

PRAIRIE FIRE!

Using fire to improve the health and condition of unmown rough areas.

BY JONATHAN JENNINGS, CGCS



Sending a notification letter to the surrounding property owners is a good way to avoid last-minute phone calls from concerned residents regarding clouds of smoke rising up from the course. Such letters should include contact information for the superintendent and possible burn dates.

Regularly included on Classical Top 100 golf course lists, Chicago Golf Club (Wheaton, Ill.) owes a large portion of its special appeal to the unmown areas of the rough. Dominated by the seedheads of cool-season grasses for most of the season, this area outlines every hole and serves as a potent reminder from architect C. B. Macdonald to keep the ball on the fairway. Above and beyond the rough's obvious visual appeal, it is also a rare haven for numerous bird species and small animals in the sprawling metropolis of the Midwest's largest city. And, by acting as a buffer zone between intensely managed turf areas and the irrigation pond on the 10th hole, it protects the fish and other aquatic inhabitants from possible nutrient and pesticide migration.

Given the enormous value of the unmown rough, it is surprising that golfers often equate its earthy appearance with low-cost or, worse yet, no-cost maintenance. In fact, changing the designation of a large area of the rough to unmown does not necessarily mean that a substantial amount of labor and materials can be trimmed from the budget. To produce the desired look of the unmown rough at Chicago Golf Club, numerous man-hours are spent hand-pulling undesirable plants in highly visible areas around the clubhouse, greens, and tees; treating broad-leaf weeds with selective herbicides; and burning all 80 acres each spring under the direction of a hired professional.

Burning, whether caused by lightning or used as a management tool, has

been an integral part of the prairie life-cycle since the beginning of time. Its benefits include the removal of dead vegetation that hinders new growth, the release of nutrients that enrich the soil, the reduction of noxious weeds, and the encouragement of native species that are attractive to wildlife.

Chicago Golf Club is fortunate, because it is located in unincorporated Milton Township, where controlled burns are permitted for native grass restoration. To evaluate whether or not fire might be a management choice in your area, you should determine if:

- Federal, state, and local regulations permit burning.
- Containment and safety factors are within acceptable risk parameters.

- Endangered species/natural communities are not subject to harm.
- Local residences are not in jeopardy.

If fire cannot be used for these or any other reasons, then other methods for maintaining unmown rough areas must be explored.

The initial step in conducting a controlled burn at Chicago Golf Club is to obtain a permit from the Environmental Protection Agency. This document allows the club to burn anytime throughout a 12-month period, provided all appropriate contacts are made with local officials. As a side note, we also learned during our first year of conducting a controlled burn that it is best to make all neighbors aware of the burn with a notification letter. While variable weather conditions in the spring make it impossible to include a specific date for the burn, our notification letter references a two-week time frame and provides contact information for any questions that may arise.

Once the weather conditions are appropriate for burning, the next step is to contact all emergency response personnel, including the fire and police departments. In our case, we must also keep the DuPage County Sheriff's Department up to date, because the course is located in an unincorporated area of the township. Speaking from personal experience, never assume that one entity will contact another or you will surely be meeting with them the day of your burn.

Before burning commences, each section of the unmown rough is evaluated based on its relevant constraints. When burning on a golf course, these constraints may include uneven terrain, public view of the burn area, smoke problems in relation to residential areas or major roads, the presence of utility poles and wires, adjacent crops or livestock, presence of endangered species, or nesting and fawning areas. It is always best to address as many constraints as possible well in advance of the actual burn date; if not, don't be surprised at

the reaction from neighbors during the burn.

The most important element of a successful controlled burn is weather. Weather controls fire behavior, smoke behavior, fuel condition, and flammability, all of which have a relationship with the safety of the burn. The weather variables most applicable to controlled burns are air temperature, relative humidity, wind speed and direction, precipitation, and air mass stability. A combination of the first three (air

smoke if allowed to continue burning when the temperature drops and the humidity increases in late afternoon.

