peppers |

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# October Activities

**To be sustainable, the garden needs people to**

- Keep up your gardening schedule with students, staff and volunteers
- Continue to dig planting beds and add organic compost to support the fall plantings
- Weed garden paths and open area; cover with deep layers of wood chips or other materials
- Control the weeds by pulling them out by the roots
- Patrol for bugs and other pests; hand-picking the “bad guys” and dropping them in soapy water (https://savvygardening.com/guide-to-vegetable-garden-pests/ or http://davesgarden.com/guides/bf/ can help you identify garden friends and foes)
- Clean up leaves (especially away from fruit trees) and start a compost pile.

**Garden learning suggestions**

- Make seed tapes for carrot and lettuce seeds – they won’t need thinning later.
- Continue to save seeds from summer flowers and veggies
- Have students identify flowers and veggies to plant for fall and winter; map the plantings
- Plant the fall garden, mapping and charting its growth in future months
- Continue Garden Journals to log their observations and tasks accomplished
- Chart “good bugs” and “bad bugs” with pictures to identify each

**Fun Activities:**

- Harvest and eat some garden treats
- Plant “salad beds” of carrots, lettuces chard for winter harvest
- Check in with Yolo Farm to Fork for winter-blooming flowers and bulbs
- Leave one pumpkin in a bed and have students observe and report on what happens to it from now till June

**My Notes:**

# November

Fall

## What should we plant?

| | |
|---|---|
| Direct sow | **Fava beans, Beets**, bok choy, broccoli rabe, radicchio, **radish**, squash, **swiss chard**, mustard, **lettuce**, turnips, garlic bulbs, shallots, **spinach** |
| Start seed indoor | Micro-greens, bok choy, kale |
| Transplant | Broccoli, bok choy, celery, fennel, kohlrabi, onions, peas, cabbage, cauliflower, kalé |
| Cafeteria Harvest | Radish, lettuce (if you planted in August) |

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# November Activities

**To be sustainable, the garden needs people to**

- Keep up your gardening schedule with students, staff and volunteers
- Plant a “cover crop” in empty beds to fix nitrogen in the soil for winter (e.g., red clover or fava beans). Check in with Yolo Farm to Fork for seeds (info@yolofarmtofork.org).
- Weed garden paths and open area; cover with deep layers of wood chips or other materials
- Control the weeds by pulling them out by the roots
- Patrol for bugs and other pests; hand-picking the “bad guys” and dropping them in soapy water (https://savvygardening.com/guide-to-vegetable-garden-pests/ or http://davesgarden.com/guides/bf/ can help you identify garden friends and foes)
- Clean up leaves (especially away from fruit trees) and start a compost pile.

**Garden learning suggestions**

- Continue to save seeds from summer flowers and veggies
- Have students identify flowers and veggies to plant for fall and winter; map the plantings
- Plant the fall garden, charting its growth in future months
- Continue Garden Journals to log their observations and tasks accomplished
- Start a chart of “good bugs” and “bad bugs” with pictures to identify each (https://savvygardening.com/guide-to-vegetable-garden-pests/ can help you identify garden friends and foes)

**Fun Activities:**

- Harvest and eat some garden treats
- Last chance to plant a cover crop for winter
- Plant bulbs for spring blooms – especially daffodils
- Consider making holiday garden gifts

**My Notes:**

# December

Winter

## What should we plant?

| | |
|---|---|
| Direct sow | **Fava beans, Beet**s, bok choy, broccoli rabe, kale, radicchio, radish, squash, mustard, turnips, garlic bulbs, |
| Start seed indoor | Micro-greens, |
| Transplant | Bok choy, onions, kale, asparagus roots |
| Cafeteria Harvest | Lettuce, radish (planted by October) |

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# December Activities

Winter

**To be sustainable, the garden needs people to**

- Keep up your gardening schedule with students, staff and volunteers
- Weed garden paths and open area; cover with deep layers of wood chips or other materials
- Control the weeds by pulling them out by the roots
- Patrol for bugs and other pests; hand-picking the “bad guys” and dropping them in soapy water (https://savvygardening.com/guide-to-vegetable-garden-pests/ or http://davesgarden.com/guides/bf/ can help you identify garden friends and foes)
- Clean up leaves (especially away from fruit trees) and start a compost pile.
- **Check in with Yolo Farm to Fork** to get mulch, seeds and transplants for spring (info@yolofarmtofork.org)
-

**Garden learning suggestions**

- Continue Garden Journals to log their observations and tasks accomplished
- Continue a chart of “good bugs” and “bad bugs” with pictures to identify each (https://davesgarden.com/guides/bf/ can help you identify garden friends and foes)

**Fun Activities:**

- Have students create holiday garden gifts, decorations or cards from previously pressed flowers and other garden materials

**My Notes:**

# January

Winter

## What should we plant?

| | |
|---|---|
| Direct sow | Fava beans, broccoli rabe, kohlrabi, **lettuce**, mustard, radicchio, **radish**, bok choy |
| Start seed indoor | Micro-greens, broccoli, cabbage, cauliflower |
| Transplant | Bok choy, pak choi, onion, asparagus roots |
| Cafeteria Harvest | Lettuce, radish, carrots (planted in September or October) |

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# January Activities

**To be sustainable, the garden needs people to**

- Keep up your gardening schedule with students, staff and volunteers
- Control the weeds by pulling them out by the roots
- Patrol for bugs and other pests; hand-picking the "bad guys" and dropping them in soapy water (https://savvygardening.com/guide-to-vegetable-garden-pests/ or http://davesgarden.com/guides/bf/ can help you identify garden friends and foes)
- Prune fruit trees and roses if you have them. Here's a helpful video for pruning fruit trees: https://www.youtube.com/watch?v=yNytXvxWJIY.
- For pruning roses: https://www.youtube.com/watch?v=5uMbXpDOfno

**Garden learning suggestions**

- Make seed tapes for carrot and lettuce seeds – they won't need thinning later.
- Put a rain gauge in the garden and have students measure and graph rain accumulation. You may want to turn off your automatic watering system.
- Grow "desk top gardens" of micro-greens like broccoli
- Have students draw a map of the garden and plan spring plantings of veggies and flowers
- Continue Garden Journals to log their observations and tasks accomplished
- Continue to chart "good bugs" and "bad bugs" with pictures to identify each (https://savvygardening.com/guide-to-vegetable-garden-pests/ can help you identify garden friends and foes)

**Fun Activities:**

- Make "good bug" houses from twigs (https://www.pinterest.com/wildforms/bug-houses/) They can hang in the garden or be taken home.
- Start sweet or white potatoes indoors for transplanting into the garden

**My Notes:**

# February

Winter

## What should we plant?

| | |
|---|---|
| Direct seed | Beets, broccoli rabe, broccoli, kohlrabi, **lettuce**, mustard, radicchio, **radish**, cabbage, **carrots**, swiss chard, **chives**, collards, endive, kale, kohlrabi, peas, **potatoes**, radicchio, turnips |
| Start seed indoor | Micro-greens, eggplant, leeks, peppers, tomatoes |
| Transplant | Broccoli, cabbage, kale, leeks |
| Cafeteria Harvest | Lettuce, carrots, radish, snow peas |

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# February Activities

**To be sustainable, the garden needs people to**

- Keep up your gardening schedule with students, staff and volunteers
- Finish pruning fruit trees and roses if you have them
- Control the weeds by pulling them out by the roots
- Work fresh compost into beds with perennials
- Patrol for bugs and other pests; hand-picking the “bad guys” and dropping them in soapy water (https://savvygardening.com/guide-to-vegetable-garden-pests/ or http://davesgarden.com/guides/bf/ can help you identify garden friends and foes)

**Garden learning suggestions**

- Measure, track and graph rain accumulation in the garden (you may turn off your automatic watering system)
- Make seed tapes for carrot and lettuce seeds – they won’t need thinning later.
- Grow “desk top gardens” of micro-greens like broccoli
- Have students draw a map of the garden and plan spring plantings of veggies and flowers. Check in with Yolo Farm to Fork for spring seeds and transplants and other freebies. info@yolofarmtofork.org
- Continue Garden Journals to log their observations and tasks accomplished

**Fun Activities:**

- Have students design and build a worm compost bin. Here’s a helpful video link: https://www.youtube.com/watch?v=pR9TzAK3jMo
- Have students create valentine garden gifts or cards from previously pressed flowers

**My Notes:**

# March

Spring

## What should we plant?

| | |
|---|---|
| Direct sow | Beets, mustard, radicchio, **radish**, **carrots**, swiss chard, chives, collards, endive, kale, potatoes, **squash**, turnips, celeriac, celery, fennel, jicama |
| Start seed indoor | Chives, eggplant, peppers, sweet potatoes, tomatoes |
| Transplant | Leeks, chives |
| Cafeteria Harvest | Lettuce, carrots, radish, snow peas |

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# March Activities

**To be sustainable, the garden needs people to**

- Keep up your gardening schedule with students, staff and volunteers
- Finish pruning fruit trees and roses if you have them
- Feed the base of fruit trees with organic fertilizer
- Begin planting your spring/summer garden; be sure to work compost into beds before planting
- Control the weeds by pulling them out by the roots
- Patrol for bugs and other pests; hand-picking the "bad guys" and dropping them in soapy water (https://savvygardening.com/guide-to-vegetable-garden-pests/ or http://davesgarden.com/guides/bf/ can help you identify garden friends and foes)

**Garden learning suggestions**

- Make seed tapes for carrot and lettuce seeds – they won't need thinning later.
- Measure, track and graph rain accumulation in the garden (you may turn off your automatic watering system)
- Plant spring garden seeds following the instructions on each seed packet. **Check in with Yolo Farm to Fork for spring seeds and transplants.** (info@yolofarmtofork.org)
- Continue Garden Journals to log their observations and tasks accomplished

**Fun Activities:**

- Dissect daffodils to identify the parts of a flower
- Celebrate the first day of spring by making and throwing wildflower seed balls (seeds mixed with mud)
- Transplant potatoes sprouted indoors into the garden

**My Notes:**

# April

Spring

## What should we plant?

| | |
|---|---|
| Direct sow | Lima/snap beans, beets, corn, cucumbers, eggplant, mustard, radish, **carrots, swiss chard**, chives, endive, **melons**, okra, potatoes, **squash**, turnips, celeriac, celery, fennel, jicama, soybean, spinach, **watermelon** |
| Start seed indoor | Micro-greens, chives, eggplant, sweet potatoes, tomatoes |
| Transplant | Chives, eggplant, peppers, sweet potatoes, tomatoes |
| Cafeteria Harvest | Lettuce, carrots, peas, chard |

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# April Activities

**To be sustainable, the garden needs people to**

- Keep up your gardening schedule with students, staff and volunteers
- Plant your spring and summer garden; be sure to work compost into beds before planting
- Control the weeds by pulling them out by the roots
- Patrol for bugs and other pests; hand-picking the “bad guys” and dropping them in soapy water (https://savvygardening.com/guide-to-vegetable-garden-pests/ or http://davesgarden.com/guides/bf/ can help you identify garden friends and foes)
- Flush out your automatic watering system and repair it as needed

**Garden learning suggestions**

- Make seed tapes for carrot and lettuce seeds – they won’t need thinning later.
- Continue Garden Journals to log their observations and tasks accomplished
- Weigh, count, track and graph your garden harvests

**Fun Activities:**

- Fertilize your growing veggies with worm castings from your worm bin
- Track the growth of your potato sprouts
- Be sure to taste your garden harvests

**My Notes:**

# May

Spring

## What should we plant?

| | |
|---|---|
| Direct sow | **Beans, corn, cucumbers**, eggplant, swiss chard, **melons,** okra, potatoes, squash, turnips, soybean, spinach, pumpkins, watermelon |
| Start seed indoor | Basil |
| Transplant | Chives, eggplant, sweet potatoes, tomatoes |
| Cafeteria Harvest | Lettuce, carrots, radish, peas, potatoes |

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# May Activities

**To be sustainable, the garden needs people to**

- Keep up your gardening schedule with students, staff and volunteers
- Plant your summer garden; be sure to work compost into beds before planting
- Control the weeds by pulling them out by the roots
- Patrol for bugs and other pests; hand-picking the “bad guys” and dropping them in soapy water (https://savvygardening.com/guide-to-vegetable-garden-pests/ or http://davesgarden.com/guides/bf/ can help you identify garden friends and foes)
- Arrange the summer care for your garden

**Garden learning suggestions**

- Continue Garden Journals to log their observations and tasks accomplished
- Keep up your spring “harvest delivery” procedures so the cafeteria can serve garden harvests. Be sure to weigh and record the produce you deliver.

