Wet Feet in the Landscape

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All right Mother Nature, enough is enough! Three consecutive years of record drought, 1986-88 were bad enough, but your relentless rains in 1989-91 (ten inches above normal rainfall in some areas of the state) have been the kiss of death to many ornamental plants in the landscape.

Among the plants hardest hit by excess rains have been junipers. These plants have a history of being drought tolerant, once established, but they do not like wet feet. Plants in low-spots where water collects after a rain or at the base of a bank where water drains are usually the first to go. Other plants affected by extremes of soil moisture are ornamental cherry, dogwood and redbud. Annuals and herbaceous perennials have also taken a beating, including coreopsis, verbena, celosia, sedum and salvia.

Plants stressed by too much water show many different symptoms. Woody ornamentals may show leaf scorching, wilting, premature fall color, interveinal chlorosis or die-back. Bradford pear, for instance, growing in chronically wet areas will show early red leaf color and interveinal chlorosis. Some trees under moisture often throw off foliage in an effort to compensate for the damaged roots. Entire branches may die back. The root system of plants under water stress will appear water-soaked, dark brown and decayed. Insect and disease problems often become more pronounced on plants under water stress. Verbeana, particularly the *tenuisecta* species, will stop blooming and go into a dormant state when under water stress. Sedum 'Autumn Joy', a widely grown herbaceous perennial, will literally fall-apart from the crown area when given too much water.

Water stress problems are usually easier to diagnose than to cure. When you hear a slurping sound when digging a plant and see water dripping from the roots, it's obvious that there is a water problem. When you dig a hole and it fills up with water a few inches below the surface and then refuses to drain after several hours, there is a water problem. Such site problems should have been identified during the design of the landscape and corrected during installation, but most clients don't want to hear that. They want to know what they can do to correct the situation now, after the fact.

Improving the drainage of poorly-drained soils can be done in a number of ways, none of which are easy or cheap. Clients must dig the affected plants, heel them in somewhere close by in a shaded, well-drained site while changes are made to the existing site. Then, rototill the site to a depth of 12 to 15 inches if possible to break up the soil and a possible hard-pan layer beneath the surface. If there is a definite hard-pan, sub-soiling with a mole plow or cultivator attached to a tractor is recommended. Soil augers can also be used to break up the soil.

Next, elevate the bed by adding twelve or more inches of well-drained soil. Shape the bed in a smooth gently sloping contour to assure good drainage and no standing Pockets of water.

A third option would be to replace the damaged plants with others that are more tolerant of moisture extremes. For instance, replacing helleri holly or gumpo azaleas with dwarf yaupon holly, camellia with wax myrtle, and leyland

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cypress with bald cypress. Ornamental grasses, ferns, hosta and Japanese iris are other possible choices for moist to wet sites. In extremely wet soils, plant substitution may not be the answer, because most ornamental plants will not grow hydroponically. Table 1 is a partial list of some plants known to be tolerant of moist sites.

When attempting to diagnose what you think is a moisture- related problem, examine the site closely. Ask the client how recently the site received rain or irrigation. Use your soil probe to examine the soil profile for hardpan and water beneath the surface. If you send samples to the diagnostic clinic, send as many plant parts as possible, including above-ground parts showing injury as well as a sample of the root. Moisture-related problems are extremely difficult to diagnose over the phone, and a visit to the site is often necessary.

Table 1. Plants Tolerant of Moist[1] Sites

Common Name	Botanical Name
TREES	
Alder	*Alnus glutinosa*
Bald Cypress[2]	*Taxodium distichum*
Black gum, tupelo	*Nyssa sylvatica*
Boxelder	*Acer negundo*
Green Ash	*Fraxinus pennsylvanica*
Loblolly Pine	*Pinus taeda*
Pecan	*Carya illinoensis*
Persimmon	*Oiospyros virginiana*
Pond Cypress	*Taxodium ascendens*
Red Maple	*Acer rubrum*
River Birch	*Betula nigra*
Southern magnolia	*Magnolia grandiflora*
Sweetbay magnolia	*Magnolia virginiana*
Sweetgum	*Liquidambar styraciflua*
Virgnia Pine	*Pinus virginiana*
Willow Oak	*Quercus phellos*
Willow	*Salix Spp.*
SHRUBS/VINES	
Asiatic jasmine	*Jasminum asiaticum*
Carolina Jessamine	*Gelsimium sempervirens*
Devilwood, false holly	*Osmanthus spp.*
Dwarf Yaupon Holly	*Ilex vomitoria 'Nana'*
Fetterbush	*Leucothoe populifolia*
Florida Anise-tree	*Illicium floridanum*
Gallberry	*Ilex glabra*
SHRUBS/VINES *cont.*	
Japanese fatsia	*Fatsia japonica*
Leatherleaf viburnum	*Viburnum rhytidophyllum*
Lily Turf	*Liriope spp.*
Loblolly Bay	*Gordonia lasianthus*
Maidengrass	*Miscanthus spp.*
Oleander	*Nerium oleander*
Pampasgrass	*Cortederia selloana*
Periwinkle	*Vinca major*
Possumhaw	*Ilex decidua*
Privet	*Ligustrum spp.*
Upland Sea Oats	*Chasmanthium latifolium*
Virginia sweetspire	*Itea virginica*
Wax myrtle	*Myrica cerifera*
Winterberry	*Ilex verticillata*
Yaupon Holly	*Ilex vomitoria*
PERENNIALS	
Astilbe	*Astilbe spp.*
Beebalm	*Monarda spp.*
Bergenia	*Bergenia spp.*
Foxglove	*Digitalis spp.*
Gayfeather	*Liatrus spp.*
Horse Tail	*Equisetum hyemale*
Hosta	*Hosta spp.*
Japanese Iris	*Iris kaempferi*
Lobelia	*Lobelia spp.*
Loosestrife	*Lythrum spp.*
Louisiana Iris	*Iris fulva (nelsonii)*
Obedient Plant	*Physostegia spp.*
Phlox	*Phlox spp.*
Yellow Flag Iris	*Iris pseudacorus*

[1] Moist = can withstand seasonal fluctuations in soil moisture but not permanent waterlogging

[2] Flood Tolerant