There are three basic types of controlled fires — backing, head, and flank. Backing fires are started along a prepared baseline, such as a fairway or maintenance road, and allowed to burn into the wind. For the most part, this is the easiest way to burn because of the shorter flame lengths, a slower rate of spread, and a smoke density that is generally less than that of a head or



Fire lines are spread along gradual curves with drip torches. Backing fires, set to burn into the wind, do a better job of total fuel consumption due to their hottest temperature at ground level.

temperature, relative humidity, and wind speed) determines fuel condition that, in turn, affects a fire's behavior.

The optimum weather conditions for burning the rough at Chicago Golf Club are an air temperature between 55°F and 70°F, a relative humidity between 25% and 50%, and a consistent wind speed between 8 and 15 m.p.h. The time of day when weather conditions are most apt to be in the optimum ranges is generally between 11:00 a.m. and 4:00 p.m. Burning outside these weather parameters could compromise the results and make the fire more difficult to manage.

Fire behavior and fuel conditions are most unpredictable when temperatures are rising during the morning hours. As the temperature rises and the humidity drops, a fire will tend to grow more intense. Conversely, a good fire will begin to smolder and produce excess

flank fire. Backing fires also burn hotter at ground level and do a better job of total fuel consumption.

Head fires are the opposite of backing fires in that they burn with the wind. These fires have greater flame lengths, faster rates of spread, greater smoke volumes, and a tendency to burn cooler at ground level than backing or flank fires. Containment of these fires is more critical, however, as wind speed and fuel quantity increase. Before starting a head fire, one should be absolutely certain that the fire will not escape the intended burn area.

Flank fires are a modification of a backing fire in that lines of fire are set at slanting angles to the wind direction. Flank fires are commonly used to secure the flanks of a head fire as the head fire progresses.

Management of a controlled burn is never over until all affected areas are

cold and no longer producing smoke. Post-burn activities include monitoring the perimeter, completely extinguishing all of the smoking and burning patches of fuel, and cleaning up the site. Monitoring the burn perimeter is actually a continuous function from the time the fire is set until it has been determined that the fire is out and cold. To extinguish smoking and/or burning patches, the areas are drenched with the irrigation system, if possible, smothered with soil, and/or raked. To clean up after a burn, the rough is mowed with a tractor-mounted Bush Hog. This work is necessary to even out the clumps of green grass and break up the small piles of dead grass that refused to burn.

The highest priority when conducting a controlled burn of the rough is, of course, safety. If the weather conditions change to unfavorable at any time, the fire is immediately extinguished. Addi-

tionally, safety is promoted with proper employee training, hazard removal, and the use of personal protective equipment. Suffice it to say, without a strong emphasis on safety, it would be impossible to have the continued support of golfers and the neighboring community.

As a final thought, I offer two very good reasons for patience when conducting a controlled burn of the rough. First, the results of burning vary from year to year due to weather conditions and the condition of the area. Second, it can take several consecutive years of burning and follow-up management before an area develops the desired appearance.

Historically, the unmown areas of the rough at Chicago Golf Club were simply cut during the early part of the playing season and then allowed to grow to full maturity. By adopting an

annual burn program that is scheduled during late March or early April, the quality of this area has improved noticeably because of a reduction in woody plants and a slow but steady proliferation of warm-season grasses. Two to three weeks after each burn, the rough begins to show strong signs of recovery, just as the native prairies have for thousands of years.

REFERENCE

Kenneth F. Higgins, Arnold D. Kruse, James L. Piehl. *Prescribed Burning Guidelines in the Northern Great Plains* (www.npwrc.usgs.gov/resource/tools/-burning/burning.htm).

JONATHAN JENNINGS *has been the superintendent of Chicago Golf Club since 2000 and is a firm believer in taking a professional approach to course management. The club will host the 2005 Walker Cup.*



One of the many benefits of burning unmown rough areas during successive years is the proliferation of native, warm-season grasses that provide year-round interest and valuable habitat.