OUSD School Gardens Toolkit

A User Friendly Manual
Containing Easy to Read Chapters
On
All Components of Starting, Developing, Enhancing, Stewarding, and Utilizing
an
OUSD School Garden

Issue Date: February, 2021
Update: July, 2022
Education Programming Team @ The Center

Acknowledgments

We would like to begin by acknowledging that Oakland Unified School District rests on land originally taken from the Ohlone peoples. The land we currently occupy is Chochenyo Ohlone ancestral land, the land of Huichin, Conferated Villages of Lisjan. We pay respect to the Ohlone people past and present.

As one of the largest “landowners”” in Oakland, OUSD has a responsibility to steward this land and care for it for generations to come. We hope that school gardens are a bright spot for all to grow and flourish - human, plant, and animal.

This manual would not have been possible without the years of hard work and dedication put in by countless individuals in the OUSD community to make these gardens possible. School gardens are more often than not a passion project born out of a strong desire to round out the hard edges of a traditional urban landscape. They represent the uniqueness of the students, staff, families, and volunteers that live, work, learn, and play in and around these environments. This uniqueness and diversity is a gift. Thank you to all of the students, staff, families, and community members who continue to devote countless hours to ensure these spaces thrive.

We also want to acknowledge the many people who contributed to the writing of this manual. We started this manual in 2018 with the help of our fabulous intern and former OUSD Garfield Teacher, Annie Calef. Thank you, Annie. Thank you also to all of the folks who have contributed photos, edits, suggestions, proofreading, and revisions.

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Foreword

Welcome!

This toolkit is meant to be a user friendly manual containing easy to read chapters on all components of starting, developing, enhancing, stewarding, and utilizing a school site learning garden. The impetus of this project was to provide not only a road map but also all of the necessary content, materials, and resources for both internal and external stakeholders to navigate our systems and either plant or grow their garden project in partnership with a mosaic of school community members.

While curriculum contributes in large part to how we use our garden learning spaces, that is not the current focus of this manual. You will, however, find teacher tips and lesson ideas woven throughout. Look for them, as well as brief gardening ideas in the “Hot Tips” boxes.

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ACRONYMS AND ABBREVIATIONS

ADA	**American Disability Act**
B&G	**Buildings and Grounds**
CBO	**Community Based Organization**
CCEOF	**Climate Corps Education Outside Fellows**
CCSS	**Common Core State Standards**
CHKS	**California Healthy Kids Survey**
CSA	**Community Supported Agriculture**
EWF	**Engineered Wood Fiber (Certified Playground Fiber)**
IPM	**Integrated Pest Management**
LGMP	**Learning Garden Maintenance Plan**
MG	**Master Gardener**
NGSS	**Next Generation Science Standards**
OUSD	**Oakland Unified School District**
PTA	**Parent Teacher Association**
PTO	**Parent Teacher Organization**
STEM	**Science Technology Engineering Mathematics**
STL	**Science Teacher Leader**
TSA	**Teacher on Special Assignment**
UCCE	**University of California Cooperative Extension**
USDA	**United States Department of Agriculture**
WM	**Waste Management**

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(Photos: Garfield Elementary School Garden)

1 - INTRODUCTION

(Photo: New Highland Academy School Garden)

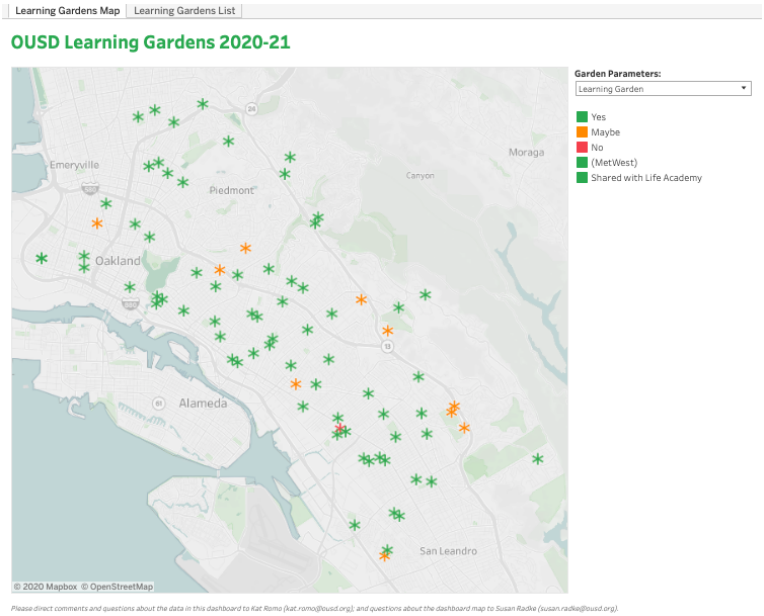
OUSD School Garden's programming is part of our District's Education and Community Programming @ The Central Kitchen, Instructional Garden, Farm, and Education Center. Our goal is to build, enhance, maintain, and beautify our school site learning gardens and provide school sites with a broad scope of programming and support. In this way we can empower site staff and students to discover the wonders of the natural world, learn about food systems and health, connect to real world applications of the Common Core State Standards (CCSS) and Next Generation Science Standards (NGSS), bring to life the California Health Education Standards, and grow and eat healthful food grown on-site. School gardens provide urban children access to nature and reflect each child's inherent right to the following:

- Access to healthy, locally-produced food
- Understanding of food systems and the natural cycle
- Social, economic and health justice
- Hands-on real world based application of CCSS, NGSS, and California Health Standards
- Self-reliance and character-building opportunities
- Connection to our local community
- Opportunities to explore the natural world
- Environmental and climate literacy and justice

Through school gardens, students become stewards of the environment and gain insight into themselves, their community and their world. This empowers them to discover the connections among personal health, education and opportunity.

OUSD is a diverse public school district, composed of 77 schools. The School Gardens program has a strong history and has continuously grown, establishing more learning gardens and garden programming throughout the year. As of the 2020-21 school year, there were 72 OUSD schools with school gardens. To learn more about school site learning gardens, garden liaisons and partner programming visit the School Gardens and Living Schoolyards Dashboard.

School Gardens and Living Schoolyards Dashboard



OUSD SCHOOL GARDENS PROGRAMMING

OUSD provides support for educational gardens in accordance with the OUSD Vegetation Policy. OUSD supports and promotes the following:

Garden Council

The OUSD Garden Council is an interdepartmental District team which meets monthly to develop and refine learning garden policies and systems, review and approve project proposals and ensure oversight and sustainability of all school gardens. See the Garden Council and FAQ for more information.

Garden Infrastructure
Each school site is supported in developing maintenance, improvement and expansion plans for their school garden. School site garden teams are provided with consultations, project proposal development guidance, maintenance and building tutorials, and when possible through grant funding, the materials, supplies and tools needed for a thriving garden. Support for site based garden maintenance and repairs can potentially be provided from the Education Programming Team @ The Center or partner CBO's. These repairs would otherwise be insurmountable for school site EFG Champions and teams.

Garden Stewardship
Each school site is supported in determining, ordering and planting culturally and community responsive plants and seeds through our OUSD Seed and Start program. These plants are grown at The Center for the benefit of school gardens in Education Team @ The Center programming. The Center is thankful for ongoing donations from many organizations such as, Urban Adamah, Merritt College Horticulture Department, UC Master Gardeners, Friends of Sausal Creek Nursery, Seed Savers, and True Leaf Market, to name a few.

Garden Community Engagement and Service Projects
Working with the Oakland Ed Fund, we match CBOs, nonprofits and volunteers with school sites for service learning days, projects and stewardship in the school gardens. We can aid in organizing, resourcing and leading the work days.

Garden Education
Each OUSD site with a FoodCorps Service Member or Climate Corps Education Outside Fellow has the benefit of a part-time educator who works with students during the school day with the support of the classroom teacher as well as potentially in the afterschool program and with site based student leadership groups such as Cafeteria Captains, Green Team and Student EFG Teams. We curate various garden education curricula and lessons as a resource offering for garden liaisons and educators interested in garden education throughout the District. We also provide a yearly workshop and training series to adults in our EFG program and host special guest presentations from local CBOs that highlight curricula and strategies for garden education.

EFG Champions/Garden Liaisons/Garden Persons of Record
All school sites in OUSD that have School Gardens are encouraged to have a designated garden Person of Record. Garden Persons of Record run the gamut of roles within our OUSD family. They can be parents, volunteers, classroom teachers, community based non-profits, or afterschool staff. We offer a stipended Environment-Food-Garden (EFG) Champion position. This role is part of our

comprehensive District-wide Wellness Champion Program. EFG Champions are responsible for stewarding their gardens and promoting student education using the garden as well as developing engagement opportunities for staff and community members. In exchange we offer support, resources, and the benefit of a like-minded community where ideas can be shared.

Interested in becoming an EFG Champion? Here is the EFG Champion Role Description.

Garden Communications & Social Media

We offer a Health and Wellness Youtube Channel with garden and nutrition based videos and tutorials as well as a monthly garden newsletter: "Dig In". The monthly newsletter highlights garden based recipes, Harvest of the Month, photos and stories, as well as upcoming events and offerings. We also curate an Education and Community Programming @ The Center website.

OUSD SCHOOL GARDENS CROSS DEPARTMENTAL COLLABORATION

As our world grows more fractured and compartmentalized we draw power across departments and work together to build bridges and leverage strengths to make positive change in our school environments and school gardens. We do this through continued collaboration, dialogue, and thought partnership with the following departments:

Facilities
Buildings and Grounds
Custodial
Nutrition Services
Warehouse
Academics
Afterschool Programming
Extended Learning

OUSD SCHOOL GARDENS PARTNER PROGRAMS

There are several programs that OUSD School Gardens currently partners with to ensure school sites have the support needed to steward the garden and provide garden education.

FoodCorps

Foodcorps is an arm of Americorps and accepts service members for a service period of 1-2 years. Their mission is to work with communities to connect students to healthy food. Their vision is to

“create a future in which all our nation’s children—regardless of race, place, or class—know what healthy food is, care where it comes from, and eat it every day.” There are three main prongs of their work. They include enhancing a culture of health, teaching hands on classes with students, and connecting key learnings and leadership in the cafeteria environment. In OUSD a large part of their work is working with students to grow their own food in the school site learning garden. With the help of their FoodCorps Service Members, students grow, harvest, cook, and eat wonderful garden fresh produce year round.

Climate Corps

Climate Corps is an arm of Americorps and was a new partnership in OUSD in 2019-2020. Climate Corps Education Outside Fellows (CCEOF) “teach garden-based science and environmental literacy lessons to inspire the next generation of earth stewards.” Our Fellows plan and teach ecoliteracy lessons to 2 elementary schools in OUSD. They also work to build, enhance, and promote beautiful and robust green schoolyards and outdoor learning spaces for students' connection to the environment. Lastly, CCEOFs activate community and volunteer power to develop lush outdoor classrooms.

UC Master Gardeners

UC Master Gardeners are University of California Cooperative Extension (UCCE) trained volunteers. They are residents of our community that give back year after year to provide UCCE researched-based horticultural information to individuals in their communities and throughout the state. Since 2017-2018 we have been working to strengthen and grow our partnership with the UC Master Gardeners (MG) school cohort. Under the leadership of Devra Laner, our MGs mentor Garden Stewards, provide expertise and reviews of literature and resources, and work collaboratively with us on providing plants, seeds, and trainings. EFG Champions and Corps Members who want a mentor from the school garden Master Gardener cohort can request one here.

Growing Together & Common Vision

Growing Together’s mission is to green our community’s schools and neighborhoods. They work for the health and sustainability of school communities through schoolyard greening, growing school gardens with youth, and increasing access to fresh food. This organization aims to support young people to connect with the living world around them.

Common Vision’s mission is creating a healthy and just society by growing fruit tree orchards in low-income schools and envisions a world where sustainable agriculture provides all people with access to high quality and culturally appropriate foods; a world where agriculture is a tool for reversing climate change and supporting social equity.

Growing Together & Common Vision provide site stewardship for former installations and/or tree plantings, as well as irrigation repair, plant/tree replacement, other maintenance, training/consultations, or other services related to ongoing maintenance as requested by sites at the direction of OUSD School Garden program. They are also planning to provide outdoor learning and garden education professional development for classroom teachers and the school community.

Community Based Organizations (CBOs)
Oakland is home to a wealth of garden and food justice organizations. We partner with several Oakland CBOs to support our school site learning gardens.

2 - GETTING STARTED

> Students are able to apply what they learn in the garden to everyday life, and it's a good experience for students with hands on activities.
> – MLK Staff on Garden Education

A successful school garden requires an all hands on deck approach. Administrators, teachers, custodians, cafeteria staff, support staff, students, parents, and community members are all critical to the development and maintenance of a thriving garden. This chapter will help you build the social infrastructure you need, provide tips on how to navigate your school site, learn more about the staff, community, and students' interests, and develop a successful garden team.

NAVIGATING THE SCHOOL SITE

Whether you are a long time staff member or a new community partner, it can take time to learn who can provide support for the school garden, and what resources you have access to. During your first meeting with your school leadership and instructional and support staff, it is helpful to get clarity on resources and protocols that will impact your garden work.

We have created a ***School Site Garden Quest*** to help guide your conversations with your colleagues and allies. It can be accessed as a google form or in document form.

SURVEYING STAFF AND STUDENTS

Every school-site community is unique, and understanding its diversity is key to developing a learning garden that is culturally responsive. There are many ways to learn about the school site where you work.

