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Aspen / 

**TABLE 1**  
**Dryland turf possibilities**

NATIVE TO GREAT PLAINS	INTRODUCED
<b>WARM SEASON</b>	
Buffalograss	Bermudagrass
Blue grama	Zoysia
Sideoats grama	Windmillgrass
Saltgrass	
Nimblewill	
<b>COOL SEASON</b>	
Western wheatgrass	Kentucky bluegrass
Thickspike wheatgrass	Crested wheatgrass
Streambank wheatgrass	Smooth brome
	Tall fescue

**TABLE 2**

Grass	C/W <sup>1</sup>	I/N <sup>2</sup>	B/S <sup>3</sup>
Kentucky bluegrass <i>Poa pratensis</i>	C	I	S
Smooth brome <i>Bromus inermis</i>	C	I	weak S
Tall fescue <i>Festuca arundinacea</i>	C	I	B
Crested wheatgrass <i>Agropyron cristatum</i> or <i>A. desertorum</i>	C	I	B
Western wheatgrass <i>Pascopyrum smithii</i> was <i>Agropyron smithii</i>	C	N	S
Buffalograss <i>Buchloe dactyloides</i>	W	N	S
Blue grama <i>Bouteloua gracilis</i>	W	N	B
Bermudagrass <i>Cynodon dactylon</i>	W	I	S

<sup>1</sup>C = cool season; W = warm season

<sup>2</sup>I = introduced grass; N = native to Great Plains

<sup>3</sup>B = bunch grass; S = sod former

size of bluegrass lawn that is allowed. Homeowners and commercial developers try to reduce water costs by eliminating the most water intensive part of the landscape—the lawn.

Oftentimes, the bluegrass lawn is replaced with non-water-using materials such as gravel or lava rock.

Rock, in small quantities and in tune with the landscape, can be an attractive addition.

All too often, any grass that is removed is replaced, almost inch for inch, with acres of rock. Few of us find large acreages of identically-sized rock attractive. We often don't consider the increased heat load on the building from this material.

With these developments as impetus, plus the desire to reduce maintenance, people are looking for landscape plants and grasses that can be substituted for bluegrass and more traditional plants without a loss in the visual quality of their landscape.

### Drought tolerance

In the past, we have been led to believe that "you can't overwater bluegrass" and that bluegrass is not drought tolerant. These are both false, yet hard to shake from our landscape beliefs.

In commercial settings, the major concern is reducing water costs while maintaining a green landscape. The homeowners typically are more interested in reducing the time they must spend in their yard with water savings as a secondary benefit.

In reality, reducing water use will also reduce maintenance needs, resulting in savings of water, time, and money.

Turfgrass research at universities across the country are exploring two areas: (1) water needs of the familiar turfgrasses and breeding more tolerant varieties of these grasses; and, (2) new species of grasses.

Both areas of research are valuable and needed. Here, we will concentrate on new grasses for turf use.

### No cure-all

There are quite a few grasses that show promise as turfgrasses while offering low water and maintenance needs. But there is no one grass that is the answer for all situations and no grass is completely bad.

Also, there are several techniques that can be used on any turfgrass to reduce water use and maintenance, methods such as reducing turf areas with decks or shrub beds, monitoring irrigation amounts closely, and reducing mowing frequency.

To find "new" turfgrasses, turf researchers and managers have been

looking to range science and to neglected areas where grasses have naturalized and are thriving without irrigation. If these grasses can perform well with only natural precipitation, their performances should improve with a little supplemental irrigation and fertilization.

Many times, people associate dryland grasses with native grasses (Table 1). This is often not the case. Some prefer to concentrate more on the warm season/cool season classification than on the native vs. introduced classification.

If a grass is adapted to an area and

*There is no one grass that is the answer for all situations and no grass is completely bad.*

can survive without irrigation, it has potential for turf use.

