

## How to Care for Wilted Plants By Barbara White

This problem may be more than just a lack of water. A wilted plant looks morose. It seems to be giving up the struggle for a better life somewhere else. Carrying the personification of plants even further, a wilted plant seems to be accusing its owner of outrageous abuse even as it gives up its will to live. A plant that you have allowed to wilt looks pathetically vulnerable. And it's all your fault.

Well, potted plants are vulnerable. And they do wilt. But the process has absolutely nothing to do with a conscious effort by the plants to look sickly or to alert their owners to the need for help. Wilting is a straightforward reaction by plants to a problem they are having. Generally speaking, the problem is too little water.

Wilting can also be caused by viruses, bacteria, fungi and insect attacks. But most of the time it is the result of a simple lack of moisture in a plant. Notice, please, that it is a water shortage in the plant, not necessarily in the plant's soil. The inability of a plant to get moisture from its soil or problems in absorbing water fast enough can cause a plant to wilt even if it is sitting in a soggy pot. This curious fact about the absorption of water as well as its availability explains why there are several kinds of wilting.

### **What is Wilting?**

Wilting is the slow collapse of plant tissues that contribute to the normal shape or posture of a plant. Normally, water pressure in a plant helps it stay erect. When the pressure drops, the supporting tissues in a plant aren't able to hold the plant up and so it droops. But there are several kinds of water shortages in plants. They have different causes and should be treated differently.

**Incipient wilting** is almost invisible. It is a very slight drop in a plant's water pressure, called turgor, and it is quite normal. Nearly every plant experiences some incipient wilting every day. This occurs because the sun shines on a plant's leaves during the day. Plants react to the light by photosynthesizing sugars and by evaporating water from their leaves. The hotter and drier the air is around a leaf, the faster it evaporates or loses water.

Normally, a plant loses water faster than it can take it up through its roots. So, there is a net loss to the plant while the sun is shining on it.

Incipient wilting is so normal that plants have learned to cope with it. They absorb water fast enough to minimize their internal shortages and recover during the night when not much evaporation takes place. So the temporary loss of water is something that a plant, growing in the ground and in suitable light conditions, can endure very easily.

**Temporary wilting** is another normal occurrence. But it is visible and often quite painful to watch. Temporary wilting is a condition caused by the rapid loss of water through the leaves and the slower absorption of it through the roots. It is a radical form of incipient wilting that varies from it only by degrees. Even this visible, forlorn sort of wilting may cause no damage to the plant. To some degree at least, all plants can be low on internal water for a while without suffering any cell damage.

Since temporary wilting is a water flow problem and not a question of its supply, it is self-remedying. That is, a wilted plant that has been losing water faster than it has been taking it up will unwill if taken it out of the sun. All you have to do is let the plant catch up by slowing down its rate of evaporation. No water has to be added to the soil.

In fact, a plant in moist soil that is temporarily wilted won't be helped by adding water. It still loses water faster than it takes it up, no matter how much moisture you make available to its roots. Lots of plants are like this. They wilt rather severely in the sunlight and then recover at night. If the following day is cool and cloudy, the wilting soon is forgotten.

**Permanent wilting** is another thing altogether. It is a soil condition, not a plant description. When a soil reaches its 'permanent wilting point', it no longer contains enough moisture for the plant to absorb even if the plant loses no moisture through evaporation. Soils hold water because water clings to soil particles. Each bit of soil is coated with a thin layer of moisture. Roots absorb this moisture by 'pulling' it off the soil particles. As the thin film of water around a soil particle becomes thinner and thinner, the surface tension, or clinging force, of the water increases. At some point (the permanent wilting point), the clinging force of the water is stronger than the pulling power of the roots. That's when the plant can no longer take water from the soil because it is too dry.