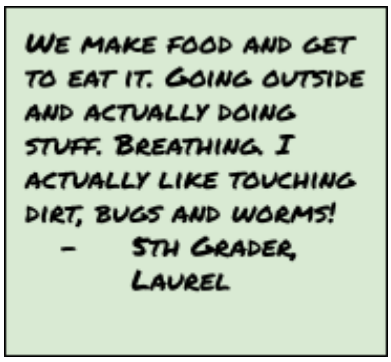
- **OUSD Data** - OUSD Fast Facts provides a snapshot of our District as a whole. The Enrollment Dashboard and a suite of other dashboards at www.ousddata.org can provide valuable information about your school site.

- **CHKS Survey -** All OUSD schools participate in the annual California Healthy Kids Survey (CHKS). CHKS provides information on a variety of health and wellness topics, including school climate and culture, physical and mental health, and social emotional learning.

- **Survey Veteran Staff and Community Members -** You may find that the custodian has been at the school longer than the principal. There may be staff members such as classroom teachers or afterschool educators that helped build the garden or come to the garden regularly to teach classes. Ask around! Has there been a garden on site before? Have community groups used the space? What has been successful for this community in the past? Are there existing clubs or groups that come into the garden? Here is an example survey designed by Joaquin Miller's Garden Steward.

- **Present at a Staff Meeting -** Share your findings, ideas and plans about the garden at a staff meeting. Get input, drum up participation and build excitement.

- **Talk to Students -** Ask students what their dream garden would look like. Let them draw, build, play with materials to envision the garden. Make it a contest! Students can share their garden ideas with the school and community. Meet with any student leadership groups.



- **Reach Out to Parent Groups -** If your school has an active Parent Teacher Organization (PTO or PTA), contact them! They will often be a critical ally in fundraising and organizing volunteers.

- **Follow Existing School Outreach Programs -** Does your school offer English, Zumba, or other classes to parents? Which parents and guardians serve on the School Advisory Councils? Are there parents that cook for fundraisers that you could reach out to? Is there a parent center? Is there a parent liaison? Active parents and guardians can provide important insight on how to link the garden to communities outside of the school (e.g. planting culturally relevant produce).

DEVELOPING A TEAM

Your garden team, or garden committee, will be your greatest support. The size of a garden committee is up to you, but four to six members is generally sufficient. These members will help with everything from weeding to envisioning, building garden beds to teaching classes. It is best to recruit a diverse group of team members with a range of skills and backgrounds and a range of roles in the school community. Below are some school roles that typically align with garden work and can serve as important assets:

- School Principal

- Teachers (ideally from different grade levels or content teams)
- Science Teacher Leader (STL)
- Parent Engagement Staff Member
- PTO leader or member, parents and guardians
- Community School Manager
- Members of local community organizations (e.g. Mandela Marketplace, Master Gardeners)
- Students (e.g. members from student council, Green Team, Cafeteria Captains, service learning group, or interested individuals)

Consider developing a student based garden team to help steward the garden, develop challenges, and build enthusiasm with the larger student population. Teams that have been developed in the past are student wellness councils, after school garden clubs, or lunch time student garden committees.

BUILDING YOUR TEAM'S CAPACITY

Once the Garden or EFG committee is formed, members will work together to determine operating procedures.

Here are some key questions to get you started:

1) What are the key roles and responsibilities of individual members (facilitator, communications, process checker, notetaker, timekeeper, etc.)
2) How often will you need to meet? Perhaps you will need to meet more while getting started and less when the business of building truly begins.
3) How will you communicate with each other in between meetings?
4) How will communication out to your administration and community at large be conveyed?
5) What is the mission and vision for your school garden?
6) Will your garden have a name? How will it be decided?

(Photo: REACH Academy classroom teacher who uses the garden to teach her kindergarten students about nature and also is considered a "team member" of the garden. She is helpful to service members navigating the culture of the school and garden.)

CONNECTING WITH CENTRAL OFFICE SUPPORTS

Now that you've laid the groundwork for a strong site-based garden team, it's time to reach out to OUSD School Garden Programs for support in navigating the complex ecosystem of OUSD. Once you've built your team, the exciting, and challenging, work of building your dream garden can begin! In the next chapter we discuss all of the ins, outs, and nitty gritty of building, expanding, or revitalizing your school garden.

Here are a few steps to get you off and running:

- Read our OUSD Vegetation Policy
- Review our OUSD Material Standards
- Identify who will be your EFG Champion
- Contact OUSD School Gardens with questions or for more information - kat.romo@ousd.org

(Photo: WOMS School Garden)

(Photo: Roosevelt Middle School Completed Garden Expansion)

3 - BUILDING YOUR SCHOOL GARDEN

Whether you are starting a new OUSD school garden or beginning work in an existing one, you will likely face many questions regarding the construction and design of the learning space. **This section will provide guidance on building your garden, garden best practices and OUSD specific regulations.**

DESIGNING YOUR GARDEN

Selecting a layout for your garden is an important first step to constructing a space that is best suited to the needs of your school site. It's helpful to consider natural forces, accessibility, and your school site's map and design.

Site Considerations

A site assessment of sectors, natural forces that affect a site, will provide valuable information about the ecological and community context of your garden. Gathering data about these sectors will allow you to design a realistic and sustainable garden.

Sector	Detail
Usage	Usage influences all elements of your garden design. It provides us with the how, who, why, and what. ● *Who will be using the garden?* ● *When will it be used?* ● *What will it be used for?* ● *How many students will use the garden?* ● *How many students do you expect to have in the garden at one time?* ● *How big is the largest class in the school?* ● *Are there students or classes that serve students with special needs?* **Why is this important?** This topic is really the underpinning of the project. The investigation of this topic will influence all of the following sections. Keeping the who and why in focus is paramount.
Prevailing Wind	A Wind Sector analysis tells us about the direction and speed of the wind. Prevailing winds are the regular winds coming into the site. In most sites in coastal California, the prevailing winds come from the northwest. ● *Where does the site's prevailing wind come from?* ● *What characteristics describe the wind? Gentle or strong, cool or warm, moist or dry? How does it change with the season?* ● *Why might the wind have these characteristics?* ● *With wind, comes rain (ideally!), what directions do your regular rain storms come from?* **Why is this important?** Knowing the wind patterns can help you determine where to locate your garden and/or what structures to put in place or plants to grow to provide wind buffers. For example, in one school garden, beds have been placed between two buildings, the walls of which create a wind tunnel. The high amount of wind has made working in the garden unpleasant and difficult.
Fire Danger	In our ever-changing world, fire is becoming a real and persistent threat. Winds in the dry season can bring fire danger. Fire can also come from sparks from nearby homes or roads, as well as, cigarettes, fireworks, and cars.

	• *Where might fire come from?* • *How will you manage your garden debris to ensure they don't become a fire hazard?* **Why is this important?** Analyzing where fire could come from helps us better develop our landscape plan such as, what plants to grow where, where to place hardscape, non-living elements like paving stones, decomposed granite, etc., what areas should be cleared regularly of debris, etc. For example, one school sits across the street from an illegal dumping area and place where people would let off fireworks. This needed to be considered when thinking about where to place the garden and how to manage the debris, especially in hot, dry summer months.
Water Movement	Understanding how water moves through the site will help you avoid undesired standing water and develop a comprehensive plan for watering. • *Where does water run through the property?* • *Where does it pool?* • *Where is it absorbed?* **Why is this important?** This information will help you plan for your irrigation system and watering frequency. It will also give you important knowledge for building out water catchment systems and how to focus efforts on how to "*slow, spread, and sink*" water on your site through building your soil, developing contours, putting in bioswales, and planting appropriately adapted plants to the differing areas of your garden site. (Permaculture Apprentice, "Water Management for Every Permaculture Farm.") For example, at one school they placed the garden in an area with a downward slope so water began pooling in the garden. They managed this by adding a bioswale.

Animals/Wildlife	Animals and wildlife can be both beneficial and detrimental to a garden. On the one hand, your garden can be a crucial source of habitat for wildlife in a world that is increasingly inhospitable to their needs. On the other hand, animals can cause potential health risks in the garden and consume growing plants. ● *Are there animal trails through the site? Scat?* ● *Have animals been reported in the area previously?* ● *What birds do you see? Where are they going?* ● *What insects have you observed?* ● *Have you seen lizards, snakes, or amphibians?* **Why is this important?** When properly assessed the garden team can work to create or transform the learning garden into a certifiable wildlife habitat further strengthening the draw of the garden as a site for interdisciplinary studies and increasing students' opportunities for connection to the natural world. This assessment can also lead to problem solving around issues of produce contamination or degradation.
Desirable or Undesirable Views	Consider sitting in various areas of your garden. Access the current vantage point to determine if there is something you would like to showcase or something you'd like to hide. ● *Are there any views from the site that you would like to preserve or enhance?* ● *Are there any views that you would like to block (e.g. street views or chain link fence next to public areas)?* **Why is this important?** When designing your garden space you will want to create various outdoor "rooms", areas of interest or sitting spaces. Think of the view that each area has as the wall of your room. Certain things about your current physical space will most likely be of interest while others may be eye sores. This lens will greatly influence your plant selections and other design elements.
Climate	Climate information can easily be found online by searching for your city and "annual climate." ● *What are the average temperatures throughout the year? Average high and low temperatures?* ● *What is the average rainfall throughout the year? Average high and low rainfall?* **Why is this important?** This information is crucial for developing your plant lists. Without proper

	consideration of climate you may end up with plants that are ill-suited to your landscape and will therefore fail to thrive. With proper consideration you will select plants that are suited to the various microclimates within your learning garden and your plants will thank you for it.
Topography and Aspect	Topography refers to the changing elevation of the land, and aspect refers to the direction a slope is facing. ● *Is there a slope on your site?* ● *In what direction does it slope?* **Why is this important?** Analyzing the topography of your land will help you plan for mitigating potential soil runoff and erosion that can happen depending on the slope of your site. The slope can also affect soil moisture. Slope can also affect the temperature or micro-climate of the areas as well as the sun access resulting in the need for proper plant selection.
Size	Size is a basic first step in drawing out your garden plan. ● *How big is the garden?* ● *Are there areas available for expansion?* ● *Is it big enough for an entire class to work in?* ● *Are there meeting areas for the class?* **Why is this important?** This will influence the usage of your garden as well as the scope of what you can accomplish within your garden space. It may also lead you to consider other areas of the school for pocket gardens or interesting ways to consider size limitations and potential. It's useful to think this topic through at the beginning to mitigate problems further down the road.
Shade and Sun	It is imperative that school garden designers observe patterns of sun and shade in the garden to determine layout. OUSD strongly encourages school gardens to provide shaded areas for students. ● *What areas are currently shaded in the site?* ● *Where might you place a shade structure or shade trees?* ● *Where are your sunny areas? Your shady areas? Your partial shade?* ● *How will you design accordingly?* **Why is this important?** Without a shady place to gather in the outdoor learning space students and other users will find it difficult to maintain focus and interest. Selecting

	appropriate plants for appropriate conditions is crucial to crop/planting success.
Soil	Soil is a critical part of your school garden. The health and purity of your soil will impact how your plants grow and whether students are allowed to consume them. ● *Has your soil been tested for heavy metals and the like?* ● *Is your soil loamy, silty, sandy, or clay?* ● *Does your soil have the proper nutrient composition?* **Why is this important?** In order to have your garden produce thrive and provide healthy food for the community the gardener will need to know what type of soil they are dealing with and what, if anything, needs to be done to augment or rejuvenate it.

Adapted from the Occidental Arts & Ecology Center's School Garden Teacher Training

Accessibility Considerations

OUSD is committed to ensuring that all students have access to rigorous and joyful learning opportunities. When designing your garden, it is important to consider accessibility guidelines to ensure that students, and staff, of all physical abilities are able to enter, engage with, and enjoy the learning garden.

Pathways

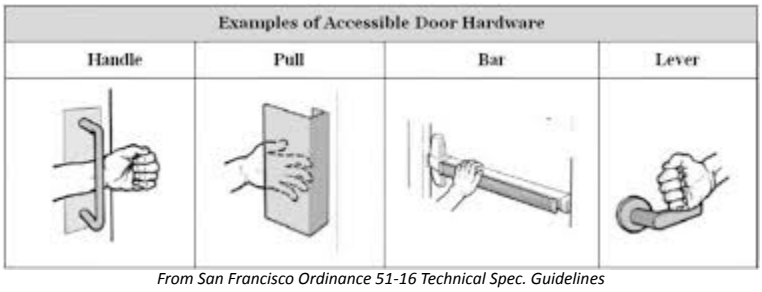
In order for pathways to be wheelchair accessible, they should be as **flat** as possible, not exceeding a 1 foot rise for 20 feet of length. Paths should be at least **three feet wide for one-way traffic** and at least four feet for turning wheelchairs 90 degrees.

Wheelchair accessible pathways should be firm, stable, and slip resistant. Materials include:

- Concrete
- Concrete pavers
- Crushed pea gravel or decomposed granite
- Certified Playground Fiber (EWF)
- Mowed pathways
- Dirt

Entrances/Exits

Garden gates should have accessible handles, swing easily, and provide ample space for an individual in a wheelchair to open the gate and enter.



