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# Texas Agricultural Extension Service

The Texas A&M University System

# Horticultural Update



Government Publications  
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## Plant of the Month . . . July / August

AUG 15 1996

Dr. William C. Welch, Landscape Horticulturist  
Texas A&M University, College Station, Texas

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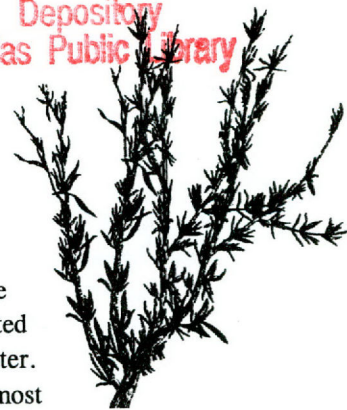
### Rosemary, *Rosmarinus officinalis*

Family: *Labiatae* (Mint)

Zones: 8-11

As long as the drainage is good, rosemary will thrive even on poor, dry rocky soils. Indeed, in its native range around the Mediterranean Sea, rosemary flourishes in coastal regions so arid that a significant part of the plant's moisture comes from the dew absorbed through the foliage. But though tolerant of drought, this plant is not cold hardy, and this limits its use as a landscape plant even in the South. However, rosemary is an ideal candidate for

container cultivation, in which case the plant can be moved to a protected spot during the coldest parts of winter. It's worth the trouble, for this is a most decorative plant. Rosemary tolerates clipping and responds well to training; it is a good subject for bonsai or topiary, and through these techniques, can adopt an endless variety of forms. And whatever the shape, rosemary preserves the same virtue: the needlelike foliage looks good year-round -- for rosemary is evergreen -- and it smells even better than it looks.



The genus name *Rosmarinus* means "dew of the sea" (a reference to the plant's preference for seaside conditions), while the species name -- *officinalis* -- indicates that the plant has been used for medicinal purposes. Indeed, early herbals devoted considerable space to the properties (both curative and magical) of this plant.

Rosemary is often planted close to the front door, where people brush against it as they pass, releasing some of the foliage's clean, rich scent. The foliage is popular, fresh or dried, for seasoning various dishes, and is particularly good (in this writer's opinion) with meats and potatoes.

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# Mulches for Water Conservation

By Malcolm Beck, Texas' Premier Naturalist, Garden-Ville Horticultural Products,  
Jerry M. Parsons and Roland E. Roberts, Extension Horticulturists, Texas A&M University

The quality of the food we eat, the water we drink and the air we breathe -- in fact the well-being of all plant and animal life -- is determined by the quality of our topsoil. The earth's crucial thin layer of soil must be protected, maintained, built, and nourished. A mulch cover of various materials on soil enables, conserves, and enhances our precious soil.

What is mulch? Natural mulch consists of dead leaves, twigs, fallen branches and other plant debris which accumulate on the earth's surface. Bacteria, fungi, and other living organisms use these raw organic materials for food, a process we know as decay. In the natural scheme of things, decay is Nature's way of returning to the earth the raw materials borrowed by previous generations of plants.

Organic mulches not only conserve moisture, they also feed plants, earthworms, microbes, and other beneficial soil life by composting at the moist earth surface. More species and tonnage of life occur below than above the soil surface. All soil life needs energy. They cannot collect energy directly as green plants do, but they feed on energy released from decaying mulch, which is their preferred food source. As microbes digest organic materials they give off a sticky substance that glues soil particles into a crumb-like structure. Carbon dioxide-oxygen exchange necessary for healthy root growth and proliferation of beneficial soil life is enhanced. Better control of soil pathogens results. Crumb-like or crumbly soil structure also allows water to soak in better. Water that soaks in is held on the humus and clay particles for future plant use. Water amounts higher than the field capacity of a soil are filtered by organic matter as it flows downward to feed aquifers that supply drinking water. Soils which have lost crumb structure need mulch cover to rebuild.

People can adapt natural mulching to cropping practices and to production and landscape use of ornamental plants by using available living or dead organic matter and inorganic materials. Public interest in mulch is aroused for two reasons: labor savings and plant advantages. Native materials collected in your area are the best mulch. It is neither economical nor environmentally feasible to ship in barks, wood chips, or some other fancy material from a distant source when usually there are nearby materials being wasted.

## REASONS FOR MULCHING

Unfortunately, mulching does not perform instant miracles, but it encourages better plant growth and development, and makes all landscape maintenance operations easier. These benefits accrue whether plants are growing in the coolest or hottest climates or in the wettest or driest weather. A mulch is any material placed on the soil surface to conserve moisture, lower soil temperatures around plant roots, prevent erosion, and reduce weed growth. Mulches can be derived from either organic or inorganic materials.

