

Golf Courses on the Fire Line

Golf courses and large turf areas serve a valuable role as firebreaks.

BY PATRICK GROSS



The many benefits of turf have been well documented in scientific literature. Add to that list the fact that golf courses and large turf areas serve a valuable role as firebreaks.

Wildfires occur frequently throughout the Southwest, causing extensive devastation and property damage. It is reported that more than 1,445 structures each year are destroyed by wildfires in California. At the same time, it is important to note that many structures are saved as a result of the firebreaks created by large turf areas and landscaping techniques that minimize the

spread of fires to homes and structures (CAL FIRE, 2005).

Complicating matters is the fact that drought conditions in the Southwest over the past eight years have put pressure on turf managers to reduce water use, either by voluntary or mandatory means. The prevailing opinion by water regulators and politicians is that turf irrigation is wasteful. On the contrary, there are many examples indicating that healthy, well-watered golf courses and large turf areas have played an important role in stopping wildfires and protecting property.

Golf course turf, in addition to the requirement of a fuel modification zone on slopes, helped save dozens of homes in the path of the Yorba Linda fire in 2008.



Golf courses provide large open areas with low fuel volume that create a defensible space in fire-prone areas. In addition, water hazards on golf courses can be used as a source of water to fight fires.

DEVASTATION CAUSED BY FIRE

Fire-fighting experts refer to three essential components of wildfires, known as “the fire triangle” — fuel, heat, and oxygen. Eliminating one of these components helps slow or stop the fire. Firebreaks remove fuel. Water helps reduce heat. Flame retardants block oxygen from reaching the fuel (Riggs, 2002).

The height, type, and spacing of plants impact the intensity and spread of a fire. In many wildfires, a “ladder effect” is created when fire sweeps through low-growing brush and climbs into the canopy of nearby trees, where flames and embers can be spread greater distances (Nader, 2007). In particular, live embers from a fire have been known to travel up to one mile, landing on brush and structures and accelerating the spread of the fire.

Each wildfire will spread and behave differently depending on wind, terrain, humidity,

weather conditions, and the amount of fuel. The only factor that can be controlled by human activity is the amount of fuel available to sustain a fire. Structures surrounded by dense, dry brush and closely spaced trees are at high risk of fire damage. At lower risk are properties with a defense zone of at least 100 feet that includes well-watered turf and landscape plants.

BENEFITS OF TURF AND GOLF COURSES IN FIRE-PRONE AREAS

Although fire experts warn that there is no such thing as a plant that will not burn, previous experience in California indicates that well-watered and properly maintained landscapes did not burn as readily as dry plantings (Youngner, 1970). Plants that are low growing, open structured, and less resinous, such as turf, present a lower fire risk (Nader, 2007). Additional benefits

of large turf areas and golf courses in fire-prone areas are noted below:

- Healthy turf is less likely to burn due to the high water content within the plant tissue, which ranges from 75% to 85% by weight (Beard, 1974).
- The low, prostrate growth habit of maintained turf limits the amount of fuel available to sustain a fire (Beard and Green, 1994).
- Golf courses provide large open areas with a low fuel volume that create a defensible space in fire-prone areas. This establishes an effective firebreak, placing more distance between fire and nearby structures. Golf courses are especially helpful in stopping the spread of fire when situated on the side of the prevailing wind (Riggs, 2002).
- Trees growing on golf courses are less likely to ignite because the turf beneath limits the available fuel source, thus stopping the “ladder effect.”
- Wind-blown embers start many house fires. Golf courses and large turf areas create distance between combustible vegetation and homes, creating more area for embers to potentially fade (Anderson, 2009).
- Water hazards on golf courses are sometimes used as a source of water to fight fires.
- For firefighters, the open space provided by golf courses has been used as a staging area for equipment and personnel as well as the fire command center (Liske, 2009).
- Golf courses provide an escape route and safe zone for firefighters should the direction and intensity of the fire change and the firefighters need to evacuate the area (Liske, 2009).

GOLF COURSES ON THE FIRE LINE

Wildfires have been a common occurrence throughout California for decades, and recent experience indicates that golf courses have served a valuable role by creating firebreaks to stop the spread of fires as noted in the following examples.

Simi/Vale Verde fire, October 2003:

In October 2003, a wildfire consumed 750,000 acres north of Los Angeles, destroying 3,500 homes and causing 22 deaths. Tierra Rejada Golf Club in Moorpark, California, was in the path of the fire. According to general manager Tom Szwedzinski, the firebreak created by the golf course prevented the flames from crossing Hwy. 22 into a densely populated Moorpark neighborhood (Bailey, 2003).