Virtually all plants take up moisture in the same way and can reduce the amount of water in a soil to about the same point. Some plants have very large root systems with extensive root hairs, so they can gather moisture from a larger volume of soil. But when all the soil is dried to a certain point, no more water can come out of it, no matter how many root hairs the plant has. Some desert plants seem to be able to do a slightly better job of drying the soil, but the difference here is minimal. The real distinction among plants is how well they tolerate permanent wilting.

The point of all this is that plants use a lot of water. Somewhere between 97 and 99% of all water a plant absorbs is lost to the air around its leaves as they evaporate water. So large amounts of water travel through plants and, it travels quickly when the sun is shining. One other point: Permanent wilting isn't really permanent. It can be remedied by adding water to the soil. It's called permanent because the plant won't recover simply by having its evaporation rate reduced.

### **So What?**

All of the above is very interesting. But you are probably asking yourself what good it does anyone to know such stuff. Well, it can do a lot of good, especially if you happen to be growing plants in containers. A pot is a very artificial environment for roots. Plants in pots reach both temporary and permanent wilting points much faster than they would if they were growing in the ground. Knowing which sort of wilting is which and understanding the effects of each can be very helpful in keeping your plants alive and healthy.

### **Keeping Wilt Away**

There are a few simple procedures for coping with wilting. None of them are very surprising, but they do the trick.

Keep the soil evenly moist. In most homes this means checking the soil every two or three days. If the days are bright, warm and dry or if your plants are actively growing, check more often. If the soil feels dry to your finger, it's time to water thoroughly.

Pour water on to plants slowly until you see some of it seeping out the bottom of the pot. This shouldn't take very long, since you also should make sure your plant has adequate drainage.

Drainage is about 95% soil quality and 5% pot. Most commercially mixed potting soils drain well. If the pot doesn't have a hole in the bottom, however, water can collect and rot your plant's roots. Too much water then will create decayed root hairs, which are incapable of

absorbing water. Since leaves depend on roots for all the moisture they evaporate, they may wilt even though the moisture in the soil is more than adequate.

Wilting occurs quickly in plants that are root-bound. A root-bound plant has so many roots that its soil is often compacted. Such soil has little or no drainage, relatively little airspace and therefore can't hold much moisture. Root-bound plants dry out very quickly, so you should suspect this problem if you have a chronic wilter on your hands.

### **More Considerations**

Plants like air. They like it fresh, clean and moving. But fresh air is often cold and air can move too fast. Air is taken in by plants through their stomatas. These are openings in the leaf surfaces. As air goes in, water vapor flows out of the stomatas. In very strong breezes, a plant can lose a lot of water to the air. The problem is compounded if the air is cool, since cold air is generally dirty.

A few battles with potted garden soil can leave you thinking that soil is the main cause of wilting. Nope. Your watering habits, whether the plant is growing in pure sand or humus clay, determine the wilting ways of your plant.

Packaged soil is well engineered. Sterile, porous and laded with organic matter, it holds water well. If it's good stuff, it's easy to work with, wet or dry. But potting with dry soil tends to keep the soil more porous. Wet soil compacts easily. Consequently, it doesn't hold water as well in the long sun. After you've potted a plant, give the pot a few firm but gentle thumps on the floor to settle the soil and eliminate air pockets. Don't push the soil around the pants with your thumbs. You'll destroy roots and compact the soil this way.

Every time you water, water thoroughly. Hit every grain of soil. Trickle the water around the top of the pot and wait until you see it coming out the bottom.

### **Easy Does It**

When you come across a wilted plant, be gentle. The root hairs suffer first when a plant is dry. Water applied to a plant with serious root hair damage does little good. The plant won't be able to absorb the moisture and even may begin to rot as a result.

So, move a wilted plant out of the sun and treat it as though it needs to convalesce. Give it just a little moisture at a time. If the plant recovers quickly, it may have been suffering only from temporary wilting. If moving the plant doesn't work, apply moisture regularly until it is turgid again. And then be careful not to drown any developing root hairs by over watering.

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