## WHAT DO MULCHES DO?

Mulch insulates and protects soil from drying and the hard-baking effects caused by evaporation of water from soil exposed to hot sun and winds. Mulched soils are cooler than non-mulched soils and have fewer fluctuations in soil temperature. Optimum soil temperatures and less moisture evaporation from the soil surface enables plants to grow evenly. Plant roots find a more favorable environment near the soil surface where air content and nutrient levels are conducive to good plant growth.

Mulches break the force of rain and irrigation water, thereby preventing erosion, soil compaction, and crusting. Mulched soils absorb water faster. Mulches prevent splashing of mud and certain plant disease organisms onto plants and flowers during rain or overhead irrigation.

The mulch covering excludes light which prevents germination of many weed seeds. Fewer weeds means less competition for available moisture and nutrients. Using mulches to control weeds is safer than applying herbicides or cultivating, which can damage tender, newly formed roots.

Mulches also add attractive features to landscape. Research and common sense have shown that a high organic content favors soil microbes which detoxify pesticides after they are used, and also furnishes energy needed by the microbes to make high-analysis fertilizer available to plants, without the fertilizer itself becoming toxic. This is another great benefit of using organic mulches. Decaying organic mulch

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on soil keeps both plants and beneficial soil life-species flourishing so they can help each other.

### **MANAGEMENT OF MULCHES**

Apply mulches in a layer 2 to 6 inches thick. Layer thickness depends on mulch material, e.g., coarser mulches are applied more thickly. Thicker layers of mulch are placed around trees and shrubs than in flower or vegetable beds. Four inches of loose fibrous materials works well around trees and shrubs. The finer and smaller the particle size, the thinner the layer needs to be. Thick layers of very fine material block air to the roots of plants. In their search for air, roots will grow up into mulch, which can be harmful to plants if the layer of mulch is not constantly maintained.

Organic mulching materials should be added regularly to maintain the desired layer thickness. Shredded branches from tree trimmings and large 2-inch bark make a fibrous or loose mulch. Leaves or leaves mixed with some grass clippings and 1-inch size bark would be a medium mulch. When using medium mulch, the layer should be about 2 inches thick. One-half inch and smaller materials, such as fine-screened and double-ground barks, should only be 1-inch thick layers. When piled too thickly, these tiny particles can quickly settle together and prevent air and water from penetrating into the soil. The finer, smaller materials should be used around small flowers and vegetables.

When applying mulch around plants, cover the entire area of soil containing roots. Do not pile mulch against tree trunks. It isn't needed against trunks and may do harm. Doughnut mulch around plants to be benefited, allowing the plant to be in the hole of the doughnut structure.

Mulches can increase availability of certain elements in the soil. Gardeners can make a synthetic chelate with mulch by mixing one cup of iron sulfate (copperas) to each bushel of mulch applied. Iron particles will adhere to the surface of the mulching material and will be released for plant use as decomposition occurs around plants. Iron sulfate-treated mulches are also effective when incorporated into the soil.

### **MULCHING YOUR LAWN**

The Texas A&M 'Don't Bag It' Program, which encourages people to mow frequently and allow grass clippings to remain on lawn areas, and mulching lawn mowers are best for mulching your lawn naturally. However, most lawns

will benefit from additional mulching. Naturally you wouldn't use the same mulch you put around flowers, shrubs, and trees.

It is best to supply one-half inch of fine-screened compost in the fall or early winter after the grass has stopped growing. During periods of water restriction, cover bare areas or dead turf with 1 inch of a red sand and compost lawn-dressing mix, to precondition the area for replanting when water is once again available. Remember, all grasses and grass seed must be watered **AT LEAST** twice a day for 7 to 10 days after sodding or sowing to insure stand survival, and water restrictions prohibit such water use. The use of lawn dressing during drought conditions will insure a rapid establishment of lawn grasses when planting can occur, and will make unsightly areas more attractive. Lawns are our biggest water consumers. For this reason, lawns are the most important places to practice water conservation by mulching. Lawns with no crumb structure, no humus, no beneficial soil life, or root-colonizing microbes require more care.

### **WATERING WITH MULCH**

While mulches do retain moisture in the soil, it will still be necessary to water plants growing in mulched soils. Water should be targeted beneath the mulch specifically at the root zone of desirable plants. Drip irrigation is the most efficient, effective watering technique. The only fate worse than thirst for a plant is death. In fact, death can follow severe thirst! Even if some folks are wise enough to know when to water a thirsty plant just seconds before it crosses death's threshold, these procrastinators are still losers. When a plant thirsts and is severely stressed, overall vigor and production (of flowers and fruit) are decreased. Shrubs display foliage abnormalities! Flowers bloom with mediocrity! Trees do not grow rapidly! How does one know when to water?

