

You will need a large, clear plastic bag, an unwound paperclip, a timer and a set of precise digital scales. The bag needs to be large enough to fit over the section of foliage in question, such as a small branch of leaves.

The mass of the plastic bag is measured using the digital scales and recorded. The bag should then be placed over the branch such that a cluster of leaves are inside the bag and the bag sealed around a clear section of the stem using the paper clip wire length as a tie to twist around it.

The timer is started and after 30 minutes the clip should be carefully undone and the bag carefully removed from the branch such that the condensation on the inside is not disturbed. The bag can then be weighed again. The difference between the first and second masses is a representation of how much transpiration has taken place.

To find the rate of transpiration, the bag should be replaced on the same branch in the same manner for further 30 minute intervals, with the bag being weighed again after each 30 minute period. This will give students a number of masses to plot onto a line graph showing the change in the mass of the bag over time.

Measurements are best made when the leaves of the plant or tree are dry (i.e. not after a rain event) and on a relatively warm day.

Students could measure the relative transpiration rates of different tree species. In this case, the size of the sample branch and the number of leaves enclosed in the bag would have to be comparable.