From San Francisco Ordinance 51-16 Technical Spec. Guidelines

Bed Design

At least one raised bed should meet ADA table requirements, with a **wheelchair accessible height (24" min. to 36" max.)**. If using a raised table design, use the recommended 27" minimum from the floor to the bottom of the table for **knee clearance**. Another option is to create a roll in space in the garden bed allowing for the wheelchair to park under the bed for ease of use. Placing an ADA compliant bed near the entrance or exit will further help with accessibility.

Other Considerations

In addition to raised beds, **vertical** and **container gardening** can also be used to increase accessibility. Growing on trellises or a-frames, vertical gardening supports individuals that are unable to bend down. Container gardening relies on pots that are light enough to be lifted onto work stations.

With an **ADA accessible potting or work table**, students can engage with potted plants as well as harvesting and other activities.

Hot Tip: Think about ways to plant vertical in the garden. Trellises add not only more space for growth but also a different dimension to the look of the garden space. Many plants prefer to grow up and vine, think about peas, grapes, or pole beans.

SCHOOL GARDEN MAP AND DESIGN CONSIDERATIONS

Hot Tip: Students can help design their dream garden by doing visioning work, drawing their ideas, and helping with measuring and mapping.

After you have assessed your site and reviewed ADA considerations, you can consider what components you wish to include in your garden and begin to draw a site map. OUSD Education and Community Programming @ The Center can be helpful and provide consultancies as you face major decisions, including:

(Photo: Community work day at WOMS School Garden)

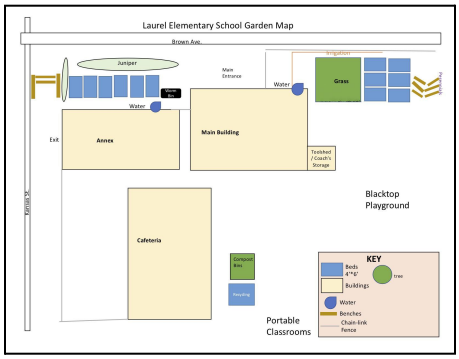
- Where will you place your garden on campus?
    - What are the site's traffic patterns and access routes?

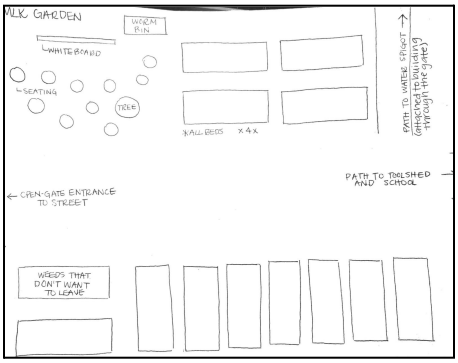
    - How is the site used during different times of day and year?
    - How would trucks access the garden?
- How big will the garden be?
- How many raised beds can you have and/or handle?
- What size will each bed be?
- How will you lay out the garden beds?
- Will you build fences?
- Where will your water source be located?
- Where will you store your tools?
- Where will you place:
    - Learning kitchen?
    - Compost bin(s)?
    - Harvest/washing areas?
    - Perennial plants?
    - Classroom area (requires seating, shade)?
    - White board?

Questions adapted from [Slow Food USA Garden Manual]

While your school administrator may give you full control of the garden layout, all OUSD gardens must be constructed according to [OUSD Materials Standards] (see pages 11-12 of the document) and with American Disability Act (ADA) regulations in mind.

School Garden maps are a collaborative and logistical tool. Invite students to design their ideal garden, and incorporate elements into your design. When it comes to the final product to guide your landscaping decisions, school garden maps can be drawn by hand or created on the computer. View examples of





[School Garden Maps].

GETTING APPROVAL FOR YOUR GARDEN

Issue Date: February, 2021
Update: July, 2022
Education Programming Team @ The Center

Installing a new garden or making major changes to an existing one requires approval from the OUSD Garden Council facilitated by Kat Romo on behalf of Education Team @ The Center. All proposals related to garden creation, improvement and renovation must be submitted via the OUSD School Garden Improvement Projects Form.

The OUSD Garden Council meets once per month to review proposals. See the calendar and FAQ.

Make sure to remember that there are often follow-up questions and work to be done on the project proposal prior to approval. If you need consultation or assistance with the project planning, email kat.romo@ousd.org prior to submission. To get more concrete information on what to include in your proposal refer to these exemplary proposals:

- CUES/Futures Garden Expansion Proposal
- Laurel Elementary Garden Expansion Proposal
- Peralta Elementary Garden Expansion Proposal
- Joaquin Miller Elementary Garden Expansion Proposal

Hot Tip: Have older students work on the project proposal with you. Once submitted, give students an opportunity to practice their public speaking and presentation skills by presenting their idea at the monthly Garden Council.

The formal approval process begins with the OUSD School Garden Improvement Projects Form. The form asks you for your information, contact information for any partners that you might be working with, details about the project, and prior approval received from the school site administrator. It provides three options: new garden, garden expansion/new structure build, and garden removal. After you select the option that matches your project, you will be asked to provide greater detail on your process and materials for the project as well as your compliance with the OUSD Vegetation Policy and OUSD Material Standards. The form is particularly focused on the OUSD Vegetation Policy due to longstanding best practices and the need for school site stewardship of school gardens.

Once submitted, the form is sent to the OUSD Garden Council, which includes staff from OUSD Learning Gardens, Buildings and Grounds (B&G), Facilities, and Custodial Departments. The Garden Council meets once a month to review proposed projects and collaboratively determine each project's compliance with the OUSD Vegetation Policy, OUSD Material Standards and OUSD Volunteer Policy (if applicable), as well as its overall feasibility both in the short and long term. Should any issues arise, questions and feedback will be sent to you for project revisions and adjustments. **Work on your project should not begin until you have received explicit approval from the Garden Council.** The Garden Council will notify you when your project has been approved. Be sure to include the approval process in your timeline as it is easily a multi-month process.

BUILDING BEDS FOR YOUR GARDEN

(CUES/Futures Garden Expansion Project a partnership collaboration with the school site, Climate Corps Fellow and Growing Together, and OUSD)

Most school gardens will benefit from raised beds. In addition to increasing accessibility for students with differing physical abilities, raised beds can also reduce weed pressure and provide high soil fertility in the first year. As you plan to build raised beds, it is important to remember the previously mentioned accessibility considerations, as well as consider the materials used and sizes. Benches, arbors, gateways, outdoor counters, potting benches, etc. are other building projects that folks may be interested in when planning, reimagining, or expanding their schools' learning garden. While moveable benches do not usually require approval from the Garden Council most permanent build projects do. Make sure to include them in your project proposals.

OUSD Buildings & Grounds Role

The OUSD Vegetation Policy states that Buildings and Grounds (B&G) will not break down existing beds or help build new ones. While B&G will not provide lumber, they will, on occasion, cut lumber to size if you can bring the lumber to their offices on High St. Be sure to contact kat.romo@ousd.org to help you see if this is a viable option at the time of the request.

Types of Lumber

Redwood and cedar make excellent garden beds because they are naturally rot resistant. While cedar may be cheaper initially, redwood lasts longer and tends to be more economical in the long run.

In OUSD, use of pressure treated wood is expressly prohibited because the chemicals used could enter the soil. Similarly, old tires and railroad ties cannot be used. Here are some, not all, examples of pressure treated wood:

(Green Tinted Pressure Treated Wood)

(Pressure Treated Wood w/ Incise Marks for Deep Penetration)

Where To Get Lumber

- *Ask, ask, ask!*: If your school has existing garden beds, ask veteran staff members if they know where the lumber was previously acquired from. Ask your school secretary, principal and/or Community Schools Manager if there are any parents or partner organizations that might be able to donate lumber.
- *Craigslist*: Sometimes you can find cheap or free lumber on Craigslist. If you do decide to acquire lumber through Craigslist, be sure to bring another person with you when you pick it up. Make sure it's redwood or cedar.
- *Economy Lumber*: Located on High Street near OUSD's warehouse, Economy Lumber offers many options at reasonably affordable prices and is an approved OUSD vendor.
- *Lumber Baron*: Located in Albany, Lumber Baron also provides an exceptional selection of wood.
- *Urban Ore*: Urban Ore receives and sells salvaged goods. There is a building materials exchange as well as a general store with recycled household goods.
- Link to OUSD Garden Resource Map

Size of Garden Beds

- Generally beds that are 4' by 8' are sufficient for students and easily built using standard lumber cuts.
- With younger students, smaller beds (3' x 5' or 3' x 6') are even better. This way the wee ones can easily reach across the beds for planting, weeding, and watering.
- Beds should be at least 12" tall.
- Beds that are 2' or taller also offer greater accessibility to students in wheelchairs.

Hot Tip: Though it might be tempting, refrain from painting the garden beds. The paint may be toxic for plants or soil, and it requires unnecessary labor of touching up the paint in years to come.

- It is also important to consider the root depths of the plants you will be putting in the beds.
    - While some veggies have root depths of 12” many require up to 36+” to properly grow and flourish.
    - If you are interested in keeping the entire root system in the imported soil you have planned for your raised bed, the depth of the root system will need to be taken in account.

SOIL CONSIDERATIONS

Soil is what sustains us. It can grow the healthy food we eat ***and*** it can suck tons of carbon out of our air. In our mild climate it takes 200-400 years, yes years, to build one centimeter of soil. That's a long time. Precious, right? Unfortunately, we are losing too much of it and much of the soil we do have is degraded. Did you know that, "our most significant non-renewable geo-resource is productive land and fertile soil. Each year, an estimated 24 billion tonnes of fertile soil are lost due to erosion. That’s 3.4 tonnes lost every year for every person on the planet"[1].

(Photo: Greenleaf Students Explore Soil through Mud Experiments)

Soil is a critical part of your school garden. The health and purity of your soil will impact how your plants grow and whether students are allowed to consume them. **Soil amendments** are any materials added to your soil to enhance or enliven its physical properties. They are an important way to maintain healthy soil for planting. **Carbon farming** is a method of taking carbon dioxide in our environment and bringing it out of the atmosphere to the soil for storage. It not only helps mitigate climate change, it also helps our plants. This process is called **carbon sequestration.** We recommend employing the six practices highlighted below in your school garden.

Six Main Practices of Carbon Farming[2]

1. Feed your soil with compost
2. Maximize continuous living roots
3. Keep unplanted areas covered with mulch (though leave a patch of bare earth for native bees)
4. Minimize soil disturbance
5. Avoid synthetic pesticides, herbicides, and fertilizers (follow Healthy School Act requirements)

Hot Tip: Make soil testing a lesson! Soil test kits can be purchased and used with students. Or try methods of testing the textures of soil to determine what kind of loam is present. Most students will love spending time digging in the soil.

[1] globalagriculture.org

[2] (Practices extracted from https://www.stopwaste.org/at-home/home-gardening/carbon-farming. Read more on their webpage!)

6. Maximize biodiversity

Testing Your Soil

Whether working with new soil or existing soil, it is important to test your soil to determine what amendments to add and ensure that the soil is free of any contaminants (including metals, poisons, organic material). Check out this list of labs that will analyze your soil sample. Often, labs will ask you to follow a specific protocol for gathering the sample so check with your chosen lab before mailing the soil.

Soil Amendments

Where To Get Soil and Amendments

- *Playground Fiber (mulch), Soil, and Compost*: Kat Romo, OUSD Garden Coordinator, can arrange for purchase and delivery to OUSD schools. For 2020-2021 all the aforementioned landscape materials are sourced through Bee Green in Oakland. Requests must be submitted **two-three weeks in advance** of the desired delivery time and include the type of material as well as the **cubic yards** desired. The form below must be used for all landscape materials requests.
    - OUSD Garden Landscape Materials Order Form
- The City of Berkeley offers free compost to ***residents*** the last Saturday of every month at the Marina. Bring your own bags (or truck!) and shovel. Other cities may offer this or similar services. Check with the Department of Public Works where you reside.
- *Other Amendments:*
    - Straw Bales: Straw Bales may be used as mulching but is not encouraged for seating in the garden due to potential rodent issues. Straw bales are sourced for the 20-21 year through Biofuel Oasis in Berkeley. *Do not use hay.*
        - A thin 2 inch layer of straw may be placed on the top of beds for moisture retention and weed abatement.
        - All loose straw needs to be swept consistently
        - Only order what you will spread.
        - Use this form: OUSD School Garden Landscape Materials Order Form
        - Straw bales ordered through the above form must be picked up by the school site from The Center. .
    - Worm Castings: Also known as vermicast, worm castings are earthworm manure. They improve soil aeration, drainage and water retention. Worm castings are made during the vermiculture process.

Hot Tip: Students love to learn about worms! Have students observe worms and learn about their behaviors and anatomy. Discuss what they do for the soil. Compare and contrast worm castings with other soil samples. Learn about other decomposers commonly found in compost piles.

- Worm Tea: Worm tea is made by steeping worm castings in water. It provides an array of nutrients and helps cultivate beneficial microbes in your soil.

(Photo: REACH Academy students explore worm characteristics with worms from their school worm bin)

Both worm tea and worm castings are the result of vermicompost (composting with worms). Sonoma Valley Worm Farm, https://sonomavalleywormfarm.com/products.php, is a trusted source of vermicompost, worms, and worm tea and is an OUSD vendor.

Setting up a compost bin provides rich soil amendments and "closes the food loop" at your school - demonstrating how food waste provides necessary nutrients for future growth. Vermicomposting is quite suitable to the school environment, is easy and is much loved by students. Please see the section below, "On Site Composting" for more details.

