

WATER REQUIREMENTS OF WARM SEASON TURFGRASS

In the warm climate of sub-tropical and tropical Queensland landscape vegetation such as natural turfgrass requires water for growth and survival. With the pressures of our Great Barrier Reef protection loss of groundcover of turfgrass can have significant negative impacts on our environment as healthy turfgrass provides so many critical benefits. With the changes in our climate and water reserves becoming increasingly limited water conservation is high on the agenda.

The question then is what is needed to ensure the survival of natural turfgrass in residential, commercial areas and open space Parklands. As stated in many Turf Queensland 'Fact Sheets' there are a number of areas to consider when planning and ordering turf grass for your project.

1. What are you trying to achieve?
2. Does the area have full sun or shaded areas?
3. What type and quality of soil do you have?
4. Will there be a lot of activity on the turfgrass?
5. Is water readily available?
6. How much maintenance do you intend to apply?

In answering these questions you will be able to discuss your needs with your Turf Queensland member supplier. Obviously along the 2000 km of Queensland coastline where natural turfgrass is utilised, the 3 big questions surround soil, sun and water although there are many others. These areas relate back to a process known as evapotranspiration (ET). Evapotranspiration is made up of 2 areas water loss from the leaf and water loss from the soil surface. In Queensland we utilise warm season grasses where in southern states they are cool season grasses. This means that the varieties and species selected and grown by Turf Queensland members are suitable for tropical and subtropical areas and take into account of ET issues.

Plants with deep and dense root systems typically have a high capacity for water extraction from the soil and enables plants to avoid water stress by taking up water from a deeper soil profile when the surface is dry. When the soil surface is allowed to dry production of roots increases

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considerably in the lower layer where water is available in the soil. This is however not sustainable as water is needed however it allows the natural turfgrass to survive short periods of dry weather.

Natural turfgrass can lay dormant and have low water usage. This generally occurs in the cooler months for warm season grasses. The grass is not dead however and the root system is still operating and will come back when the weather changes and water is available.

There are different requirements between warm and cool season grasses. Warm season grasses generally have an ET rate of between 2 to 5 mm per day. Of course these could change across different climatic conditions and dependent on individual varieties. In the urban residential and commercial environment, water is often applied incorrectly and wasted. Turfgrass leaves of a well watered plant maintain nearly 100% relative humidity within the leaf. A leaf exposed to 30° C may transpire 3 times as fast as it does at 20° C when the leaves are fully hydrated.

Water use of turfgrass is typically much higher in areas exposed to full sun manage shaded or darker conditions.

Humidity assists the turfgrass and ET was measured in University tests at 40 to 60% less in a humid environment compared with the same variety in dry air conditions.

Wind above the turfgrass dries the air adjacent to the leaf and therefore causes increased water requirements.

Sun it is obvious that water use typically is much higher in areas that the turfgrass is exposed to full sun than in shaded or darker areas.

Natural turfgrass has been proven to provide decreased run-off of nutrients and sediments as well as controlling erosion and stopping overland flow of soils.

Soil moisture is an important area for root growth. Generally turfgrass tends to use less water when the soil water content is low. The availability of soil water content which is held by the soil below the surface assists maintenance of turfgrass variety when water is not available. Obviously there is a point where plants will be permanently damage to due to lack of water and drought. The available soil texture is also important here. For example soils such as sandy soil is large particle size soils and requires more frequent watering holding around 30% of total water. Fine textured soils such as clay loam, silt, sand and clay hold around 50% of total water.

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The 3 main warm season grasses that have relatively low water use rates are:

- Cooch grasses (Cynodon spp.)
- Zoysiagrass (Zoysia spp.)
- Buffalograss (Buchloe dactyloids (Nut.) Engelm)

NB: Research and technical detail taken from an article produced by Bingru Huang

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