

B.L.D.E Association's

**S.B. Arts and K.C.P. Science College,
Vijayapur (Karnataka)**

**DEPARTMENT OF
CHEMISTRY**

**BEST PRACTICE
2016-17**

**MAINTAINING COLLEGE
GARDEN**

Maintaining college Garden

The excitement of Planting Day is hard to top, but it is the continual care and observation of plant growth that strengthens students' connection to the land and broadens their understanding of the environment and food systems. Once plants are in the ground, you will need to maintain the garden through regular activities such as watering, thinning, weeding, fertilizing, mulching, composting, and monitoring for pests. These activities promote healthy plants by providing for their needs. The five basic needs of plants are water, light, nutrients, air, and a place to grow.

Water. Plants use water for a number of important processes, including photosynthesis (production of food) and transpiration (evaporation of water from the leaves into air that cools the plant and creates pressure to move water from roots to leaves). Water also aids in the absorption of some nutrients. Light. Energy from light is captured to use during photosynthesis.



Cleaning the garden

Nutrients. Just as people need vitamins, plants need special nutrients to help them grow properly and for their biological processes to function. The top three essential nutrients for plants are nitrogen, phosphorus, and potassium. Most plant nutrients are provided by the soil, and we increase their availability through fertilization.

Air. Plants take in carbon dioxide and oxygen to use during photosynthesis.

A Place to Grow. Plants need a place to call their own with room to grow to maturity. The need for each of these components varies by plant. Research your school garden plants to learn how to care for them properly. Plants also provide signals when they have a need. For instance, a plant needing water will wilt, and the leaves of a plant needing nitrogen will turn yellow. It is important for your students to discover and understand these signals. This chapter provides background information on some of the techniques your team will employ to maintain the garden, along with an overview of seasonal garden tasks. It concludes with tips for dealing with such common challenges as how to maintain the garden during summer breaks and how to deal with vandalism.



Cleaning the garden

Watering As a general rule, during active growth most plants require about 1 inch of water (from rain or irrigation) per week. In hot, dry, and windy conditions they need more. In cool and humid conditions they need less. Feeling the soil around the plants is the best indicator of when it is time to water. The soil should be moist, but not too wet. Poke your finger about 1 inch down in the soil. If the soil feels dry, then it needs additional water. Plants wilt when not enough water is getting to the

leaves. However, do not automatically assume that you need to water wilted plants, because they may also wilt when there is ample or excessive water. Test the soil first. If the plants are wilted but the soil is wet, it is still a sign that the leaves are not getting enough water — but it is a root problem. If the plant is new or recently transplanted, it may just need some time for the root system to become established. Sometimes new roots cannot keep up with the water demands of the leaves. If the problem continues, it could mean the roots have a fungal disease. In this case, remove the plant and the soil around it to prevent possible disease spread. When you or your students water, apply the spray to the base of the plant and avoid excessive moisture on the leaves. The plants are absorbing water through their roots, so the water needs to be in the soil. Additionally, water on leaves can lead to a number of disease problems. Water plants in the early morning to cut potential losses by evaporation. Apply water slowly to give it time to sink into the soil. If water is applied too quickly or with too much force, it will run off into drainage areas along with loose soil and new seeds. Children often water until the soil looks moist on the surface, but that might not be enough to benefit the plant. After watering, it is always a good idea to check the soil by poking a finger into the soil around the plant's roots. A number of watering tools are available. Watering cans and garden hoses are the least expensive alternatives. However, they take quite a bit of time and close monitoring. Other alternatives are soaker hoses, drip irrigation, and sprinkler systems. These require less time and can be linked to automatic timers, easing the chore of watering during weekends and long breaks. These tools are more expensive, however, so you may need to look for additional funds or donations.