Ramona fire, October 2003: During the same time of the fires north of Los Angeles, flames swept through the chaparral-covered hillsides of Ramona, in north San Diego County. The San Diego Country Estates development on the outskirts of Ramona borders the San Vicente Inn & Golf Club, which helped stop and redirect the fire away from homes in a portion of the development. Only 27 of the 3,000 homes in the subdivision were lost to the fire. According to Captain Dave Hypes of the California Department of Forestry and Fire Protection, the green grass didn't allow the fire to spread and the golf

The intense heat generated by wildfires destroys homes and damages property, including this irrigation controller on the border of Black Gold Golf Course in Yorba Linda, California.



course created a very nice firebreak (Bailey, 2003).

Yorba Linda fire, October 2008: With the help of strong Santa Ana winds, a brush fire that started in Corona, California, rapidly moved west toward the neighboring city of Yorba Linda. Several homes in the path of the fire were destroyed as it burned through the chaparral-covered hillsides and up to the edge of Black Gold Golf Course. The golf course stopped flames from reaching the housing development on the southern edge of the property. According to Bret Anderson with the Orange County Fire Authority, there were several factors that helped stop the fires and spare the surrounding homes:

- The golf course put more distance between the combustible vegetation and the homes. This provided more area for wind-driven embers to fade.
- The green grass on the golf course was less combustible than the brush on the hillside. Although turf along the edge of the course was scorched, it did not sustain the fire.
- A fuel modification zone around the homes was required during development. These areas were established with fire-resistant plants and also prevented fires from reaching the homes (Anderson, 2009).

Griffith Park fire, May 2007: A discarded cigarette started a brush fire in the Aberdeen Canyon area of Griffith Park in Los Angeles. The terrain and heavy winds created very erratic fire conditions that ultimately burned 800 acres and damaged one home. As the fire changed direction and moved southward, it stopped at the edge of the Roosevelt Golf Course and Tregnan Golf Academy. According to senior arson investigator David Liske, the golf courses were great firebreaks that saved dozens of expensive homes south of the golf course (Liske, 2009). Roosevelt Golf Course also served as a landing area for helicopters that were used for aerial observation and to direct firefighters on the ground.

SUMMARY

Aside from being an aesthetic element of the landscape, turf is a practical environmental tool as a fire barrier in addition to the other benefits of providing erosion control, producing a cooling effect, and trapping pollution particulates. As noted in the previous examples, golf courses served a valuable function as firebreaks due to

the low fuel content of the green, prostrate-growing turf. The green belt created by golf courses was especially important as a buffer for homes and buildings adjacent to extensive woodland and dryland chaparral. In firefighting terms, expansive turf areas and golf courses create a defensible area that not only stops the spread of a fire but also can be used as a staging area and safety zone for fire department personnel.

In times of drought, turfgrass irrigation is often deemed to be wasteful. This often results in political pressure to eliminate golf course irrigation and remove turf from landscapes. Ironically, areas affected by drought tend to be a greater fire risk, and expansive turf areas, such as golf courses, serve a practical role in reducing fire danger. When it comes to reducing fire hazard, it is important to recognize that the benefits of turfgrass far outweigh the water requirement.

REFERENCES

- Anderson, Bret. 2009. Orange County Fire Authority. Personal communication.
- Bailey, Mike. Firebreak: Courses Survive California Wildfires as Flames Devour Land Around Them. *Golf Week's Super News*. November 21, 2003. 5(21):12-13.
- Beard, James B. *Turfgrass: Science and Culture*. 1973. Prentice Hall, Inc., Englewood Cliffs, N.J. p. 261.
- Beard, James B.; R. L. Green. The Role of Turfgrasses in Environmental Protection and Their Benefits to Humans. *Journal of Environmental Quality*. May-June 1994. 23(3):452-460.
- Boyd, Stephanie. Southern California Courses Spared Wildfires' Worst. *Golf Course Management*. December 1993. 61(12):42-43.
- CAL FIRE (California Dept. of Forestry and Fire Protection). 2005. Make Your House Fire Safe. CAL FIRE Website, http://www.fire.ca.gov/about_content/downloads/Defens_space_flyer4_11final.pdf.
- Liske, David. 2009. Los Angeles Fire Department. Personal communication.
- Nader, Glen; G. Nakamura; M. DeLasaux; S. Quarles; Y. Valachovic. *Home Landscaping for Fire*. 2007. Oakland, California. University of California Division of Agriculture and Natural Resources. ANR publication 8228.
- Riggs, Nancy. Arizona Golf Courses Survive Fires. *Turf:West*. October 2002. 12(10):B9-B11, B20.
- Youngner, V. B. 1970. Landscaping to Protect Homes from Wildfires. *California Turfgrass Culture*. 20(4):28-32.

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