**Fun Activities:**

- Harvest and taste your garden’s edible produce
- Have students plan thank-you gifts/letters for staff and volunteers who have helped in the garden
- Consider providing “awards” to students who have excelled in some way in the garden.

**My Notes:**

# June

**Summer**

## What should we plant?

| | |
|---|---|
| Direct sow | **Melons, sweet basil, corn**, cucumbers, radish, swiss chard, okra, squash, turnips, soybean, **pumpkins**, **watermelon**, parsnips |
| Start seed indoor | Micro-greens, celery. brussels sprouts |
| Transplant | Chives, **sweet potatoes, tomatoes**, celery. leeks |
| Cafeteria Harvest | Lettuce, carrots, peas, chard |

| Monday | Tuesday | Wednesday | Thursday | Friday |
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# June Activities

**To be sustainable, the garden needs people to**

- Keep up your gardening schedule with students, staff and volunteers
- Last chance to plant melons, pumpkins and sunflowers!
- Control the weeds by pulling them out by the roots
- Finalize the summer care for your garden

**Garden learning suggestions**

- Keep up your spring “harvest delivery” procedures so the cafeteria can serve garden harvests. Be sure to weigh and record the produce you deliver.

**Fun Activities:**

- Harvest and taste your garden’s edible produce
- Prepare students for their “back to school” harvest; have them figure out what will be available and how much will be there?
- Build a solar oven and roast garden potatoes and carrots (https://www.homesciencetools.com/a/build-a-solar-oven-project)
- Present any “awards” to student gardeners, and thank-you’s to staff and volunteers.

**My Notes:**

# July

Summer

## What should we plant?

| | |
|---|---|
| Direct sow | Beans, **corn**, radish, okra, squash, turnips, **pumpkins**, parsnips, celeriac, lettuce, rutabaga |
| Start seed indoor | Micro-greens, brussels sprouts |
| Transplant | Celery, brussels sprouts |
| Cafeteria Harvest | Lettuce, carrots, tomatoes, sweet potatoes, Sweet Basil |

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**Enjoy a summer vacation with produce from your garden!**

# Vegetable Planting Guide

preferred time to seed in a greenhouse or other protected area (e.g. coldframe, well lit window)

preferred time to transplant

preferred time to direct seed

seeding

transplanting

*Seeding and transplanting dates may vary between varieties. Please check seed package or nursery for additional information.*

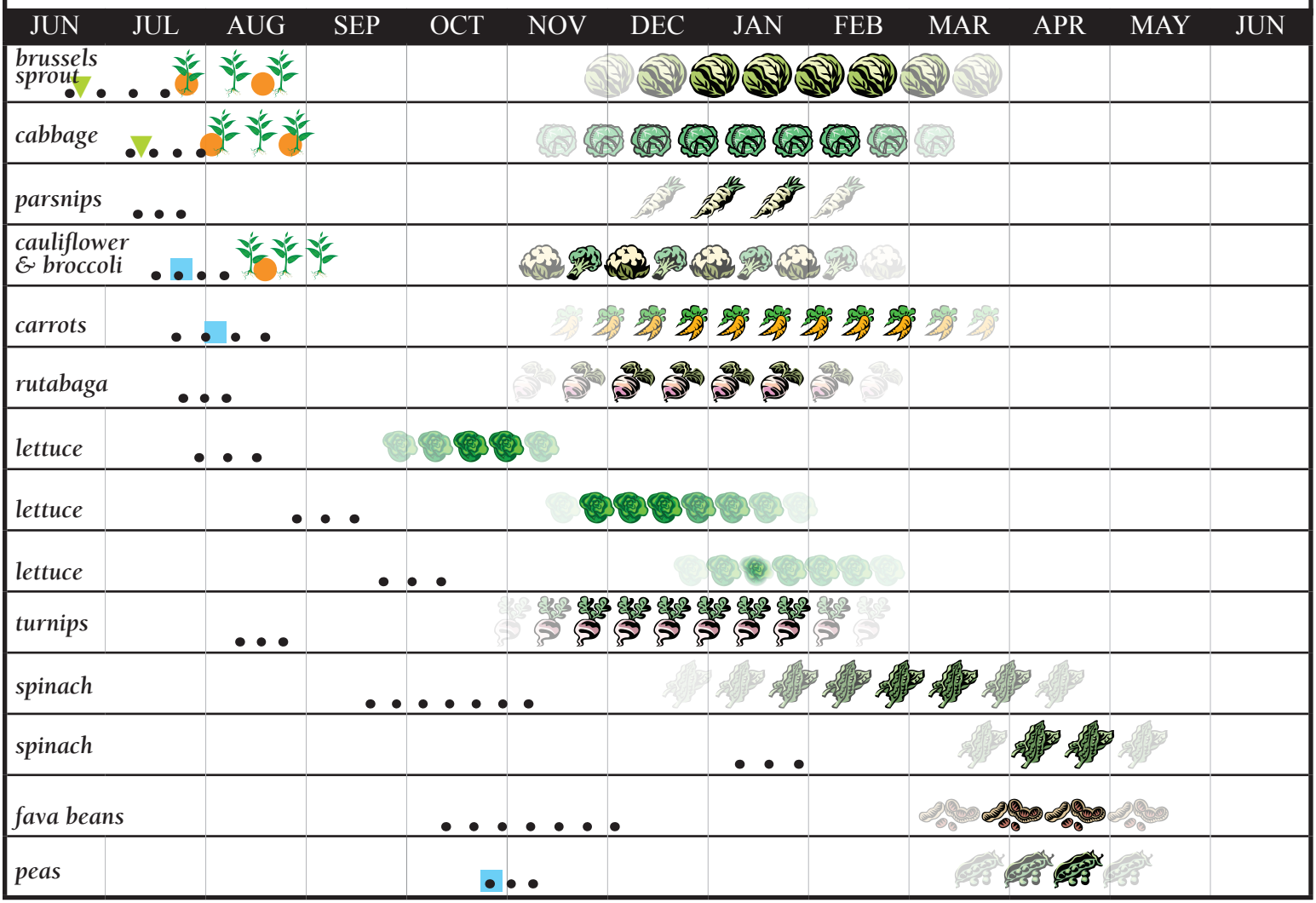
*Weather can modify planting and harvesting dates.*

UCDAVIS PLANT SCIENCES

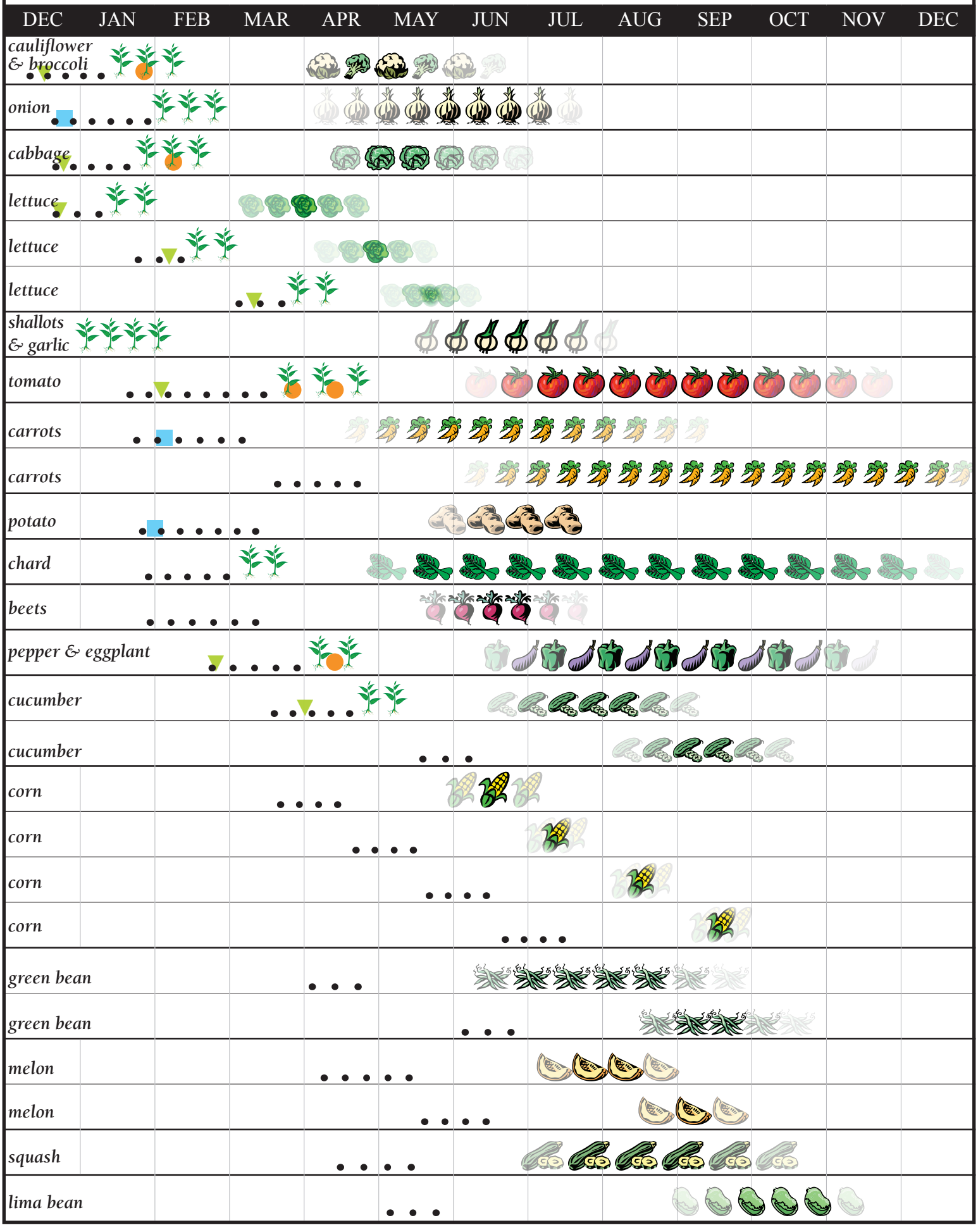
UC Vegetable Research & Information Center

Information provided by Robert Norris, Department of Plant Sciences, 2008

## SUMMER/FALL Vegetables for the Sacramento Area



# WINTER/SPRING Vegetables for the Sacramento Area




# Section 2

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# Garden Management Resources

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## Identifying and Preventing Pest Damage

### Aphids

Aphids are small, sap sucking insects that feed on plants by inserting their proboscis into the vasculature of plant leaves. They can be green, gray or even yellow. When populations of aphids are very high they can damage or completely destroy plants. Aphids tend to hide on the underside of leaves so be sure to check them.
To treat aphids you can use a blast of hose water to spray off the leaves, horticultural oil or simply squish them. Floating row covers help prevent aphids.

