

The Miracle at Jack Murphy Stadium

Or how George Toma and Ph.D.® Overseeding Blend created Super Bowl quality turf in 25 days & 25 nights



BEFORE • January 2, 1988



AFTER • January 27, 1988

The Miracle at Jack Murp



January 2, 1988



The native turf of Santa Ana hybrid Bermuda grass in Jack Murphy stadium, San Diego, California, is seen here after a hard season of use. As the first step in preparing the field for Super Bowl XXII, George Toma and his famed "Sod Squad" first brushed and vacuumed the holiday bowl game designs at midfield and in the end zone, and shatter-core aerified the field.

January 6, 1988



The "Sod Squad" sowed Ph.D.® turf-type ryegrass overseeding blend on the bare soil and areas in which there was 50-80 percent remaining coverage of dormant Bermuda grass. Seeding rate was 30 pounds per 1,000 square feet. Ph.D.® has been used in seven Super Bowl games with superlative results. Because it produces superior turf in the shortest possible time, Ph.D.® ryegrass blend is always specified by Toma before work begins.



January 15, 1988

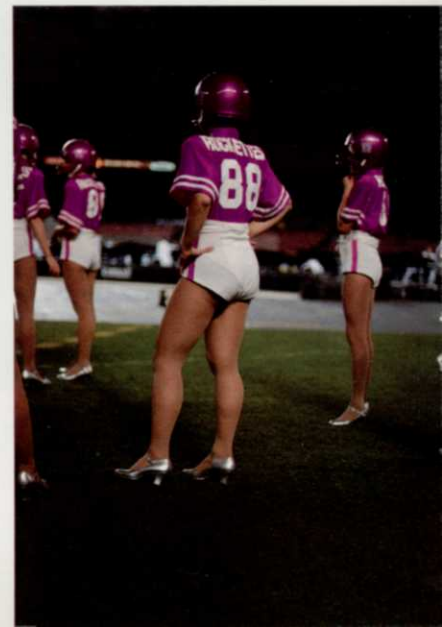


Six days after the Ph.D.® was sown, the thick, dark green ryegrass turf was approximately 1 1/2 inches high and ready for its first mowing. It is being cut here for the *third* time on January 15 with John Deere equipment. While ryegrass will germinate in a matter of 7-10 days under ideal conditions, Toma accelerates the process by pre-germinating the seed.

January 29, 1988



It's the Friday before the Sunday game. For some 12 hours more than 1,500 participants in the show scheduled for half-time on Sunday practice their routines on the new turf. Not all wore high heels, but the pounding feet of marching bands, drill teams and the heavy stages on wheels used in the half time show means the Super Bowl turf must be able to take plenty of punishment and come right back.



hy Stadium



January 31, 1988



It's Super Bowl Sunday! Under the direction of George Toma, the Ph.D.[®] ryegrass overseeding blend is deep green, deep-rooted and ready for the tearing cleats of the players as well as the pounding it will be given by the half-time performers. It's a demanding role for any grass, but this all-ryegrass mixture has proven equal to the task and is picture-perfect for the television cameras on game day.



Turf wizard George Toma not only prepares the playing surface for all Super Bowl games, he's the groundskeeper for the Kansas City Royals baseball club and the Kansas City Chiefs professional football team.

Most knowledgeable turf experts acknowledge that he is the best groundskeeper in the business.



Toma says that Ph.D.[®] turf-type ryegrass overseeding blend with its ability to quickly germinate and develop a strong root system, is a major factor in his success in turf preparation.

Ph.D.[®] – the Super Bowl Grass.

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WINTER OVERSEEDING

Switching from warm-season to cool-season turf and back again is no longer a matter of luck.

by A. R. Mazur, Ph.D., Clemson University

Many turf managers think that overseeding is merely scattering seed and waiting for it to germinate. In fact, overseeding is a complex operation that doesn't depend on luck for success.

The technology associated with overseeding has come a long way in the last 15 years. Methods of surface preparation have evolved from severe dethatching and scalping to less disrupting practices like lighter, more frequent thatching and raising mow-

ing heights during the establishment phase.