- **Always receive approval from your principal before delivery** of landscape materials. They often require substantial space and spread of the material can take time and be unpredictable.
  - All soil, compost, and wood chip piles must be at least 10 feet from buildings
  - Mulch/compost must be covered with a tarp after delivery
  - Delivery must be placed away from play areas and high traffic zones
  - We aim for a one and done approach. This means order only what you can spread in a 24 hour period. You can always order again.

Cover Crops[3]

Another way we can steward the soil is by using cover crops. "A **cover crop** is a **plant** that is used primarily to slow erosion, improve soil health, enhance water availability, smother weeds, help control pests and diseases, increase biodiversity and bring a host of other benefits to your farm"[4] (SARE). They also improve crop yields and attract pollinators. Any planter bed that is not currently being planted for an edible crop should be planted with cover crop. Also, if you have noticed that certain beds aren't producing like they used to, give them a rest and plant a cover crop.

Controlling Weeds

[3] Information regarding cover crops found from "Soil Fertility and Erosion" (https://www.globalagriculture.org/report-topics/soil-fertility-and-erosion.html) and Edible Schoolyard Pittsburgh Lesson Plan: "Turning over Cover Corps" (https://drive.google.com/file/d/1QJCzLAIRwx_VmwnyQQSECvMsLc9tcL2T/view?usp=sharing)

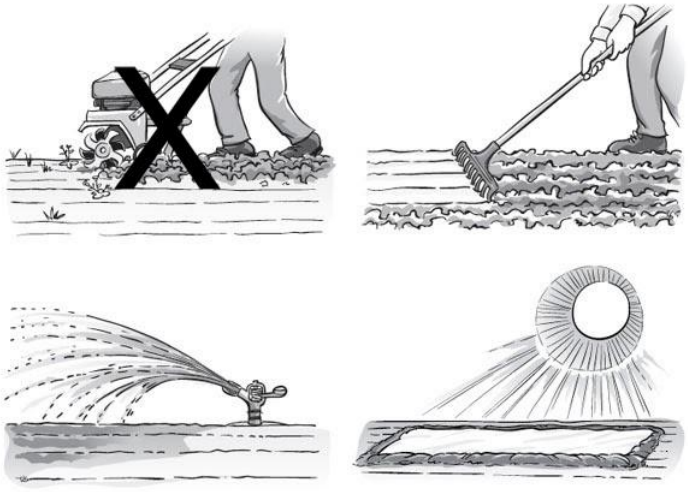
[4] "Cover Crops for Sustainable Crop Rotations": https://www.sare.org/resources/cover-crops/

Weeds can be controlled by a variety of organic methods.

- *Sheet mulching*: Use an organic, biodegradable material, such as cardboard, as a weed barrier. Cover the cardboard with approximately 4" to 6" of compost, followed by at least three inches of mulch. Alternatively, you can skip the compost layer by spraying the cardboard with water and placing mulch on top. The cardboard **must** have **all** staples and tape removed. It should not be glossy or have any plastic components. **Brown corrugated cardboard** is recommended because it is the least processed paper product.
- *Straw:* A thin layer of rice straw on top of beds can help reduce weed growth. Because straw can compost quickly, it is important to check the straw every six weeks and add more straw as needed. Do not use hay because it may contain seeds that can create potential problems in your garden site. Use this form to order straw:
- OUSD School Garden Landscape Materials Order Form

(Photo: School Garden Training @ OAEC)

- *Soil Solarization:* Solarization controls weeds without using chemicals by heating the soil over a period of four to six weeks in order to kill any soil borne pests. Beds are covered with a plastic tarp during hot months (normally August) in order to trap solar energy and heat the top 12 to 18 inches of the bed to a temperature in which many weeds, pathogens, and insects cannot survive.



Soil Solarization Example[5]

TOOLS

There are many different types of garden tools for each type of garden activity.

Basic Gardening Tools

(click link to see photographs and descriptions of basic tools)

- Garden trowels
- Gardening gloves
- Hose and Nozzle
- Watering cans
- Wheelbarrows
- Turning forks
- Tine bow rakes
- Square tipped shovels
- Round tipped shovels
- Pushbrooms
- Pruning shears
- Water key

OUSD Learning Garden Tool Lending Library

[5] For more information: UC ANR, Statewide Integrated Pest Management Program

Our OUSD Learning Garden Program has created a district school learning garden tool lending library. We have a limited amount of tools available to check out for school garden work days and/or educational events. See the tool lending library form for a list of the tools. Tools are available for those currently operating as stipended OUSD Garden Stewards, FoodCorps Service Members, or Climate Corps Education Outside Fellows.

Contact Kat.Romo@ousd.org for more information **or** complete this request form: OUSD School Gardens Tool Lending Library. Tools need to be picked up and returned on prearranged days subject to availability of the program. We are not delivering tools at this time. All tools must be cleaned before return. See Tool Cleaning Guidance.

Where To Get Garden Tools

Tools can be purchased, borrowed from community partners or parents, or borrowed from tool lending libraries.

- Oakland Public Library Tool Lending Library
- Berkeley Public Library Tool Lending Library
- Link to OUSD Garden Resource Map

On-Site Compost Systems

Maintaining an active composting system not only ensures a steady stream of compost for your garden but can also serve as a valuable educational resource, reduce the amount of hauled away organic material, improve on proper waste sorting systems on the campus and help close the loop. Making and using compost in your garden is a valuable way to help remove carbon dioxide from the atmosphere.

There are various methods of composting and systems to consider. While considering the systems available please assess what works best for the space, the team's capacity, potential for student involvement, the use and purpose, and the volume of material. Different systems require different levels of maintenance and commitment. No matter what system is selected it will need regular maintenance and oversight to keep it productive and pest free.

Building a Composting System

A composting system can be in the shade or sun. Old pallets work well for constructing a compost bin or bins can also be purchased. Below are different composing system options to consider.

In Vessel Units

- **Double barrel*** -This type of unit allows composting to be at two different stages and keeps rodents out. Single barrel options are available as well but the double is ideal for being able to stagger organic material. (**highly recommended*)
- **Earth Cube**
- **Drop and Dig**
- **DIY wood three bins**
- **Wire Compost Bins** - This type of bin, illustrated to the right, is cheap and easy and is perfect for leaf collection to then be composted.
- Subpod Grow Bundle

There are a variety of new products coming out that have potential to serve well in a learning school garden. Know that some systems can be more challenging than others or might not meet the needs of the school's garden. The Garden Council, which meets monthly, can assist in reviewing options and making recommendations. Any system needs to be approved by the OUSD Garden Council.

Per the OUSD Vegetation Policy, during the summer, all composting systems must be harvested, secured to limit access, and free of food scraps that might attract rodents.

Five essential considerations for a successful compost bin:

Source: StopFoodWaste Ireland

Compost Tips

- Do not throw weeds with flowers or seeds in the compost bin- they will grow!
- Work with cafeteria staff to save fruits and veggie food scraps and add them to your compost pile or worm bin. A utility bucket with a sign for fruits and veggies can be provided in the cafeteria sorting station to prompt students to separate out these items. Dairy, meat, breads, and cheeses should not be added to the garden compost nor should

prepared foods (these types of items are to be handled in industrial composting facilities and should go in the school green waste bin). Raw fruit and vegetable scraps should be added to the **middle** of the pile and balanced with yard trimmings or rice straw. **Note:** If you have a rodent problem do not add food scraps to your compost pile.

- Layer "browns" (e.g. dry leaves) and "greens" (e.g. vegetable scraps)
- Cut your materials into small pieces. The smaller they are, the faster they will decompose
- Only add a small amount of food scraps in the center of the pile.
- Avoid dairy, greasy, and meat food scraps.
- Compost pile should be watered and turned over every week.

For more information check out these resources: Composting 101 and Compost 101 by FoodPrint

Source: Polywood Outdoor

Worm Composting

Worm composting works well with fruit and vegetable trimmings, and is a great way to reduce food waste. Student leaders can collect fruit and vegetable waste to bring to the garden, or individual classes can develop a collection system as part of a year long action project. Worm bins can be made or purchased and are both a wonderful educational resource and source of compost for your garden. If the worm bin is kept in the garden, just make sure it is protected from direct sun, rodents, and rain.

A worm bin can be kept in the classroom as well. If there is enough space in the garden, the garden team can consider setting up a worm composting bed. See the resource page at the end of this manual for additional information.

Compost Green Waste Bins and Carts

Every school has either a WM compost bin or compost carts that WM services. These bins and carts are for organic material from the garden, landscape and food scraps and soiled paper from the school. Compostable materials can go directly into the bin/carts. Clear liners(bags) are accepted by WM for the collection of compostable material if and when needed. We use clear liners to collect food scraps from the kitchens/cafeterias to help keep the bins/carts clean and reduce on pest issues. WM allows for 10% contamination to be in our compost and recycle bins/carts. We want to ensure proper sorting and as students understand and learn about composting in the garden, this can improve sorting throughout the campus and when they go home and in community.

There are county and state mandates on separating and collecting compostable and recyclable materials. We need to follow these to be in compliance. The goal of these mandates to keep the good stuff out of the landfill and maintain our valuable resources. If there are bins or supplies needed to assist in sorting from the garden, please reach out to Learning Garden Staff.

If there are any questions or concerns with the sorting, collection or hauling service, please contact Kat.Romo@ousd.org or Nancy.Deming@ousd.org.

CHICKEN HUSBANDRY

Raising chickens can be a fun way to engage students, especially those that might not otherwise be drawn to the school garden. It provides students with an opportunity to care for animals, and learn more about our food system. Chicken husbandry does require extra care and attention to both their animal needs, health and safety practices, and policies surrounding their inclusion on school sites. Chicken tractors, portable chicken coops, are a great way to keep weeds under control in your garden. Any housing and care of farm animals on OUSD property should be cleared through the Garden Council and must follow strict guidelines for the health and safety of the animals and the humans who come in contact with them.

Regulations

Chickens must be kept in an enclosed coop that is at least twenty feet from houses, schools or churches. Hens are allowed in the City of Oakland, but it is illegal to own roosters. Refer to A Guide to Raising Chickens in District School Gardens for detailed information.

Care and Safety

- Wash hands before and after handling chickens.
- Chicken coops should be down sloped from the garden.
- Follow a coop maintenance plan - possible template
- Chicken waste should ***not*** be incorporated directly into garden beds, it can be composted or thrown away.
- Wear face masks when cleaning chicken coop. Clean coops regularly.
- Follow careful procedures when cleaning and distributing eggs:
    - Keep the nesting box clean.
    - Do not wash eggs with water, use a small brush.
    - If the brush does not work, clean the eggs under running water (do not immerse the egg), let it dry completely, then use the brush.
    - Dry eggs completely before packing them.
    - Keep eggs at a consistent temperature.
    - Washed eggs should be refrigerated immediately.
- Coops need to be constructed in such a way as to discourage rodent infiltration.

MAINTAINING YOUR GARDEN

To better understand the responsibilities of your school staff once the garden is established or renovated, please complete the OUSD School Garden Maintenance Plan. The School Garden Maintenance Plan was created with OUSD Educaiton Programming Team @ The Center, Buildings & Grounds, and Custodial Services to ensure that responsibilities were articulated according to the OUSD Vegetation Policy. It summarizes what it takes to maintain a garden and is comprehensive in its scope. It also highlights that this work cannot be done alone but rather is most successful and sustainable when done in community with many participants, volunteers, and contributors.

The School Garden Maintenance Plan should be used as a living notes taking and goal setting document for ongoing garden walkthroughs.

- Write trimester and summer goals.
- On your walkthrough, write your observations, to do's, questions, comments, support needs in each box for each task.
- For tasks that are to be completed by school site personnel or community partners, it provides blanks for you to write in the appropriate name of those persons or teams who complete the tasks.
- All of the elements within this maintenance plan are essential to consider as you are planning, seeking approval for, and building your school garden.

Only with the buy-in and contributions from students, staff, families, and community will your garden project succeed and flourish.

School		EFG Champion/Corps Member		Date of First Walkthrough	/ /

OUSD Garden Maintenance Plan

To be used by EFG Champions and Corps Members and Fellows where school gardens are present. Make a digital copy and print. Then complete, scan, and share through your EFG Champion Monthly Log . Forms should be updated whenever garden walkthroughs and/or tasks are completed as well as when quarterly goals and work days are planned (fall, winter, spring, summer). Submit through your EFG Champion Monthly Log. Stewardship and maintenance feedback and Ideas will be provided by the Education and Community Programming Team @ The Center through periodic School Garden Maintainance Checks.

To begin, please write your goals and community stewardship plans (Work Days) for the appropriate quarter:

Quarter	*Date*	*Goals and Work Days*
1 - Fall		
2 - Winter		
3 - Spring		

4 - PLANTING & HARVESTING

I LEARNED ABOUT PARTS OF THE PLANTS, HOW PLANTS GROW, AND ABOUT WORMS.
– 2ND GRADE STUDENT, '18–19, GREENLEAF ACADEMY

Choosing what to plant and when are important pedagogical and ecological decisions for your school garden. It's also tons of fun and it's yet another place where you can really let your creativity shine. The seeds you choose to plant determine the gardening, harvest, and culinary activities you can do with students as well as how bountiful the garden will be throughout the year. This section will explore the do's and don'ts of planting, what seeds work well for school gardens, and an OUSD specific planting calendar as well as a planning calendar for the East Bay.

