Repairing Storm-Damaged Shade, Ornamental, and Fruit Trees

Storm season can wreak havoc on our landscape trees. The type of care you give damaged trees depends on their size, the extent and type of damage, and the time required for surrounding soil to reach normal moisture levels.

A tree's size largely determines its ability to recover. A small, vigorous tree is more likely to survive than a larger one. In general, a damaged large tree is weakened more than a smaller tree receiving the same kind of damage. Types of damage to trees include falling and being uprooted, broken and torn limbs, wounds, split branches, and exposed roots. In many cases, the damaged tree will have to be removed and replaced.

Decide what to do with tree stumps. If you are going to leave them, cut them off flush with the ground. If you plan to have them removed, leave 4 feet of stump. Removal is cheaper and easier if stumps can be pulled out rather than dug out. Stumps can be cut at ground level and the remains removed using a stump grinder.

Broken and Torn Limbs

Limb damage affects the shape and general health of the tree. The tree must be pruned properly to avoid additional damage. Removing tree limbs is dangerous work. If you are unsure about your ability to perform the proper repairs, you should hire a certified arborist for the job.

1. Cut off small broken or torn limbs 1 inch or less in diameter with a single cut at the branch collar to avoid unnecessary bark stripping.
2. To remove large, heavy limbs greater than 1 inch in diameter, use the drop cut method (1-2-3 technique) to avoid ripping bark and wood (Figure 1).

   a. Make a cut on the underside of the limb, about 1 foot from the trunk or branch from which you are pruning. Cut about one-third to one-half of the way through the limb.
   b. Make a second cut on the upper side of the limb, about 2 to 6 inches farther out on the limb than the first cut. Continue sawing until the branch splits off.
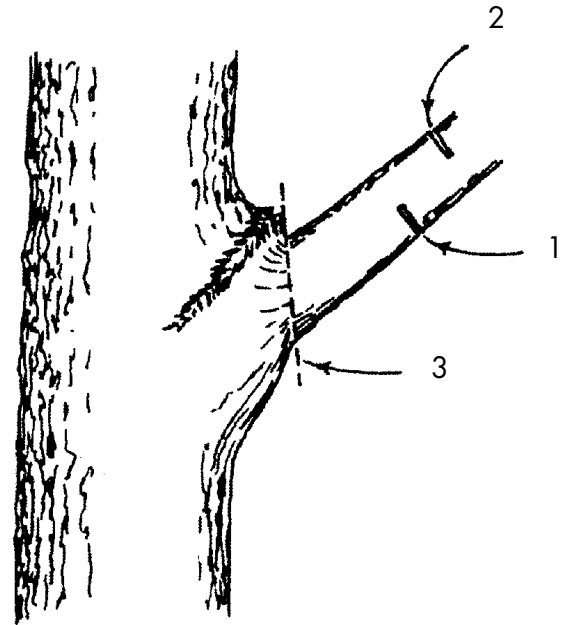

Figure 1. Example of the drop cut used to remove large limbs. (With permission from Edward F. Gilman, *An Illustrated Guide to Pruning*, 2nd edition.)

   c. Remove the remaining stub by making a single cut at the branch collar. Never cut flush with the trunk or branch from which you are pruning. This will delay healing and possibly allow an entry for rot organisms into the tree.

Split Branches and Trunks

Trees that have certain types and degrees of structural damage may have the potential for mechanical repair using bolts and cables. Repairing large branches and trunks can be very dangerous for the homeowner. Any such repairs to large branches or trunks must be performed by a certified arborist. Contact your local MSU Extension office for more information on certified arborists in your area.

If small branches are split at the crotches, these can be pulled back into place and secured with lag-threaded screw rods.

Steps to repair small split branches or trunks:

1. Bore a hole through the trunk or branch at a place above the split. The hole should be at least two times the diameter of the largest affected stem. This is where the screw rod will be inserted. Make the hole one-sixteenth of an inch smaller in diameter than the diameter of the screw rod.
2. Insert screw rod until the point is through the opposite side.
3. Tighten with nuts and washers to secure the split.
4. If the split is long, insert as many screw rods as necessary, 12 to 18 inches apart. (Or use regular bolts with washers on each end. Countersink the bolt so the washers rest on the hardwood.)

If the crowns of larger trees need strengthening, cables can be used between the weakened branches. Hire a certified arborist to see if cabling is an appropriate repair method.

