



# Green Teens CHALLENGE

## October Theme: Tools & Tech

*Due Date: October 31, 2023*

### **Challenge #4: Hydroponics**

Your challenge is to develop a growing system that doesn't require large amounts of land or landscaping tools. Each hydroponic system should include a list of supplies and procedures and a short description of why this system is effective for urban farmers.

### **Challenge #5: Solar Oven**

Your challenge is to build a solar powered oven from which you can warm up food without the use of polluting fossil fuels. Each solar oven should include a list of supplies and procedures and a short description of why this oven is an effective way to use renewable energy.

### **Challenge #6: Natural Plant Dyes**

Fast Fashion has a severe negative environmental impact. Your challenge is to research and identify plants in your local environment that can be used to naturally dye articles of clothing. Once research is conducted, your submission should also include the final products created from the natural dyeing process.

### **Challenge #7: Tool Care Demonstration Video**

Prolonging the use of the items we purchase is an essential component of a sustainable lifestyle. Your challenge is to record yourself maintaining horticultural, landscape and/or culinary tools. Each video should be engaging and appropriate for an audience of all ages with an emphasis on safety considerations.

**"I like to envision the world as a jigsaw puzzle...if you look at the whole picture, it is overwhelming and terrifying, but if you work on your little part of the jigsaw and know that people all over the world are working on their little bits, that's what will give you hope."**

*~ Jane Goodall*



Building Community through Gardening, Education & Environmental Stewardship  
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# Challenge #4: Hydroponics

*October*

## Description

Your challenge is to develop a growing system that doesn't require large amounts of land or landscaping tools. You should take time to research hydroponic growing systems and develop one that is capable of producing healthy food ingredients. Each hydroponic system should include a list of supplies and procedures and a short description of why this system is effective for urban farmers (see the rubric on the next page for details).



## Resources

For inspiration and ideas, see <https://civicgardencenter.org/green-teens-challenge>. For further support, email us at [greenteens@civicgardencenter.org](mailto:greenteens@civicgardencenter.org).

## Steps to Success

- Step 1:** Read the description (above) and rubric (next page) for Challenge #4.
- Step 2:** Research different kinds of hydroponic systems. You can start with our suggested resources via the link above!
- Step 3:** Create a design for the system. If you would like a consultation, please reach out to the Green Teens team at [greenteens@civicgardencenter.org](mailto:greenteens@civicgardencenter.org).
- Step 4:** Gather materials necessary for the build and what seeds you will be planting.
- Step 5:** Build the system and plant seeds.
- Step 6:** Take photos of your system and use captions to describe what you did and what seeds are planted.
- Step 7:** Combine all information and photos into a single document.
- Step 8:** Make sure your name and email are written clearly and that you have submitted all pieces of your submission.
- Step 9:** Review the rubric to make sure you have met all the “Full Points” column.
- Step 10:** Submit and celebrate!

*Don't forget the rubric on the next page!*

## Challenge #4: Hydroponics Rubric

	Full Points	Half Points	No Points
<b>System Specifications</b>	System is built to grow food without the use of soil and utilizes sustainable materials	System is built to grow food without the use of soil but doesn't use sustainable materials	System doesn't grow food without the use of soil or use sustainable materials
<b>System Components</b>	System includes elements to grow, nourish and maintain plants in a small space using minimal energy inputs	System includes elements to grow, nourish and maintain plants but takes up a large space or uses high amounts of energy	System includes elements to grow, nourish and maintain plants but takes up a large space and uses high amounts of energy or does not include all of the required elements
<b>System Effectiveness</b>	System is able to produce healthy food ingredients in a two-month time period or less	System is able to produce healthy food ingredients in a three-month time period or less	System is unable to produce healthy food ingredients in a three-month time period or less
<b>Student Information</b>	Student names and email addresses are clearly written		Student names and email addresses are missing
<b>Due Date</b>	Challenge was submitted by the due date of October 31		Challenge was not submitted by due date

### Did you...

- Complete the Steps to Success checklist on the previous page?
- Make note of the submission due date?
- Email us for support ([greenteens@civicgardencenter.org](mailto:greenteens@civicgardencenter.org))?

### Standards Alignment

- **Meets these ELA standards:** RST.11-12.7, RST.11-12.8, RST.11-12.9, RST.9-10.8, WHST.9-12.7, W.9-10.7, W.11-12.7, RH.9-10.1, RH.9-10.2, RH.11-12.2, WHST.9-10.9, WHST.11-12.9
- **Meets these Math standards:** MP.2, MP.4
- **Meets these Science standards:** HS-ETSI-2, HS-ETS1-3, HS-LS2-7, HS-ESS3-3

# Challenge #5:

## Solar Oven

*October*

### Description

Your challenge is to build a solar-powered oven with which you can warm up food without the use of polluting fossil fuels. Each solar oven should include a list of supplies and procedures and a short description of why this oven is an effective way to use renewable energy (see the rubric on the next page for details).