AT-A-GLANCE DO'S AND DON'TS OF PLANTING

Do's

- Plant both annuals and perennials.
- Consider companion planting.
- Plant a pollinator perennial garden bed to bring pollinators.
- Plant things that will have interest for children (e.g. roots, fruits, broccoli, carrots, sorel) and/or relate to the curriculum.
- Do plant plants that are appropriate to your site assessment (see Chapter 3) i.e. plant natives that need limited water or if you have an area on a downslope where water collects plant bog plants.

MY STUDENTS ARE GROWING AND EATING KALE, AND OTHER VEGGIES AND HERBS ON A REGULAR BASIS. THEY ENJOY LEARNING ABOUT EVERYTHING FROM THE SOIL, SEASONS, AND INSECTS IN THE BELLA VISTA GARDEN.
– TEACHER, BELLA VISTA ELEMENTARY SCHOOL

- Plant culturally responsively (survey your students, staff, and community to see what plants they would like to see, what do they eat and grow at home).
- Plant dwarf or semi-dwarf fruit trees so you can easily harvest the fruit.
- Seek prior approval through the OUSD Garden Improvement Form from the Garden Council prior to planting fruit or shade trees.

Don'ts

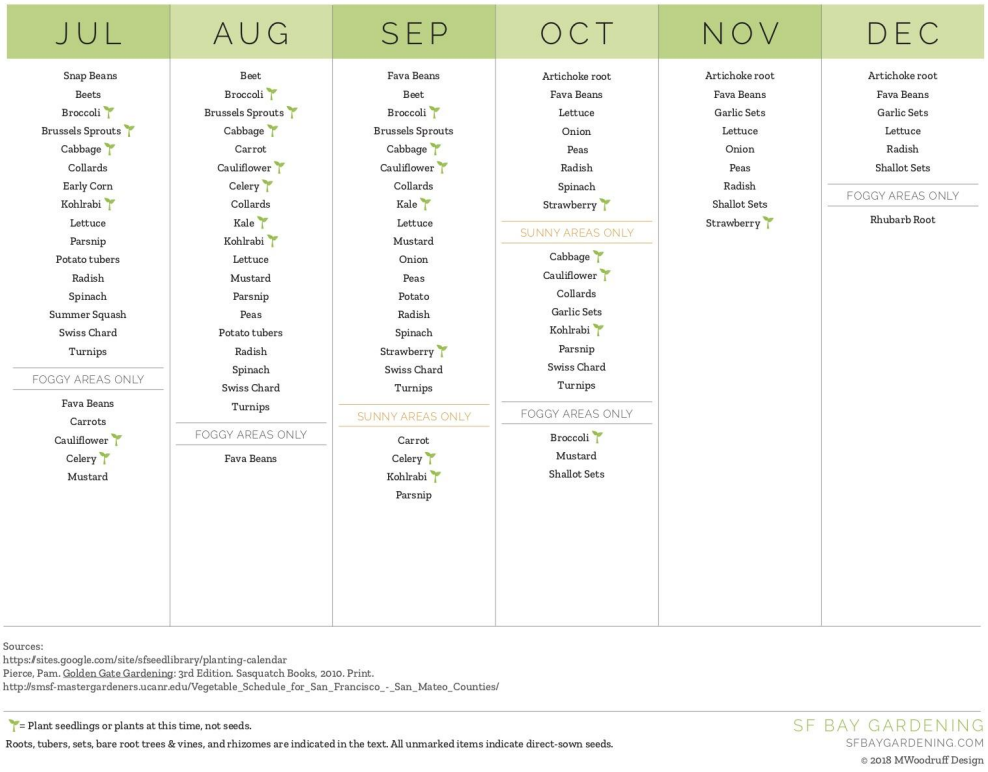
- The following plants are not permitted in OUSD school gardens:
  - Ivy is not permitted in OUSD school gardens for safety reasons.
  - Plants with spines (such as some cacti, citrus trees, Blackberry *Rosaceae* bushes) are not permitted in OUSD school gardens for safety reasons.
  - Invasive plant species (some varieties of bamboo, etc) are not permitted.
  - Planting toxic plants is not recommended when working with children.
- Plant fruit trees or shade trees over water lines, sewers, electrical lines or in fire paths is not permitted.
- Plant a large full scale fruit tree within 25 feet from any building, 15 feet from fence lines, and 12 feet between areas through which a mower needs to go is not permitted. However small and dwarf varieties can be planted closer to structures pending approval.

SEEDS and STARTS for SCHOOL GARDENS

Selecting the seeds for your school garden is an exciting and difficult decision. They are many variables to consider, including season, edible parts, whether to save your own seeds or to purchase them, connections to science/nutrition/social studies curriculum and cultural connections to your school community.

In general, **Oakland** is in **Sunset Zone 17** and **USDA Zone 9b, 10a, or 10b**. A general first frost date is **December 21** and a **last frost date is January 31**. You can use free seed-starting date calculators available online from Johnny's Seeds or GrowOrganic. A popular guide to gardens in the Bay Area is *Golden Gate Gardening* by Pam Pierce (3rd Edition, 2010).

For annual, edible plants in Oakland a general guide is:



Sources:
https://sites.google.com/site/sfseedlibrary/planting-calendar
Pierce, Pam. Golden Gate Gardening: 3rd Edition. Sasquatch Books, 2010. Print.
http://smsf-mastergardeners.ucanr.edu/Vegetable_Schedule_for_San_Francisco_-_San_Mateo_Counties/

= Plant seedlings or plants at this time, not seeds.
Roots, tubers, sets, bare root trees & vines, and rhizomes are indicated in the text. All unmarked items indicate direct-sown seeds.
SF BAY GARDENING
SFBAYGARDENING.COM
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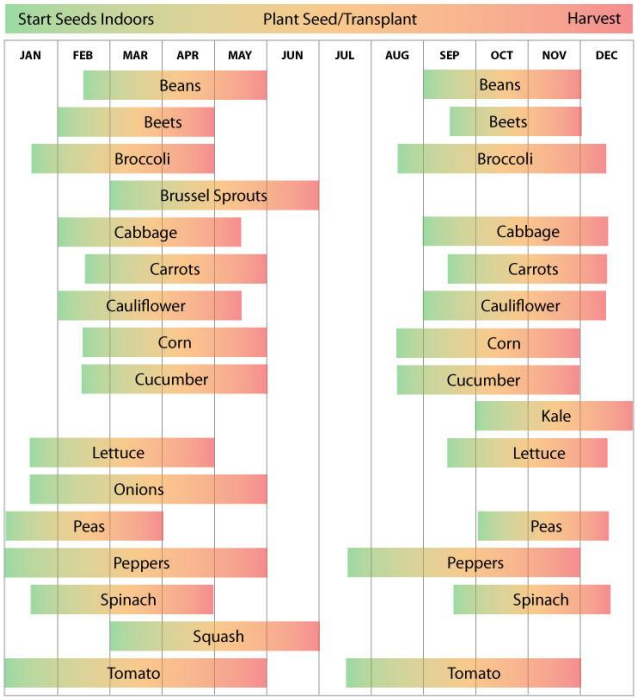
Issue Date: February, 2021
Update: July, 2022
Education Programming Team @ The Center



From Urban Farmer

OUSD PLANTING CALENDARS and OUR OUSD SEED AND START CSA

We have an OUSD Learning Garden Planting Calendar. Please use this as your "go to" for what to plant when. This one pager provides you with a simple to read at-a-glance opportunity to see what seeds and starts are best suited for planting in each month. We also have worked with our UC Master Gardener School cohort to create a monthly UC Master Gardener School Garden Calendar that not only provides you with what to plant when but also what garden tasks should be done on a monthly basis. An Excel spreadsheet template for tracking your planting can be found here or here.

Issue Date: February, 2021
Update: July, 2022
Education Programming Team @ The Center

OUSD Seed and Start Program

Hi, OUSD School Garden Community!

In partnership with our UC Master Gardeners, we are offering you the ability to order fruit and veggie starts/seedlings and seeds at appropriate planting times. We'll also have perennials, natives, and other fun things as they become available to us. You'll be able to order starts and/or seeds.

Orders will need to be placed by TUESDAY @ 5pm. They will be filled on Wednesday. All orders will need to be picked up between Thursday - Friday at The Center. We will send out a confirmation to those that order with the necessary details. This way the plants stay fresh and healthy for you!

We also have an OUSD Seed and Start program! Through the Seed and Start Program we offer seeds and starts that align with the OUSD Planting Calendar AND Harvest of the Month. We also offer weekly specials as donations and opportunities arise. Some fun things we have offered are onions, garlic, jerusalem artichokes, native CA shrubs, perennial herbs, and self water ceramic seed trays. All orders are to be placed by 5pm on Tuesday. Patrons are notified of their order confirmation and any changes. Orders are then to be picked up by from Thursday-Friday. New offerings are sent our to our school garden community on a weekly basis and included in our Dig In Newsletter.

> Plants are almost like us, because they also have body parts.
> – 2nd Grade Student, 18-19, International Community School

Plants that have been tried, tested, and loved by Oakland students include:

Edible Part of Plant			
Seeds	**Leaves**	**Fruits**	**Roots/Tubers**
Snap peas	Lemon verbena	Lemons	Carrots
Sunflower	Mint	Passionfruit	Radishes
Corn	Pineapple sage	Strawberries	Beets
Edamame	Sorrel	Blueberries	Watermelon radishes
Cow peas	Dino kale	Pomegranates	Potatoes
Fava Beans	Amaranth	Pineapple guava	Sun chokes
Dry beans	Tree collards	Fuyu persimmons	
Pumpkin seeds	Cilantro	Loganberries	

THEME GARDENS

There are many ways to organize your garden space but a fun way to enhance the spaces within your garden is to add theme gardens throughout.

The sky is truly the limit. You can have butterfly gardens, pollinator gardens, native plant gardens, or gardens focused on the curricula of the school. You could have gardens themed around books like Peter Cottontail, fantasy gardens, ABC gardens, fairytale gardens. You could have gardens built around crafts like a dying garden, a weavers garden, a rainbow garden, or an aromatherapy garden. You can have culture gardens such as Three Sisters gardens, indigenous gardens, or gardens planned around the foods of the various racial ethnicities and food traditions of the students and families at your school. Lastly, you could plant a themed garden around certain food types: a soup garden, pizza garden, or salsa garden.

This is a great time to get the kids excited about the garden. What theme would they like to see? What art could they add to the theme? What signs could they make? How could they work with the space to create the mood of the theme. What odes, haikus, and poems could they write about the theme? Get their creative juices flowing.

Life Lab has created an Edible Theme Garden Planting Guide for the California Coast that includes the ingredients for winter soups, salads, pizza toppings, and salsas. Olfactory and tactile plant lists from Lane County's "Increasing Inclusion in the School Garden" handbook. KidsGardening has a fun lesson to help you work with kids on getting started with their own theme garden project[6].

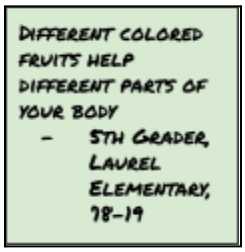
COMPANION PLANTING

Companion planting is a type of intercropping and is a method of increasing the success of plants in your garden by simply planting certain plants together. Certain plants attract specific types of beneficials to your garden which increase pollination and yields. Other plants act as natural deterrents for insects considered pests that can cause harm to vegetables and fruits in the garden. In addition to this attraction and repulsion phenomena planting specific plants together can aid the plants in other mutually beneficial ways such as providing shade, a natural trellis, suppress weeds, and make nitrogen more accessible. Here is an expansive companion planting chart from Permaculture News.

[6] https://kidsgardening.org/garden-activities-theme-gardens/

FRUIT TREES

Fruit trees are always a popular choice when planting out a garden. They offer much needed shade, interest, and yummy food which is always easy to get kids to try. *All tree plantings need prior approval from the OUSD Garden Council prior to planting.* There is a lot to consider when selecting a fruit tree. Some of the main considerations are:



- Size
- Location
- Chill hours
- Common pests and disease
- Growth requirements such as soil and water needs
- Harvest period
- Self-fertility or self-sterility
- Your community

When selecting a fruit tree choose dwarf or semi-dwarf varieties as well as trees that prove disease resistant. There are many other things to consider when choosing a fruit tree. When does it bear fruit? What number of chill hours does it need? Is it self-fertile? Is it self sterile, thus needing more than one to be planted near each other? Other things to consider are the desires of the students, staff, and families. What fruit would they like to snack on and cook with? What will the fruit trees be used for?

For information on common fruit trees in Northern California, see this resource created by Alameda Backyard Growers.

OUSD Learning Garden Programs can help you select varieties of fruit trees that meet the needs of the school, the needs of the District, AND the needs of the tree! We can also help you with procuring your fruit trees and hosting planting days for engaging your students and communities.

Want fruit trees? Here's the process in OUSD:

1) Walk your site, if you have fruit trees, be sure to complete the Fruit Tree segment of the School Garden Assessment. We'll want to make sure that the trees you have are healthy and well cared for before adding more trees to the mix. It's also helpful to know what varieties you have. This can help with the new tree selections.
2) Ready to pick out new fruit trees? Review this easy to read OUSD Fruit Trees Slide Deck to help you through your selection process. This will help you choose trees that are appropriate for a school district, the planting zone, and the site.
    a) If you need help with your project seek support from Education Programmint Team @ The Center.
3) Now that you've selected your trees, it's time to get approval. Please complete the OUSD School Garden Improvement Form. This ensures that the trees you selected are approved by the OUSD

Garden Council and that we have an accurate database of what's in our District orchard. Do not plant any trees until you have received approval from the Garden Council.

