Preface: Meadow Vale Farm and Elms at Meadow Vale have abundant irrigation water to cover all community watering needs, in non-drought years. In the past we have been guilty of over-watering and wasting water. With this in mind the following “**Care and Watering of Established Lawns**” is offered to help better manage a limited resource. These are guidelines only and do not apply watering restrictions or specific days/times to water. However, by becoming more sensitive to how much water is actually needed for lawns and green belts, we may be able to cope with one or more drought summers without having to alter our watering habits significantly.

Abundant water, good water pressure and a good distribution system does not justify wanton waste of water.

Care and Watering of Established Lawns

Quick Facts...

- Kentucky blue-grass, tall fescue, and perennial ryegrass lawns must receive supplemental irrigation to survive.
- Proper watering promotes deeply rooted, healthier turf.
- Grass species, health, soil conditions, and weather dictate irrigation practices, **not the number of days between watering cycles**.
- **The best time of day to irrigate is at night between 9 p.m. and 9 a.m**.
- Mow blue-grass, ryegrass and fescue to a height of 2 to 3 inches. Buffalo grass and blue grama lawns can be mowed to this height, but also do well un-mowed.
- Kentucky blue-grass lawns may require **2 1/2 inches of water or more per week during the heat of summer.**
- Core cultivation is essential for all lawn areas, especially those that have heavy thatch or are subject to high traffic.

To determine the most appropriate irrigation schedule for an established lawn consider the following:
turf species; soil type; cutting height; potential disease and pest problems; local weather patterns; and microclimates (i.e., shade vs. full sun exposure; low vs. high areas of the yard).
For example, a lawn cut at 3 inches holds water longer than a lawn cut at 2 inches; or lower areas of a lawn hold water longer than higher areas. Sprinkler systems should be programmed to accommodate these specific lawn needs

When developing an irrigation schedule consider the presence of trees and shrubs in the lawn because they have roots in the turf area that compete for water and nutrients.

A lawn’s tolerance to drought is directly related to how well the soil was prepared prior to applying seed or sod. Heavily compacted soil that is low in organic matter does not facilitate deep, healthy root growth. Grass roots grow to their maximum depth in well-aerated soil containing four to five percent organic matter. A healthy, deep root system produces vigorous turf that is tolerant of drought and resistant to disease and insect pests.

Cool season turf grass such as blue-grass, fescue or perennial ryegrass needs regular applications of water.

Warm season grasses (blue grama and buffalo grass) are known for their drought tolerance; but they too thrive with occasional watering. The condition of the grass and soil – not the number of days since watering – is the best guide to irrigation**. Watering daily or every other day, just because water is available, is a waste of water and is detrimental to the lawn.** Doing this predisposes the turf to disease. Watering too frequently causes root death of trees and shrubs in or near the turf area either from root rot disease or lack of oxygen in the soil.

Water lawn and plants according to their needs. Check soil moisture before watering**. Insert a 6 inch screwdriver into the soil; if it can be easily inserted, you don't need to water.**

Watering Frequency, Amount and Time of Day

The rule of thumb for watering an established lawn is, **"water as deeply and as infrequently as possible."** Deep and infrequent irrigation stimulates root growth, resulting in healthy, drought tolerant, and pest resistant turf. Maximum rooting depth occurs when soil conditions allow the roots of a particular species (or variety) to reach their full potential. This is not achieved by proper irrigation alone; a combination of proper irrigation, proper fertility, and regular core aeration (once in spring and/or once in fall) maximizes rooting depth and overall turf vigor.

Has it rained? Skip watering on days following 1/2 inch or more of rain. On cool, cloudy days plants use less water and there is less evaporation. This extends the time needed between watering. Rain sensors are useful for residents who are unable to adjust automatic systems when rainfall occurs.

Check sprinkler system. Check to see how long each zone is scheduled to run and adjust the timer. A shade zone requires less water than a hot, sunny area and the cooler seasons require less water than hot summer months. Check sprinkler heads frequently to make sure they function properly. **Check where coverage overlaps**. Learn how to operate system manually.

Brown spots? Be willing to accept a less than perfect lawn. Respond to brown spots by hand or spot watering. Check the coverage of the sprinklers, and look for broken lines or heads, clogged nozzles resulting in poor spray patterns, and improperly adjusted heads/nozzles frequently.

Frequency: A sure sign that turf requires irrigation is a wilted appearance. One symptom is "foot prints" on the lawn that do not disappear within an hour. This symptom is soon followed by actual wilting, where the turf takes on a grayish or purple-to-blue cast**. If only a few such spots regularly appear in the same general location, spot water them to delay watering the entire lawn for another day or so**. These indicator spots help predict when the entire lawn needs watering. A hardened or toughened lawn, attained through less frequent, deep irrigation, often withstands minor drought and generally has fewer disease problems. It is important, however, that the turf not be allowed to become overly drought-stressed between watering sessions. This weakens the turf and makes it more susceptible to insect and disease damage and to weed invasion.