#### *When to Water*

Soil moisture-level is the best criterion for watering. If soil moisture is adequate, don't water, even if a plant is wilted. To test for soil moisture, probe around plants with your finger. If the soil is moist several inches deep, i.e., will form a ball when squeezed, there is adequate moisture present.

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### **How to Water**

You may know when to water, but you may not know how. Knowing 'how' may be the most important part. First of all, plant soils need to be thoroughly wet, not saturated. These are not swamp plants we are trying to grow. If treated as such, garden plants and most trees will respond appropriately by dying.

Deep watering is desirable to insure development of deep, drought-tolerant root systems. It is best to water plants thoroughly and deeply with drip irrigation. 'Drip or trickle' irrigation is a unique method which allows precise application of water in the immediate vicinity of plant roots. Soil moisture in the root area around the plants is maintained at a uniformly optimum level throughout the growing season. Small amounts of water are applied frequently to replace that withdrawn by transpiration of water from leaves. Most water loss by evaporation from the soil IS PREVENTED BY MULCH! Growth and production of plants is greater with uniform watering (kept moist - not too wet or dry) rather than being subjected to wet and dry cycles which normally occur with other irrigation methods. Operation of a drip system for three hours per day every other day will insure adequate soil moisture. Distribution and evaporation losses are minimized. Less of the total soil surface area is fully wetted than with sprinkler systems. Normally, only 25 percent of the soil surface is wetted with drip. This significantly reduces the amount of water required for irrigation. This does not reduce the plant's water requirement. Drip irrigation also simplifies irrigation procedures and reduces labor requirements.

Drip systems can be easily activated from one faucet. A drip irrigation system also waters otherwise forgotten or missed plants. Once drip hose is installed around shrubs, vegetables, and flowers, it never 'forgets' to water -- it specifically waters each and every plant. Drip systems are available at most local nurseries. Try one and reap the many rewards it offers. Drip systems can be used to water during periods when drought restrictions forbid most other types of watering. However, drip systems are not foolproof and must be properly maintained for best results.

### **PROPER USE OF MULCHES**

In garden beds planted every year, organic mulches can be incorporated into the soil each year to improve soil structure. New mulch is applied each year. Regardless of the source of organic matter, two factors are important to

the user. One is the stage of mulch decomposition and the second is relative salinity of the material. Manures and sludges are usually saline and may sometimes cause trouble unless used in moderation.

One question with organic mulches dependent upon the state of decomposition is whether to add a nitrogen source to the mulch. Many fresh materials may require this, to avoid nitrogen tie-up. The microbes decomposing untreated wood and bark use nitrogen; in this example, some nitrogen must be added. Slow-release nitrogen fertilizers are much more effective. When required, nitrogen can be added at the rate of one-half pound of actual nitrogen per 10 cubic feet of material.

### **ORGANIC MULCHES**

#### ***Municipal Tree Trimmings***

Using local mulch (from municipal tree trimmings) around plants has certain advantages over pine or hardwood bark. The contents of the local mulch are much closer to the contents of rich compost. The local-mulch blend actually feeds plants being mulched, while bark usually causes nutrients to be robbed from plants being mulched.

#### ***Bark (Pine)***

Ground bark is available mostly from pine trees, in sizes ranging from 2-inch chunks to a fine grind. It provides an attractive, long-lasting cover, and is usually reddish brown in color.

#### ***Grass Clippings***

These should be used only before grass seed has ripened, must be spread thin (2 inches or less), and allowed to dry. If applied too thick, they will build up heat and foul odors and become slimy during decomposition.

#### ***Compost***

This dark-colored material is easily spread and has slight nutrient value. It may be highly satisfactory where available from commercial producers or home owners.

#### ***Peat Moss***

Fine texture and good color are characteristic of peat moss, but it has a tendency to dry out and become

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impervious to water. It is costly to use in large quantities. Domestic peat moss may be so finely ground that it will blow away, and it is difficult to wet if it becomes dry -- water may run off rather than be absorbed by it.

#### ***Pine Needles***

Needles are green when fresh, then turn from reddish brown to gray upon drying, are long-lasting, and supply nutrients as they decompose. Pine needles make attractive mulch which is good for acid-loving plants such as azaleas, gardenias, and hydrangeas.

#### ***Sawdust***

If fresh sawdust is incorporated into the soil, supplemental nitrogen should be added to prevent nutrient deficiencies.