A cool season grass (bluegrass, ryegrass, and tall and fine fescues) produces bursts of growth in the spring and fall when temperatures are cool. Without supplemental irrigation, these grasses will go into a natural dormancy mid-summer until cooler temperatures and moisture return.

On the other hand, warm season grasses, such as bermudagrass, buffalograss, and zoysia, produce their best growth when temperatures are warmer in the middle of the summer. Warm season grasses go dormant and turn tan when temperatures drop and days grow shorter.

In Colorado, buffalograss goes dormant after the first heavy frost and remains tan colored until about three weeks after bluegrass has begun to green-up.

Knowledge of the growth cycle of the grass affects the fertilization program and the winter appearance of the turf. In many southern states, dormant bermudagrass is overseeded with a ryegrass in the winter to maintain a lush green turf area.

This is most common on golf courses at winter resorts. This shows that dormant winter-season grass is not acceptable.

Let's look at some cool season grasses that can be used as turf. Table 2 lists characteristics of these grasses.

### Kentucky bluegrass

Although bluegrass is the turf standard, it can be used selectively in a landscape, and with a little extra attention, can prosper with reduced

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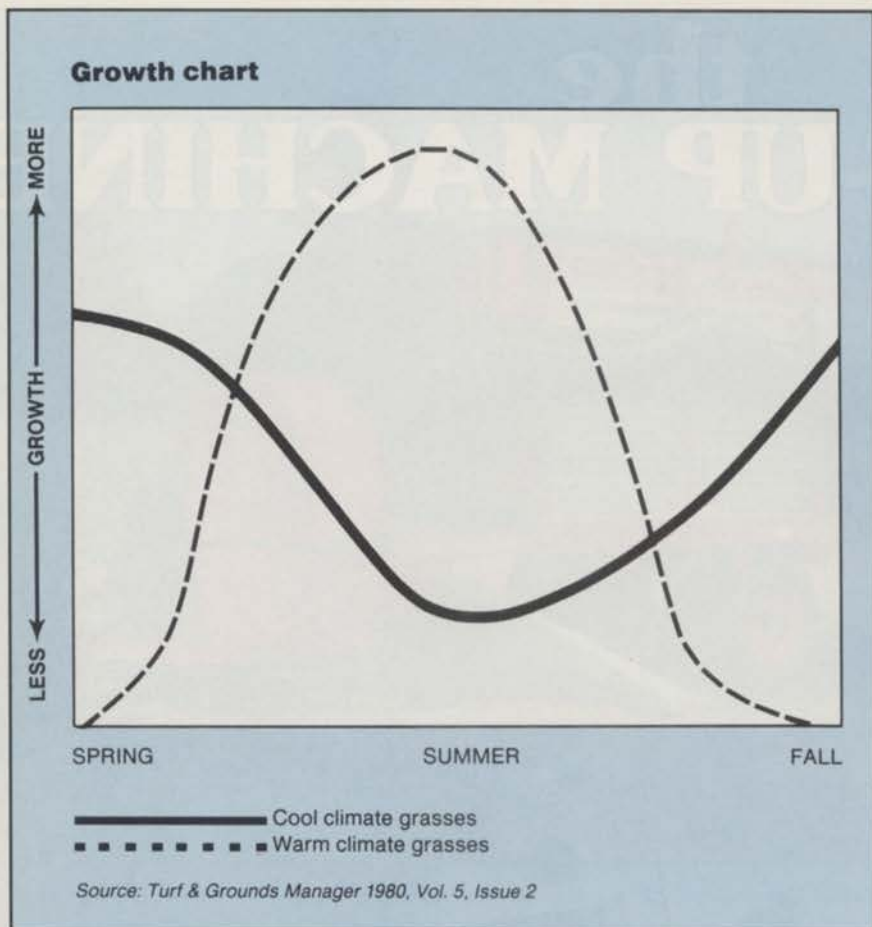
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*Of the water used in urban areas, estimates indicate approximately 50 percent is used on the landscape.*

water use and maintenance.