### Bagrada and Harlequin Bugs

Bagrada and Harlequin Bugs are specialists of “cole” crops (Broccoli, Cabbage, Kale). They feed on plant sap with piercing and sucking mouthparts, leaving behind white discolored areas where they have been feeding.

These bugs do not have predators and are best handled by growing cole crops during the cooler months when they are not active. If these insects are found they should be removed from the plants and dropped in soapy water. Be warned, they are members of the family shared by stink bugs.

### Caterpillars (Cabbage Looper)

Caterpillars, such as the cabbage looper, are common leaf eating insects. They are often found on cabbage, broccoli, kale and lettuce. They eat the leaves and leave behind “frass” (poop). Caterpillars can be hand picked and left somewhere for birds to find. Floating row covers help exclude moths from laying eggs. Preemptively spraying leaves with B.T. selectively kills only caterpillars.

**Cucumber Beetles**

Cucumber Beetles can be spotted or striped. They are specialists in squash, cucumbers, melons and watermelons. They can spread a plant disease called bacterial wilt where the plant stops transporting water through its vascular system, wilts and dies. When beetles are seen they should be removed and dropped in soapy water. Floating row fabric helps exclude beetles but may limit pollination of fruit.

**Cutworms**

Cutworms are a type of burrowing caterpillar that feeds on stems and roots at the soil surface at night. They are especially harmful when plants are young and very small.They are often accidentally dug out of soil and seen rolled into a ball. Cut worms should be put somewhere where birds will find them and far from plants. Using “Sluggo Plus” pellets at the base of very young plants can also help prevent the plants from being eaten.

**Earwigs**

Earwigs tend to eat around the veins of leaves of plants in irregular patterns with *smooth* edges. They are especially fond of lettuce, cole crops and artichokes.

Typically earwigs have enough other things to eat in a garden and do not require control. However, if extensive damage occurs “Sluggo Plus” pellets can be placed near the plants being affected which, when eaten by the earwigs, should kill them. They can also be plucked by hand and dropped in soapy water.

**Flea Beetles**

Flea Beetles are small, black beetles that jump when disturbed, a bit like a flea. They primarily feed on eggplants, corn and cabbage. Adult beetles can spread plant viruses. To prevent large populations of flea beetles, garden debris should be swept up and removed often. Row covers can be used to create a barrier between the beetles and plants. Insecticidal soaps may be used to control them.

**(Lesser and American) Goldfinch**

Lesser and American GoldFinches have a diverse diet which includes leafy green plant leaves. They are small gray perching birds with yellow underbellies. The males have black “caps”. They tend to eat between veins and leave *ragged* edges where they’ve eaten. They prefer sunflowers, chard and beets but may sometimes feed on other plants. The best defense is a good offense: covers for the plants. LGFs typically only cause cosmetic damage and are not a significant concern.

**Leaf Footed Bug**

Leaf footed bugs are generalists but most often found on tomatoes, peppers, eggplants, tomatillos, okra, peas and beans. It is uncommon for their populations to be large enough to cause significant damage. If populations do become large enough to cause significant plant damage they should be handpicked and dropped into soapy water.

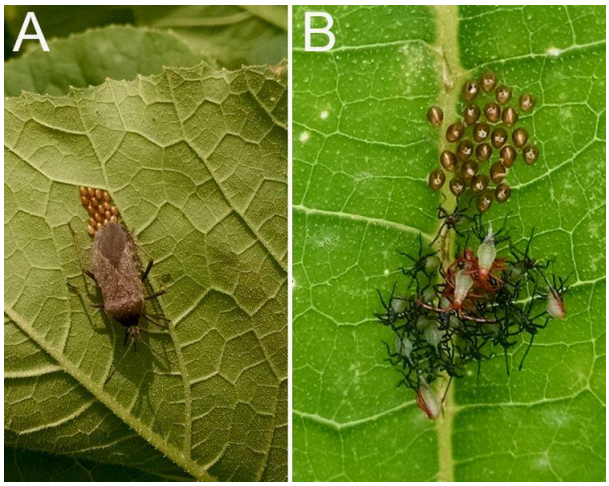
**Slugs and Snails**

Slugs and snails are generalist herbivores, feeding primarily on plants at night. They leave behind a characteristic shiny slime trail where they've traveled. Slugs and snails are especially detrimental to young, very small plants and should be controlled by sprinkling "Sluggo Plus" pellets directly around the plants. They can also be hand plucked and dropped in soapy water.

**Spider Mites**


Spider mites are very small arachnids that suck plant juices. They leave damage similar to thrips and leave behind tell tale webs. They are just large enough to see. Spider mites have explosive population growth despite having natural predators. Affected areas can be removed, sprayed with water or insecticidal soaps multiple times.

**Squash Bugs**




Squash bugs are specialists of squash plants. They suck juices from plant leaves, stems and fruit and can spread plant diseases. Squash bugs lack natural enemies due to their bad smell. Squash bugs overwinter in plant debris so removing plant debris often helps reduce their numbers. If you see a squash bug it's important it is dealt with early, usually by hand picking and dropping into soapy water.

**Thrips**

There are many species of thrips that affect all families of plants. Thrips are nearly microscopic insects that suck juices from plant leaves and spread plant viruses. They leave behind dead patches in the leaves with little black specks in affected areas. They have natural predators such as predatory thrips and minute pirate bugs. If thrips have damaged the crop significantly it is important to lower their populations. Prevention starts with controlling weeds in the garden which act like "green bridges", allowing the thrips to travel to the most vulnerable plants. Control measures include removing affected foliage, spraying with soaps or oils or spraying with water.

**Whiteflies**

Whiteflies are very small white flies but large enough to see. They are usually seen flying when disturbed from the undersides of leaves. Whiteflies suck juices from leaves and leave little slime marks and eggs on the undersides of leaves. Whiteflies generally have enough natural predators (like lady beetles) to not require intervention. If intervention is required, Whiteflies can be sprayed off with a hose, sprayed with insecticide soap or neem oil.

**For More Information:**

Aphid Link: https://gpnmag.com/article/dr-bugs-managing-aphid-populations/
Bagrada: https://www.growingproduce.com/vegetables/field-scouting-guide-bagrada-bug/
Caterpillar: https://entomology.ca.uky.edu/ef300
Cucumber beetle: https://entomology.ca.uky.edu/ef311
Cutworm: https://content.ces.ncsu.edu/cutworm-in-turf
Earwig Link: https://gardenbite.com/earwigs/
https://www.mccallservice.com/blog/what-is-an-earwig/
Flea Beetle: https://extension.umd.edu/resource/flea-beetles-vegetables
Goldfinch: https://www.allaboutbirds.org/guide/Lesser_Goldfinch/id
Goldfinch Leaf Damage: https://jaysbirdbarn.com/sights-and-sounds-of-nature-in-my-yard/
Leaf Footed Bug:
https://durham.ces.ncsu.edu/2020/08/whats-that-bug-leaf-footed-bugs-in-the-garden/
Slugs and Snails: https://www.almanac.com/pest/slugs-and-snails
Spider Mites: https://desantislandscapes.com/keep-an-eye-out-for-this-common-garden-pest/
Squash Bugs:
https://www.canr.msu.edu/news/squash_bugs_as_pests_of_cucurbits_in_michigan
Thrips: https://www.nature-and-garden.com/gardening/thrips.html
Whitefly:
https://pestpointers.com/where-whiteflies-come-from-and-how-to-remove-them-naturally/

## Guide to Predatory Insects

### Assassin Bug

There are many species of assassin bugs all of which are ambush predators of a wide range of insects. Nymphs and adults ambush their prey and use their tubular mouthparts to inject venom and suck out the body contents of other insects. They are great controls for many pest insects in the gardens but are opportunistic, eating beneficial insects as well. They are not considered harmful to humans.

### Dragonflies and Damselflies

Dragonflies and their smaller counterparts, Damselflies are aerial predators who actively hunt flying insects. They help control populations of insects harmful to both humans and the garden such as mosquitos, aphids, beetles, etc. These predators enjoy resting at the tips of branches and twigs and can be encouraged into the garden by setting up bamboo stakes.


### Lacewings

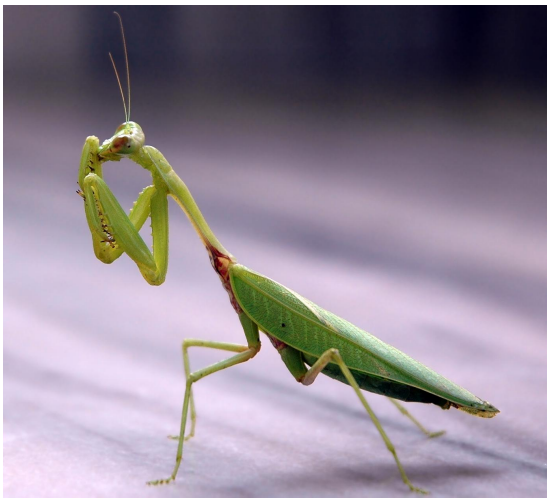
The eggs of lacewings are laid on plant leaves and surfaces near populations of aphids. They are elevated on a long, thin stalk with the white egg at the very end. When they hatch, the nymphs (also known as aphid lions) immediately get to work eating aphids. The adults are green with clear wings and are unable to feed.

**Lady Beetle**


Lady Beetles start life from yellow clusters of eggs that hatch as nymphs who later metamorphosis into adult beetles. The nymph stage of the lifecycle is the most active when it comes to predation of aphids but the adults also eat aphids voraciously. Lady beetles can be encouraged to stay in the garden by leaving piles of moist leaves or grass nearby where they rest when the weather is warm and dry. Lady beetles will persist in the garden only when there are sufficient hiding places and aphid food sources available.

**Mantids**

Mantids, often referred to as “praying mantises” are active predators of a wide range of insects in the garden. They distinguish so little between insects that they are known cannibals. Mantises are active during the warm months of the year and die after mating and laying eggs. Egg cases, known as ootheca, are straw colored and about an inch long. They are often found on tree trunks, posts or other vertical surfaces and hatch in spring once the weather has warmed sufficiently.



**Minute Pirate Bug**

Minute (pronounced “mine-oot”) Pirate Bugs are only 2-3 millimeters long, making them one of the smallest predators in the garden. They feed on soft bodied insects such as aphids, scales, thrips and mites.

When no prey is available, minute pirates will feed on flower pollen and nectar. For this reason, flowers should be kept in the garden as much as possible. Care should be taken when spraying for their pests to not accidentally spray them instead.

**Spiders**

While spiders often leave many of us fearful, it's important to remember their role in the garden. Spiders are predators and a good indicator of the health of the miniature ecosystems where we grow food. Spiders trap and eat lots of problem insects, helping us maintain happy and safer work spaces. Most spiders are not harmful to humans but should be respected. If you find a spider in an undesirable area, consider using a small bucket or cup to move it elsewhere instead of killing it.

If you find a black widow in the garden your coordinator should be contacted immediately. Black widows tend to nest in sheltered locations such as gutter drains, overhung garden boxes, under pumpkins and watermelons and in woody debris piles. They are venomous and considered dangerous to humans.

