Lesson | Community Plant Detectives

Dig into the world of phenology and inspire students to enter the Budburst Plant Trackers contest!

OBJECTIVE

Students will understand what phenology is and how observations of plants can reveal important connections to climate change.

STANDARDS

NGSS

- 3-LS1-1. Develop models to describe life cycles
- 3-LS3-2. Traits are influenced by the environment
- 4-LS1-1. Internal/external structures and plant growth
- DCI: LS2.C: Biodiversity and ecosystem health (MS-LS2-5)

CCSS ELA

- RI.4 Determine word meanings
- W.9 Draw evidence from informational text

TIME

45 minutes plus additional time for fieldwork

MATERIALS

PDFs

- Observe Plants Like a Scientist! resource sheet
- How Do Plants Know When to Bloom? reading passage
- Meet the Plant Groups resource sheet

Google Docs

- Figure Out the Phenophase activity sheet
- Phenophase Finder resource
- Contest entry form + rubric

For remote instruction: Google Doc and PDF student guides

Get materials and contest details at scholastic.com/budburst.

PART A: INTRO

1 **Ask:** *What plant transformations show that a season is changing?* (E.g., flowers blooming, leaves changing color.)

2 **Define** *phenology*: the study of how changing seasons and climate affect the timing of plant/animal life cycles. Share the **Observe Plants Like a Scientist** resource sheet and review the oak tree phenophases.

3 **Discuss:** How does the weather affect oak trees? *(Spring triggers new growth; fall triggers color change and leaf drop.)* Which plant parts do oak trees grow again each year? *(Leaves, flowers, fruits, seeds.)* How does this help survival?

4 **Have** students read **How Do Plants Know When to Bloom?** Discuss their responses. Emphasize that observations of a single plant in one year will reflect the weather. But many years of observations can track valuable climate information.

5 **Explain** that community science allows people (including students) to share plant observations to help scientists better understand environmental changes, including climate change. You may sign up to share student data at **budburst.org**.

PART B: PREP

6 **Ask** students what kinds of plants they know about. What groups would they put them in? (They may say things like flowers/trees, short/tall.) Share the **Meet the Plant Groups resource** sheet. As a class, compare and contrast the plant groups, or discuss where your students have seen examples from each group.

7 **Prepare** students for fieldwork in Part C with this practice activity. Direct them to the **Figure Out the Phenophase** digital activity sheet, and have them use the **Phenophase Finder** resource as a reference to complete the activity. *(Answers: 1. Flower Bud Burst, 2. 50% Color, 3. Middle Fruiting [Cones], 4. First Flower, 5. All Leaves Withered)*

PART C: OBSERVE PLANTS

Your students' work can be entered into the Budburst Plant Trackers contest!

8 **Bring** students outdoors *(or use videos, photos, or indoor plants)* to choose a plant to observe and to draw and write detailed observations. Back indoors, have them use the **Phenophase Finder** resource to determine their plant's group and phenophase. (To decrease the challenge: Have students discuss in pairs and assign them a specific plant.)

9 **Enter the Contest—$1,000 Prize!** **Direct** students to complete the **contest entry form** for the Budburst Plant Trackers contest, using the **rubric** and **Phenophase Finder** digital resource for guidance. Submit your class's entries for a chance for students and teachers to each win $1,000! **Deadline: April 26, 2021.**

budburst
A project of the Chicago Botanic Garden

About the **Budburst Plant Trackers** Contest

WHAT IS THE BUDBURST PLANT TRACKERS CONTEST?

- Students will closely observe a plant, determine its phenophase (life cycle stage), and draw and write about it.

WHY ENTER?

- Students will be practicing scientific skills in the real world—and contributing data to a community science project (learn more about Budburst community science at **budburst.org**).
- Plus, students and teachers each have a chance to win **$1,000**!
- This contest supports lessons you may be teaching about plant structures, life cycles, ecosystems, pollinators, and climate change.

HOW DO I ENTER?

- Your students will need the entry form (includes instructions for students) and Phenophase Finder resource. You can also share the rubric.
  - These pages are available as Google Docs. You may download and print them.
- You may also use the accompanying lesson, reading passage, and resource sheets to prepare your students for the contest. Download these resources at **scholastic.com/budburst**.
- **Contest Deadline: April 26, 2021**

THREE EASY WAYS TO SUBMIT

1. UPLOAD | **scholastic.com/budburst**
2. EMAIL | **scholasticsubmissions@scholastic.com**
3. SUBMIT | **Mail**

Scholastic Inc., Budburst Plant Trackers Contest
ATTN: Space 3-226 (SNP)
557 Broadway
New York, NY 10012

Community Science With Budburst

Enhance your plant-focused lessons with free and engaging resources.

Plant Life Cycles • Structure and Function • Ecosystems • Pollinators • Climate Change

After entering the contest, continue engaging in community science by submitting your class's plant observations on the Budburst website. Classes can **submit data on any outdoor plant,** anywhere. Educators can even identify plants in the schoolyard for students to study all year.

A project of the Chicago Botanic Garden, Budburst offers **NGSS-aligned** activities designed for grades **K–12**, with suggestions for implementation either **remotely or in-person**. Visit the Educators page **budburst.org/activities/for-educators** and Getting Started **budburst.org/getting-started** to learn more.

HOW TO USE BUDBURST

Budburst Groups

→ Participate in a community science project by creating a Budburst Group. The COPPA-compliant platform collects student data via anonymous accounts that protect student privacy. Great for classes and clubs!

Using Budburst Groups is as simple as...

1. Create or login to your own account
2. Create your group and add member accounts
3. Report your observations
4. Explore your data

See details here: budburst.org/participating-in-groups **Review privacy details here:** budburst.org/privacy-policy.

Upcoming Mobile App

→ In mid-March, students will be able to submit plant data from anywhere via mobile devices like smartphones and tablets.

Budburst Database

→ Use Budburst's publicly available data to help answer students' research questions and to compare your class's plant observations with nationwide data.**View data here:** budburst.org/data-intro.

Other Projects

→ Go beyond plant phenology with Budburst's other projects, including investigating:

- What types of plants **pollinators** prefer
- How pollinator activity is influenced by **climate**
- How monarch **butterflies** and milkweed plants interact

→ **Explore different projects your class can take part in here:** budburst.org/projects.

Professional Development for Educators

→ Dig deeper into community science with the **Citizen Science Academy**. Learn about:

- Community/citizen science as a field
- How to use these programs effectively
- How to create compelling activities and opportunities to engage with the natural world

→ **Find out more:** chicagobotanic.org/education/citizen_science_academy

Benefits of Using Budburst

- Helps students practice **close observation** skills
- Builds student engagement with **student choice and personalization**, as students choose plants to 'adopt' and observe
- Provides **outdoor** learning opportunities
- Acts as a springboard for students to plan and conduct their own **investigations**
- Shows students that everyone can be part of a **scientific community**
- Provides a sense of **purpose** for collecting data to be used by scientists beyond the classroom
- Improves science literacy using **real-world data**
- Provides **place-based climate change education**