Bluegrass is the standard for comparing other grasses. Comparisons of plant characteristics such as leaf texture and plant tolerances use bluegrass as a point of reference.

Bluegrass has surprising drought tolerance. If unirrigated, the grass will go brown but will resprout from the rhizomes or underground stems when favorable conditions return.

It is by these rhizomes that bluegrass forms the tight sod with which we are familiar. It responds well to irrigation, fertilization, and mowing. Newer varieties have increased resistance or tolerance to heat, drought, disease, wear, and compaction.

#### Smooth brome/tall fescue

Smooth brome and tall fescue have been used as a turf mix in an office

complex for at least six years in Denver. It is a cool season mix first created to reduce visible drought stress during summer months.

Smooth brome is a weak sod former and tall fescue is a bunch grass. Both of these grasses are widely used as pasture grasses in the Great Plains.

The leaf texture (width) is much coarser than bluegrass. However, unless bluegrass is planted adjacent to this mix, most people do not realize it is not bluegrass.

This mix offers better visual drought tolerance than bluegrass and when mowed only every two weeks can be used to delineate areas for aesthetic appeal. The seed costs, using an "old" variety of tall fescue, can be as little as one-half that of bluegrass.

#### Tall fescue

Tall fescue is sometimes considered to be a weedy grass that is difficult to control. The improved varieties have almost-bluegrass leaf width and when planted as a monoculture, a tall fescue lawn is beautiful.

Some recommend this cool season grass as a method to reduce maintenance by mowing every two weeks to a height of four inches.

Researchers at the University of

Nebraska have extensive plots mowed at both one and two inches and both look great.

According to Dr. Terry Riordan (University of Nebraska), if a grass can maintain turf quality at one- and two-inch mowing heights, it will also be acceptable under less intensive maintenance schedules.

Tall fescue has a higher water use rate than bluegrass. Its drought tolerance is tied to its four foot deep root system, enabling it to tap a large soil volume for moisture. This grass is now available as sod in several states including Colorado, California, Texas, and New Mexico.

The seed is fairly large and seeding rates range from four to 10 pounds per 1,000 sq. ft. By postponing fertilization until early June after the natural flush of growth, excessive growth can be reduced.

#### The wheatgrasses

There are several wheatgrasses with turf potential. The two most promising at this time are western and crested or fairway wheatgrass. Both these wheatgrasses will tolerate precipitation as low as 14 inches per year, which can influence the amount of supplemental irrigation applied in season.

Western wheatgrass is a native sod forming grass. The aggressiveness of the rhizomes of this grass, as with most grasses, is related to the available water and nutrients. It is closely related to quackgrass (*Elytrigia repens*, was *Agropyron repens*). Most western wheatgrass has a bluish tinge to the foliage which can give an added visual feature in the landscape.

Emergence of the seed can be expected in two to three weeks, a rate that is a little slower than bluegrass. This should be considered when including this grass in a mix because western wheatgrass may not be visible the first season due to competition from the other germinating grasses.

Fairway wheatgrass is a selection from the crested wheatgrass complex. Fairway is leafier and shorter in height, making it the more suitable variety for turf use.

It is a cool season bunch grass and is one of the most widely used grasses for highway revegetation. The leaf texture is between bluegrass and tall fescue. Fairway wheatgrass responds well to irrigation, fertilization, and mowing and will prosper in a pure stand or in a mix.

#### Bermudagrass

Now what about warm season grasses? (Table 2) A problem with warm season grasses used in urban

