



Project BudBurst

A National Phenology Network Field Campaign for Citizen Scientists



www.budburst.org

Follow these 5 simple steps to complete your phenological investigation!

(For complete information visit www.budburst.org/participate.php)

1. Select and identify your plant
2. Describe the site where your plant is located
3. Determine the phenophases you are looking for
4. Begin observations (before expected time of flowering or budding)
5. Report your observations online

Register online with Project BudBurst to save your observation sites and plants that you are monitoring throughout this year and for coming years. (www.budburst.org)

Plant Etiquette/Safety:

- If you are observing plants in public places (such as parks or gardens), state or national forests, forests, or private property other than your own, please be considerate. In general, collecting living plant parts (including the flowers) is not allowed in most public places.
- Be careful around plants you are not familiar with. Some have thorns and others may have substances that cause allergic reactions.
- If you are going into areas that have plants such as poison ivy, oak, or sumac, know how to identify such plants so you don't accidentally come into contact with them.

1. Your first task is to **choose a plant** from the Project BudBurst plant list (www.budburst.org/plantlist.php) that is likely to be found in your neighborhood. Choose a plant that you can easily observe on a daily basis. Plants that are in your backyard,

schoolyard, workplace, or neighborhood will work best for daily observations. If your plant is one of many in the area, you may want to use a temporary marker such as plastic tape to mark your plant for easy identification.

Note: If you do not have access to a plant that is on the Project BudBurst plant list, you may choose to observe any other plant species that is accessible.

You will want to identify your plant at least a week or two before the phenological event actually happens. Of course, if we knew exactly when that time was, there would be no need to begin regular observations! To make the best educated estimate of the general timeframe where you can expect first flower or budburst for your species, consult the Plant Identification Guide (www.budburst.org/materials.php)

2. Once you have selected your plant and are ready to begin monitoring, take a few moments to **describe the site** where your plant is growing. You will need to know the geographic coordinates for your site -- the latitude and longitude (Lat/Lon). Here are some suggestions for finding these coordinates:

- Enter a street address or city/state location in the UCAR Geocoder on the Project BudBurst Website.
- A GPS unit outside at your location. Report as many decimal places as the unit provides.
- Topographic map.

You will need to take notes about the site. Look around and describe what you see. Is your plant near a building? Is it on a slope? Is it on a flat field? Are there other plants near your plant? If yes, what kind? What else can you note about your site?



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3. Determine the phenophase(s)

(phenological stage) of your plant. The ultimate goal of Project BudBurst is to have you observe the first day of the appropriate phenological event for your plant (e.g. first flower or budburst). You can use your Plant Identification Guide to help you determine the phenophase(s) for your plant.

Please remember that the list below does not necessarily reflect the chronological event order for all plant species.

Budburst/First Leaf: Report the date at which the first leaves are completely unfolded from the bud. For trees or large shrubs you will want to make sure there are at least three places on the tree or shrub where budburst has occurred. The leaves need to be opened completely and the leaf stem or leaf base must be visible (you might need to bend the new leaf backwards in order to see those). For conifers record when the new needles have expanded beyond the length of the bud scales.

Full Leaf: Report the date when nearly all (at least 95%) of the growing leaf buds have already reached the completely unfolded stage described above (Budburst/First Leaf). For conifers record when the needles first reach the length of the other mature needles.

First Flower: Report the date at which the first flowers are completely open. You must be able to see the stamens among the unfolded petals. For herbs (non-woody plants), look for the date when the first flowers of one patch are blooming. For trees or large shrubs you will want to make sure there are blooms on at least three places on the tree or shrub. In case of Hazel, Alder or Pine trees (or other conifers), look for the date when they start releasing the powdery, yellow pollen from their cones or catkins (cone-like flower clusters).

Full Flower: Report the date when 50% of the flowers are fully opened. Note that some trees and shrubs, especially in southern areas never reach full flowering (never have 50% of flowers open at one time). For these plants just record first flower and last flower. For conifers record when 50% of the branches (with cones) have pollen.

End Flower: Report the date when at least 95% of the flowers have withered, dried up, or died. For conifers record when 95% of the branches with male cones no longer are dispersing pollen.

Seed or Fruit Dispersal: Report the date when you notice the first fruits or seeds dropping naturally from the plant. For conifers record when the cones turn brown and the scales expand (seeds should start dispersing shortly thereafter).



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4. Now you are ready to **begin monitoring** your plant! About a week or two before the phenological event is likely to occur, start observing your plant every day (this way you won't miss the phenological event when it happens) and you will be able to get the best phenological data. Look for swelling leaves or flower buds because they are a sign that the bud is about to burst.

Fill out the attached report form while you monitor your plant, reporting the dates of each phenophase that apply to your plant. You can stop observing your plant(s) when they have reached the phenophase you were looking for and there is no other phenophase you would like to observe.

5. When a phenophase has occurred, **report your observations** online at www.budburst.org If you have registered for Project BudBurst, you can report the phenophases for your plant as they occur throughout the growing season.

If you do not wish to register for Project BudBurst, you will report your observations only when all the phenophases you have observed – this is a one-time submission.

Frequently Asked Questions:

Can I observe more than one species?

Yes, you will need to keep separate records and report each one individually. Fill out the attached report form for each plant.

Important: When you have chosen an individual plant or group of plants of the same species to observe (for instance the Lilac or the bluebells in your garden), only report the first time you see a certain phenophase. However, it is very likely that one plant will be earlier than another individual of the same species. We are very interested in differences between individuals of the same species at different locations. Therefore, it is also possible to follow more (groups of) individuals for Project BudBurst (for instance another Lilac 100 yards away or the bluebells at the park entrance). Those extra observations need to be reported separately.

Can I observe more than one plant of the same species?

Yes, just be sure to record the location of each. When different individuals of the same species vary in timing of budburst, it is often due to their environment. Note if the plant is on a north or south facing slope (or the north or south side of a building).

What if I miss a day? Can I still participate?

Yes, but it is best to observe every day.

Information sources:

- Nature's Calendar, the Netherlands (www.natuurkalender.nl/)
- PlantWatch Canada (www.naturewatch.ca/english/plantwatch/)
- USA National Phenology Network (www.usanpn.org)



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Fill out this observation form for each plant you observe. Fields marked by * are required.
Report online at www.budburst.org

WHAT PLANT DID YOU OBSERVE?

(see our plant list, www.budburst.org/plantlist.php,
or identify a different plant)

*Common Name: _____

Scientific Name (if known): _____

SKETCH YOUR PLANT:



WHERE DID YOU OBSERVE?

*Latitude: _____ decimal degrees (i.e. 39.9847)

*Longitude: _____ decimal degrees (i.e. -105.2682)

Elevation: _____ feet

*City: _____

*State: _____

Postal Code: _____

Country: United States

Comments on Location: _____

WHEN DID YOU OBSERVE?

MONTH / DAY / YEAR

Budburst/First Leaf: _____ / _____ / _____

Full Leaf: _____ / _____ / _____

First Flower: _____ / _____ / _____

Full Flower: _____ / _____ / _____

End Flower: _____ / _____ / _____

Seed or Fruit Dispersal: _____ / _____ / _____

Additional Comments: _____