**Spined Soldier Bug**


Spined Soldier Bugs are predatory stink bugs that are generalist predators who are especially fond of caterpillars. Their most notable features are the two sharp points that project *outward* from their "shoulders". From egg to adult, the soldier bug grows through multiple stages known as "instars" that appear very different both from each stage and from the adult form. These insects are so good at caterpillar control that they are used as bio controlling insects across the world's agricultural regions.

**Syrphid Flies**

There are many species of Syrphid Flies, a lot of which are bee mimics and valuable predators and pollinators. As adults, they feed on the nectar and pollen of small flowers such as carrot, yarrow, alyssum and asters. The larvae of the adults are often brown or green and appear a little bit like a caterpillar and a little like grubs. They have nondescript heads and no discernible eyes, mouthparts or legs/feet. The young feed on aphids in the garden.

**Wasps**

There are many different species of Wasps that come in all shapes, colors, sizes and social nature. Most species of wasp are actually solitary insects and only some, such as the paper wasp (first image) and yellow jacket (second image) are social insects that nest in colonies. Almost all adult wasps you see are female, all of which possess stingers. The adults feed on nectar and pollen. They catch and feed insects to their pupae, who are carnivorous and hungry all of the time.

When you encounter a wasp in the garden it's important to remain calm. Wasps typically use the gardens to feed themselves and hunt for their young rather than attack people. They typically will not realize you are present and will go on about their business peacefully. This is especially true of solitary wasps.

If you encounter a social wasp nest in the garden it's important for you to contact your coordinator to report it. Yellow jackets typically (though not always) nest in the ground. They build their nests inside of a paper "jacket" where you cannot see the structure of the inside of the nest (right lower image). They can act with extreme aggression to defend their nests. Paper wasps usually nest under the eaves of buildings and fences. Their nests (left lower image) usually face downward with visible hexagonal patterns. Paper wasps will defend their nests aggressively though are less quick to come to that than yellow jackets. Both of these species are visitors to the garden and on an individual basis are non aggressive unless provoked. Both require respect and caution.

**For More Reading**

Assassin Bug: https://homeorchard.ucanr.edu/?blogtag=assassin%20bug&blogasset=45538
https://www2.ipm.ucanr.edu/natural-enemies/assassin-bugs/

Dragonflies and Damselflies: https://www.ealt.ca/blog/fun-facts-dragonflies-vs-damselflies

Lacewing: https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=24151

Lady Beetle: https://cals.arizona.edu/yavapai/anr/hort/byg/archive/ladybeetle2017.html

Mantids: https://extension.umd.edu/resource/praying-mantid-mantis

Minute Pirate Bug: https://extension.umn.edu/beneficial-insects/minute-pirate-bug

Spiders: https://www.growveg.com/guides/the-benefits-of-spiders-in-the-garden/
Black Widows: https://www.wikihow.com/Identify-a-Black-Widow-Spider

Spined Soldier Bug: https://entnemdept.ufl.edu/creatures/beneficial/podisus_maculiventris.htm

Syrphid Flies:
https://www.gardeningknowhow.com/garden-how-to/beneficial/hoverfly-eggs-larvae.htm
https://content.ces.ncsu.edu/syrphid-flies

Wasps: https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=40718

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## Basic Soil Preparation and Planting Guide

Good food that comes from the garden starts with good conditions for soil. Soil is an accumulation of parent material from weathered rocks and organic matter that has accumulated over thousands to millions of years. It is the home of trillions of microorganisms that facilitate nutrient cycling, making nutrients available to plants and later, to us! In order to make this relationship work, we need to give back to the soil to maintain a balanced environment.

### How to Prepare Soil Before Planting (and why!)

1) Remove previous crop
    - Reduces chances of crop diseases and pests staying in the bed
2) Pull irrigation lines outside of the bed
    - Reduces the chances of breaking the irrigation
3) Use a shovel or digging fork to break up compaction all throughout the bed
    - Compaction makes it difficult for young plant roots to penetrate more deeply into the soil
4) Add enough compost to cover the soil 1-2 inches
    - Compost is full of nutrients and organic matter (OM). OM holds water and nutrients! It is also food for microbes!
5) Add fertilizer according to instructions (ie: 1 pound per 100 square feet)
    - The nutritional needs of the plants will not be met by compost alone. Each component of a fertilizer blend has a role to play in the growth and development of the plant.
6) Dig in the compost and fertilizer
    - By digging them into the soil you're making them available to the plant roots. Not all of the nutrients in either will percolate down with watering so this ensures the nutrients are where they're supposed to be.
7) Rake the soil surface to even it out and reduce large clumps at the surface
    - This is more of a cosmetic thing, but it is very helpful if you are planting seeds directly into the beds.
8) Replace irrigation lines

### Planting in the Garden

There are many different types of vegetable and fruit plants you can plant in the garden during different parts of the year. "Starts" or "Transplants" are plants that have been grown from seed in containers and are later planted into the garden. "Direct seeding" is another method of growing plants where they are started directly in the garden bed.

### Planting Transplants

1) Make note of where the emitters for the irrigation system are. Transplants should be located within the wetting zone
2) Pre dig small holes for transplants in the garden bed
3) Gently lift transplant from the container and place in the hole

4) Fill the hole back in with soil making sure that the surface of the transplants soil and the garden soil are even
5) Irrigate immediately after either with a hose or by turning on the irrigation system

## Direct Seeding

1) Select seeds appropriate for the season in which they will be growing (list below)
2) Read the back of the seed packet.
    a) Look for depth of seed planting
    b) Look for spacing in between seeds
    c) Look for germination time
3) Sow seeds according to instructions on packet

## When to Plant What Crops

**Spring**
Beans
Beets
Bok Choy
Carrots
Chard
Cilantro
Corn
Cucumbers
Eggplant
Gourds
Herbs
Melons
Okra
Peppers
Pumpkins
Squash
Sweet Potatoes
Tomatillos
Tomatoes
Turnips
Watermelons

**Summer**
Beans
Beets
Chard
Corn
Eggplant
Herbs
Okra
Peppers
Squash
Tomatoes

**Fall**
Beets
Bok Choy
Broccoli
Cauliflower
Chard
Cilantro
Fennel
Garlic
Kale
Lettuce
Onions
Peas
Radish
Spinach

**Winter**
Beets
Bok Choy
Broccoli
Carrots
Cilantro
Fennel
Kale
Lettuce
Peas
Potatoes (late winter)
Radish

**Common Garden Tool use and Safety Guide**

## Bypass Loppers

Bypass Loppers are tools used to prune tree branches up to one inch in size. Larger branches than one inch pruned with bypass loppers may be crushed instead of cut, resulting in injury to the tree or yourself. Work comfortably, don't extend your arms unless you have to. Keep your arms close to your body to avoid muscle fatigue/injury or making a weak cut.

Bypass loppers should be stored in the sheds when not in use to avoid rust, theft or injury to others.

## Bypass Pruners

Bypass pruners are cutting tools that can be used on trees or other plants growing in the garden. Bypass pruners can safely cut stems and branches up to 3/4s of an inch in width. It is important with bypass pruners that you always know exactly where the blade is so you do not cut yourself or something else unintentionally. Hand injuries can be avoided by slowing down so you can see better and keep out of harms way.

Pay special attention if using pruners to harvest veggies. Make sure the plant doesn't have symptoms of illness and keep an eye on where the blades are at all times during use.

## Digging Fork

Digging Forks may look a lot like a pitchfork, but they are more robust and built to dig with. Digging forks are good tools to loosen garden soil for bed preparation or digging out plants by the roots. To use this tool effectively looks much the way using a digging shovel would. Use your foot to step on the smooth edge of the fork to sink it into the earth and use your body weight to move the soil up towards the surface. Hold the fork close to your body for maximum leverage with minimal muscle strain.

**Flat Shovel**

Flat shovels are best used for digging trench holes. Hold the shovel with the edge parallel to the ground and use your foot to press it into the soil straight down with your body weight. When removing loosened soil from the hole, bend your knees and hold the shovel handle with hand placement closer to your body to ergonomically move soil. Make sure to take frequent breaks to avoid muscle fatigue and injury.

**Garden (Bow) Rake**

Garden rakes are robust metal rakes that are designed to rake soil and large debris. Garden rakes can be used to level and break up soil in garden beds as well as to rake out mulch, gravel and large pieces of debris. When using a garden rake it is important to pay attention to your posture to avoid injuries to your back. Bending should happen at the waist and knees while keeping your spine straight.
Always set the bow rake in an upright position when not in use to avoid accidents.

**Hand Cultivator**

There are many shapes and sizes of hand cultivators, all of which are built to disturb a shallow layer of soil. Cultivators can be used to disturb and kill small weeds, to mix in fertilizer or to break down large clumps of soil. Care should be taken when using to not accidentally hit irrigation lines, small vegetable plants or other people.

**Hand Trowel**

Hand trowels are used to dig small, precise holes in garden soil. Hand trowels are not built for heavy soils or for digging out large plants and may break or cause user injury if used in those conditions. When using a hand trowel, pay attention to your posture. Make sure to bend at the knees and waist while keeping your spine straight. Take regular breaks that allow you to sit up properly to avoid muscle fatigue.

Hand trowels are great to use with children in the garden and are often used to pre dig holes where plants will be planted. They are effective tools to remove weeds by the roots if soil is loose enough to dig into with minimal effort.

**Leaf Rake**

Leaf rakes are best used for their namesake, leaves! Leaf rakes can also be used to rake out grass clippings and small brush. If you're using a leaf rake for an extended period of time it's important to remember to switch sides you're holding the handle with and to take regular breaks to avoid muscle fatigue.

**Soil Pick (pick ax)**

Soil picks are most commonly used to break up highly compacted soil and gravel. Soil picks are used by thrusting the pointed end over hand into the soil, then pulling back to break it into smaller pieces. Legs should be placed apart with one in front of the other. Bending should happen in the knees and waist while keeping your spine as straight as possible. You should always know where other people are when using a pick and take breaks often to avoid muscle fatigue.

**Bedding Fork**

Bedding Forks are built to move loose materials such as straw and wood chips. The multiple, thin tines give the bedding fork less surface area, allowing it to be pushed into debris piles more easily than a shovel. When moving debris from a pile into a wheelbarrow, placement and posture are keys to avoiding injury or muscle fatigue. Place the wheelbarrow slightly behind you on the side of your body opposite your dominant hand. Bend your knees, place one foot in front of the other and hold the handle with one your non-dominant hand close to the head of the tool. Thrust tines into the debris, pull up and back to remove and without twisting at the waist, use your arms to arc the debris into the wheelbarrow.

**(Manual) Post Hole Digger**

Post hold diggers are built to make circular holes in the soil. They can be used for shallow holes or deep holes. To use, hold the handles together from the outside and lift as high as you are comfortable. Next, drive the digger downward into the soil. Once in the soil, pull the handles apart, lift and deposit soil into a pile. If you are digging a deep hole, use this technique little by little to gain depth rather than trying to get it deep in one pass. Take breaks frequently to avoid muscle fatigue.

**Pruning Saw**

Pruning saws are used for tree branches greater than one inch in width. Gloves should always be worn when using pruning saws to avoid accidental cuts of your skin. If extensive use of a pruning saw is required, hands should be switched frequently and breaks taken often to avoid fatigue and muscle injury.