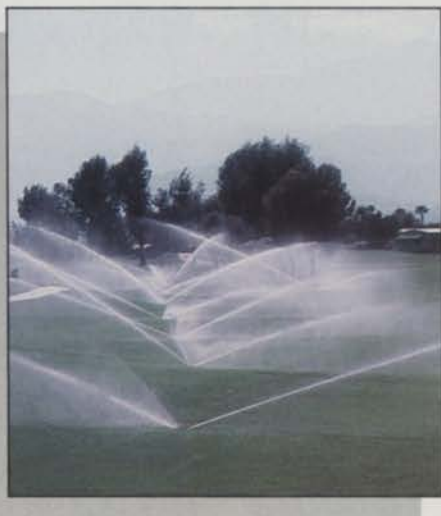
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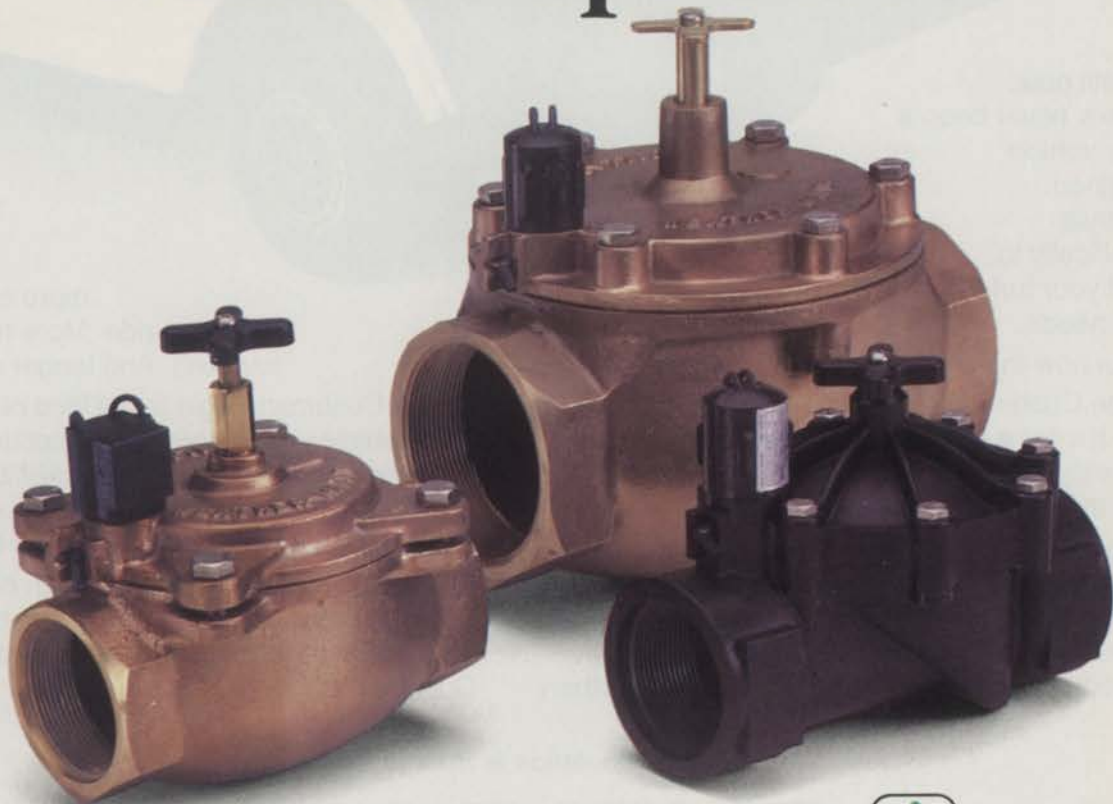
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areas is their lack of shade tolerance. In shady areas, weedy cool season grasses may invade and dominate over time.

Bermudagrass is a familiar grass in many sections of the country. The bermudagrasses that seem to have the most potential for "dryland" turf are the locally-adapted varieties. In northern Colorado, some say the hybrid, improved bermudagrass varieties do not have the needed winter hardiness to survive.

This grass has great characteristics as a low water and maintenance turfgrass. It is a warm season grass

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*...reducing water use  
will actually reduce  
maintenance needs,  
resulting in savings of  
water, time, and money.*

---

with aggressive rhizomes and stolons and has excellent heat, drought, and salt tolerance.

However, the very characteristics that make bermudagrass attractive for low maintenance lawns also make it a terrible weed where it is not wanted.