More Perennial Plants for Living Schoolyards and Garden Landscaping

Perennials are wonderful additions to a school learning garden. Perennials rebloom year after year. They bring lasting beauty to a garden. Perennial vegetables are also growing in popularity. We recommend planting all edibles in raised beds and leave non-edibles for border regions or themed areas such as shade gardens, pollinator gardens, and the like. They are slower growing than annuals and put out extensive root systems deep in the soil. This allows them to better stabilize the soil and prevent erosion, use less nutrients over longer periods of time than their annual counterparts, and build on their relationship with mycorrhizae fungi in the soil[7].

Hot Tip: Have students select some plant parts, smash them onto paper to see what pigments they create. Compare to a color wheel. Try making natural dyes! Paint with plants!

Bay Tree Design, StopWaste and Trees for Oakland released a comprehensive "Plants for Living Schoolyards" in 2017 that provides a comprehensive list of plants that considers both "adult" - code compliance, maintenance, etc. and "child" - loose parts, textures, colors, curricular connections, etc. centered elements. The 45-page document is specially tailored to the San Francisco Bay Area climate and includes everything from trees to bioswale. All permanent expansion projects, tree plantings and the like need project plan approval from the Garden Council. Use the OUSD School Garden Improvement Form.

Perennial plants, those that last more than two years, are also sensitive to climatic zones and frost. Life Lab has a guide to perennials in school gardens. See this slide deck on CA Native Plants in the School Garden sponsored by Education Programming Team @ The Center and presented by Peralta Garden Committee Member Christine Martin.

ACCESSIBILITY TIPS FOR PLANTING

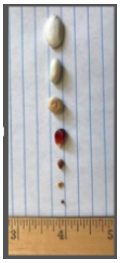
OUSD's commitment to accessibility extends beyond garden design. When you begin planting with students, consider the following ideas to assist students with limited mobility, strength, vision or fine motor skills:

- **To Eliminate Bending or Hunching Over Plant Using a Tube**
  Take a 2 - 3.5 foot section of a 1-inch diameter PVC pipe. If desired, duct tape a can to the pipe to hold the seeds. After a whole has been made in the dirt using the pipe, students then drop the seed into the pipe to plant.

[7] "Perennial Plants and Permaculture"

- **To Eliminate Struggle for Those with Fine Motor Issues Plant Large Seeds**
  Large seeds are easier for students that struggle with fine motor schools.

- **To Eliminate the Need for Vision Plant by Feel Using String as a Guide**
  String a line of yarn or twine across the garden bed so students can use the string as a guide for where to place seeds.



- **To Eliminate Struggle for Those with Fine Motor Issues or Little Young Hands:**
  - Plant Large Seeds
    Large seeds are easier for students that struggle with fine motor schools.
  - **Plant Tiny Seeds Using Seed Tape**
    Seed tape is a biodegradable "tape" to which you affix small seeds in order to ensure proper spacing or, in this case, to help students that struggle with fine motor skills. Making the seed tape does require fine motor skills, but could be a partner activity done indoors. Once you've made the tape, students lay it in the garden bed and cover it with soil! Check out this guide to making side tape.

  - **Use a Can or Plastic Bottle with Holes to Sprinkle Tiny Seeds**
    Very small seeds can be placed in a can or plastic bottle with holes in the bottom so students can sprinkle them over soil.

- **To Increase Activity Access for Those in Wheelchairs or Otherly Abled Establish a Workstation Table**
  An accessible workstation at an appropriate height for students in wheelchairs, allows for container planting, sedding, transplanting, and other garden activities[8].

HARVESTING

You've been caring for your garden all season (see Maintenance in Chapter 5 for support) and now it's time to harvest. Harvest is an exciting time in any school garden. Students finally have an opportunity to try the fruits of their labor, and educators can teach nutrition and healthy eating lessons.

(Photo: FCSM, Susan Bean, greets garfield students with recess snacks from the school garden)

WHEN TO HARVEST

When to harvest edible plants will depend on when they've been planted and how much they have grown. We have created some simple instruction

[8] *Taken from Guerrero, "Increasing Inclusion in the School Garden"*

cards in multiple languages for planting, caring for, and harvesting some common school vegetables in containers: Multi-Lingual Vegetable Planting Instruction Sheets. The harvesting data should be helpful. There are many other useful resources available, one is from the *Collective School Garden Network*. It is a clear resource on when to pick common school garden vegetables. The best way to know when to harvest your crops is to watch them - observe, observe, observe!

(Photo: New Highland Students Harvesting Broccoli for Stir Fry)

ACCESSIBILITY TIPS

Harvesting can be a group activity. Assign leadership roles and pair students. If students have mobility or sight issues set up a table where harvesting tasks can take place - vegetables can be sorted, beans can be removed from pods, and corn can be shucked.

(Photo: Grown with Love in an OUSD School Garden)

PREPARING YOUR GARDEN HARVEST

Nothing is more exciting than eating a fresh fruit or vegetable from the school garden! However, to ensure the health and safety of our students, OUSD teachers and garden stewards **must follow the simple procedures listed.**

Washing your Harvest

Washing produce is a fun and necessary element of any school garden program. It's an important and crucial step to ensure the safety of the food that is about to be shared and enjoyed.

OUSD Produce Washing Protocol

You will need the following supplies: water, 3 bus tubs, colander basket, food safe hose with sprayer attachment, vegetable brush (for scrubbing), produce bags and/or twist ties or jute, vinegar, nitrile gloves, spray bottle (clearly marked as containing bleach and stored in a locked location away from children), bleach, and no phosphate soap.

Now that you have your supplies. Follow these easy steps:

1. Wash hands and put on nitrile gloves.
2. Fill 3 bus bins with water: Bus Bin 1 - water for initial rinse, Bus Bin 2 - water and vinegar for through washing with vegetable brushes as applicable, Bus Bin 3 - final rinse with water only
3. Submerge and rinse produce thoroughly down the line in each vessel for 3 washes.

i. Use the colander basket for fragile produce such as greens.
ii. Scrub or wash produce with gloved hands or brush as necessary to loosen debris.
iii. Root vegetables (potatoes, carrots) should be scrubbed to remove dirt in crevices during the first and second wash.

4. Check triple-washed produce for any dirt, aphids, or other debris, and spray with hose to remove as necessary.
5. Store washed produce in lidded Cambro storage bins in the refrigerator. Write name of produce item and harvest date on storage container.
6. Clean and sanitize all harvesting equipment (harvest pruners, scissors, harvest baskets) by hosing down equipment, scrubbing with soap, and then spraying with diluted bleach solution.

WEIGHING YOUR HARVEST

It's very rewarding to know how much your garden is producing. Not only does this allow for more precise meal planning in the present it also helps for planning for productivity in the future. Once you have a robust database you can analyze which crops grow better where and which foods are more productive in your garden. Use this handy harvesting log! You can then better strategize for how to use your bounty most effectively in your school community. Beside the fact that all of us want to know how many pounds of tomatoes you grew and the weight of your heaviest cauliflower!

Produce Weighing Procedure

You will need the following supplies: scale, washable harvest bins, digital or analog harvest record sheet (to be scanned later), and pen or tech device (laptop, ipad, etc.).

Hot Tip: Have students in charge of weighing the produce. Calculate what was their largest yield, smallest yield, etc. Over time have them graph their data and draw conclusions.

Follow these easy steps:

1. Turn on the scale.
2. Find the Tare Weight of your harvest container. The Tare Weight is the weight of the empty container which you find by placing the empty bin on the scale. The scale will now read the weight of the bin.
    i. Press the "T" (or Tare) button to zero the weight of the bin. The scale should now read zero with the container on the scale.
    ii. Take the empty container off of the scale and fill it with your produce item OR replace it with another similar container of harvested produce. The scale will now read the weight of just the harvested produce. (*(Container + Produce) - (Weight of Container) = Weight of Produce*)

3. Record harvest data on the harvest record sheet on the clipboard or in your digital device.
    i. Legibly write, or input, the name of the crop harvested, i.e. Broccoli.
    ii. Legibly write, or input, the date of day the crop was harvested.
    iii. Legibly record, or input, the weight of the crop that was harvested. Add together multiple weighings of the same crop for the grand total weight of the harvested crop as necessary.
    iv. Update your Harvest Log information to the Environment, Food, Garden Monthly Log on a monthly basis.

COOKING FROM THE GARDEN

Nothing is more exciting than eating a fresh fruit or vegetable from the school garden! After you have washed the produce, try some of the educational, fun, and delicious cooking and nutrition lessons put out by our longstanding partner, FoodCorps. The *Collective School Garden Network* also has a list of fun "One Bite Lessons" you can do with students right in the garden! These lessons include ideas like a "Flower Feast" or "One Bite Salsa." You can find more suggestions in the section below. Many easy and fun recipes to do with students can be found online. Life Lab has many fun recipes to try with students while middle school specific cooking curriculum is available at Edible Schoolyard.

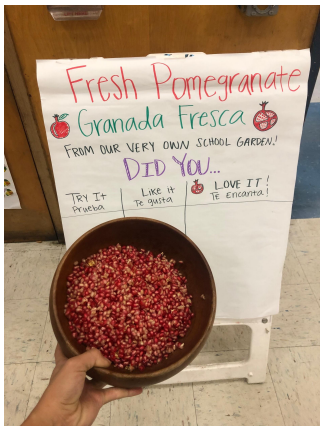
I LIKE THE SMOOTHIE AND PLANTING SEEDS AND EATING FLOWERS
– 1ST GRADE STUDENT, NEW HIGHLAND ACADEMY, '18-'19

(Photo: New Highland Stir Fry Cooking Class)

Cooking lessons are a fun portion of any garden and nutrition program! If you are going to cook with students, it is important that you follow the OUSD Cooking with Students Guidelines to ensure student safety and health. Always begin by engaging in an overview of health and safety with students.

Cooking with Students Guidelines:

1) Double check student records for food allergies
2) Check with teachers about known allergies that may not be listed on records.
3) Wash hands prior to food prep.
4) Clean and sanitize cooking areas.
5) Assign roles and responsibilities.
6) Teach students how to use all tools and equipment.
7) Clean dishes appropriately.
8) Compost all food scraps.



(Photo: Taste Testing School Garden Pomegranate Arils)

Issue Date: February, 2021
Update: July, 2022
Education Programming Team @ The Center

INTEGRATING PRODUCE INTO THE SCHOOL DAY AND BEYOND

Healthy school gardens can produce an abundance of fruit and vegetables. At present we can not incorporate school garden produce into the cafeteria meals. However, there are many ways to share the bounty with students, families, and staff. Many Garden Stewards and educators have successfully conducted taste tests during lunch time. They have also held cooking classes with students and planned community engagement activities such as 5th grade feasts where students cook a garden fresh meal to share with their families. Make sure to get the permission of the Principal for the events and the cafeteria staff for any taste tests occurring during school meal times.

CLASSROOM CSA

One fun idea is to start a classroom CSA. Follow the OUSD planting calendar. Create a monthly sign up for classroom teachers. Have teachers sign up to receive a fresh school site produce box delivered to their classroom door. Students can harvest, wash, sort, and package the materials. Work with them to design recipes and classroom learning experiences for students and teachers to try.

START A STUDENT PRODUCE STAND/Farmer's Market

With the permission of the principal, properly washed and grown (e.g. without chemicals) produce can be given to community members and parents**.** The produce should be labeled with the school site/garden name. Make sure to wear gloves and engage in proper handwashing and hygiene practices when handling and giving away the produce.

These free produce markets include a produce give-away and a simple recipe using the produce. Giving away a recipe card is a nice touch. One can also donate the produce to the food bank if there is one that comes to the school. If produce is donated to the food bank the requirement is, once again, that it is properly cleaned, bundled, and labeled stating that it is from the school garden.

Some FoodCorps members and Garden Stewards have also started their own "Farmers' Markets" to distribute materials and fund small garden projects. With the approval of the principal, Farmers' Markets can also be a great way to teach students about financial literacy.

Resources about starting a Farmer's Market include:

- Kids Gardening: Starting a School Farmers' Market
- Slow Food USA Denver Youth Farmers' Market Handbook

Other Ideas for How to Use all of that Produce

- Host a Salad Day.
- Use it in spa water for Wellness Wednesday.
- Rent the smoothie bike and have a smoothie event.
- Host a healthy snack table during recess.
- Have a whole school Carrot Crunch or (insert any produce) crunch.

5 - MAINTENANCE

Maintaining a school garden is labor intensive and often the hardest part of being an EFG Champion. The key for long-term success in maintaining a garden is having a good understanding of everything involved. It's also important to frame maintenance as "stewarding" or "caring for" or "making beautiful" rather than back breaking drudgery. This "work" is part of the wonder of tending a garden and being a gardener. It takes daily attention and care for the garden to grow in a robust and healthy way. This chapter will provide some tips on routine maintenance, irrigation, special cases, and how to take care of your garden during school breaks. While maintaining a school garden is the responsibility of the school site staff, the OUSD School Garden Program supports and honors this work. When grant funding allows, we are able to assist with special projects, repairs, and maintenance. If you are feeling overwhelmed reach out to the Education Programming Team @ The Center and we'll figure it out together. You're not alone.