**Round Shovel**

Round shovels can be used for digging and moving materials like compost. When digging, place the head of the shovel onto the ground and use your foot to press it into the soil. Hold the handle closer to your body when lifting soil from the ground.
When moving debris from a compost pile into a wheelbarrow, place the wheelbarrow slightly behind you on the side of your body opposite your dominant hand. Bend your knees, hold the handle close to the shovel head with your hand that is not dominant, thrust into the debris, remove and without twisting at the waist, use your arms to arc the debris into the wheelbarrow.

**Standard (Grub) Hoe**

The standard grub hoe is a robust tool with uses that include digging out small trenches, hilling soil and taking down *large weeds*. When it comes to large weeds, use this hoe by swinging it to hit the soil where the plant's roots are, then pulling back towards you to pull them up and break up the soil. Bend at the knees and waist while keeping your spine straight with one foot in front of the other. The sides of your body you use when hoeing should be switched frequently and breaks taken often to avoid muscle fatigue and injury.

**Stirrup/Hula Hoe (push pull hoe)**

Stirrup hoes should be used for *medium to small weeds only*. Use on large weeds will result in fatigue or even injury if used too vigorously. To use, set the edge of the stirrup hoe on the surface of the soil in front of the small weed. Place legs apart with one in front of the other, bend at the waist while keeping your spine straight and then with force, use a push then pull motion to dislodge the weed at the base of where the stem meets the roots from the soil.

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**Fresh Fruit and Vegetable Harvest Guide**

- **Beans**
  - Beans are best harvested before the seeds fill out too much for fresh beans
  - For dried beans wait for the pods to turn brown then store for later use
  - Fresh green beans should be stored in a paper bag (humidity causes mold)
- **Beets**
  - Beets can be harvested at any size but will continue to grow regardless of age
  - Greens and roots can both be eaten
- **Bok-Choy**
  - Bok-choy can be harvested at any stage of development but is favored when about five inches tall
  - Cut bok-choy above the roots and store whole in a cold, humid environment
- **Broccoli**
  - Broccoli heads will vary in size depending on variety, plant spacing, etc
  - Heads should be firm and compact
  - “Beads” are the individual florets in the head and should be evenly sized
  - Cut at the base of the stem with the floret
  - When cut this way additional florets will form around the stem
- **Cabbage**
  - Heads should be round and very firm
  - When squeezed they should hold fast against the pressure
  - Cut stem below the head
  - Remove outer leaves
- **Carrots**
  - Dig back the soil a little bit until you can see the top of the root
  - If the size of a quarter or larger they are ready to harvest
  - Dig around carrot with a shovel or digging fork first, then lift out by the leaves
  - Leaves are also edible and make a good pesto!
- **Cauliflower**
  - Very gentle move aside center leaves to look at the “curds”
  - Curds should be very firm and pressed against eachother
  - Heads should be the size of a softball or larger
  - Cut at the base of the head and remove outer leaves
  - If you wait to long, the curds will begin separating and the cauliflower will be best used as a rice substitute
- **Chard**
  - Once chard has five or six leaves you can begin harvesting
  - Always harvest the outer leaves
  - Leave at least three leaves for the plant to continue growing
- **Cilantro**
  - Once cilantro has five or six leaves you can begin harvesting
  - Always harvest the outer leaves
  - Leave at least three leaves for plant to continue growing

    - Cilantro “bolts” (begins flowering) when the weather warms. It will not continue producing leaves once flowers begin forming.
- **Corn**
    - Check the ears for size
    - Check the “tassles” (hairy part at the top). They should be brown
    - Peel back the top of the husk until you can see some kernels
    - Break open a kernel to look at the color of the fluid
    - If fluid is clear the corn is not ready yet
    - If the fluid is milky the corn is ready
    - Waiting too long results in hard kernels not suitable for fresh eating
- **Cucumbers**
    - Field cucumbers are ready at any size but are best when about 4-6 inches long
    - Painted serpent cucumbers are best when they are between a quarter and a half dollar in width
    - Lemon cucumbers are best before they turn dark orange, but the size is variable
- **Fennel**
    - Fennel is ready to harvest when the bulbs are about 2-3 inches tall and 1-3 inches wide
    - Cut above the roots
    - Plants will regrow after the first cutting
- **Eggplant**
    - Eggplants vary considerably across varieties
    - Good, edible fruit should have very shiny skin and good color development
    - Dull skin or skin that is turning yellow orange is overripe and bitter and not good for eating
- **Garlic**
    - Garlic planted in fall is usually ready to harvest in June
    - Leaves will begin turning yellow/brown. At this point their irrigation should be shut off for at least one to two weeks before harvesting
    - Once stalks are 60% or more brown the garlic is ready
    - Dig out and set in a warm dry place for two weeks to “cure” the garlic, making it able to store for months
- **Kales**
    - Kale is ready to harvest when the plant has around a dozen leaves
    - Harvest leaves on the outside of the stem only
    - Leave at least 3-4 leaves for the plant to continue growing
- **Lettuce**
    - Heading lettuce can vary in size when it is ready to be harvested
    - Typically lettuce can be harvested at any stage prior to flowering
    - Cut heading lettuce at the base of the stem above the roots
    - Cut leaf lettuce above the roots and wait for plants to regrow
- **Melons**
    - **Honeydew**

        - Melons will be very white (lose their green color) on the outside and often have a canary yellow splotch. Hairs will fall off easily
    - **Cantaloupe**
        - Melons will start to take on their flesh color on the outside (turn somewhat orange)
        - The scent may become apparent and melon will smell sweet
        - Very ripe melons will literally “slip” right off of the vine. These should be eaten within 1-2 days
- **Okra**
    - Okra fruit develops rapidly in summer and should be checked frequently
    - Fruit should be cut from the stem when about 2 inches long
    - Larger okra should be discarded as it is prickly and very woody
- **Onions**
    - When the leaves and stalk of onions begin bending over water should be turned off for at least a week prior to harvesting
    - Stalks should be 60% or more brown and flopped over
    - Onions should be placed in a warm dry place for up to two weeks to cure for long term storage
- **Peas**
    - **Snap Peas**
        - Snap peas should be harvested when about two inches long
        - Can be plucked from the stem
    - **Snow peas**
        - Snow peas should be harvested when about two inches long
        - Peas within should be very small and unnoticeable from the outside. More developed peas within may make for a very bitter experience
    - **English (shelling) peas**
        - English peas should be harvested when 2-3 inches long
        - Pods should be very round
- **Peppers**
    - Peppers can be harvested at any stage of development
    - **Bell peppers**
        - Should be harvested when still green as they sunburn easily
    - **Jalapeno Peppers**
        - Can be harvested when about 1 ½ inches long and about the width of a quarter
    - **Anaheim Peppers**
        - Can be harvested when about 6 inches long and the width is about 1-2 inches
        - Should be harvested if they’re changing from green to red
    - **Poblano Peppers**
        - Poblanos will have a noticeable dip where the stem meets the fruit. The fruit dips down, then comes back up around the stem
    - **Sweet Peppers**

        - Can be harvested once the fruit changes color from green to yellow/orange/red
- **Potatoes**
    - Potatoes planted in late winter are typically ready to harvest in June when stalks start dying back
    - Dig around potatoes and lift from the soil
    - Brush away soil but do not wash if they are being stored
    - Store in a cool, dark place
- **Pumpkins**
    - Pumpkins are ready to harvest when the stem attached to the fruit turns brown
    - Cut the pumpkin from the vine and leave to cure where it is sitting. If there is a risk that someone will run away with the pumpkin leave to cure in the shed for at least one week before bringing indoors
- **Radish**
    - Check the tops of the roots for size
    - Radishes can be harvested when the root top is about the size of a quarter
- **Spinach**
    - Spinach can begin being harvested when it has about six leaves
    - Clip the outside leaves at the base of the stem, leaving several inside leaves to continue growing
- **Squash**
    - **Summer squash**
        - Summer squash, such as zucchini and yellow crookneck, are best when they are about 6 inches long. Larger than that and they develop seeds inside and aren't as good to eat (but make decent compost)
    - **Winter squash**
        - Winter squash like butternut and spaghetti squash are ready to harvest when the stem attached to the fruit has turned brown.
        - Cut at the stem and leave in the garden (or warm, dry shed) to cure for at least one week before bringing indoors.
- **Sweet Potatoes**
    - Sweet potatoes should be harvested in fall before the first frost
    - Dig them out of the soil, removing any vines that may still be attached
    - Cure in a warm, dark and somewhat humid place for at least a week before bringing indoors
- **Tomatillos**
    - Squeeze the husks to check if the fruit has filled in
    - When the fruit inside the husk splits the husk the fruit is definitely ready, however, tomatillos can be harvested at any size.
- **Tomatoes**
    - Tomatoes are ready to harvest when color development is at least 50% of the fruit
    - Less color development when harvested means the fruit will last longer

    - More color development means the fruit won't last as long but will have more flavor
    - Cherry tomatoes should be picked individually rather than picking the entire cluster
- **Turnips**
    - For smaller turnip sizing, they are usually ready to harvest within 30 days of planting. They are very sweet when small
    - For larger turnip sizing, they are usually ready to harvest within 40-50 days of planting. They will be larger and a bit less sweet
    - Waiting longer will mean a large turnip that is less smooth or sweet
- **Watermelons**
    - Watermelons vary across varieties when it comes to seeing if they are ready to harvest but these tips should help
    - The tendril (curly vine) closest to the stem of the fruit begins browning or is totally brown is a good indicator
    - The "field spot" where the melon sits on the soil changes from white to yellow
        - When checking the field spot the melon should be placed back in the exact position it was growing before or the field spot may develop sunburn
    - The skin goes from being shiny to matte

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# Section 3

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# Garden Learning Activities & Lessons

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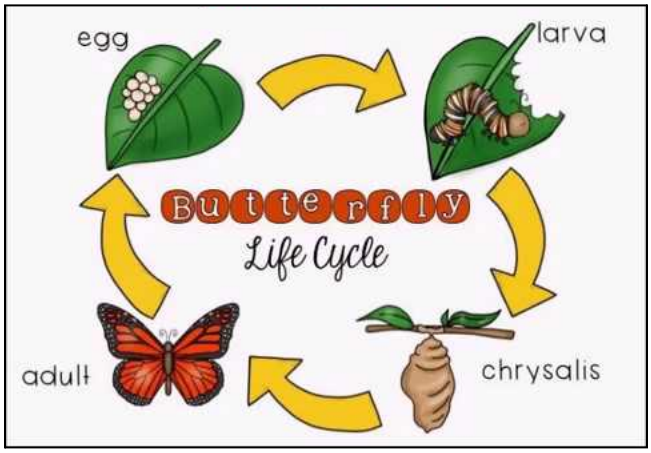
# Butterfly Races




**Objective**
Students will learn the butterfly life cycle and the importance of sequencing through a relay race activity.

**Materials/Set Up**
- Popcorn or other small, healthy snack
- Small cups/bowls
- Safe Area to run Bonus: the area is near a butterfly-related plant

**Opening Questions**
- What types of garden critters fly in the air?
- Can anyone explain what a life cycle is?

**Procedure**
1. Go through the butterfly life cycle with students: egg, caterpillar, chrysalis, and butterfly
2. Once students are comfortable with this cycle, have them come to the running area
3. In the running area, have students pretend to be in each sequence of the life cycle
    a. Crouch down and cover your head as an egg
    b. Crawl as a caterpillar
    c. Hug yourself tight as a chrysalis
    d. Flap your wings as a butterfly and get pollen at the end
4. Have students line up in 2 equal lines and mark the points where they will stop at each sequence
5. Allow students to run through the life cycles, ending by receiving their popcorn (or healthy snack) pollen
6. If time allows, play again!