New concepts facilitate the shift from warm-season to cool-season turfgrasses during the fall and spring transition periods. In addition, there has been a switch from using annual to perennial ryegrass and the development of more improved cool-season cultivars for overseeding mixtures and blends. This has resulted in lower seeding rates and less injury from disease.

While these technological advances have solved some problems, new ones have taken their place. For example, the dense stands of improved cool-season turfgrasses now pose severe competition to emerging Bermudagrass during the spring transition period.

To solve this problem, it's important to develop a healthy hardened warm-season turf prior to winter dormancy. A 1:1 nitrogen-to-potassium ratio during the mid-summer period

Overseeding high management turf

Here is the accepted procedure to overseed fine turf:

1. Verticut the area in two directions, four to seven days prior to overseeding. On greens it is best to avoid mowing for several days before overseeding to allow a stubble to develop to help hold seed in place. Avoid topdressing on greens prior to seeding because it destroys uniform seed placement. The uniform distribution of seed is most easily obtained with a centrifugal-type spreader, applying the seed in a minimum of four directions.

Using fungicide-treated seed is the most effective method of minimizing seedling diseases that can be so devastating on densely planted, overseeded turf.

2. Immediately after seeding, the area should be matted with a piece of carpet tied under a steel drag mat. This process works the seed into contact with the soil surface.

3. Topdressing the area then serves as a light mulch to enhance germination. The topdressing material should be a mix comparable to the material in the root zone to prevent a layering condition. Layers are often responsible for disruption of water movement in the soil profile. For low management turf, preparation is merely a closer than normal mowing and removal of clippings prior to seeding. □

has been shown to improve stress tolerance. However, nitrogen fertilization should be stopped three to four weeks before overseeding. This will provide good uniform growth and color in the Bermudagrass without creating excessive competition with the overseeded cool-season grasses.

Optimum thatch level

Thatch levels have been shown to have a significant effect on the success of overseeding high management turf. The standard 1/2 inch of thatch desired for resiliency and cushion is still the goal. Excessive thatch results in poor seed-soil contact and offers less than optimum conditions for germination. Seedlings that germinate under excessive thatch conditions are more susceptible to moisture and temperature stresses.

A maintenance program on greens, including light, frequent verticutting and/or topdressing during the summer, is more effective than severe dethatching two to three weeks before winter overseeding. This will provide the uniform and smooth surfaces to permit close, frequent mowing.

Lower maintenance grasses, such as centipede, St. Augustine and bahia, usually present fewer thatch management problems.

Coring should be completed on lower management grasses during the spring or summer. On high management areas such as greens, coring must be avoided within three to four weeks of overseeding. (Seed germination in aeration holes will result in a very unsightly checkerboard appearance.) Aeration also promotes annual bluegrass intrusion into overseedlings.

Weed control

Winter annual weeds, particularly annual bluegrass, can be a serious problem in overseeded turf. Although cultural practices influence the extent of weed invasion, acceptable con-

trol can only be assured with a pre-emergence herbicide.

The herbicides, in order to be effective without injuring the seedling turf, must be applied 45 to 60 days before overseeding. Herbicides have to be applied uniformly to an area with a minimum of 50 gallons of water per acre. Irrigation or rain must follow within 7 to 10 days after application to assure the herbicide's effectiveness. Pre-emergence herbicides should not be used on areas without good surface and/or internal drainage. That can cause turf injury when washed or concentrated in low areas.

The basic attributes of grass for winter overseeding are rapid germination, good seeding vigor, fine texture, good color, disease tolerance and large seed size. Since perennial ryegrass is the cool-season grass with the greatest number of these characteristics, it has become the backbone of winter overseedings.

Each cultivar used for overseeding has distinct characteristics of color, texture and tolerance to disease and environmental stresses. For this reason, ryegrass cultivars are often blended or mixed with other cool-season species to get a desired effect or performance. Although other cool-season species are not generally used alone, they are often included in mixtures to strengthen the performance of the overseeding. This practice improves color, density, disease tolerance and mowing qualities.

Mowing tolerance

Late in the season, perennial ryegrass becomes difficult to cleanly mow, due to the fibrous nature of its vascular strands. Including other cool-season species in overseeding mixtures provides for a much cleaner mower cut.

