



Wind

WHY IS THIS IMPORTANT?

Whether you are gardening with an open landscape or on a terrace in a high rise apartment building, wind can affect the plants you are growing. Gentle breezes may be beneficial by allowing healthy air exchanges. Still air may promote disease organisms, while good air flow reduces their population. Stronger winds that blow occasionally before, during or after an infrequent storm is inevitable in most locations.

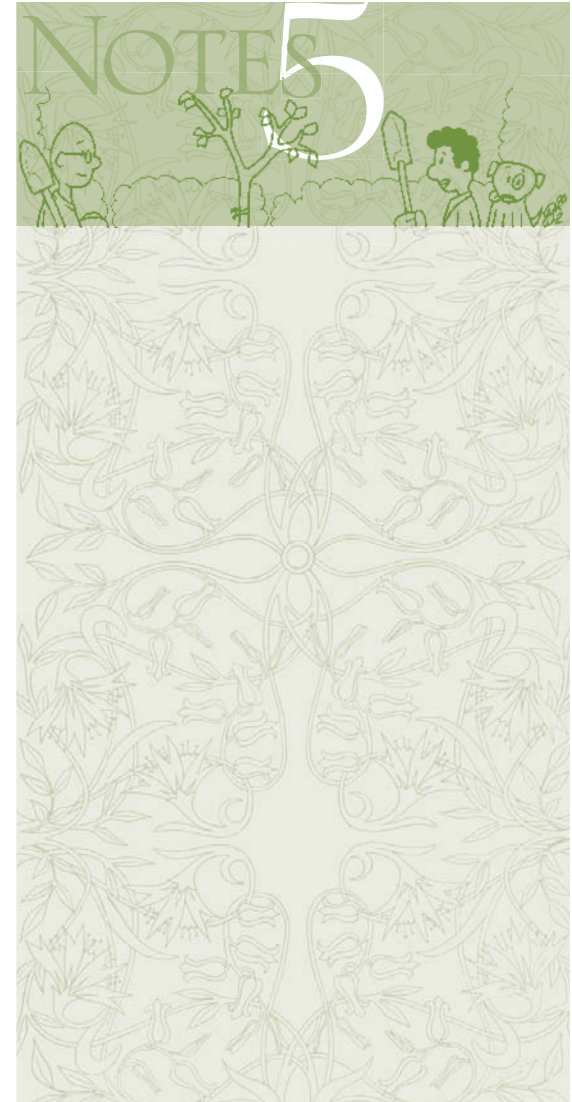
However, if your site is located where stronger winds blow on a regular basis or during certain seasons of the year, you should pay special attention to the effect the winds have on your

landscape. Settings near water or on hilltops are especially vulnerable to frequent winds. Setting plants, which are intolerant of wind on those sites, are aesthetically and financially disastrous. The plants are stressed and less able to sustain health.

Winds can dry out a plant quicker than replacement water can be drawn up by the roots. Water is a key component of every cell in the plant. Wind can accelerate evaporation from leaf surfaces, causing plants to struggle unnecessarily. Some plants are able to withstand wind better than others, and may be planted as windbreaks. Other plants are quite sensitive to the drying effect, or *dessication*, caused by wind.

Plants, including trees, are at their most vulnerable state when they are first planted. Roots have not yet gotten established and the plant has not yet adjusted to an environment which is different from the nursery. They are also more vulnerable when they are transplanted. On windy sites, plants can be lost during the first or second year after planting. In the winter, when the ground is frozen or dry, wind can do the most damage. Winter wind can affect trees or rose bushes in some locations.

Wind damage may show up on broad leaved evergreens (like holly, cherry laurel and



rhododendron) frequently. While damaged leaves can be pruned out, it is not advisable to plant them in sites where they are wind damaged annually.

ACTIVITY

Where are my windy spots?

MATERIALS:

- 10+ STICKS LARGER THAN 2 FT.
- ROLL OF FLAGGING TAPE
- WRISTWATCH OR STOPWATCH

This activity will require a set up and periodic monitoring. It will be done over a longer period of time than activities in other Steps. Ideally, this should be done at different seasons of the year, including winter, to get a full picture of wind patterns.

Sites surrounded by fences, woodland, or mature plantings that protect or buffer from wind are less likely to suffer wind damage. This activity is optional for sites with wind buffers.