**Reflection**
- Discuss the importance of pollination with students
    - Ex: helps flowers blossom, trees produce fruit, and keeps the garden happy!
- After they finish their snack, they may butterfly fly - with walking feet - through the garden
- Ask students which plants they pollinated as butterflies

# Graham Cracker Insects

**Objective**
Students will understand the main parts of a bug and will create their own edible version

**Materials/Set Up**
- Paper plates
- Serving bowls
- Serving spoons
- Plastic knives
- Bug Body Parts Info Poster
- Photograph examples
- Crackers (rice, graham, etc.)
- Cream Cheese and/or honey
- Freshly harvest plant parts OR
- Strawberries, mint, sunflower seeds, raisins
- Place paper plates out for every child. Wash and cut any produce, then place in separate owls. Break crackers in half and put cream cheese or honey into bowls.

**Opening Questions**
- What are some critters we know of that fly in the garden?
- What are some critters we know of that crawl on the ground?
- What are some critters we know that dig through the dirt?

**Procedure**
1. Sing Bug Parts song with students
2. If having students harvest, pick the produce, then place in colander to wash and have students wash their hands as well
3. Explain the parts of the bug body, then demonstrate how we will create a bug shape using plants
    a. Common garden plants to harvest or purchase: mint, spearmint, chives, lettuce, grated carrots, kale, flower petals
4. Interns or chaperones can help apply cream cheese or honey to graham crackers with younger students
5. Allow students to create their own bug, ensuring each one has a head, thorax, and abdomen.
    a. Ask students to wait until everyone is done before they eat it

**Reflection**
- Ask students to share their bugs, identifying the head, thorax, and abdomen as well as the name of the bug if they have come up with one
- Eat and enjoy!

**Bug Parts Song (Tune of Head, Shoulders, Knees & Toes)**
Head, Thorax, Abdomen, Abdomen
Head, Thorax, Abdomen, Abdomen
Eyes, Antenna, Wings, and Six Legs,
Head, Thorax, Abdomen, Abdomen!
(Repeat 3x)

# Mild to Wild

**Objective**
Allow students to taste a variety of garden veggies and use this sense to categorize them based on their judgment of “mild” and “wild” flavors.

**Materials/Set Up**
- Set out tables, harvest and wash greens.
- Common plants to try: lettuce, kale, mustard, chives, mint, carrot tops

**Opening Questions**
- What are some ways you could describe “wild” flavors?
- Are spicy foods wild? Sour foods? Sweet foods
- What are some ways you could describe “mild” flavors?
- Discuss “don’t yuck my yum”

**Procedure**
1. Harvest a variety of leafy greens and herbs (if available) from the garden.
2. Wash everything off under running water and plate a piece of each leafy green on a plate.
3. Students take one plate each and taste each
4. After everyone has tasted their veggies, instructor asks which ones were mild and which were wild

**Reflection**

- Students raise their hand in response to the instructor and give their explanations as to why a certain leafy green was mild or wild. This is a good time to have them use descriptive adjectives and potential vocabulary terms.
- Students talk about which one was their favorite (keeping in mind “don’t yuck my yum”)


**Objectives**

Allow students to use their senses of touch, smell, and hearing to explore different garden items.

**Materials/Set Up**

- Collect the following:
    - Pieces from several different plants in the garden. Cut pieces that are 1-3 times the size of a child's hand. Choose plants with interesting, contrasting, smells and textures.
    - A large tray or bowl for plant pieces.
    - A cloth to cover the tray of plant pieces.
- Put the plant parts into the tray and cover with the cloth. You may want to have a jar of water available to put the plant pieces into between uses to keep them fresh.

**Opening Questions**

- What are the different senses we use?
- If you couldn’t use your sight, what other senses would help you know what different objects are?

**Procedure**

1. Have the children sit on the ground in a close circle around the covered tray of plants. Point out the covered tray in the center and tell them they will discover what is underneath the cloth. Exaggerate the mystery of the activity to interest the group.
2. Instruct them to close their eyes if they are comfortable with it and that it’s important that they do not peek
3. Once they have their eyes closed, tell the children that you will give them each a different plant part from the tray. If there are extras, remove them from the tray at this time.
4. Encourage the children to touch, smell, and shake the plant part to become familiar with it with closed eyes. (Do not have any children taste the plants.)
5. Collect all the plants back into the tray and ask students to open their eyes.

**Reflection**

- Ask students to identify the part that each of them had. Let them touch and smell the parts again if they would like
- Which senses were most helpful in determining different garden items?
- Give descriptions of garden items.
    - Is it a flower, seed pod, or leaf?
    - What is the name of the plant or area it was found near?
    - What are the uses of the plant?
- This activity can be lengthened for older students by allowing them to find the garden items in the garden

# Compost in a Bag

**Objectives**

To familiarize students with aerobic composting, composting processes and how compost helps the natural/garden ecosystem.

**Materials**

- Ziploc bags (1-2 bags per group)
- Starter compost (aerobic compost or worm compost)
- Food bits (vegetables or fruits)
- Hay or other types of organic matter (grass clippings, chicken manure)
- One plastic toy, paper clip, rock, Styrofoam, plastic (something that takes a long time to decompose)
- 6- Pots, three with compost and other three without compost.

**Background:**

Composting is a process in which natural products and wastes decompose at a faster rate as compared to individual decomposition. It is basically a way of recycling food and yard waste by the use of organisms (i.e. **F.B.I:** fungus, bacteria and insects), air and water.

There are two ways to make compost:

Vermicomposting and aerobic composting.

Both ways of composting must include insects and microorganisms.

Vermicomposting is a process in which composting is done through red worms as well as the **F.BI.** digesting food leftovers and aerobic composting is a process in which the **F.B.I** exclusively decomposes natural wastes, no food. The red worms and the **F.B.I.** eat the compost material, digest it and secrete it out as nutrients that are packaged into a form that plants can use. Plants thrive with compost because plants need nutrients to be broken down into smaller forms so they can absorb it through their roots, which is the job of the red worms and the **F.B.I.**



**Opening Questions**

- Does anyone know what happens to food parts that you don’t eat, like orange peels?
- Are you able to see the animals/organisms that help break it down?
- How do plants in the garden get the food/nutrients that they need? The sun? The soil?

**Pre-Activity Lesson:**

1. Explain how aerobic compost works
2. Start with a pile of natural waste, emphasizing the layers of brown, green, brown, green. Explain what kind of waste can go into a compost pile and which is green versus which is brown.
3. Air is required. A pile is turned to keep oxygen available in all parts, water is also added to insulate and facilitate breakdown of the materials.
4. Through this process, the material slowly breaks down into smaller and smaller particles while retaining most of its nutrients.
5. Once all of the pre-compost material has been broken down into small dark brown material, it is now compost.

**Procedure**

- Get Ziplock bags for each student to make their own “mini compost in a bag.”
- Place food bits, organic matter and non-compostable items into the bags.
- Water the contents of the bag.
- Punch 4-5 holes along the top of the bags under the seal for oxygen.
- The kids write their names on their own bags and place it in a safe place in the classroom. Over time, they will see what happens to the compostable items and the non-compostable items.

**Reflection**

- Explain why the non-biodegradable item does not break down

- Discuss the importance of compost in helping plants grow bigger, taller, and stronger
    - Ex: the nutrients supplied to the plant from the compost help the plant be healthier and grow bigger, much like how eating vegetables helps students grow healthier and bigger

# Mini Monets in the Garden

**Objective**
To have children create a visual representation of their garden and to help students work on their creativity, language arts, and vocabulary. This activity can be used for any grade or age level.

**Materials/Set Up**
- Paper
- Crayons/Markers/Pencils/Paint
- Clipboards

**Opening Questions**
- Can someone name some plants that might be in a garden?
- Can someone name some bugs that could be in the garden?
- What else can be found in a garden?

**Procedure**
1. Give each child a piece of paper and coloring utensils at the beginning of the activity. Have them spend 5 minutes looking around the garden and then spend 10-15 minutes drawing and coloring what they see in the garden.
2. To scale up this lesson, children could pair together and one student can describe what they are looking at while the other student draws.

3. Students can switch roles once they are done drawing. This allows students to use descriptive vocabulary words and requires more thought; in addition, students can use vocabulary words they learned in the classroom to describe their drawings.
4. At the end of the activity, have the children share what they drew.
5. Having children draw what they see helps with motor skills and hand-eye coordination, creativity, and allows them to express themselves through non-verbal means.

**Reflection**

- How would you describe what you drew (touch, sight, taste if possible)?
- What is a new word that you learned today?

# Scavenger Hunt!

Let's get outdoors and use the clues on the back of this page to find objects for our Scavenger Hunt.

## Step 1: What's a Scavengar Hunt?

- Discuss with your teacher and friends what you think a scavenger might be. What might happen during a scavenger hunt?

## Step 2: Decorate Your Bag!

- Use any materials you may have to decorate your brown paper bag. We have included crayons in your kit!

## Step 3: Start the Hunt!

- Look on the back of this form. Read all of the different items you might be able to find outside.
- With your brown paper bag, go outside and start collecting items from the list that you find!

## Step 4: What did you discover?

- In your discovery journal, write down at least 3 items you collected in your brown paper bag. Write a descriptive sentence for each of these items.

## What's in my kit?

☑ Check the each box as you go

- ☐  Discovery Journal
- ☐  Brown Paper Bag
- ☐  Crayons
- ☐  Pencil

## Vocabulary Words:

| | | | | |
|---|---|---|---|---|
| Colorful | Sharp | Soft | Rough | Smooth |
| Fuzzy | Scratchy | Round | Bright | Dull |

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YOLO farm to fork — Planting the seeds of healthy living

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# Scavenger Hunt - Search List

Put a √ by the 5 things you think you will find outdoors, then go outdoors and capture them in your bags:

___ A leaf you can eat

___ A leaf with veins you can see

___ The biggest leaf you can find

___ Signs of an animal or insect

___ The part of a plant that produces nectar and pollen

___ The part of a plant that brings water to the leaves

___ Something non-living

___ A creature with legs

___ A creature that eats garbage and makes compost

___ A seed

___ Something with a smooth surface

___ Something with a scratchy surface

___ Something with a pattern

___ Something you can make music with


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# Scavenger Hunt

Write down the objects you predict you will collect in your brown bag. When you come back, write down what you found. Where you able to find everything?

## Observations:

I think I will be able to find:

1.

2.

3.

4.

5.

I was actually able to find:

1.

2.

3.

4.

5.

Write a descriptive sentence for at least three of the items you were able to find. If you have time you can also draw the items!

This Discovery Journal belongs to:

YOLO farm to fork
Planting the seeds of healthy living

Name _____

Date _____

_____

What objects were harder to find?

_____

Which objects were easier to find?



## Scavenger Hunt

# Discovery Journal

Fold Here!

Do you think you will find different objects during different seasons? Give an example.

_____

What is your favorite season? What do you think you would fill your brown bag with then?

_____

I think this project was: _____

Something else I would like to learn is: _____

_____

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# Nature Bracelets

**Materials**

- A piece of masking tape or duct tape large enough to slip over a child's hand.

**Directions**

1. Cut a piece of masking tape long enough to make  a bracelet to slip over the child's hand.
2. Form a ring with tape with the sticky side out.
3. Slip on the bracelet and go explore!
4. Decorate the bracelet with leaves, pebbles, flowers, seeds and other things from nature.