In areas of southern and western Colorado, locally-adapted bermudagrass is the only grass that can tolerate the hot, dry, and sometimes salty (saline) conditions. Availability of seed and/or stolons is based on collections of the grass within an area.

### **Buffalograss**

This native warm season grass has been looked upon as the panacea for lawns in parts of the Great Plains. Around the turn of the century, buffalograss was widely used in the Midwest as a lawn grass.

Buffalograss and blue grama were found in associations over approximately 90 percent of the Great Plains. Obviously these grasses have the heat and drought tolerance to survive in our lawns.

Buffalograss spreads by stolons or above-ground runners. Its maximum height is six to eight inches which makes the grass attractive as a "no mow" lawn. It has both male and female plants and flowers. The male flowers extend above the foliage while the female flowers and seeds are nestled in the foliage, close to the ground.

Special seed harvesters and techniques are needed for buffalograss, increasing the cost of seed. The seeds are found inside burs, two to five

seeds per bur. By using treated seed, buffalograss will emerge in seven to 10 days with establishment irrigation.

### **Blue grama**

Also a native grass, blue grama has a familiar and attractive seedhead. It is a bunch grass and is often mixed with buffalograss for diversity and to reduce seed costs.

All eight grasses discussed here tolerate mowing at 2½-3 inches on a weekly basis, although less frequent mowings may be beneficial to the grass. They all respond to fertilization and irrigation and make an acceptable turf.

These grasses have been selected for examination in research plots because of their adaptations to a semi-arid climate and tolerance for increased moisture and other maintenance practices.

All organisms have pests, these "new" grasses included. As an industry, we don't know all the pests that might cause problems or which chemicals will work and which may burn the foliage.

Many pest outbreaks, especially diseases, can be prevented by maintaining a healthy stand of grass. Water for these alternative grasses is the key for reducing disease incidence just as it is for bluegrass.

When selecting a grass, be it bluegrass or another, develop long-term maintenance practices to match the needs of the grass.

Regardless of the grass selected, good horticulture practices such as soil preparation, proper placement of plants, well designed irrigation systems and appropriate irrigation schedules, and matched maintenance schedules will benefit the grass selected. The maintenance schedule should also show reduced costs through reduced maintenance and water used.

In some areas of the country, using other grasses is more critical now than in other areas. However, in all parts of the U.S., unless we can figure out how to supply the natural precipitation evenly throughout the year, there will be more interest and emphasis on lower water using plants. The green industry could suffer considerable damage if landscaping is forbidden or restricted as a method of conserving water.

We, as an industry, can prevent this by developing or introducing plant material better adapted to the climatic variations in our area and by working with municipalities to help educate the public on attractive water conserving landscaping techniques and options, before ordinances are enacted.

**WT&T**



Inverness Club superintendent Tom Walker is confident the "Hinkle Tree," the blue hills spruce directly behind him, will provide the barrier needed between the 8th and 17th holes.

## IDYLIC INVERNESS

Superintendent Tom Walker keeps his course, host of this year's PGA Championship, in superb shape with a 'light and frequent' maintenance program.

by Ken Kuhajda, managing editor

It doesn't look like much, the blue hills spruce that sits near the tee of the 8th hole. But it sure made Inverness Club in Toledo, Ohio, even more famous.

It's become known simply as the "Hinkle Tree," the 25-footer that golfer Lon Hinkle made famous at the 1979 U.S. Open.

During the opening round, Hinkle decided to take a short cut on the par 5, 528-yard, dogleg left 8th hole by hitting his tee shot through a narrow opening and into the parallel 17th fairway.

From the 17th fairway, the no. 8 green was reachable in two strokes.

may have been the only Open participant to realize that, and during the first round, he hit a one-iron and two-iron, and then two-putted for birdie.

Word spread and two other golfers birdied the hole. The next day, golfers were surprised to see the scraggly blue hills spruce in the slight gap Hinkle had hit through.