#### ***Shavings***

Shavings last longer than sawdust and will not mat as badly, decompose rapidly, but blow away easily during strong winds. Wood chips mixed with shavings pull much nitrogen from soil. Nitrogen level must be increased.

#### ***Straw***

Straw is coarser, more durable than most kinds of hay, and in most instances, is not attractive in ornamental plantings unless chopped. Straw requires applications of nitrogen because of its non-decomposed nature.

#### ***Wood Chips***

In landscape operations, wood chips offer a useful method for disposing of waste twigs and branches. It is good mulch, coarser than sawdust, and less likely to cause nitrogen deficiency. Wood chips are long-lasting, lie flat, and do not blow away easily in strong winds. Cypress chips do not decompose within our lifetime, and disrupt water movement in soil into which they have been incorporated, so **DO NOT TILL CYPRESS CHIPS INTO THE SOIL!!** Instead, rake or pull cypress mulch off beds before tilling, and reapply again after planting.

### **INORGANIC MULCHES**

Inorganic materials used for mulches do not add nutrients or humus to soil, and do not decompose except after long exposure to weathering. Otherwise, these materials are effective mulches, and several are permanent and quite attractive.

#### ***Crushed Rock***

Crushed volcanic rock or stones are available in many colors and sizes, and make a permanent cover. These materials are especially useful around plants subject to crown rot. Spread deeply, crushed rock can be walked on immediately after watering. Remember that white rock radiates sunlight, and can create too much heat for most plants to survive. Black rock absorbs heat, and can cause soil temperatures to be hotter than normal. A caution: inorganic mulches of this type are exceedingly difficult to maintain and keep clean under pine or other very small-leaved evergreens.

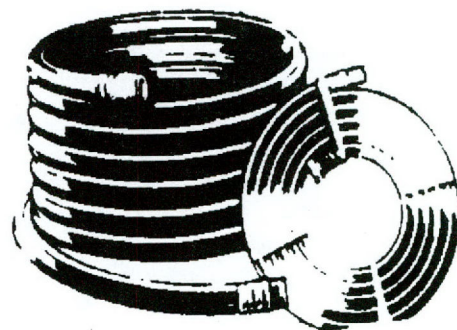
#### ***Pea Gravel***

Pea gravel is an attractive permanent mulch. It is usually applied 2 to 4 inches deep, and can be reused indefinitely. Pea gravel in various sizes is especially good for soil surface around plants in containers.

#### ***Plastic Film***

Plastic film is used to cover vegetable beds. With ornamentals, it is often used under gravel or stone mulches. It is not practical under sharp stones unless used with a 1-inch layer of sand between soil and stones. Plastic is difficult to dispose of when used on large areas.

Conserving moisture, slowing flood waters, reducing pesticide use, promoting healthier plants, smothering weeds, saving money by recycling materials considered waste -- and on and on. We still have not yet discovered all the benefits of mulching. **WE HAVE DISCOVERED** that the proper use of mulches can help us and our plants make it through the hot, dry times ahead -- **AND IN STYLE!!** Mulching is about **SAVING** (plant life, resources, environment, labor) **FOR NOW AND FOREVER!!!!** ❁



# Drought Hits Texas Pecans

*Dr. George Ray McEachern, Extension Horticulturist  
Texas A&M University, College Station*

Pecans require 2 inches of water every week from April to October to produce a profitable crop of well filled nuts. Texas pecan growers are having a hard time obtaining this large volume of water for irrigation. The problem is not only the shortage of water in the spring, but the absence of rain since June of 1995. A second problem is that when a rain does come, runoff is so fast, little of the water actually enters the soil reservoir. We have also experienced one of the hottest springs on record, which increases the trees' water requirement.

As of May 1996, most Texas pecan growers were surprised to see a return crop of moderate to large size. However, because of a very heavy pecan-nut casebearer feeding and because of the drought and heat, the crop is shedding fast. The May crop for Texas appeared to be 50,000,000 pounds; however, one month later it appears to be 40,000,000 pounds, and it could drop more if rain does not come. From 1947 through 1956, Texas experienced one of its greatest droughts, the most severe year being 1954 when only 50 percent of the average rainfall was received. Mature pecan trees on some of the best river sites died during this period. In the early 1970s when growers were showing me their orchards, we would come to spots where a few or many trees were missing, and they would say, "the drought of the 50s." Almost all orchards lost trees during the drought years.