# Propagate new plants from cuttings.

**Materials**

Rosemary, lavender, sage, mint

**Directions**

1. Remove leaves on the bottom of the stem.
2. Place cuttings in glass containers with water in a sunny window. In two weeks, there should be roots sprouting.
3. Change the water every four or five days.
4. After roots develop,  plant directly into soil.

# Don’t forget to label your plants!





Be creative with your kids.

# Plant labels make GREAT art projects!

## Herb Poetry

These activities require about 45 minutes, and are best for grades 3-5.

**Objective:** Learners will be able to describe herbs using their senses and create a poem.

**Materials**

- Assortment of herbs or leaves, enough for each learner
- 1 blindfold for every two learners
- Garden journals
- Pencils

**Preparation:** Harvest any strongly scented herbs including sage, rosemary, lemon balm, and scented geraniums. Harvest the entire sprig instead of individual leaves.

Make sure each learner has his own pencil and garden journal.Divide the group into pairs. Students will take turns being the scribe and the sensor in this exercise.

**Activities**

1. The first student ties the blindfold over her eyes. Her partner gives her a sprig of herbs.

2. The blindfolded student answers the following prompts while the scribe writes down the answers:

- Use words to describe the scent of the plant.
- Feel the plant with your fingers. Use words to describe the texture.
- Taste a piece of the plant. Use words to describe the flavor.
- What does the plant remind you of?

3. After the first learner has finished the questions, repeat the exercise with a different plant and the second learner.

4. Use the description words to write a poem.

**Discussion from the garden:** Share the poems with the class and ask the learners, “What do you know about the herb that you didn't know before the lesson?”

# Garden Word Search for Adjectives

**(Words that Describe)**

**Objective:**

To have students read and connect adjectives to real world items in the garden that specific adjectives describe. Use the list below or add more words as appropriate – in English or any other language students speak.

**Set up:**

Write each adjective on a separate slip of paper and insert the paper in a "treasure bag" (clear plastic sandwich bag). Bring all the bags out to the garden with the students. On the next page, you will find a list you can copy and cut up for each "treasure bag".

**Word list:**

| | | | |
|---|---|---|---|
| Rough | Smooth | Triangular | Squishy |
| Dark | Light | Soft | Stringy |
| Scratchy | Hard | Rectangular | White |
| Dried | Fuzzy | Brown | Green |
| Slippery | Flat | Egg-shaped | Oval |
| Black | Round | Wrinkled | Live |
| Sticky | Long | Spiny | Heavy |

**Activity:**

This activity should take students about 15 minutes

1. Divide students in teams of two. Give each team a bag with the adjective in it. Have them read the word in the bag, asking if anyone needs help with the reading or meaning.
2. Explain that they have 10 minutes to find two items in the garden that fit the adjective and put those two items in the bag.
3. Back in the classroom select a few students to explain how their items fit the adjective in their bags.
4. Have each team write a sentence that includes both the adjective and the item they found in the garden.

Copy and cut as needed

| | | | |
|---|---|---|---|
| Rough | Smooth | Triangular | Squishy |
| Dark | Light | Soft | Stringy |
| Scratchy | Hard | Rectangular | White |
| Dried | Fuzzy | Brown | Green |
| Slippery | Flat | Egg-shaped | Oval |
| Black | Round | Wrinkled | Live |
| Sticky | Long | Spiny | Heavy |

## Making Your Own Seed Tape in the Classroom


**What is Seed Tape?**
Seed tape is a great product for planting that has seeds embedded right into it. It's perfect for planting tiny seeds like carrots that are difficult to space in the garden. The "tape" is made of biodegradable paper (like toilet paper or newspaper) which is planted directly into your garden. You can make your own seed tape for a fraction of the cost of pre-made tape.

**Why Bother With Seed Tape**
Seed tape has several advantages. No seed is wasted; the seeds are embedded into the paper tape one at a time and are perfectly spaced and ready to go into the garden. This also means that no thinning is required. They are especially useful for tiny seeds which can be difficult to plant such as radish, carrot, lettuce or parsnip.

**How to Make Seed Tape**
Use unbleached toilet paper to make seed tape. Paper towels or even newsprint would work as well, although I haven't tried them.  Cut strips of paper into 12" sections for classroom use. Label each length with the name of the seeds and, possibly, the student preparing them.

**Picking up seeds.**
Begin by mixing approximately 2 Tablespoons of white flour with 1 Tablespoon of water to make a thick paste, or use Elmer's School Glue. This will act as the glue to hold the seed in place. You want it to dry quickly so that the seed does not have a chance to absorb the water.

Unroll the toilet paper (or newsprint) into 12" strips (3" x 12" if using newsprint). Fold the paper in half the long way, and then unfold. You will be placing the seed in the middle of one half of the paper (about 1″ from the edge of the paper).

From the seed packet, determine how far apart you need to space your seeds. Don't use the distance given on the packet for planting – use the distance that the packet suggests for thinning. For carrots seeds should be 1″ apart.

**Use a ruler to guide you as you space seeds.**
Spread your seeds out onto a piece of paper. Use a pen or marker to mark the spot on the paper where the seed will go. Now, dip a tooth pick into the glue to get a small amount on its tip. Use this to pick up just one seed. Using a ruler as a guide, place the seed onto the toilet paper at the proper distance apart for the seed you are working with.

When you've seeded12" of toilet paper, add a few dots of your glue every few inches near the edge of the toilet paper and fold the paper back in half.

Rub gently to allow the paste to glue the two sides of toilet paper together.
Continue working in the same manner until you've used all your seeds, or until you've made as much seed tape as you require. Be sure to leave the paper spread out until the glue is completely dry. Store in a cool, dry spot until you're ready to plant.  This is also a good time to make an attractive, larger garden label for your future crop.

**Stashing your Seed tapes**
When they're dry, you can roll them up into a tube, or fold them into a large envelope until you're ready to plant.

**Math connections**
When children make seed tapes, they reinforce an experiential connection with "inches" and "feet."  After the tapes are planted, they can "predict" and count the days to germination to bolster their concepts of cause and effect, prediction, and data gathering if they chart the germination and growth process.

**Planting Seed Tape**
When you are ready to plant your seeds, unroll your seed tapes and plant them in a raised bed. Uncover any mulch on top of the soil, place the tape on the soil, and cover it with the amount of soil that the seed packet recommends for planting depth. For carrots, that's about 1/4″. Cover gently with mulch and water.

# Snap/Snow Peas

(Organic Oregon Sugar Pod)

## Two ways to grow them

### 1. Sprouting in the classroom

Soak all the pea seeds overnight in room-temp water.

Desktop containers can be recycled (sterilized in a dishwasher) plastic containers at least 1" tall. In each container pat down 1" of new or sterilized, MOIST potting soil. "Perfect" soil is moist enough to hold together when squeezed, but not drip water.

Have students count out 10 or 20 seeds to plant in each container. Pat them evenly on top of the soil in each container. Cover half the containers so those seeds are completely in the dark, and leave the other containers in regular light. Ask students to predict how long it will take and what percentage of seeds will germinate. It's fun to chart their answers.

In 2-5 days seeds will sprout. How many or what percentage sprout and when? Which sprouted first, the seeds in the dark or in the light? Why?

When the sprouts are about 2" tall, have students snip them above the soil level and taste them. Have them describe the flavor(s). Who guessed the right number of days and the right percentage of germination?

### 2. Direct seeding in the garden for yummy snacks in future months

Snow peas make a GREAT fall or spring crop. Germinating in one or two weeks (kids love to predict how many days till they sprout), they create 3-4' vines that produce sweet, edible pod peas in the last days of winter and early spring.

Sprouting happens best when seeds are soaked in water 24 hours before planting. This breaks down the hard outer covering and increases the germination percentage (also a good math lesson – how many of the seeds we planted actually germinated?).

In the garden, top the pea-planting area with 3" of organic compost. Have students poke 1" deep holes in the compost about 3" apart. They can measure distances with fingers: 1" = the distance from fingertip to first knuckle. 3" = about 4 finger widths. Plant 1 pre-soaked seed in each hole and cover with soil or compost. Water well.

Once they sprout, they take 60-65 days to mature. Harvest them continuously when the pods are about 3" long. The more pea pods are harvested, the more pods will be produced. Be sure to weigh and log the amount of each harvest, and wash them before kids devour them.

# Growing Microgreens in the classroom

Yummy, Healthy and Math-oriented!

## Request organic sprouting broccoli/kale/bean seeds from Yolo Farm to Fork.

1. Prepare small, clear plastic boxes or jar lids (for each student's desk) in the garden:
   - Wet the soil so that when a handful is squeezed, it sticks together, but no water comes out. If it's too wet, add more dry soil. (If the soil is too wet, the seeds will mold and not sprout)
   - Fill the bottom of the box or lid with damp soil about 1/2" deep.
   - Scatter a packet of 10 organic sprouting **Broccoli** seeds over the top of the soil in the box or lid. Gently pat them down, then sprinkle a tiny bit of soil on top of them.
   - Close the lid on a stick to keep it partially open, and have students write their name(s) and the date on the label.


2. Keep the boxes/lids in the classroom, near a window; they don't need much light to sprout, but more shade = leggy sprouts.
   - Don't water! If you're using jar lids, spritz the top with water at the beginning and end of each day
   - Track how many days it takes to have the seeds begin to sprout.
   - When the seeds sprout, open the box lid completely (or take it off; it can be reattached later)
   - When the soil looks dry on top, use a sprayer to water – just 2 sprays (if soil is too wet on top the sprouts will "damp off" and die at the soil level)

3. Track how many days it takes to have the seeds begin to sprout – lots of ways…

   - Predict, then count the days until the first seed sprouts, then count how many days until ALL of the are sprouted (10 per box)
   - Graph the number of seeds that sprout each day – in total or by each box
   - Calculate the percentage of seeds that sprout – in total or by each box

4. When the sprouts are taller than the box, snip them off with scissors (above the soil) and eat them

5. Language arts connections:
   - Vocabulary: sprout, roots, stems leaves; reading *From Seed to Plant*
   - Discussing which parts of plants we eat
   - Journaling the experience of planting, waiting and eating
   - Discussing adjectives to describe the flavor of the sprouts; how many different words can describe the taste?

# How to Grow Sweet Potatoes

## Materials

Sweet potato
Toothpicks
Jar or Vase

## Directions

1. Place the sweet potato in a container of water.
2. Keep the top 1/3 of the potato exposed by placing toothpicks into the sides.
3. The pointed end should be down in the water.
4. In a few weeks a vine with several stems will begin to sprout.

You can keep the vine growing in water, or you can transplant it into soil after about three weeks. Just carefully remove the potato, remove the toothpicks and plant it in a pot that is large enough to completely bury the potato, or you can cut off the sprouted sections of the potato and plant them in the soil.

## Growing ANY potatoes in a large container

(You can use rooted sweet potatoes or white potatoes)

1. Prepare: Cut seed potatoes into chunks having at least 2 eyes each or plant potatoes whole.
2. Fill a container about 1/3 full with a mixture of garden soil and compost, straw, or dried leaves.
3. Plant potatoes eye side up.
4. As potatoes grow and reach about 3-4” tall, fill the container with More soil. (Potatoes grow up in the soil rather than down).
5. When potato plants begin to grow flowers, it is time to harvest.
6. Either turn the container over and enjoy finding the potatoes or stop watering and dig for potatoes whenever you want some!
7. You can keep some of the new potatoes to start a new container of potatoes and eat the rest!

