

# Growing a Great Garden

## Preventing Plant Issues

*To avoid unwanted issues, prevention is the first step.*

Plants will usually be quite happy in their Earthboxes, and there are a few simple tricks to greatly improve your chances at a trouble-free crop:

- Before starting your indoor garden, inspect all plants you already have in your classroom and discard any that are diseased or have pests.
- Inspect your plants daily, including the underside of the leaves occasionally, checking for potential problems.
- **Buy or make your own sticky traps immediately upon planting into your boxes as an early warning sign for pest issues.**

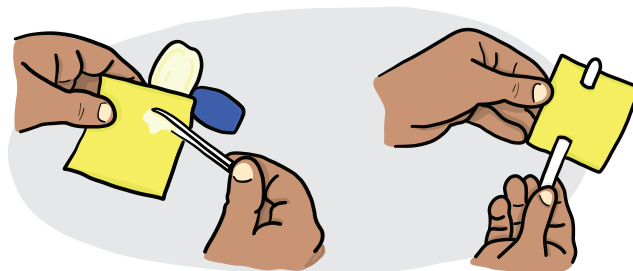
You only need a few simple supplies (yellow card stock, petroleum jelly, popsicle sticks). See the end Appendix for simple instructions. Assign a student to check the sticky traps each day for any signs of insects sticking to the traps. Usually you will see pests on the traps first, as bugs can be very hard to see until you have a larger problem! If you do spot a problem, you can then address it (see the Troubleshooting section).

- Keep air flowing through the leaf canopy by using your oscillating fan.
- Don't handle plants when they are wet.
- Ensure your pots are clean and sterilized each year before using them in the classroom.
- Keep your plant stress levels low – this means maintaining adequate soil moisture, consistent light intensity and sufficient fertilization. When plants are grown under stressful conditions (such as low light and excess water), soil-borne pathogens are more likely to develop.



### Growing food isn't always easy, but it is rewarding and exciting!

Help students explore any failures by relating their growing challenges to those that farmers face. Did you forget to water and the plants? What happens when farmers face a drought. Did a pest damage some of your garden? What do farmers do in this situation?



Sticky Traps



### Be ruthless!

If you see a plant with any sign of infection or insect infestation on it, remove the infected plant part and dispose of it. Be ruthless! If the infection has taken over the entire plant, remove the whole plant if you can. See the **“Troubleshooting”** section for more tips to handle problems.

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## Caring for Plants and their Needs

*Plants, like all living things, have basic needs that must be met for them to survive. These needs are the same for indoor, as well as outdoor plants.*

Though the specific needs of a particular plant may vary, all plants share the same basic needs. When a gardener or farmer grows food, they become the provider of those needs, along with nature.



**(L)IGHT** - Plants need sunlight to grow. This can also be supplied by grow lighting indoors. Plant leaves capture sun, then convert and store that energy as a sugar called glucose. Plants use glucose for energy. Too little or too much light can cause issues for plant health and growth.



**(A)IR** - Air contains carbon dioxide used by plants for photosynthesis. Plants also require the proper temperatures for growth and humidity. Most plants in an LGT garden require daytime temperatures of between 18 degrees Celsius and 25 degrees Celsius. Nighttime temperatures should not drop below 10 degrees Celsius. Cool temperatures can cause stunted growth in plants.



**(W)ATER** - All living things, including plants, are comprised mostly of water. Plants use water to move nutrients back and forth between roots and leaves. Water is used during photosynthesis and water pressure helps promote the growth of stems and leaves. Water also helps a plant stay cool during photosynthesis. Water in the soil is absorbed by the roots and travels through the stems to the leaves. Too much or too little water can cause the plant to wilt or droop.



**(N)UTRIENTS** - Just like humans, plants require essential nutrients to support their growth. Plants must take up essential nutrients from the soil to support their growth. The most important nutrients for plants growing needs are nitrogen (N), phosphorus (P), and potassium (K). Nitrogen is necessary for making green leaves, phosphorus is needed for making big flowers and strong roots, and potassium helps the plants fight off disease.



**(S)PACE** - Space is like a plant's habitat. Space to grow is required for roots and leaves of a plant. Without enough room, plants may compete for basic needs and become susceptible to disease.

### Elicit help from students to decide where the needs of plants and people align!

First ask students: what do we, as humans, need to survive? Write their answers in a list on the board. Now, ask students what they know plants need to survive. Make a list on the other side of your board. Which of these are the same, which are different? Connect the similar needs with a line between them. Shelter needed by people, is like the space of plants. Nutrients and sunlight for plants are like food for humans.

As you care for plants, remember to consider their needs. As you inspect plants, return to their needs. Do they have enough light? How is the air temperature? What are the soil moisture levels? Are they crowded or do they have adequate growing space? **Considering your plants' needs on a regular basis is the best way to prevent issues in the garden.**