Drought begins in the soil reservoir. One inch of good soil can store .20 acre inches of water, which is 5,400 gallons. If the soil is 32 inches deep, this could be 175,000 gallons per acre, or six acre inches of water. With very little rain from June 1995 to June 1996, most pecan soil reservoirs are dry. On very deep river-bottom orchards, water can move upward and supply the trees with enough water to stay alive. However, if the soil has impervious clay layers at various depths, water cannot move up to the roots, and this is where the first trees die.

Under drought stress conditions, many pecans shed prematurely. This is a survival mechanism which allows pecans to make it through long drought periods such as the 50s. Poor zinc efficiency of pecans is a second survival mechanism which reduces growth on native trees, thus reducing the water requirement. When pecan growth is vigorous in April and May, it increases the trees' water

requirement. Also, when heavy spring rains occur, pecan nut size develops fast, forming large nuts which are hard to fill without optimum irrigation. Texas pecans usually start the year in good shape; reservoirs fill during the dormant season rains, and trees receive 1 inch of rainfall per week in April and May. This year, both of these rainfall periods did not occur, and growers are facing water shortage problems if irrigation is not available. Pecan growers of the southeast typically out-produce Texas growers because of their heavy rainfall in the winter and throughout the production season. This year, Texas growers will have difficulty keeping the crop on the trees and even more difficulty filling the nuts in August, September and October.

If it rains in 1996, it will need to be for a long period of time to fill the soil reservoir. The rains will need to be slow enough to enter the soil. Good soil will allow water to enter at a rate of 2 inches per hour, but many soils will not absorb that fast. Irrigation in much of Texas has always been considered a supplement to rainfall. Orchards with sufficient water and a system to correctly deliver the water can still have problems if no rains occur. Long-term climatic records indicate Texas receives very little rainfall in July or August, so we may be in for a serious drought if no effective rainfall occurs before September.

When water is limited, it is best to irrigate as deep as possible, because most surface roots die during the drought. When the soil reservoir is empty, deep soaking irrigation every three weeks will be better than frequent, light surface irrigation. Push a steel rebar into the soil while irrigating to see how deep the water is going, and move the water as deep as 32 inches if possible.

Weed control is very easy during a drought, so every effort needs to be taken to kill all weeds. This will help conserve the water used by weeds. With an empty soil reservoir and slow infiltration of occasional rains, growers must not let weeds steal water from their pecan trees.

Tree crowding intensifies a water shortage. Maximum space between trees increases the soil reservoir's water-holding capacity simply by having more soil volume to

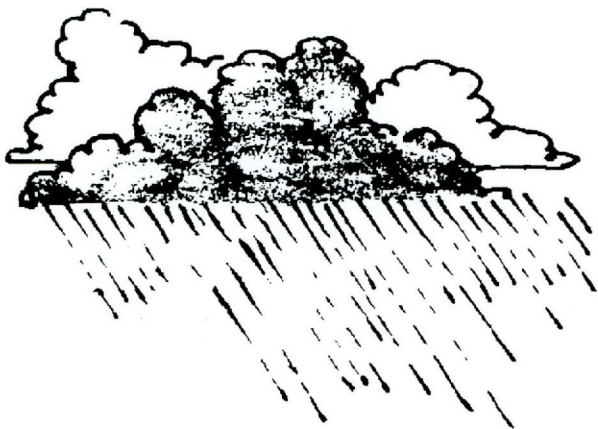
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hold the water. Fewer trees will give more water per tree. As the tree limbs and leaves occupy space for light, roots likewise need space for soil water.

Heavy bearing varieties of large pecans will have greater water stress during a drought than varieties with lower production and smaller nut size. Drought stress on trees with a heavy crop will be a setup for serious viviparity (premature sprouting on the tree) if rains occur in October. If no rains come in September or October as they normally do, sticktight will occur. In either case, the entire crop could be lost to viviparity or sticktight if the drought continues.

Orchard size should be consistent with the amount of water available for irrigation. Ten inches of water per minute for each acre of pecans is the ideal. When rainfall is normal in the dormant months (spring and early fall), 5 inches may suffice. However, during years such as 1996, the full 10 inches of irrigation water per acre of pecans will be needed. Growers all too frequently plant more trees than they can irrigate. Many orchard managers would profit by concentrating their available water on fewer trees growing on their best soil. They could shift the management of the non-irrigated trees to a wide-spaced sustainable system similar to natives.

I hope rains will come for our Texas pecans soon; however, we should place water management at the top of our list of plans for the future. ❀



## Low-Acid Tomato Mystery

*Dr. Al Wagner, Associate Head,  
Department of Horticulture,  
Texas A&M University, College Station*

**I**t seems like every canning season we get calls about low-acid tomato varieties. In order for us to be consistent, several points need to be discussed. First of all, most of the so-called low-acid varieties are normally not grown in Texas. Secondly, it should be remembered that many tomato varieties, under the right conditions, will possess less acid. Certain environmental conditions, as well as degree of maturity, can have a significant effect on tomato acidity. Over-mature tomatoes will not have enough acid to can safely, using the water-bath method.