Thinning

Many times more seeds are planted than can grow to maturity in the available space. Once the seeds germinate, you and your students need to “thin” your crop by removing some of the seedlings growing too close to each other. Although it is never easy to remove plants, if you leave too many plants in a small space they will compete for resources and will not be able to grow to their full potential. When

your students thin, instruct them to identify the healthiest seedlings and remove the others. One technique is to pull out the less-healthy seedlings. However, doing so risks disturbing the roots of the plants you want to keep. An alternative is to cut the tops off the unwanted seedlings, after which the roots will eventually decompose. Thinning can be a challenging activity for younger children, and they may need close guidance. You can place thinned plants in a compost pile or worm bin. Also, some vegetable sprouts are edible and full of nutrients — perfect for a great nutrition lesson and tasting activity

Weeding

Weeds are plants growing in the wrong place. You should remove all such plants because they will compete for space, light, and water with your intended crops (and many times weeds will win, because they are well adapted to your conditions). First, you and your students need to learn how to identify the seedlings of your crops. After students know what to keep, they will know what to remove. Pull weeds by hand or remove them by hoeing or cultivating around the plants, staying far enough away to prevent damaging the wanted plants or their roots. With either approach, make sure the roots of the weed are completely removed. To ensure that weeding does not become an overwhelming job, encourage students to monitor the garden continuously and remove weeds when they are small. If weeds are allowed to grow for too long, they will flower and spread seeds, which will escalate the weed problem. One simple way to decrease weed problems is to apply a layer of mulch to the soil.

Mulching

Outdoor gardens benefit from the addition of 2 to 3 inches of mulch on top of the soil. The mulch helps to slow water loss from evaporation, moderate soil temperatures, decrease soil erosion, and decrease the spread of soilborne diseases. You can use a number of different materials as mulch, including shredded wood, leaves, straw, plastic, and newspaper. The various mulches offer different benefits. For instance, organic mulches (shredded wood, leaves, or straw) will eventually break down and help improve soil structure. Plastic mulches will increase the soil temperature. Choose mulch according to your plants' needs, mulch availability, and visual preferences.

Fertilizing

For healthy growth, all plants require certain nutrients. The three they need in the largest quantities are nitrogen (N), phosphorus (P), and potassium (K). Nitrogen is important for stem and leaf growth and for the photosynthesis process. Phosphorus promotes root growth and improves flowering and fruiting. Potassium contributes to root development, the overall growth of the plant, and disease resistance. Other essential nutrients are equally important, but plants require them in much smaller amounts. Plants acquire most nutrients from the soil by absorbing them through their roots. During the site analysis discussed in designing your college.


Garden, you completed a soil test that provided information on the nutrient content. It is common to find that your soil is low in nutrients, especially the “big three.” Since nutrients aren’t always abundant enough in soil to support healthy plant growth, gardeners make up the difference by adding fertilizer. A number of different types of fertilizers are available. Some deliver nutrients to your plant immediately; others release nutrients slowly over time. Examples of common fertilizers are liquid or solid synthetic fertilizers, slow-release pellets, compost, fish emulsion, and dried manure. Any product sold as a fertilizer will have a nutrient analysis on the label with three numbers. The numbers represent what percentage of the three major nutrients — nitrogen (first number), phosphorus (second number), and potassium (third number) — the fertilizer contains. The product label should also tell you how much to use for different crops and areas. Check with school administrators to see if there are any restrictions on the type of fertilizer your class may use in the garden. Always follow the warnings on fertilizer products and store in a secure location. Fertilizers should be handled by adults or under close adult supervision. You might think that if a little bit of fertilizer will help your plant grow, a lot of fertilizer will result in an even better harvest. However, the phrase “the more the better” is not applicable to fertilization. Excessive fertilizer can contribute to plant diseases and lead to runoff of the extra nutrients. So make sure to apply only the amount you need. Fertilizing is not a one-time event. As plants grow, they deplete the soil’s available nutrients, so you will need to constantly monitor nutrient levels and provide additional fertilizers when needed. Keeping soil healthy is the key to maintaining healthy and productive plants.

Composting

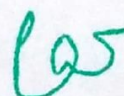
In the natural world, decomposers such as earthworms, sow bugs, slugs, molds, mushrooms, and bacteria use dead plants and animals as food, breaking them down into smaller particles and thereby releasing nutrients back into the soil. In the garden, we simulate this decomposition process by creating compost piles. Compost piles are made up of garden waste and other organic matter high in carbon and nitrogen and exposed to moist conditions to attract decomposers. As the decomposers use the composted organic matter for energy and maintenance, they break it down into simpler molecules. This process gives off heat, which in turn speeds up decomposition. Compost can be made in freestanding piles (3- by 3- by 3-foot is an optimal size) or contained in special bins as long as it receives proper water and air movement. Once the materials are broken down, the compost can be incorporated into the soil to increase the nutrient content and improve the structure. Check the California School Garden Network Web site at www.csgn.org for more information on creating a compost pile, or contact your local Cooperative Extension Service office.



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