



***BSA Sci-π***  
***Scientific Inquiry Through Plants***  
***"The Wonder of Seeds" Pilot***

The Botanical Society of America welcomes you to the BSA Sci-π pilot "The Wonder of Seeds". We thank you for taking part and trust you will have a truly scientific experience, come to learn a bit more about plants and gain an appreciation for the important role they both play in all of our lives!

We hope this guide to using the website assists you in your research and in communicating with the BSA Scientists and other teams participating in the project. Remember, keeping a lab notebook ("journal"), data collection, communication and sharing ideas are key components of good science. Record your team discussions, decisions, and procedures in your journal, keep good data records, share your ideas and communicate with other teams. Oh, and have fun!

For the record, science is not a noun, it's a verb!!!

If you have questions or comments about the project or the website, please contact us at: [bsa-scipi@botany.org](mailto:bsa-scipi@botany.org). Please let us know how we can help make this pilot a success for you and for those participating in the future. The experience you have and the comments you provide are important to us.

This document to follow provides an overview of the website.



**Botanical Society of America**



*Scientific Inquiry through Plants*



1. On the top of each website page you will find buttons that link to:
  - The home page - ([http://www.botany.org/scientific\\_inquiry/](http://www.botany.org/scientific_inquiry/) )
  - About BSA Sci-π — ([http://www.botany.org/scientific\\_inquiry/about.php](http://www.botany.org/scientific_inquiry/about.php)) a history of the project's development
  - Participants — [http://www.botany.org/scientific\\_inquiry/aparticipants.php](http://www.botany.org/scientific_inquiry/aparticipants.php) a list of the schools/groups currently involved with the project with links back to their own website
  - BSA Scientists — [http://www.botany.org/scientific\\_inquiry/ascientists.php](http://www.botany.org/scientific_inquiry/ascientists.php) a list of the participating scientist with links back to their websites
  - Research Topics page — [http://www.botany.org/scientific\\_inquiry/aresearch.php](http://www.botany.org/scientific_inquiry/aresearch.php) a list of current research topics
  - View Research — [http://www.botany.org/scientific\\_inquiry/aviews.php](http://www.botany.org/scientific_inquiry/aviews.php) a pages that provides an overview of the active schools/groups with access to the page set up for each as well as a link to each participating team
  - Contact Us - [http://www.botany.org/scientific\\_inquiry/acomment.php](http://www.botany.org/scientific_inquiry/acomment.php) a page with links to the development committee and contact information for the BSA.
  - Resources available to teachers and students — [http://www.botany.org/scientific\\_inquiry/topics/Wonder\\_of\\_Seeds.php](http://www.botany.org/scientific_inquiry/topics/Wonder_of_Seeds.php)
2. The website displays when a school/team sends in new information and when scientists have provided feedback to a teams work. This can be easily seen on screen shot of the "View Research" page below ([http://www.botany.org/scientific\\_inquiry/aviews.php](http://www.botany.org/scientific_inquiry/aviews.php) ). We suggest this as a good page to add to the "favorites list" in your browser.

***BSA Sci-π***  
**Scientific Inquiry through Plants**  
**Research Viewing Pages**  
**The Wonder of Seeds**

[Emporia State University](#), Emporia, Kansas - **ACTIVE**  
***New Info Available***  
*Scientist Comment Posted*

[Team 1](#), [Team 2](#)

[The Bush School](#), Seattle, Washington - **ACTIVE**  
***New Info Available***  
*Scientist Comment Posted*

[Team 1](#), [Team 2](#), [Team 3](#), [Team 4](#), [Team 5](#),  
[Team 6](#), [Team 7](#), [Team 8](#), [Team 9](#), [Team 10](#),  
[Team 11](#), [Team 12](#), [Team 13](#), [Team 14](#)

[Pershing County High School](#), Lovelock, Nevada - **ACTIVE**  
***New Info Available***  
*Scientist Comment Posted*

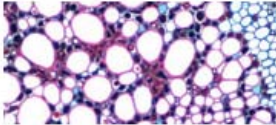
[Team 1](#), [Team 2](#), [Team 3](#), [Team 4](#), [Team 5](#)

3. From the "View Research" page you can click on the link for an active school. This will allow you to see the "new information" available for each team within that school.

From the "School" page (or the "View Research" page), click on the image or team name to link to see that specific team's research page.



## Research Page for **The Bush School, Team 6** **RED CLOVER**



### Our reasearch question is:

Does the color of the seed affect the germination rate or the characteristics of the adult plant?

[Website Guide](#), [Student Research Guide](#), [Suggested Resources](#), [Supplemental Materials](#)

[VIEW](#)

[Our Journal](#)  
[Our Data](#)

Uploaded 27/4/05  
Uploaded 27/4/05

[Upload Journal](#)  
[Upload Data](#)



[Peer Review Comments](#)  
[Click Here](#)



[Team Responses](#)  
[Click Here](#)



[Scientists' Comments](#)  
[Click Here](#)

### Research Discussion

**4/22/05 3:14PM - T6:** First upload of our journal is complete.  
We noticed that the clover seeds come in variety of colors. Why does this happen? Is the color important to growth rate, health, or any other characteristics of the adult plant? Does the cotyledon store food in every kind of seed? We have noticed that the root of the plant seems to always grow first. Is this always the case? How does red clover put more nitrogen in the soil?