In order to avoid a potential problem in the safety of home-canned tomato products, USDA is recommending the addition of one (1) tablespoon lemon juice (bottled) per pint, or two (2) tablespoons per quart, to home-canned tomatoes. This is a precaution to insure a safe pH level of 4.6 or below.

In summary, one should remember that variety is not the only factor which affects the acidity level of tomatoes. Environmental conditions and maturity are also very important. Over-mature tomatoes not only do not have enough acidity for water-bath canning, but the quality of the finished product will be inferior. ❀

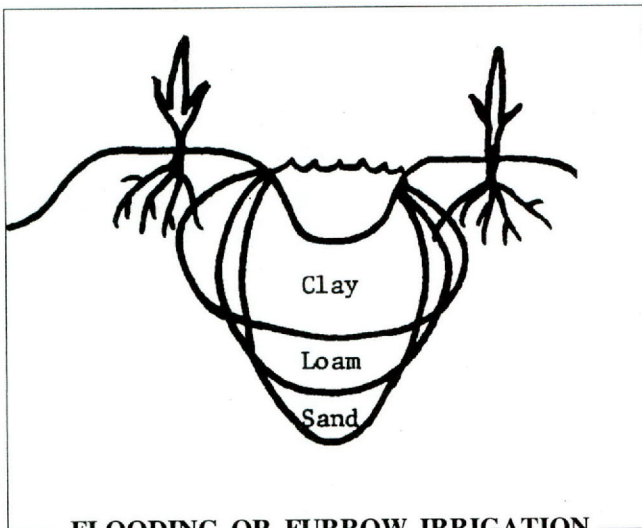
# Watering the Garden

Dr. Sam D. Cotner, Head, Department of Horticulture  
Texas A&M University, College Station

With vegetable gardens in various stages of growth across the state, it is certain that most home owners will be concerned sooner or later about watering their gardens. When to water, how to water, and how much water to apply are questions asked continually throughout the gardening season. To many people, watering is one of the most enjoyable aspects of home gardening, but it is also one of the most misunderstood. Misuse of water in the home garden often causes more problems than it solves. Problems such as soil crusting, poor root growth, blossom drop, fruit cracking, nutrient deficiencies, and various types of diseases can be directly related to improper watering.

Sufficient water should be applied to wet garden soil to a depth of 4 to 6 inches. Frequency of watering will depend upon climatic conditions, rate of growth, and stage of maturity of the plant. In general, additional water should be applied when the soil is becoming dry about 1 inch below the surface.

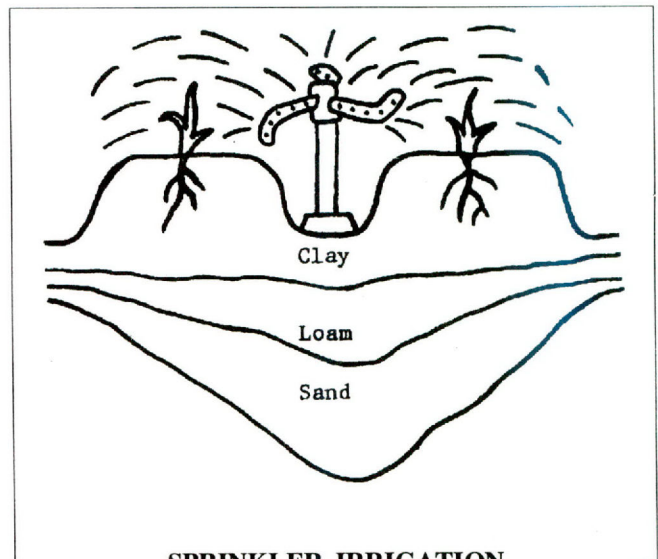
Following is a brief discussion of the various watering methods available to home gardeners.



**FLOODING OR FURROW IRRIGATION**

Flooding or furrow irrigating the garden is probably the most common method. No specialized equipment is necessary other than some method of moving the water to the garden area, which usually is a common garden hose. For this type of watering system to be most effective, it is best to have the garden bedded. Plants or seeds are

planted on raised beds, and water is allowed to flow between the beds. The garden should be gently sloped, to facilitate the movement of water down the rows. Too steep a slope will result in poor water distribution, as water will flow quickly to the lower end of the garden. With this watering method, the water should be applied slowly and allowed to soak the soil thoroughly. Furrow or flood watering is probably the best method for most home gardens. Watering by this method can be selective in that only vegetables which require water can be watered. Watering with a furrow system eliminates soaking the top of the bed, which often results in poor soil aeration, disease, problems, and weed growth. Also, small furrow systems can be arranged so that only one or two moves of the hose will water the entire garden.