GARDEN MAINTENANCE PLAN TEMPLATE

Before you embark on any garden project, it is important to consider the variety of maintenance needs it will require. The Garden Maintenance Plan Template provides a clear and discrete breakdown of the maintenance that is required for school gardens, as well as insightful tips and ideas. This OUSD School Garden Calendar lists out monthly maintenance tasks in a comprehensive fashion.

Please make a copy of the Garden Maintenance Plan Template (Make a Copy) and complete it on an ongoing basis for your school site. All sites with a school garden should use this document, complete it regularly, submit it at the beginning of the school year through the EFG Monthly Log . Think of it as a planning tool, an observational note taking document, and a record keeping log. What sections of the document pertain to your garden? Who could be involved in the different parts of garden maintenance at your site? How will you organize and coordinate with these folks? This brings us back to the

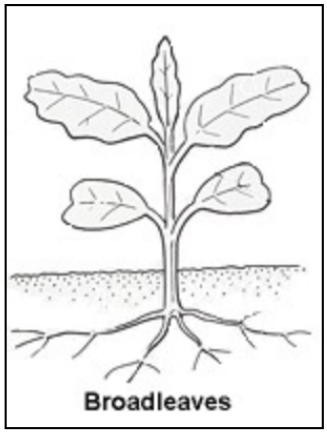
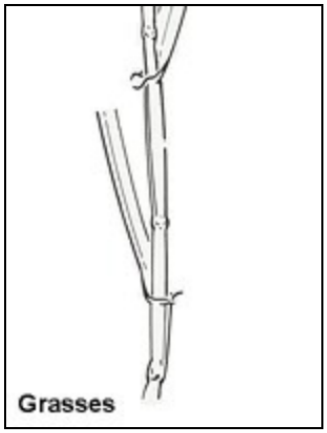
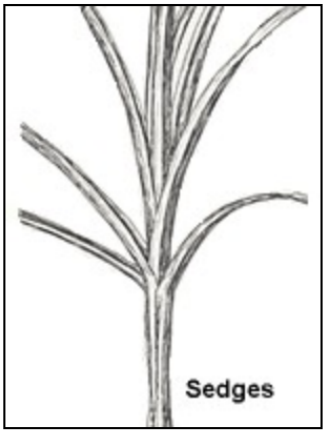
importance of a garden committee. Refer back to chapter 2 for more details on garden committee formation.

ROUTINE MAINTENANCE

Garden maintenance is a crucial element of a successful and thriving garden. Some of the key areas of maintenance include weeding, watering, pest and disease management, tool care and plant observation and tending. While you may feel confident in one area you may need support around another. That's okay! Through trial and error and a mind open to learning and experiencing you'll find success and support.

Weed Identification

Weeds are a natural part of any garden. While you can minimize weed growth through methods such as sheet mulching or solarization, removing weeds will always be a part of your life as a Garden Steward. Common weeds can be divided into three types[9]:

Leaves are wide, veins branch out in different directions	**Leaves are narrow, arranged in sets of 2; stems are rounded or flattened**	**Leaves are narrow, arranged in sets of 3; stems are triangular in cross section**
		

UC Davis maintains an online weed identification tool to help you determine the name of your weed based on its characteristics. They also have a very comprehensive list of weeds: http://ipm.ucanr.edu/PMG/weeds_intro.html

[9] *University of California Integrated Pest Management Program*

IRRIGATION

All plants need water. It's important to know the water requirements of the particular plants in your learning garden. It's also important to look to the landscape to be your guide. For example, if you have an area of the garden which naturally moist and semi shade the plants that go there should be conducive to water loving habitat. Once you learn the water requirements of the plants you steward it is important to devise a watering plan.

Hot Tip: Kids love to water use this opportunity to teach about the water cycle, water conservation, and water catchment systems. Do an irrigation lesson to see how different plants respond to different irrigation systems and/or how much water different pants require.

Watering takes all forms in OUSD school gardens. Some schools gardens in OUSD have drip irrigation systems that were installed in-ground by contractors while others have above ground drip irrigation systems. Even those schools with drip systems benefit from the occasional hand watering. And though we would love for all schools to have an irrigation system for their learning gardens sometimes it just isn't possible. These schools are watered through various hand watering techniques like hoses and watering cans. Other methods can include soaker hoses and overhead moveable oscillating sprinklers.

An irrigation system can help keep plants alive over breaks, save water and time, and help with weed management. Building, maintaining and fixing an above ground drip irrigation system are tasks that fall into the stewardship/maintenance responsibilities of the Garden Steward *not* Buildings and Grounds.

Building irrigation with older students is also a great educational STEM opportunity. Check out this lesson on ancient technologies from The Edible Schoolyard Project, a lesson using the Engineering Design Process from CPALMS, or this lesson from CalAcademy about sustainable water systems.

Construction Guides

DripWorks offers a discount to school garden systems as well as a nine-page guide for how to construct them. You can also opt for a more simple, inverted water bottle or a more complex sub-irrigated raised-bed.

OUSD Approval and Support

Above ground drip systems are often the most effective for our school learning gardens. Garden Stewards can learn to install and maintain them at a low cost and with minimal support. However, we do offer support through our OUSD School Garden Programming. If you need help designing or installing your system contact the Education Programming Team @ The Center for a consultation or submit this Infrastructure and Repair Form. We currently partner with Growing Together to provide you with support and instruction. This way you not only get a system but learn how to install one yourself and how to maintain it over time!

If you decide to build a **permanent, in-ground irrigation system**, you must get **approval** from the Garden Council before installing. To do so, you can fill out the site improvement form online. Temporary and above ground drip systems do not generally require approval via the form, however it is important to follow District guidelines regarding how and where you connect to a water hub. If in doubt contact the Education Programming Team @ The Center for support.

The OUSD Vegetation Policy requires that you maintain the irrigation system by doing the following:

- Cover drip lines and emitters with drip covers or mulch to protect from vandalism.
- Monitor the system on a regular basis to check for leaks and prevent overspray.
- Clear debris around drains.
- Fix any leaks.
- Inspect drains and replace filter fabric (if applicable) routinely.
- *If your garden is on a former lawn be sure to map out the sprinkler heads in your garden plan. Cover them with pvc for protection and do not bury them with mulch.*

It is helpful to draw out your system on your garden map. This way you, and others, wil know where to find all of the lines during general maintenance checks or should problems arise.

INTEGRATED PEST MANAGEMENT

Integrated pest management (IPM) relies on four main components: prevention, physical/mechanical barriers, cultural practices, and biological control. These components work to limit garden pests without using chemicals. In OUSD school gardens, **chemicals and pesticides are prohibited** so IPM is a great way to protect your plants and reduce weeding. A complete guide by the UC Integrated Pest Management Program can be found here and a slide deck, “Vertebrate Pests around the Garden and Home”, from our OUSD School Garden Workshop Series can be found here.

Hot Tip: Teach about insect life cycles, metamorphosis, and beneficial insects versus pests.Now is a great time to learn about host plants and nectar plants for butterflies!

Application of any compound to mitigate pests or disease must follow OUSD policies and California Healthy Schools Act. Here is a list of products from the California Healthy Schools Act website that can ***never*** be sprayed on school grounds. However, just because it's not on the above list doesn't mean it can be used on OUSD school grounds or in our school gardens. According to Andrew M. Sutherland, Ph.D, BCE, SF Bay Area IPM Advisor, UCCE Alameda County:

> “Sprays of any EPA-registered pesticide will be subject to the posting and notification requirements of the Healthy Schools Act. The only exemptions are for products not registered by the EPA. These so-called "25(b)" products will contain food-grade ingredients, usually plant-based

essential oils. If the product has an EPA Reg# then it must be treated like any other pesticide. Sprays (of any kind) are the main targets of the HSA since they often lead to drift and unintended exposure. “

If in doubt, contact the OUSD Environmental Health and Safety Manager, Sorbor Twegbe.

Prevention

Prevention begins with choosing the right plant for the right place at the right time i.e. the right season and the right month in the right location with the proper growing conditions.

- Plant a variety of crops.
- Plant pest-resistant plants i.e. plants that are naturally resistant to pests.
- Purchase, or accept, healthy nursery stock, only transfer healthy transplants.

Cultural Practices

These are things that are within your locus of control:

- Habitat Modification: Remove standing water and sources of water.
- Plant and Site Selection: Plant pest-resistant plants! Select sites away from pests.
- Sanitation: Keep things clean for example, after crops are harvested remove the spent plants and process them for your compost bin.
- Prune to increase air circulation.
- Water Management: Minimize water on leaves; do not water at night.
- Do not work with plants when foliage or soil is wet.
- Proper Fertilization
- Harvest produce when it is at its peak.
- Continually check plants for signs of damage and/or pests
- Remove pest infested plants and/or leaves.
- If **rodents are observed, notify custodians immediately** so they can begin mitigation control before they proliferate.
- Remove piles of debris and lumber.
- Do not store things against building.

Biological Control

Relationships between insects can be to your advantage!

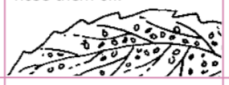
- Beneficial insects eat other insects for example, ladybugs eat about 50 aphids a day.
- Aphids, mealy bugs, and scales have a symbiotic relationship with ants, if you can get rid of ants, it will help you lose your aphids, scale, and/or mealy bugs!
- Choose plants at different heights to provide refuge to beneficial insects.

- Provide a succession of flowering plants from spring to fall to provide food sources.
- Plant both nectar plants and caterpillar food plants for the butterflies you want to attract.
- Plan for what insects you want to attract by planting accordingly.

Physical and Mechanical Barriers

The goal of physical and mechanical barriers is to essentially deny common pests access to your plants. This can be done a variety of ways:

- Placing layers of mulch.
- Adding row covers. (Remove them when insect-pollinated plants are blooming!)

Pest	Characteristics	Barriers and Repellant	Removal	Trapping	Predators
SLUGS AND SNAILS	Snails and slugs feed on the leaves of a wide variety of plants. They love leafy vegetables and can quickly devour young seedlings. Native snails and slugs are not usually pests and can be identified by their single set of tentacles.	• Around base of plant place wormwood tea, seashell grit, crushed egg shells, sawdust, kitty litter, hair, ash, mulched garlic plants. • Crush garlic into warm water and splash over snail-prone plants. • Cut out the base of a large plastic juice bottle and place over seedling.	Go on a snail hunt at night or after rain! They like hiding in cool moist places, like beneath the foliage of low-growing plants, tucked away amongst strappy leafed plants and under rocks or logs. Follow their trail to find them. Place in bucket of soapy or salty water. (Squashing may leave mature eggs to hatch.)	Snails are attracted to yeast. Half fill a small container such as the shell of half a grapefruit with a mixture of vegemite and water and bury up to top edge in the garden. 	Beetles, centipedes, frogs and toads, lizards, hens, ducks, other birds.
APHIDS	Often found on young growth, flower buds or under the leaves. Try to catch signs of them early because they breed very quickly.	• Garlic spray (see above) • *Natrasoap* is an all natural control for aphids.	Remove by hand and squash. Alternatively, hose them off. 	Fill small container with soapy water and a few drops of yellow food colouring (nature's attractant colour). Place under aphid-prone plants.	Ladybirds, praying mantises, lacewings, birds. *Achillea* will attract ladybirds. To attract birds plant Grevilleas & Kangaroo paw.
CATERPILLARS	Often found on or beneath the foliage of plants, voraciously chewing their way through the leaves. Remember not all caterpillars are bad.	• Garlic spray (see above) • *Dipel*, a bio-insecticide (natural pest control) with low toxicity • *Success* is a non-toxic spray for controlling caterpillars.	Remove by hand and squash. Be sure to wear gloves as some may sting. 		Plant native shrubs to attract birds.
SLATERS	Chew on tender young seedlings. Only a problem in large numbers.	Cut top and bottom off a milk carton, place over seedling and push into soil. 		Cut a potato in half and scoop out a hole in the centre. Then partly bury it in the soil, with the hole up.	
CABBAGE MOTHS	Attracted to the brassica family of crops. Lay eggs on leaves then caterpillar eats leaves and vegetables.	Scatter eggshells around plants. Cut butterfly shapes from white ice cream containers and place on bamboo sticks in the veggie garden.	Remove caterpillars by hand and squash. 		Plant annuals which attract moths to lay their eggs away from your vegies.

Useful resources
"Natural Control of Garden Pests" by Jackie French
www.abc.net.au/gardening *www.burkesbackyard.com.au*
www.sgaonline.org.au

Common Pests

Information about pests such as snails, slugs, aphids, ants, spiders, and rats can be found on the UC Master Gardeners' Website. Remember the first step to mitigating your pest issues, whether vertebrate or invertebrate is to identify the pest that is doing the damage. In order to do this you will need to be a pest detective and look for clues, signs, and evidence left by the pest throughout your garden. If you are interested in learning more about vertebrate pest identification and control read through the slide deck of our Vertebrate Pests Workshop from November, 2020.

TOOL MANAGEMENT

Tools require care and management as well. While it is best to have a **locked tool shed** in your garden there are many other creative solutions school garden educators have used in the past. If you do not have a shed try asking your school leadership if there is a utility closet, portable, or unused room you can use and/or share for multiple purposes. Needless to say, all tools must be kept locked away when not in use.

(Photo: Bridges School Garden Tool Closet)

A tool shed will help protect your tools and facilitate garden maintenance. A locked tool shed is also necessary to keep tools out of the hands of students and others when there is not proper supervision. Use a district lock and ensure there are multiple keys so that the EFG Champion, office staff, and custodian all have one. Be sure to do a safety check when leaving the garden to ensure that all tools have been gathered and properly stored.

