

## Activity 2: Color Change of Leaves

### 1) On a branch of your tree mark 4 leaves:

- Select a branch that is large, healthy, on the south edge of the tree and easily accessible and mark it with tape or ribbon.
- Always start from the end of the branch - choose the terminal leaf and mark the branch next to the leaf stem. If possible, select the same leaves as in the spring.
- Locate the three other leaves on this branch closest to this terminal leaf and mark them the same way
- Use permanent marker or tape



### 2) Observe the leaves twice a week:

- Start two weeks before the expected start of green down and continue until leaf color change has ended or leaves have fallen off.
- For each leaf report:

- the dominant color estimated using the GLOBE Plant Color Guide. If you don't have the Guide, contact your country coordinator.

*For example, if leaf 1 appears colored at 60 percent 5G 7/12 and 40 percent 2.5 Y8/10, record the leaf color as 5G 7/12 for that observation date.*

- "snow covered", if the leaf is snow covered
- "fallen", if the leaf has fallen



- To record your observation, use GLOBE Green-Down Data Sheet (last page)

### Example of Completed Green-Down Data Sheet

#### Tree, Shrub, and Grass Green-Down

| Date<br>YYYY-MM-DD<br>(year-month-day) | Growing<br>season cycle<br>(1, 2 or 3) | Leaf 1<br>(Color, fallen,<br>snow covered) | Leaf 2<br>(Color, fallen,<br>snow covered) | Leaf 3<br>(Color, fallen,<br>snow covered) | Leaf 4<br>(Color, fallen,<br>snow covered) | Data<br>submitted<br>to GLOBE |
|----------------------------------------|----------------------------------------|--------------------------------------------|--------------------------------------------|--------------------------------------------|--------------------------------------------|-------------------------------|
| 2013-09-30                             | 1                                      | 5 G 7/4                                    | 5 G 7/4                                    | 5 G 7/4                                    | 5 G 7/4                                    | <input type="checkbox"/>      |
| 2013-10-03                             | 1                                      | 5 G 7/4                                    | 5 G 7/4                                    | 5 G 7/4                                    | 2.5 Y 8/6                                  | <input type="checkbox"/>      |
| 2013-10-07                             | 1                                      | 5 G 7/4                                    | 2.5 Y 8/6                                  | 5 G 7/4                                    | 2.5 Y 8/6                                  | <input type="checkbox"/>      |
| 2013-10-11                             | 1                                      | 5 G 7/4                                    | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | <input type="checkbox"/>      |
| 2013-10-14                             | 1                                      | 5 G 7/4                                    | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | <input type="checkbox"/>      |
| 2013-10-16                             | 1                                      | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | <input type="checkbox"/>      |
| 2013-10-20                             | 1                                      | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 7.5 YR 6/4                                 | <input type="checkbox"/>      |
| 2013-10-23                             | 1                                      | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 7.5 YR 6/4                                 | <input type="checkbox"/>      |
| 2013-10-27                             | 1                                      | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 7.5 YR 6/4                                 | <input type="checkbox"/>      |
| 2013-10-30                             | 1                                      | 2.5 Y 8/6                                  | 2.5 Y 8/6                                  | 7.5 YR 6/4                                 | 7.5 YR 6/4                                 | <input type="checkbox"/>      |
| 2013-11-04                             | 1                                      | 2.5 Y 8/6                                  | 7.5 YR 6/4                                 | 7.5 YR 6/4                                 | fallen                                     | <input type="checkbox"/>      |
| 2013-11-06                             | 1                                      | 2.5 Y 8/6                                  | 7.5 YR 6/4                                 | 7.5 YR 6/4                                 |                                            | <input type="checkbox"/>      |
| 2013-11-11                             | 1                                      | 7.5 YR 6/4                                 | 7.5 YR 6/4                                 | 7.5 YR 6/4                                 |                                            | <input type="checkbox"/>      |

- Share the date of the end of green down at the [Discussion forum](#).

### 3) What more can you do to track the color change

- At each visit, use [GrowApp](#) to take a **picture of the whole tree or of observed leaves** with the white paper in the background. See, how the color of leaves changes in your **time-lapse animation**
- Using crayons or water colors, **create a palette of leaf colors** that you can see at your branch day by day. You can also create a color palette following this [learning activity](#).
- Share the animation and picture of your color palette at the [Discussion forum](#).



### 4) Optional: Record temperature and precipitation

If you have an Atmosphere site nearby, keep recording temperature and precipitation data along with observing the leaves and see if there is any link between the weather conditions and the change of your tree.

 **The activity should be completed no later than November 20.**

 **TIP:** Before you begin your observations, try to formulate a hypothesis with your students about how and when your tree will change during the autumn. Follow up on the questions you chose in Activity 1 and invite students to estimate, e.g., when the leaves on your tree will start to colour / what colours will be on its leaves / when will the leaves fall off.

You can also use your measurements from previous years to formulate a hypothesis or look at other GLOBE schools' measurements in an [online database](#). Using the data, students can make estimates about if and how the timing of the tree will vary this year.

You can then use your observations to confirm or reject your hypothesis.

 **TIP:** Students can take turns observing a tree near the school or observe their own trees. Use online tools such as [Padlet](#) or [Wakelet](#) to share pictures and results in your team.

# Tree, Shrub, and Grass Green-Down Data Sheet

Observer Names:

Plant Common Name: \_\_\_\_\_

Green-Up Cycle: \_\_\_\_\_ Year: \_\_\_\_\_

Check the last column in the green-up table to keep track of data submitted.

**Comments** (date each comment): \_\_\_\_\_

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