

## How we score plant morphology for Chloroplast 2010

### Scoring considerations:

Always score compared to MOST flat-mates. Look at the whole flat to get a feel for what is the norm for that flat. Environment can have an affect on plant morphology, and all plants in a flat have experienced approximately the same environment. For example, if the norm for the flat is leaves that are slightly rolled, each plant should not be scored as having rolled leaves. Be aware that there will be a range of normal phenotypes in a flat as well – for example, if there are 5-6 “small” plants in a flat, these more likely represent the low range of normal size phenotype than something abnormal.

Do not score the two oldest leaves for morphology – at the stage we are assessing, these leaves often naturally have color variations or look necrotic.

If you are not completely sure of the choice of controlled vocabulary for a particular plant, always ask for a second opinion from your co-worker(s).

On scoring web page: ‘Exclusive’ choices means only one can be picked. ‘Non-exclusive’ choices means more than one can be picked. For example, the leaves may have color variations in both the veins and the leaf apex.

1. Rosette size: Hold the [scoring guide](#) over the plant, with the center directly over the center of the rosette. Look at the plant as a whole. Anything “over the line” should be scored as the lower number.
2. Leaf size: Look at the majority of the mature leaves, not the oldest leaves or the very young, just emerging leaves.
3. Color characteristics: Look at the color of the plant as a whole. Is it lighter or darker than most of the flat-mates? Check purple if the plant is conspicuously purple. A plant could be lighter colored and purple, or darker colored and purple.
4. Leaf color variation: Look at individual leaves. Are they evenly colored, or do parts of the leaf have different colors? If you check color variations, choose one or more of the non-exclusive characters to explain your choice. For example, if the plant has dark green veins, choose veins, then dark green from the drop-down list.
5. Leaf shape: Look at the majority of the plant’s mature leaves. If they look abnormal compared to the other plants in the flat, choose abnormal and check the non-exclusive terms that explain your choice. Remember that smaller plants have leaves that are naturally not as elongated as larger plants, but that this does not necessarily mean that the shape should be scored as “round.” Become familiar with the range of normal phenotypes for a range of plant sizes.
6. Leaf number: this can be deceiving. For example, sometimes a plant with smaller leaves may falsely look like it has less leaves. Count the number of leaves on a few of the plants that are “normal” for that flat; there should be a normal range, say, 10-12. Then count the number of leaves on the plant you are scoring.

## Definitions:

- Rosette: the whole plant. Rosette stage is when the plant is producing many leaves radiating from the center to make a circular shape. The plant may or may not be starting to produce an inflorescence.
- Margin: the edge of the leaf blade
- Apex: the leaf tip
- Mottled: uneven coloring that is not confined to a certain type of tissue or area of the leaf
- Inflorescence: the flowering shoot
- Rolled: the leaf has a rolled, or tubelike, shape along the axis of the midvein
- Curled: the leaf is curled downwards (or occasionally upwards) roughly in a “C” shape, perpendicular to the midvein
- Succulent: leaves have a thick, shiny, fleshy, translucent appearance
- Serrated: with conspicuous “teeth” along the margin, more than flat-mates
- Trichomes: hairs on the leaf surface
- Necrotic: dead, browning tissue
- Petiole: structure that attaches the leaf blade to the stem or middle of the plant