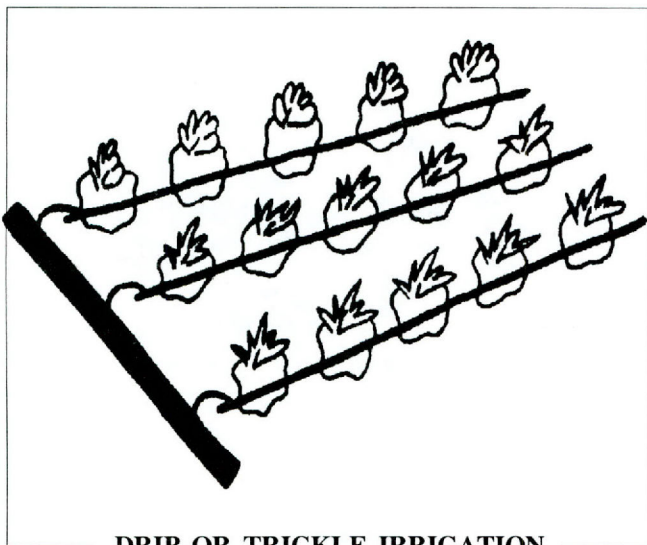
**SPRINKLER IRRIGATION**

Watering with a sprinkler is probably the most convenient method. It is a simple matter to place the lawn sprinkler where it can water the entire garden. Overhead watering can be effective when properly used. With sprinklers, at least 1 inch of water should be applied with each watering. This can be determined by placing a coffee can in the path of the sprinkler and catching an inch of water. The water should be applied early enough in the day to allow the plant foliage to dry before night. Wet foliage in combination with cooler night temperatures often results in various types of foliage diseases. One serious disadvan-





tage to overhead watering is that the application of water is indiscriminate. This results in water being applied to crops which do not necessarily need watering at that specific time. In general, sprinkler watering is best suited for cool-season crops such as cabbage, lettuce, carrots, and broccoli.



**DRIP OR TRICKLE IRRIGATION**

Drip or trickle irrigation of home gardens is a relatively new concept. This system is especially good for areas of Texas with limited water supplies or dry growing conditions. A drip or trickle system literally drops water onto the soil surface without disturbing the soil structure, so that the water seeps slowly into the soil. The water is dripped onto the ground through some type of emitter located adjacent to the garden plants. This method of watering is much more efficient than either furrow or overhead watering, in that the amount of water applied is usually about equal to the amount of water used by the plants since the last irrigation. Many drip systems are operated on an almost daily basis. Drip irrigation, when properly used, does not store water in the soil for future use, but replaces water that has already been used by the garden plant.

There are many types of drip or trickle systems available, including Dew-Hose, Viaflow, Twin-Wall, Drip-Eze, and others. None of the systems are foolproof, and problems can occur in regulation of water pressure, clogging of emitters, or mechanical breakdown of the hoses or emitters. The systems are relatively expensive, but since they use water efficiently and economically, drip or trickle systems can pay for themselves within a short time. ❀

An interesting note concerning the landscape use of rosemary comes from Miss Gertrude Jekyll, who recommends its use in her book *Wood and Garden* (1899),

... bushes of Rosemary, some just filling the border, and some trained up the wall. Our Tudor ancestors were fond of Rosemary-covered walls, and I have seen old bushes quite ten feet high on the garden walls of Italian monasteries. Among the Rosemaries I always like, if possible, to "tickle in" a China Rose ('Old Blush') or two, the tender pink of the Rose seems to go so well with the dark but dull-surfaced Rosemary.

Ms. Jekyll's advice, while excellent, represents just one way to use this plant in the landscape. Many distinctive forms of rosemary have been developed by gardeners, and this makes it an exceptionally versatile plant. There are, for example, prostrate rosemaries which furnish an unusual ground cover and make an attractive detail as they spill over retaining walls. Upright forms, by contrast, provide materials for a compact hedge or elegant container, and the mature heights of these may vary from 18 inches to 4 feet or more, depending upon the cultivar and the growing conditions. Rosemary flowers, while not spectacular, are attractive, and they vary from lavender-blue to dark-blue and white.