### Resources

For inspiration and ideas, see <https://civicgardencenter.org/green-teens-challenge>. For further support, email us at [greenteens@civicgardencenter.org](mailto:greenteens@civicgardencenter.org).

### Steps to Success

- Step 1:** Read the description (above) and rubric (next page) for Challenge #5.
- Step 2:** Research how to build a solar oven and try to think outside the box! Try and improve a design you find elsewhere!
- Step 3:** Create a design for the system. If you would like a consultation, please email the Green Teens team at [greenteens@civicgardencenter.org](mailto:greenteens@civicgardencenter.org).
- Step 4:** Gather materials necessary for the build.
- Step 5:** Build and test your oven on a sunny day.
- Step 6:** Take photos of your oven and use captions to describe what you did. Make sure to get a picture of the thermometer during your test.
- Step 7:** Combine all information and photos into a single document.
- Step 8:** Make sure your name and email are written clearly and that you have submitted all pieces of your submission.
- Step 9:** Review the rubric to make sure you have met all the “Full Points” column.
- Step 10:** Submit and celebrate!

*Don't forget the rubric on the next page!*

## Challenge #5: Solar Oven Rubric

	Full Points	Half Points	No Points
<b>Oven Specifications</b>	Oven is built to use only renewable energy as its power source and utilizes sustainable materials	Oven uses only renewable energy but is not constructed with sustainable materials	Oven doesn't utilize renewable energy or sustainable materials
<b>Oven Components</b>	Oven includes elements to capture, direct and hold solar radiation with a space to warm food	Oven includes elements to capture and hold solar radiation with a space to warm food	Oven is missing vital elements and/or doesn't have adequate space to warm food
<b>Oven Effectiveness</b>	Oven is able to warm food to an internal temperature of at least 250°F / 121°C	Oven is able to warm food to an internal temperature of at least 150°F / 65°C	Oven is missing a temperature reading
<b>Student Information</b>	Student names and email addresses are clearly written		Student names and email addresses are missing
<b>Due Date</b>	Challenge was submitted by the due date of October 31		Challenge was not submitted by due date

### Did you...

- Complete the Steps to Success checklist on the previous page?
- Make note of the submission due date?
- Email us for support ([greenteens@civicgardencenter.org](mailto:greenteens@civicgardencenter.org))?

### Standards Alignment

- **Meets these ELA standards:** RST.11-12.7, RST.11-12.8, RST.11-12.9, WHST.9-10.7, RST.9-10.8, WHST.9-12.7, RST.11-12.1, RH.9-10.3, WHST.9-10.9, WHST.11-12.9
- **Meets these Math standards:** MP.2, MP.4, HSN-Q.A.1, HSN-Q.A.2, HSN-Q.A.3
- **Meets these Science standards:** HS-ETSI-2, HS-ETSI-3, HS-PS3-3, HS-LS2-7, HS-ESS3-2, HS-ESS3-4

# Challenge #6: Natural Plant Dyes

## *October*

### Description

Fast Fashion has a severe negative environmental impact. Before the growth of the modern fashion industry, indigenous people found ways to add vibrancy to their clothing without harmful environmental impacts. Your challenge is to research and identify plants in your local environment that can be used to naturally dye articles of clothing. Once research is conducted, your submission should also include the final products created from the natural dyeing process.



### Resources

For inspiration and ideas, see <https://civiggardencenter.org/green-teens-challenge>. For further support, email us at [greenteens@civiggardencenter.org](mailto:greenteens@civiggardencenter.org).

### Steps to Success

- Step 1:** Read the description (above) and rubric (next page) for Challenge #6.
- Step 2:** Research ideas on what plants are good candidates for the natural dyeing process. You might be surprised how many might be growing near you!
- Step 3:** Create a materials list and procedure for your dyeing project.
- Step 4:** Harvest or gather all materials. Remember to take a before, during and after picture.
- Step 5:** Dye!
- Step 6:** Take photos of the final product and use captions to describe what you did.
- Step 7:** Combine all information and photos into a single document.
- Step 8:** Make sure your name and email are written clearly and that you have submitted all pieces of your submission.
- Step 9:** Review the rubric to make sure you have met all the "Full Points" column.
- Step 10:** Submit and celebrate!