# Garden Gift Ideas

## Rosemary Bouquets

### Materials

- 3-4 sprigs of rosemary  4 inches long
- Doily for each child
- Aluminum foil
- Festive ribbon

### Directions

1. Cut 3-4 sprigs of rosemary for each child.
2. Wrap bottom stems in a square of foil.
3. Cut a small hole in the center of the doily.
4. Insert wrapped stem into hole.
5. Scrunch up foil to hold rosemary in place.
6. Tie a ribbon around the bouquet.
7. Let rosemary bouquets dry.

You can use the same methods for small flower bouquets, but with fresh flowers, make sure there's something moist around the bottom of the stems inside the foil.

## Pressed Flowers and Leaves Bookmark

### Materials

- Flowers and leaves
- Cardstock
- Scissors
- Glue
- Laminating plastic
- Single hole punch
- Yarn, raffia, ribbon

### Directions

1. Take a nature walk and pick some small flowers and leaves. Press your flowers and leaves by placing them inside the pages of a thick book for 3-4 days. Once your flowers and leaves are pressed and dry, carefully remove them from the book.

2. Cut some cardstock the size you'd like your bookmark to be. (about 6" x 2") Play around with colors.

3. Use the pressed flowers and leaves to make a design on your cardstock. Once the design looks good, lightly attach the flowers and leaves to your bookmark before you permanently cover them up. You could also use a glue stick.

4. Cover the bookmarks with plastic to protect them during use. They can be laminated, but you could also cover your bookmark with clear contact paper.

5. Once you've covered your bookmark, trim off the excess plastic and decorate.

## Pre-sprouting and Planting Carrots

Total Lesson Time: 30 minutes 1st day, and then 10 minutes a day for 10 days

In this activity, students will pre-sprout carrot seeds and then transplant them into pots or the school garden. Students will be interested to know that sweet-tasting carrots depend on a soil that has humus and loose soil. Loose soil is especially important for carrots because it allows the root to grow deeply and straight.

**Objectives:** *Students will be able to*

- Pre-sprout carrot seeds
- Plant them in pots or the garden

**Materials** for the class:

2 quarts water
2 packets carrot seeds
Permanent marker
1 paper cup per student
school garden, or pots
potting soil
journals
rulers
1 paper towel per student

**Doing the Activity**

1. Introduction: Discuss with the entire group the process of sowing and germinating seeds. Explain that carrots are hard to germinate and that the seeds do not live very long. Describe the process of pre-sprouting, and demonstrate how to do it:
   Demonstrate how to fold the paper towel into thirds and roll it into a tube. The diameter of the tube should be a bit smaller than the diameter of the plastic cup. Place the paper towel tube in the cup so that it rings the inside of the cup. Pour water into the bottom third of the cup. as the paper towel slowly absorbs the water, place 10 seeds between the cup and towel around the circumference of the cup.
2. Divide the group into teams of 3-4 students. Provide 1 paper cup and 1 paper towel per student and have them count out 10 carrot seeds to sprout in each cup.
3. With a permanent marker, have each student write his/her name on her/his cup.
4. Have teams help each other roll the paper towel into the cup, pour water into 1/3 of the cup, and place 10 seeds around the cup as demonstrated between the cup and the towel.
5. In their journals, have students draw a picture of the cups and seeds and write their predictions of what will happen in 10 days.
6. Place all the cups in the warmest part of the room.
7. For the next 10 days, provide time (about 10 minutes) for students to observe the seeds and record their observations in their journals. add sufficient water to make sure paper towels stay moist.
8. Student observations may lead to discussions about the germination process. Common observations are that some seeds do not germinate (count how many do and don't; calculate percentages), the seed cracks open, the root grows out of the seed before the shoots (stem), and the leaves unfurl from the stem. Encourage students to measure the growth of the roots and stems by using rulers.
9. When leaves unfurl from the stems, help students transplant the largest plants into the school garden or pots. Discuss what the carrot plants need for optimal growth. Continue to water and monitor the growth of the carrots until they are ready to harvest.

## Science Experiment: Celery in Colored Water

### Materials

- Celery stalk with leaves
- Clear jar or glass
- Red or blue food coloring

### What You Do

1. Fill a tall, clear glass or jar half-full with water.
2. Add a few drops of red or blue food coloring and mix well.
3. Trim the bottom of a large stalk of celery, leaving the leaves on the stalk.
4. Place the celery stalk in the glass or jar.
5. Watch for results over the next few days.

## Garden Collage

### Materials

- Long roll of paper
- Paint or crayons
- Large Ink pads
- Leaves  for printing or cut sponges in leaf shapes for printing
- Tissue paper flowers - two 4” squares per flower

### Directions

1. Roll out paper.
2. Ask the children to draw plants and animals in the garden.
3. Add tissue flowers. Make tissue flowers by layering two or more squares twisted from the center to create a flower.
4. Add Leaf prints. Paint back of leaves with paint or press in a large ink pad to make prints or cut leaf shapes out of sponges and print with paint.

# Finger Salads

This activity is appropriate for all ages and takes approximately 15 minutes in the garden.

**Objective:**
To give kids an experience harvesting and preparing a fun, healthy snack from the garden.

**Background:**
Edible greens eaten raw, like spinach and lettuces plus edible flowers that can all be found in the garden during most of the spring.

**Setup:**
Set out 3 CLEAN buckets ½ full of clean water at a "washing station" for harvests (unless you are lucky enough to have a washing sink and running water in your garden) Provide dressing (1 part olive oil, 1 part balsamic vinegar) in a "squirt top" bottle so washed salad ingredients can be dressed for each student harvester.

**Activity:**

1. Have each student pick one large spinach or lettuce leaf from the garden plus one edible flower from the garden. Optional: Pick a sprig of an herb such as cilantro or oregano to add.

2. Wash everything off under running water 3 times in buckets or under running water

3. Separate petals from the flower and place them on your leaf. Optional: remove herb leaves from the stem and place them on your leaf as well.

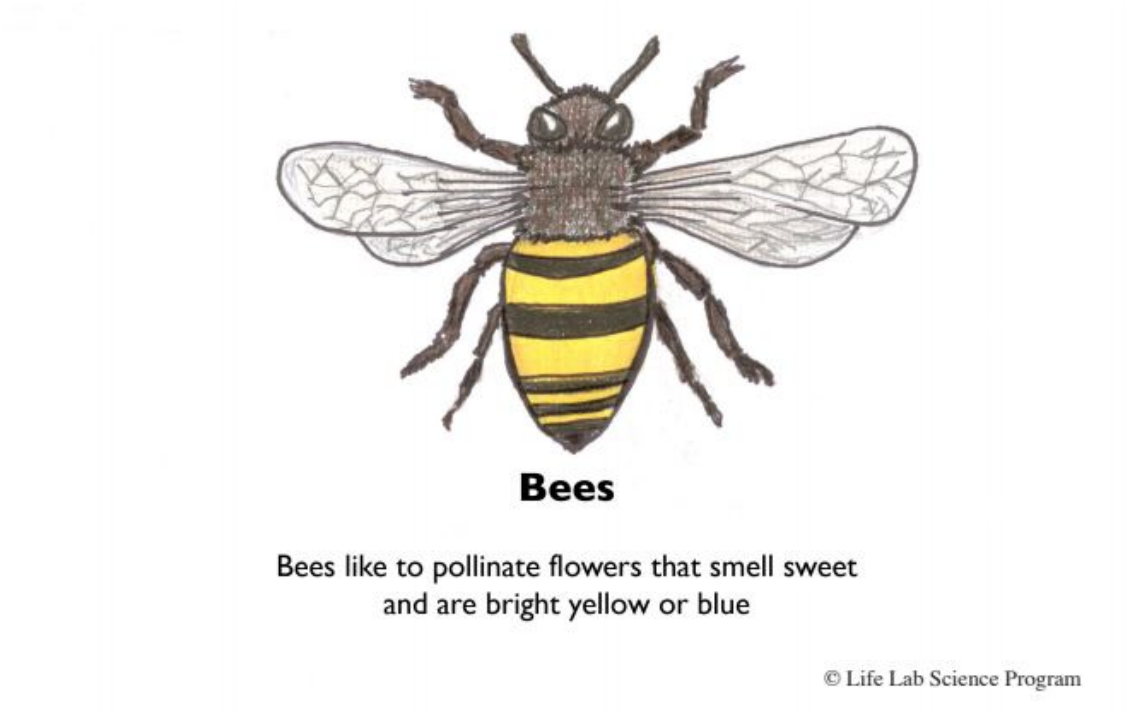
4. Squirt one squirt of dressing on the "salad" (make sure excess dressing drops on the ground instead of on clothing or arms)

5. Roll the leaf up like a taco.

6. EAT UP and ENJOY!

7. Optional: Write about the experience in a garden journal.

## Want pollinator cards for the garden?




If you would like a set of **Pollinator Cards** for your garden please contact Jewelia Flores, Program Coordinator at Jewelia.Fores@yolofarmtofork.org. We are able to print them in color for the school to laminate.

For even more information about pollinators in your garden, check out this site: http://www.lifelab.org/wp-content/uploads/2010/02/3rdGardenPollinators2016.pdf

# Mrs. Fields

https://www.mrsfields.com/blogs/blog/2013/05/edible-flowers-recipe-ideas

# ONLINE RESOURCES for Garden Learning and Development

| | |
|---|---|
| All aspects of garden development | • Life Lab a comprehensive guide including professional development opportunities: http://www.lifelab.org/<br>• Collective School Garden Network offers a comprehensive development plan for school gardens: http://www.csgn.org/steps |
| Garden lessons | • California School Garden Network, *Gardens for Learning*: http://food-hub.org/files/resources/GFLBook.pdf<br>• **Kids Gardening**. Loads of excellent lesson plans easily integrated into all areas of the curriculum K-6: https://kidsgardening.org/lesson-plans/<br>• Slow Food USA provides a "Good" curriculum for K-6 that emphasizes garden sensory experiences – especially eating from the garden. *Good* can be downloaded for free: http://gardens.slowfoodusa.org/curriculum<br>• Cornell University offers some excellent garden-learning and garden projects: http://gardening.cce.cornell.edu/lessons-listed-by-type/ |
| Starting and maintaining fruit tree orchards | **Common Vision:** http://www.commonvision.org/orchards/#tab_0<br>They have GREAT videos on tree care (especially pruning), and can come to your school if you get on their state-wide schedule for orchard installation and maintenance. |
| Garden Grants | Small grants ($100-$500) and in-kind donations can be acquired by contacting local "big" vendors like Home Depot, Lowe's, Target, Walmart, etc. Here's how to approach them<br>1. Identify and visit the manager of your local vendor<br>2. Specify your request and ask if a donation is possible. Ask if they would like to have publicity about the donation (online or print).p<br>3. If s/he responds positively, the company will likely need a letter from Yolo Farm to Fork or your school's letterhead formally requesting your donation. This assures the company that the donation will be tax deductible. Offer specific publicity if they want it.<br>4. If there is a delay, continue to contact the manager by phone or email until the donation comes through.<br><br>**Here are some foundations that offer monetary grants:**<br>Collective School Garden Network (Western Growers Foundation): http://www.csgn.org/grants.<br>YF2F will help you develop a competitive proposal; don't hesitate to ask us! |
| Bug ID by photo | http://davesgarden.com/guides/bf/ |

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