(Photo:Tool caddy at Edible Schoolyard in Berkeley)

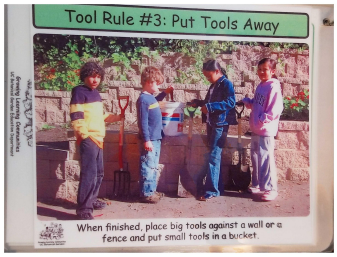
Keeping an up-to-date inventory of tools is helpful so you know what you have and where you have it. Here is our OUSD EFG Equipment and Supply Inventory Sheet. Complete the form in August and upload it through the EFG Monthly Log. This way we can better support you in maintaining our necessary school site supplies and equipment. In addition to keeping an inventory, label all tools and provide them with a specific location or home within your tool shed. Label the area where items belong inside of the shed for ease of organization. Some management ideas include tool caddies, glove walls, wheeled wagons with side storage pouches, and peg board walls attached to the inside of the shed with hanging fixtures for storing taller tools. Tool caddies, as pictured, are useful and make bringing tools into and out of the storage area easy. Glove walls or boards, see photo, make finding pairs a breeze.

(Photo: Glove wall @Edible Schoolyard in Berkeley)

Tools should be **cleaned** after use, rinsing tools after every use and letting them dry thoroughly is an important tool management strategy. If you trim a **diseased plant**, tools should be fully **sanitized** to ensure that the disease is not spread further. Dip tools into a

diluted solution of bleach (ten parts water, one part bleach) to disinfect them. Ensure that bleach is stored in a locked area out of reach of children.

Tools should be **oiled and sharpened** occasionally. To oil tools, first use a wire brush to remove any ingrained dirt, sap or rust spots. Coat all metal surfaces with an oil (linseed or camellia oil work great), let it soak in for a few minutes, and wipe away any excess oil. Check out this guidance document.



PhotoScan by Google Photos

Teach students how to use tools properly and where to store them. Incorporate this instruction into your lessons on an ongoing basis. Improper use of tools can lead to injury for both humans and plants. Designing positive expectations for tool use and care will ensure that students not only know how to use the tools and for what purpose but will also help extend the life of the tools themselves.

FRUIT TREE MANAGEMENT

Fruit trees are popular with students, and unfortunately are also prone to diseases and pests. The OUSD Vegetation Policy and other best practices recommend that you check your fruit trees frequently for the following:

- Fire Blight
- Powdery mildew
- Leaf curl/peach leaf curl
- Asian Citrus Psyllid (if found you **must** inform OUSD Learning Gardens)

Pruning Tips[10]

- The best time to prune is January through mid-February
- Remove dead or damaged branches
- Prune to "open up" center of trees for sunlight
- Do not remove more than 25% of a young tree, 20% of middle aged tree, and 10-15% of a mature tree, at one time[11]
- Prune to keep the tree well-balanced and a proper size for children to harvest it
- Prune to promote fruiting branches
- Make cuts ⅛ to ¼ inches away from (or above, not below!) remaining branch or leaf bud
- Make cut at a 45-degree angle
- Use the right tool for the right cut

[10] From Armstrong Garden
[11] SF Gate

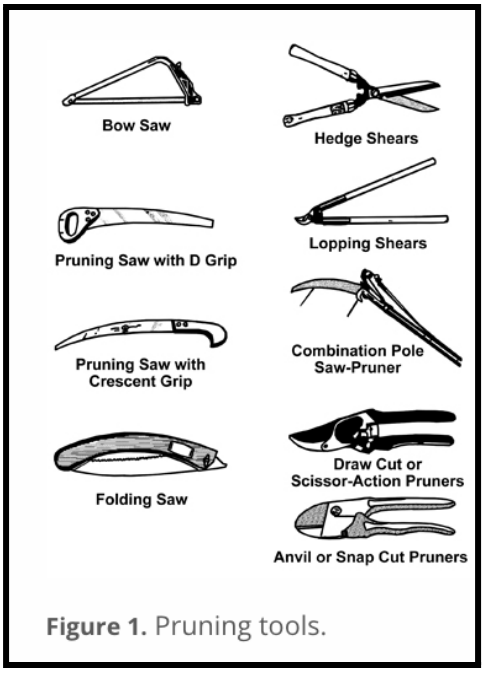


Figure 1. Pruning tools.

[12]

Harvest fruit trees when the fruit is ripe and before it falls. A fruit tree picker and a harvesting bag or basket are useful tools for this. Remember to remove fallen/spent fruit. Additionally, when the season is over remove all mummy fruit from the tree to eliminate disease spread. Our OUSD Fruit Tree Selection Guide linked here has more information on free tree selection appropriate to the OUSD Learning Garden, fruit tree growth requirements, and harvest times, and other considerations.

ROUTINE MAINTENANCE TIPS OF THE TRADE

> WHAT DO YOU LIKE ABOUT GARDEN CLASSES? I GET TO SEE NATURE AND PLANT STUFF AND HELPING THE GARDEN AND WATERING
> – 3RD GRADER, NEW HIGHLAND

Gardens can take a lot of work, and without support Garden Stewards can quickly burn out. One of the main tips is to get support and build enthusiasm and involvement. The more people invested in the garden the more successful it will be. Here are some tips and ideas from other OUSD Garden Stewards, FoodCorps Service Members, and teachers that have helped ensure their school learning garden stays healthy!

Watering Tips

- Involve students! Even the littlest ones can help water and they love it! Start a garden club with students; they can help water!

12 https://extension.uga.edu/publications/detail.html?number=B961&title=Pruning%20Ornamental%20Plants%20in%20the%20Landscape#Technique

- Make a watering **schedule** that works for you. Many FoodCorps members had success watering in the morning before students arrived or after students have left at the end of the day. Others have had success watering during students' recess to enlist their help!
- Use watering cans without a detachable spout.
- Place a thin layer (1-2") of straw on the beds to help save water and maintain soil moisture.
- Minimize water on leaves to keep pests at bay.
- Make sure that you have **access** to water in your garden. Ask for your own spigot key if necessary.

Weeding Tips

- Involve students! Students can help weed during recess or before and after school. Start a garden club with students; they can help weed!
- Make a weeding **schedule** that works for you. Some FoodCorps Service Members had success weeding once at the beginning of the week and once at the end of the week.
- If you teach multiple classes in the garden, weed during down moments! Weeding can be a relaxing break between groups.
- Listen to music while you weed, embrace it as a mindful practice.
- Place rice straw or mulch on beds to reduce weed growth.
- **Identify** your weeds so you know how to properly remove and dispose of them. Some weeds are actually volunteers that you may want to transplant to a different section of the garden.

Hot Tip: While weeding take the opportunity to teach about seeds. Weeds have all kinds of wonderful adaptive ways to get their seeds out into the world. Examine your weed specimens for seeds. What adaptations do you see? What use are those adaptations? Creative writing - If you were a seed how would you travel?

(Photo: Students mulching at Laurel School Garden)

- If others are helping to weed, have them focus on one weed at a time to make sure they pull the correct plant and dispose of it properly. If needed, educate them about the weeds - what are they, how do they grow, are they useful.
- Enlist **weekly volunteers** (e.g. high school students, parents, community members, Eagle Scouts, Girl Scouts, church groups). Volunteers must follow OUSD volunteer policies.
- Weeds with seeds such as oxalis should **not** go in your garden compost bin but should go in the city green

waste bin! Other weeds not to put in your garden compost include bindweed and crabgrass.

- Manage your weeds **before planting** by using sheet mulch or solarization
- Be careful to remove the whole weed with its roots.

GARDEN CARE OVER SCHOOL BREAKS

Breaks are a difficult time for school gardens. For short breaks, a **parent volunteer** can help with watering, harvesting, and adding a layer of **mulch** or **straw** to help reduce weed growth.

Before summer break, it is critical that you either **bring the garden to rest**, solicit school staff to maintain and harvest it during the off months, or make a plan with a partner organization to maintain it.

Comprehensive OUSD-specific plans for preparing your garden for summer can be found in the here.

VOLUNTEER WORK DAYS

Volunteer days can include the internal school community, families, or external organizations. They can be stand alone events or embedded in a broader event such as a health fair, field day, or Earth Day event. They are fun and joyful times when everyone bands together to accomplish a discrete task, enjoy fresh air, share food, and exalt in the beauty of a job well done.

(Photo: Oakland A's Service Learning Day at CUES Futures School Garden)

Many organizations are establishing service learning programs for their staff. If you are interested in a service learning day taking place in your school garden contact OUSD School Learning Gardens to get on the calendar. We work with Oakland Ed Fund to match local organizations with a school site. We can help plan and lead the event for your school. Some organizations who have worked on our gardens in the past are Oakland Ed Fund, Pivot Learning, Oakland A's, UCLA student service club, and Blue Shield.

Stay organized and keep a schedule of all volunteering and stewardship happening in your school garden. You can use this Maintenance and Volunteer Schedule Template.

RESOURCES

District

- **Calendars, Documents and Dashboards**
  - **OUSD School Garden and Living Schoolyard Dashboard**
  - OUSD School Garden Tools Equipment and Inventory
  - OUSD CHKS Survey
  - OUSD Enrollment Dashboard
  - OUSD Fast Facts
  - OUSD Harvest of the Month (10 month) Calendar
  - OUSD Materials Guidelines
  - OUSD School Garden Planting Calendar.
  - OUSD Vegetation Policy
  - OUSD Volunteer Policy
  - CA Native Plants in the School Garden Workshop: Slide Deck
  - www.ousddata.org
  - Link to OUSD Garden Resource Map
  - UC Master Gardener School Garden Calendar
  - OUSD Garden Council Calendar and FAQ
  - OUSD Seed and Start Calendar
  - OUSD Fruit Tree Selection Guide or use these easy to read OUSD Fruit Trees Slide Deck
  - EFG Workshop Calendar and Key Dates
- **Forms**
  - OUSD Garden Quest Google Form or OUSD Garden Quest Google Doc
  - OUSD School Garden Harvest Log
  - OUSD School Garden Improvement Projects Google Form
  - OUSD School Garden Landscape Materials Order Form
  - OUSD School Garden Maintenance Plan Template
  - OUSD School Gardens Tool Lending Library
  - OUSD Seed and Start Order Form
  - OUSD EFG Champion Program Overview
  - OUSD Equipment and Supplies Inventory Sheet
  - OUSD EFG Monthly Log
  - OUSD School Garden Infrastructure Repair Form
  - OUSD School Garden Supply Form
  - OUSD School Garden Work Day Share Form
  - OUSD Master Garden Mentor Survey
  - OUSD School Garden Assessment
  - OUSD School Garden Maintenance Rubric

    - OUSD School Garden Maintenance Check

- **Social Media**
    - OUSD Education and Community Programming @ The Center Website
    - Dig In Newsletter - Follow from the Newsletter Example
    - OUSD Health and Wellness Youtube Channel
    - OUSD HOTM Website and @OUSDHOTM Instagram
- **District Approved Vendors**
    - Sonoma Valley Worm Farm, https://sonomavalleywormfarm.com/products.php, is a trusted source of vermicompost, worms, and worm tea.

General

- *Slow Food USA Garden Manual*
- **Chickens**
    - https://www.thehappychickencoop.com/chicken-tractor/
    - Use of Manure in Garden Beds - Ask a Master Gardener/UCANR
    - TilthAlliance: Composting Chicken Manure
    - USDA: Shell Eggs from Farm to Table
    - https://www.oaklandca.gov/topics/urban-agriculture-citywide-update#raising-chickens-bees-and-other-animals
- **Soil**
    - Soil Testing Labs
- **Compost**
    - Free Compost from City of Berkeley for Residents
    - Composting 101: UCANR
    - Compost 101: What to Compost and How to Do It by FoodPrint
    - Beginner's Guide to Compost by Polywood Outdoor
- **Plants/Planting**
    - Invasive Plant Species for CA/DATABASE: https://www.cal-ipc.org/plants/inventory/
    - https://garden.org/apps/calendar/?q=94602
    - Seed Starting Date Calendars: Johnny's Seeds or GrowOrganic.
    - *Golden Gate Gardening*: A popular guide to Bay Area gardening
    - For annual, edible plants in Oakland a general guide
    - UrbanFarmer: https://www.ufseeds.com/learning/planting-schedules/california-vegetable-planting-calendar/
    - Edible Theme Garden Planting Guide
    - Olfactory and tactile plant lists from Lane County's "Increasing Inclusion in the School Garden" handbook
    - companion planting chart from Permaculture News
    - Track your Plantings Here: http://myexceltemplates.com/vegetable-planting-calendar/

    - Plants for Living Schoolyards
    - Life Lab's Perennials in the School Garden
    - Planting zones: http://cagardenweb.ucanr.edu/Your_Climate_Zone/
- **Fruit Trees**
    - Alameda Backyard Growers.
- **Tools**
    - Oakland Public Library Tool Lending Library
    - Berkeley Public Library Tool Lending Library
- **Worms**
    - What Are Worm Castings? GardeningKnowHow
    - Composting with Worms: UCANR and
    - Building a Worm Bin: UCANR
    - Build Healthy Soil with Worm Composting: StopWaste
    - How to Make Worm Casting Tea: WikiHow
    - Vermicompost (composting with worms).