*Don't forget the rubric on the next page!*

## Challenge #6: Natural Plant Dyes Rubric

	Full Points	Half Points	No Points
<b>Research</b>	Materials list and procedure provided clearly demonstrate research and includes references	Submission is missing one component from the Full Points column (either incomplete list or no references)	Submission is significant information and/or research is unclear
<b>Collection</b>	At least two items used for dyeing were harvested or purchased locally; items and locations/sources are clearly labeled in the materials list	At least one item used for dyeing was harvested or purchased locally; it is clearly labeled in the materials list	No items used were harvested or purchased locally
<b>Photo Documentation</b>	Three photos of the dyeing process were submitted (one before, one during and one after)	One photo listed in the Full Points section was missing from the submission	Two or more of the photos listed in the Full Points section were missing from the submission
<b>Student Information</b>	Student names and email addresses are clearly written		Student names and email addresses are missing
<b>Due Date</b>	Challenge was submitted by the due date of October 31		Challenge was not submitted by due date

### *Did you...*

- Complete the Steps to Success checklist on the previous page?
- Make note of the submission due date?
- Email us for support ([greenteens@civicgardencenter.org](mailto:greenteens@civicgardencenter.org))?

### Standards Alignment

- **Meets these ELA standards:** RST.9-10.8, RST.11-12.7, WHST.9-12.7, L.9-10.3, L.11-12.3, RH.9-10.3, WHST.9-10.9, WHST.11-12.9, RST.11-12.7, RST.11-12.8, RST.11-12.9
- **Meets these Math standards:** MP.2, MP.4
- **Meets these Science standards:** HS-LS2-7, HS-ETS1-2



# Challenge #7: Tool Care Demonstration Video

## *October*

### Description

Your challenge is to record yourself maintaining horticultural, landscape and/or culinary tools such as shovels, lawn mowers, pruners, weed wackers, rakes, kitchen appliances, etc. Prolonging the use of the items we purchase is an essential component of a sustainable lifestyle. Each video should be engaging and appropriate for an audience of all ages with an emphasis on safety considerations (see the rubric on the next page for details).



### Resources

For inspiration and ideas, see <https://civicgardencenter.org/green-teens-challenge>. For further support, email us at [greenteens@civicgardencenter.org](mailto:greenteens@civicgardencenter.org).

### Steps to Success

- Step 1:** Read the description (above) and rubric (next page) for Challenge #7.
- Step 2:** Determine what tools need care.
- Step 3:** Research what needs to be done to perform the necessary care.
- Step 4:** Gather materials necessary to perform the care. If you need to borrow materials, contact the Green Teens team at [greenteens@civicgardencenter.org](mailto:greenteens@civicgardencenter.org).
- Step 5:** Practice the care procedures you are going to film. Draft a script of the main steps you want to communicate.
- Step 6:** Film your tool care video.
- Step 7:** Edit and add captions to video.
- Step 8:** Make sure your name and email are written clearly and that you have submitted all pieces of your submission.
- Step 9:** Review the rubric to make sure you have met all the Full Points categories.
- Step 10:** Submit and celebrate!

*Don't forget the rubric on the next page!*

## Challenge #7: Tool Care Demonstration Video Rubric

	Full Points	Half Points	No Points
<b>Video Length</b>	Video is between five and nine minutes long	Video is between three and five minutes or more than nine minutes long	Video is under three minutes long
<b>Video Components</b>	Video includes a complete and accurate list of needed supplies and procedures	Video includes an incomplete list of needed supplies or procedures	Video is missing significant information regarding supplies and/or procedures
<b>Content Elements</b>	Demonstration focuses on common tools, emphasizes safety protocols and accurately conveys information needed to replicate the work	Demonstration focuses on common tools and emphasizes safety protocols but is missing one or two details required to replicate the work	Demonstration doesn't emphasize safety and is missing crucial information
<b>Student Information</b>	Student names and email addresses are clearly written		Student names and email addresses are missing
<b>Due Date</b>	Challenge was submitted by the due date of October 31		Challenge was not submitted by due date

### *Did you...*

- Complete the Steps to Success checklist on the previous page?
- Make note of the submission due date?
- Email us for support ([greenteens@civicgardencenter.org](mailto:greenteens@civicgardencenter.org))?

### **Standards Alignment**

- **Meets these ELA standards:** SL.9-10.5, SL.11-12.5, RH.9-10.3, WHST.9-10.2, WHST.11-12.2, WHST.9-10.9, WHST.11-12.9