On Friday, Hinkle was unaffected by the tree. He hit his driver over the Hinkle Tree and into the 17th fairway for another birdie.

Superintendent Tom Walker and tournament officials are hoping the same thing won't happen this year when Inverness hosts the PGA Championship Aug. 4-10. The tree is several feet taller, and the woods between the 8th and 17th holes has grown considerably more dense.

The Hinkle Tree has added to the legend of 83-year-old Inverness, host of four U.S. Opens (1920, 1931, 1957, 1979), one U.S. Amateur (1973), and a PGA Championship (1986).

### Maintenance tricks

Walker tends a course that exhibits common northern characteristics: bentgrass tees and greens, bentgrass and poa annua fairways, and a bluegrass/tall fescue mix in the roughs. He says that only subtle changes are being made in preparation for the PGA.

The course has 94 sand traps, some of which are bordered by yarrow, a noxious weed that Walker lets grow and then uses to his advantage.

Hundreds of varieties of trees dot the course, some of which were gifts from members. "We have a membership who loves their trees. We try to bring in some different trees for them," says Walker, pointing to a fern leaf beech.

A paperbark maple in the 9th fairway is a gift from a doctor



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## LANDSCAPE PROFILE



Inverness employee Eric Malczewski mows a narrow strip of turf in the U-shaped sand trap that sits in the fairway between holes 14 and 15.



Jay Collins is all eyes as he mows tees to just under 1/4-inch.

member, says Walker. "We have more than 10,000 trees."

Inverness has its own nursery of sorts but it is temporarily uprooted in preparation for the PGA. It lost a territorial battle to the press tent. Walker says trees generally grow four to five years before they are planted on the course.

### 'Lightly and frequently'

In maintaining the trees and turf, Walker says he has no tricks. But after talking with him, it's evident that his maintenance program should be labeled "lightly and frequently."

The trees are frequently pruned

by Inverness staff.

He uses a low nitrogen program, fertilizing lightly and frequently (every two weeks). He feeds his turf a lot of potassium.

He aerifies the greens in the spring and fall, the fairways in the spring and sometimes in the fall, and the tees continuously in the summer months.

He topdresses the greens lightly every two weeks.

In addition, he verticuts frequently, using a Toro riding greensmower. "It helps speed up the greens but certainly doesn't help with thatch," says Walker.

He mows his tees at just below 1/4

inch, the fairways at just below 1 inch, and the greens at just under 1/8 inch. The rough is kept at anywhere from 1 to 4 inches.

### Strong support

With all his maintenance activity, Walker needs both a big and capable crew. He's lucky. He has both.

About 30 workers toil the turf at Inverness (mainly with Toro and some Jacobsen equipment), with just

*'We have a membership who loves their trees. We try to bring in some different trees for them.'*

—Tom Walker, superintendent  
Inverness Club  
Toledo, Ohio

five remaining year-round. Walker repeatedly points out his crew's talent.

"I'd put this crew up against any in the country," says Walker. He adds there's something special, an added incentive, when preparing for a major tournament.

"Something like the PGA pulls them together. They realize it's a once-in-a-lifetime event and they get to participate in it," he says.

The crew is an interesting bunch. Assistant superintendent Tim Kennelly, 23, already has eight years golf course experience. He has an associate degree of turfgrass management from renowned Michigan State University.

The tall, blond Kennelly worked for Walker at Highland Meadows. He also worked two summers at famed Oakmont Country Club in Oakmont, Pa. The youthful Kennelly says he doesn't feel great pressure to perform.

"I don't think age is an issue. It's ability and experience," says Kennelly, who hopes to land his own superintendent's job after this year's PGA.

Kennelly says he knew he wanted to be a golf course superintendent by his sophomore year in high school.

Crew member Aaron Asmus aspires to land an irrigation construction job in Florida when he graduates from the Agricultural Technical Institute (a part of Ohio State University) in Wooster, Ohio.