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Environmental Benefits of Turfgrass

TEMPERATURE MODIFICATION

“A block of eight average homes, the front lawns have the cooling effect of 70 tons of air conditioning!”

- Source: Maryland Turfgrass Survey – 1996 - An Economic Value Study

We've all had the pleasant experience of walking barefoot in the yard and feeling how cool the grass is underfoot. That's not an illusion. Turfgrass plays an important part in controlling our climate.

Grassed surfaces reduce temperature extremes by absorbing the sun's heat during the day and releasing it slowly in the evening, thus moderating temperature. Grass plants absorb some solar radiation to fuel the photosynthesis process. The irregular surface of lawn areas also scatters light and radiation, greatly reducing glare.

Turf cools itself and its surroundings by the evapo-transpiration process. Each grass blade acts as an evaporative cooler. An acre of turf on a summer day will lose about 2,400 gallons of water through evaporation and transpiration to the atmosphere. Roughly 50% of the sun's heat striking the turf may be eliminated through this transpirational cooling process.

(MORE)

The cooling properties of turf are so effective that temperatures over turfed surfaces on a sunny summer day will be 10 - 14 degrees cooler than over concrete or asphalt. Or to put it another way, consider the fact that on a block of eight average homes, the front lawns have the cooling effect of 70 tons of air conditioning!

Research studies revealed overall temperature of urban areas may be as much as 5 to 7 °C warmer than that of nearby rural areas. Through the cooling process of transpiration, turfgrasses dissipate high levels of radiant heat in urban areas. Maximum daily canopy temperatures of a green, growing *Cynodon* turf (Bermudagrass) was found to be 21 °C cooler than a brown dormant turf and 39 °C cooler than a synthetic surface (Table 1; Beard and Johns, 1985). The transpirational cooling effect of green turfs and landscapes can save energy by reductions in the energy input required for interior mechanical cooling of adjacent homes and buildings (Johns and Beard, 1985).

Table 1. Temperature comparisons of four types of surfaces in College Station, TX.

Type of Surface	Maximum daytime surface temperature	Minimum nocturnal surface temperature
Green growing <i>Cynodon</i> * turf	31 °C	24 °C
Dry bare soil	39 °C	26 °C
Brown summer-dormant <i>Cynodon</i> * turf	52 °C	27 °C
Synthetic turf	70 °C	29 °C

* *Cynodon* turf (Bermudagrass)

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