Collect 10 or more sticks and tie about a foot of flagging tape to each. Old twigs will do. The length of the stick is not critical, but each should be similar and be at least a couple of feet high. The flagging tape is non-adhesive and light weight to blow easily. It will dangle on a still, no-wind time.

Select at least ten sites on your property that are out in the open and insert the flag into the ground securely. Number each site.

Make a chart with regular, periodic dates on it to record observations (every few days or weekly will be sufficient.) Randomly choose morning, afternoon and evening times on different dates. Allow space to record the status of the flag for a 1 minute interval. Do this over a period of a month, if possible. Also indicate each of the numbered sites you have placed a “flag”. Observe and record on the times you designate. The chart for one day might look something like this, but use your discretion:

Date	Time of Day	Location	Angle of Flag in estimated degrees	% of 1 minute interval (with movement)
2/10	10 am	1	0	100
		2	0	100
		3	15	10 (fairly still)
		4	45	50 (moves frequently)
		5	90	50 (fairly windy)

ESTIMATED TIME: 1 HOUR TO SET UP (ONE TIME ONLY) 1 MINUTE TO RECORD EACH SITE. TOTAL TIME VARIES WITH THE NUMBER OF SITES YOU CHOOSE. BUT IT WILL BE 1.5 TO 2 HOURS.

Observe and record an estimated angle that the flagging tape is flying. On a still day, the angle is 0 degrees. On a very windy day, the angle is 90 degrees or more. With a stop watch or wristwatch, record how long the tape at each site stays at that angle over a 1 minute interval. Indicate if the flag is still or moving frequently.

This activity consumes more time than others we have done. Doing it over a month’s time and at random intervals shows a trend or pattern. Don’t run out only if the day is windy, nor confine your observations to days when there is no breeze. Hopefully, the randomness of your observations gives you with information that is typical of your property’s exposure to wind. This is not scientific evidence, but is a record of random observations.

Balcony or terrace gardens on high rise apartments may have a serious wind problem, which drastically reduces the kinds of plants that you can grow there.

USING WHAT YOU FOUND IN THIS STEP

There is not a formula for assessing what you observed. You will end up making a judgement call on whether you have a very windy site or just a few spots where the wind potentially could be a problem. Keep the records (the chart) for future reference. It helps to indicate in some way where each numbered location was placed; once the sticks have been removed, you wouldn't have reference points any more (i.e. where #1 was located, for instance).

Indicate on your sketch from Step #1 (Garden and Landscape Area) if there are particularly windy spots on your property. You do not have to mark the map with every location you tested, only those that may be a problem.

On windy sites, choose plants that can tolerate the conditions. Landscape Plants for Eastern North America (see "For Further Reading") lists wind tolerance. For instance, junipers, Eastern redbud and common hackberry can tolerate

strong winds; Japanese maple, boxwood, and wisteria cannot.

Anti-desiccants have been shown to be effective in protecting plants from excessive wind damage in winter. Anti-desiccants are clear films, sprayed on the leaves of plants to seal the invisible pores and prevent excessive water loss; they last for a few months. They are often used on newly planted broad-leaved evergreens over the winter. *Burlap*, wrapped around a newly planted evergreen in winter, can also provide protection from desiccating winds.

However, the gardener who finds it necessary to use anti-desiccants or burlap wrapping every year on the same plant should rethink how that plant is placed in the garden.

BURLAP WINTER WRAP ON EVERGREENS



For severe windy sites, *windbreaks* may be necessary. Windbreaks are rows of trees or shrubs that reduce or redirect the wind, creating



still air on the protected side. Windbreaks can be trees that withstand wind, such as Lombardy poplar, Norway spruce, or Eastern white pine. For information on height, density, orientation and other factors in siting a windbreak, see the reference on windbreaks in “For Further Reading.”

Vegetable other herbaceous plant gardens are best located where there are gentle breezes, not strong wind.

Sometimes neighbors’ experiences with similar exposure to winds on their property are helpful. Each property wind patterns vary, but there may be commonalities for you to consider.

FOR FURTHER READING

The Exuberant Garden and the controlling hand (Appendix A: Summary of Cultural Preferences and Tolerances), by William H. Frederick, Jr. Little Brown and Co., New York, 1992.

Landscape Plants for Eastern North America, by Harrison L. Flint, John Wiley and Sons, Inc. 2nd edition, 1997. (shows wind tolerance for many landscape trees, shrubs and vines).

Windbreaks, from Penn State University, <http://plasticulture.cas.psu.edu/WindBreaks.html>