Do not irrigate again until you see signs of wilt. It's important that the soil profile dries somewhat between irrigation applications. Continually water-logged soils are deprived of oxygen which is required for proper root growth.

On very hot days turf may appear stressed even if the soil is wet. This is caused by **heat stress and can be remedied by cooling off the turf by wetting it for 15 seconds** or less. This technique is called syringing and is not the same as watering.

Grass that grows on sandy soil must be watered more often than the same grass growing on clay or loam soils. Even after a thorough watering, sandy soils hold little plant-available moisture. They require more frequent irrigation with smaller amounts of water. Conversely, turf growing on a loamy-clay soil can be irrigated less frequently, with larger quantities of water. **Watering less often means more efficient water use because of less loss to evaporation. It can also reduce the number of weeds that appear in the lawn.** Core cultivation (aeration) can resolve some infiltration problems by reducing thatch and compaction. Wetting agents may enhance water movement into the soil, but they should not be considered a cure-all, especially when compaction or thatch is a problem.

During extended dry periods from late fall to spring, it may be necessary to water every four to six weeks if the ground is thawed and will accept water. Pay particular attention to exposed slopes, sites with shallow soil, and south- or west-facing exposures.

Amount: Apply 1 to 1 1/2 inches of water per irrigation. Determine how long this takes by setting several shallow containers (such as baking pans) in different areas of the lawn for thirty minutes while irrigating. Measure in inches the depth of water in the containers. The average depth of water in these containers multiplied by two is the inches of water per hour emitted by the sprinkler system. Remember to measure water from overlapping sprinkler heads.

Many factors influence lawn water requirements, and no two lawns are exactly alike. A healthy, high-quality blue-grass or ryegrass lawn may need up to 2 1/2 inches of water per week under hot, dry, windy summer conditions. It may require much less when the weather is cool or cloudy. Turf-type tall fescue may perform well with less water than a blue-grass lawn, if it can grow a deep root system. In many cases, however, tall fescue requires as much water as blue-grass to look good. Buffalo grass and blue grama lawns can remain green for weeks without watering, even during the hottest summer weather.

Shady lawns and areas protected from the wind require less water over the growing season than more exposed turf. However, the roots of mature trees and shrubs also need water. You may have to water more in mature landscapes where the roots of many plants compete for water. Healthy turf encouraged by proper mowing, fertilizing and cultivation, uses water more efficiently.

Watering volume? Check sprinklers to see how much water they put out. (This is easily done by placing a shallow container like a cat food or tuna fish can in the yard to measure water.) This helps determine how long you should water. **Clay soils** (most Colorado soils) have a much lower penetration rate than sandy soils; therefore, clay needs to be watered at a slower rate in order to avoid runoff and puddling. To avoid runoff from very heavy clay soil and/or a sloped lawn you can water for a short period, then stop and start back up again until 1 to 1 1/2 inches of water has accumulated. Most irrigation clocks permit this type of cycling feature. Each time you water the lawn, apply enough water to moisten as much of the root zone as possible. Use a soil probe or shovel to determine what the average rooting depth is in the lawn. If the roots grow down 6 inches deep, water so the soil is moistened to that depth. Watering too deeply, especially on sandy soils, wastes water and allows it to percolate past the root zone.

Time of Day to Irrigate: The **most efficient time of day to water is late evening and early morning (between 9 p.m. and 9 a.m.).** It generally is less windy, cooler and more humid at this time, resulting in less evaporation and more efficient use of water. Water pressure is generally better and this results in optimal distribution patterns. **Contrary to popular belief, watering at night does not encourage disease development**. Turf has a natural dew period of about 9 p.m. to 9 a.m. Most diseases of turf occur when grass blades are wet for longer than 14 consecutive hours. Watering before 9 p.m. or after 9 a.m. extends the natural wetness period and increases disease problems. Dew contains substances exuded from the plant tissue. These materials increase the growth of disease organisms. **Water applied between 9 p.m. and 9 a.m. dilutes these materials thus reducing the growth of turf disease organisms.**

If it is not practical to water during this time period, another option is to water between 9 a.m. and 4 p.m., starting the irrigation after the dew has dried but before the winds begin. From a disease prevention perspective, irrigating anytime between 9 a.m. and 4 p.m. is fine (as long as the turf dries before the evening dew period sets in); however **water loss from sun and wind is greatest at this time.**

Set sprinklers to hit the landscape only, not sidewalks, driveways, windows, etc.

Mowing: The two most important facets of mowing are mowing height and frequency. The minimum height for any lawn is 2 inches. The preferred **mowing height for all Colorado species is 2 1/2 to 3 inches**. Mowing to less than 2 inches can result in decreased drought and heat tolerance and higher incidence of insects, diseases and weeds**. Mow the lawn at the same height all year. There is no reason to mow the turf shorter in late fall.**

Mow the turf often enough so **no more than 1/3 of the grass height is removed at any single mowing**. **If mowing height is 2 inches, mow the grass when it is 3 inches tall.** You may have to mow a blue-grass or fescue lawn every three or four days during the spring when it is actively growing but once every seven to 10 days when growth is slowed by heat, drought or cold. Buffalo grass lawns may require mowing once every 10 to 20 days; depending on how much they are watered.