Wounds

The amount of damage to tree bark inhibits the plant's ability to recover, especially when there is more than one type of injury. Just like when we cut our finger, it is important to "clean" the wound on a tree.

1. Remove all jagged and protruding wood. Make smooth, clean cuts with a saw or chisel. It is important to remove and smooth out any rough places where water could accumulate and allow rot organisms to grow.
2. If there are bark wounds, remove loose bark. Return as much bark as possible, including peninsulas of soundly attached bark.
3. To remove bark, make smooth, clean cuts to form a boat-shaped area pointed at both ends. Again, this is to make sure water cannot gather.
4. Do not paint or dress the wound edges or the exposed wood surfaces with a prepared tree paint or dressing.

As a general rule, wounds to a tree will heal themselves through the growth of callus tissue. This callus tissue will seal off, or compartmentalize, the damage from the rest of the tree. There are products marketed as tree or wound dressing. There is little evidence that these products actually provide a benefit, and they can in fact slow the wound-healing process. Sealing a wound can trap moisture and harmful organisms and stimulate the rotting process.

Uprooted Trees

Leaning trees less than 4 inches in diameter can be straightened and staked or braced back into an upright position. The staking/bracing may be required for an extended period, up to 2 years. It is important to remove any wires or bracing material that surrounds the trunk after the tree has become stable. Otherwise, the wires will girdle the trunk and inhibit future growth.

1. Before you straighten a tree, cut and smooth all jagged and irregular root breaks.
2. Prune the damaged tree just enough to balance root losses. Severe pruning should be avoided.
3. Cut out broken, diseased, and malformed branches to give the tree a desirable shape.
4. After straightening, water the tree well, and maintain moisture during dry periods.
5. Fertilization should help induce improved vigor for fall root growth. Use a tree/shrub fertilizer available at your local garden center or nursery. Follow label application rates carefully.

Trees larger than 4 inches can be difficult to fully straighten. Survey the damage if large trees were uprooted by heavy winds. At least one-half or more of the root system may have been eliminated. Reduction pruning on the leaning side can relieve stress on the trunk and root system. In these cases, a certified arborist should be consulted. It may be best to remove the tree and plant a new one in its place.

Exposed Roots

Cover exposed roots. Use nearby sand and silt deposits, if there are any. It is not essential to use regular soil to cover roots. Build the root cover to the level it was before the damage. Do not build it higher. A 2- to 3-inch-deep mulch layer retards drying of exposed roots.

Silting

If you are in an area prone to flooding during hurricane season, silting is one of the greatest threats to shade, ornamental, and fruit trees.

Silting occurs when soil is carried by rapidly moving water and left behind. Silt deposits can vary in depths of up to several inches. Trees and shrubs usually are not harmed by small silt deposits. The degree of injury increases based on how long water remains and the depth of silt deposited. To reduce silt injury to plants:

1. Remove the silt from the bases of the tree trunks. If the trees are on well-drained soil, simply wash the silt away from the trunks. A mild detergent helps remove silt from the foliage.
2. On soils that drain more slowly, wait until the silt dries, then rake and remove the excess.

If excess silting causes a change in grade and is deposited around the bases of trees, remove excess silt to the level as close to the original grade as possible. Be careful not to rake or cut into the root system.

On the other hand, erosion can take place during a flooding event. If too much soil has eroded, replace it with good topsoil around the bases of plants. The depth should equal the original soil depth. Mulch newly applied topsoil to prevent runoff.

Continue Care

Continue to care for the injured tree after repairs are completed.

1. Remove silt and sand deposits. To prevent further damage to root systems, remove all deposits to the level of the soil before the damage.
2. Check soil moisture. The variety and species of trees and the soil's natural ability to retain or expel excess moisture determine what actions are necessary to avoid losses caused by excess moisture.
3. Mulching is needed to conserve moisture as the dry fall months approach.
4. Prune a damaged tree just enough to balance the loss of roots; avoid severe pruning. Cut out broken, diseased, and malformed branches, and give the tree a desirable shape.
5. Don't use excessive fertilizer because overdoses damage plants further. Follow label rates carefully.

Consult a certified arborist if you are uncertain as to the best procedure for repairing or replacing damaged trees. Contact your local MSU Extension office for the names of International Society of Arboriculture (ISA) board-certified arborists in your area.