**Day 2** The roots have started to grow and are about 5 mm long. The seeds are germinating. We were correct that the root grows first in red clover. Is/Are there any circumstances under which the shoot would grow first? Why are the roots white even though they are above ground and could photosynthesize? Are the plants producing nitrogen yet and if not when do they start? Does the size of the seed affect how big the plant will get when it is an adult? Does the environment affect how big the plant will get?

**4/24/05 5:18PM - Dr. Beverly Brown:** You've got some great questions here! I'll look forward to seeing what you find out.

**4/25/05 3:11PM - T6(Timothy):** Journal updated. We had more questions as a team. Our first question is: are the green waxy looking things on top of the sprouts actually leaves or are they cotyledons which have turned green? Why do the stems curl? Is it because they are trying to reach more light? Will the roots still grow down even though the plants are not in dirt? Do the plants grow as well out of dirt as they do when they are planted?

**4/27/05 1:46PM - T6(Timothy):** Journal updated and see figures below in research information.

**4/28/05 11:44PM - Dr. C. Hemingway:** Team 6, I am impressed with your work. Isn't it fascinating that the clover seeds did not differ in any anatomical feature, but differed in color. Your careful observation of your clover seeds at the initial stage of this project led to you some very

4. Here is where you come in!!! On each team's research page (e.g., The Bush School, Team 6 below), there are **links** to:

- the [Website Guide](#) you are reading,
- access the [Student Research Guide](#)
- access [Suggested Resources](#) and the [Supplemental Materials](#) page
- for viewing the team's [journal & data entries](#)
- and to the web pages used to [Upload Journal](#) & [Upload Data](#) (these operate as emails at this point in the project).

There are also **buttons** for (this is the BSA Sci-π driver):

- sharing you project ideas and/or making "**Team Responses**" in response to Scientists and Peers
- making "**Peer Review Comments**" on other teams research
- and one for "**Scientists' Comments**" making comments on your project

A few important notes before you start:

1. Use the “**Team Responses**” **button** to place/share your team responses to Scientist and Peer Comments. Also use this **button** to highlight items in your journal or data you would like to make others aware of.
2. **Keep a daily/regular journal!** Talk about your research with your teammates and record your thoughts and ideas in your journal. Scientists and Peers need to hear what you are talking about and see what you are doing if they are going to make comments on your research. See the web tips below for more information.
3. **Keep a daily/regular data if it is part of the research!** Scientists and Peers need to see what you are measuring if they are going to make comments on your research. See the web tips below for more information.
4. We encourage you to explore other team’s research projects and to use the **Peer Review Comments button** to make comments and/or ask questions. In the real world science is about sharing knowledge and challenging ideas/concepts. **Remember: Real science is a verb, not a noun! Being active is the only option!!**

### Tips for using the website

Please note: At the moment the system works entirely from e-mail. The software to upload directly to the website is in development.

To Upload a journal entry to the website:

- Go to your team’s research page.
- Click on the “View” **Our Journal** link. This will open up a Word document, labeled with your team name. Save this document to your computer, and update it with new journal entries on a daily/regular basis. Save the file.
- Click on the **Upload Journal** link. This will (should) open an e-mail screen, set to send an e-mail to [up-journal@botany.org](mailto:up-journal@botany.org). Enter your School and Team Number into the subject bar. Add the file as an attachment to the e-mail. *(Note: You do not need to upload the file every day. What is important is that your journal entries are regular and up-to-date.)*
- If this fails, you can always send your journal entry by your usual e-mail to [up-journal@botany.org](mailto:up-journal@botany.org). If this fails, you can always send your journal by e-mail to [bsa-scipi@botany.org](mailto:bsa-scipi@botany.org).

## **BSA Sci-π** **Scientific Inquiry through Plants** **Journal Upload Page**

**Below is a link that will allow you to attach your journal to an email that will be loaded onto the BSA Sci-π site. Please ensure that as part fo the email you identify your school, your team and give your first name.**

**If you have any problems please contact: [bsa-scipi@botany.org](mailto:bsa-scipi@botany.org)**

[Up-Load Our Journal](#)

**To Upload data to the website:**

- Go to your team's research page.
- Click on the "View" **Our Data** link. This will open up a Word document, labeled with your team name. Save this document to your computer, and update it with new journal entries on a daily/regular basis. Save the file.
- Click on the **Upload Data** link. This will (should) open an e-mail screen, set to send an e-mail to [up-data@botany.org](mailto:up-data@botany.org). Enter your School and Team Number into the subject bar. Add the file as an attachment to the e-mail. *(Note: You do not need to upload the file every day. What is important is that your journal entries are regular and up-to-date.)*
- If this fails, you can always send your journal entry by your usual e-mail to [up-data@botany.org](mailto:up-data@botany.org). If this fails, you can always send your journal by e-mail to [bsa-scipi@botany.org](mailto:bsa-scipi@botany.org).

**If you find an interesting resource during your research that you think would be a good addition to the "suggested resources" or "supplemental materials", please send the information to:**

**[bsa-scipi@botany.org](mailto:bsa-scipi@botany.org)**

**Thanks, and have fun!**  
from  
**The BSA Sci- $\pi$  Team**