If weather or another factor prevents mowing at the proper time, raise the height of the mower temporarily to avoid cutting too much at one time. Cut the grass again a few days later at the normal mowing height.

Let grass clippings fall back onto the lawn, unless they are used for composting or mulching elsewhere in the landscape. Grass clippings decompose quickly and provide a source of recycled moisture, nutrients and organic matter for the lawn. Mulching mowers do this easily. Side-discharge rotary mowers also distribute clippings effectively if the lawn is mowed at the proper frequency. Grass clippings do not contribute to thatch accumulation. If herbicides are applied to the lawn, do not use clippings in the vegetable or flower Gardens. Keep them on the lawn.

During the season, regularly check mowing equipment for sharpness and adjustment. Sharpen rotary mower blades every fourth mowing, especially when mowing fescue or ryegrass lawns. A dull mower blade shreds and frays leaf blades instead of cutting them cleanly. The result is a brown, unattractive lawn.

Thatch is a tight, brown, spongy, organic layer of both living and dead grass roots and stems that accumulates above the soil surface. The interactions among environmental conditions, soil conditions and management practices (irrigation, mowing, and fertilization) influence the rate and extent of thatch accumulation. Thatch tends to be a problem on Kentucky blue-grass, bent grass and fine fescue lawns. It is rarely a problem with tall fescue, wheatgrass, brome grass or buffalo grass. Grass clippings do not contribute to thatch accumulation and should be returned to the lawn during mowing to recycle the nutrients they contain.

Measure thatch buildup by removing a small piece of turf, including the underlying soil. Try to slow buildup when the thatch layer exceeds 1/2 inch in thickness. The thickness can increase quickly beyond this point, making it difficult to control later. As the thatch layer thickens, it becomes the main rooting medium for the grass. This predisposes the turf to drought stress or winter kill and increases the possibility for insect, disease and weed problems. Also, fertilizers and pesticides applied to a thickly thatched lawn work less effectively.

Power Raking: This method of thatch removal has been used for years. Light (shallow) power raking may be beneficial if done often. Deep power raking of a thickly thatched lawn can be damaging, and often removes a substantial portion of the living turf. Used properly, power raking of wet, matted turf can speed spring green-up by letting air move into the root zone and warm the turf. Compost the thatch/organic material to kill any living grass before it's used as a mulch or soil amendment.

Core Cultivation or Aerating: This is more beneficial than power raking. It helps improve the root zone by relieving soil compaction while controlling thatch accumulation. Soil compaction, in fact, is one factor that contributes to thatch buildup.

Aeration removes plugs of thatch and soil 2 to 3 inches long (the longer, the better) and deposits them on the lawn. A single aeration using a machine with 1/2-inch diameter tines removes about 10 percent of the thatch if enough passes are made to achieve average 2-inch spacing between holes.

Disposing of the cores is a matter of personal choice. From a cultural perspective, there may be an advantage to allowing the cores to disintegrate and filter back down into the lawn. Mingling soil and thatch may hasten the natural decomposition of the thatch. The little fluffs of thatch and turf that remain can be collected and composted. Depending on soil type, core disintegration may take a few days to several weeks. Irrigation helps wash the soil from the cores. Dragging a piece of cyclone fence or an old metal door mat can speed the process. Many commercial companies that perform core cultivation break up the cores with a power rake.

Aeration is an important part of healthy lawn maintenance, because it **relieves soil compaction and allows better water, air and fertilizer penetration.** The result is less water run-off and better plant health. Aerate in the spring and fall under moderate moisture conditions for best results

Fertilization: Nitrogen is the most important nutrient for promoting good turf color and growth. **Do not over stimulate the turf with excess Nitrogen, especially during the spring and summer**. Over fertilization can contribute to thatch buildup and increased mowing and watering requirements. Avoid under fertilization of blue-grass and ryegrass. These species can become unhealthy if not fertilized properly. Turf that does not respond to nitrogen fertilizer may be lacking in other nutrients, such as phosphorus or iron. Get the soil tested to determine which nutrient(s) are deficient

Balanced or complete fertilizers contain various amounts of phosphorus, potassium, iron and sulfur. They are a good safeguard against a potential nutrient deficiency. If you leave clippings on the lawn, these nutrients are recycled from the clippings. If you remove clippings, this type of fertilizer is appropriate.

Still have Questions? Ask a Professional! Find a qualified professional in your area by visiting the CSU Cooperative Extension at **www.ext.colostate.edu** .

Resources used in preparation of this guideline include:

http://www.ext.colostate.edu/pubs/garden/07199.html ;
http://www.ext.colostate.edu/pubs/garden/07202.html ;
http://www.ext.colostate.edu/drought/waterwise.html .