Madelene Hill, a well known herb authority from Round Top, Texas, found a cold-tolerant rosemary in 1972 in Arp, Texas, that is said to be hardy to Washington, DC. The National Arboretum has given this plant the name *R. officinalis* 'Arp'. More recently, a sport, or seedling, of 'Arp' has been found and named 'Hill Hardy'.

Rosemary is propagated from pencil-size cuttings taken in fall or early winter. Remove the leaves from the bottom half of the stems, and then stick the cuttings in moist garden soil, where they will root by summer. In moist climates, where rosemaries often prove short-lived, it is a good idea to root new plants periodically to maintain a supply of replacements.

Rosemary has flourished in Southern gardens ever since the arrival of European colonists on these shores -- and in every colony, for this plant was precious to every group that settled here. ❀

# Accent the Fall Landscape with Vegetables and Herbs

*Dr. William C. Welch, Landscape Horticulturist  
Texas A&M University, College Station, Texas*

Now is an excellent time to evaluate the home landscape and begin making preparations for fall plantings. Vegetables and herbs are being used in imaginative ways to add beauty, interest, and utility to our landscapes. Mid-summer and early fall offer us a good "second season" for growing these plants if gardeners can motivate themselves to provide a little extra care during the long, hot days of late summer.

Hanging containers of parsley, mint, thyme, rosemary, and tomatoes can all be started now. Plants of these may be available at local nurseries, but with a little extra effort they can be grown from seed. Each of these plants has a drooping growth habit which makes it especially appropriate for hanging-container use.

An even larger variety of herbs and vegetables may be grown in the more "down to earth" containers such as clay pots and wooden tubs. Tomatoes, peppers, lettuce, eggplants, carrots, and radishes are just a few of the many. Even small porches and decks of apartments can be made more attractive and interesting with groupings of containers filled with herbs and vegetables.

Two important points to consider in growing container plants are the media and the container selection. Most vegetables require excellent drainage, so it is necessary to select a container with a hole in the bottom. Plain clay pottery is attractive and versatile, as are many of the cedar and redwood tubs. Small containers dry out too quickly, and sometimes require daily or twice-daily irrigation. A minimum size for practical containers is 10 to 12 inches, with 16 or 18 inches being more appropriate for large plants such as tomatoes or eggplants.

The media also must drain well for most plants to thrive and yet still hold an adequate amount of water. Some gardeners prefer soilless mixes such as half peat moss and half vermiculite. Others like the added support of micronutrients found in mixes such as 1/3 garden loam soil, 1/3 peat moss, and 1/3 sharp sand. Many different media can be used successfully. The most important factor is for the gardener to learn how to manage the media selected, since water and fertilizer requirements vary considerably among them. ❁



# Garden Checklist for July / August

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Caladiums require plenty of water at this time of the year if they are to remain lush and active until fall. Fertilize with 21-0-0 at the rate of 1/3 to 1/2 pound per 100 square feet of bed area, and water thoroughly.

Don't allow plants with green fruit or berries to suffer from lack of moisture. Hollies will frequently drop their fruit under drought conditions.

Prune out dead or diseased wood from trees and shrubs. Hold off on major pruning from now until midwinter. Severe pruning now will only stimulate tender new growth prior to frost.

Sow seeds of snapdragons, dianthus, pansies, calendulas, and other seasonal cut flowers in flats for planting outside during mid to late fall.

Time to divide spring-flowering perennials such as iris, Shasta daisy, gaillardia, cannas, day lilies, violets, lirioppe, and ajuga.

Plant bluebonnets and other spring wildflowers. They must germinate in late summer or early fall, develop good root systems, and be ready to grow in spring when the weather warms. Plant seed in well prepared soil, 1/2 inch deep, and water thoroughly.

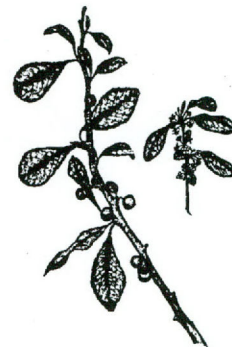
Make selections and place your order for spring-flowering bulbs, to arrive in time for planting in October and November.

A late-summer pruning of rose bushes can be beneficial. Prune out dead canes and any weak, brushy type of growth. Cut back tall, vigorous bushes to about 30 inches. After pruning, apply a complete fertilizer, and water thoroughly. If a preventive disease-control program has been maintained, your rose bushes should be ready to provide an excellent crop of flowers this fall.

Establish a new compost pile to accommodate the fall leaf accumulation.

Picking flowers frequently encourages most annuals to flower even more abundantly.

It is not too late to set out another planting of many warm-season annuals such as marigolds, zinnias, and periwinkles. They will require extra attention for the first few weeks, but should reward you with color during late September, October, and November. ❁





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