Poa trivialis is frequently included in mixtures for quick germination and fine leaf texture that improves quality in both spring and fall. The light color of rough bluegrass also helps to mask

the presence of any annual bluegrass. A major problem with *Poa trivialis* seed has been contamination with weed seed, especially annual bluegrass.

Red fescue has been used to add leaf stiffness, fine texture and mid-season color, but is much slower to establish than perennial ryegrass.

Bentgrass is added to mixtures to strengthen spring performance. It provides fine texture and color, as well as good drought and heat tolerance. But it may be excessively competitive with emerging Bermudagrass in the spring.

Kentucky bluegrass is infrequently used because it germinates very slowly, has weak seedling vigor and a coarse texture. Its major contribution is enhancing mid- and late-season color.

Using ryegrass blends

Many high quality perennial ryegrass blends and mixtures are commercially available. The important thing is to have the seed on hand well in advance of the planned overseeding date. Seed must be stored in a cool dry area to maintain viability and prevent seed dormancy from developing.

Another important factor in overseeding success is timing establishment. Traditionally, timing has been based on calendar dates and past experience with the local climate. At best, this has been a hit-or-miss approach. Why is timing so critical? If seeded too soon, the cool-season turfgrasses are subjected to extreme pressure from diseases such as pythium, brown patch and warm-season grass competition.

The ideal conditions for establishment are warm daytime temperatures to encourage germination and cool nights to reduce Bermudagrass competition and disease pressure. More recently, the use of long-range weather forecasts and soil temperatures have greatly improved the

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success of overseedings. If overseeding and fall transition are delayed, the onset of cold weather can result in poor germination, reduced stands and general failure.

General technique

Overseeding technique is extremely important to the quality of turf during the fall transition period. The warm-season turf provides much of the overall turf quality of the sward in the fall until it goes dormant with the first hard frost. This preparation ensures good seed and soil contact and provides uniform germination and root development. Also, it reduces warm turf competition and thatch levels, thereby decreasing the potential for injury from environmental stresses and diseases.

Since the turf will continue to be in use or view during overseeding, the less disruptive the operation the better.

Maintenance

Watering, disease control, fertility and mowing are important to develop and maintain overseeding quality. Light, frequent watering should begin immediately after the seeding operation is finished and continue for seven to 10 days for uniform germination. Uniformity of germination is proportional to the ability to keep the top 1/2-inch of the seedbed moist. Three to five light waterings daily (to just moisten the surface) provide the best results.

Generally, natural precipitation is adequate for overseeded turf. However, during extended periods of dry weather, it is often necessary to irrigate to avoid stress and/or seedling loss.

Overseeding dormant turf is a unique situation with respect to turfgrass management. Under normal situations turfgrasses are seeded at rates that will allow adequate room for it to develop and mature. The rate used for overseeding results in excessive seedling crowding, competition and the failure of the plants to develop lateral growth and physiological maturity. Under these conditions, the turfgrass manager is dealing with a seedling stand for a seven- to nine-month period.

Controlling disease

A preventive fungicide program is important when dealing with high density cool-season seedling populations under environmental conditions favorable for disease development. Using treated seed provides protection during the germination phase. At the highest seedling densi-

Proper seeding rates

The optimum seeding rate provides quick establishment and a dense cover of overseeded turf. On the other hand, low seeding rates mean very slow establishment with thin stands of poor quality. High seeding rates are expensive and result in excessive seedling competition and a higher disease incidence.

Most turf areas are seeded with perennial ryegrass alone or mixtures containing perennial ryegrass and other cool-season species. When using a mixture, the seeding rate can easily be calculated by multiplying the percentage of each grass by the optimum seeding rate.

An example for putting greens would be a mixture of 90 percent perennial ryegrass and 10 percent bentgrass. This mix would be planted at 27lbs. of ryegrass (.9 × 30) and 1/2 lb. bentgrass (.1 × 5) per 1,000 sq. ft.

The accompanying table shows the optimum rates for overseeding.

OVERSEEDING RATES

Turfgrass species	Seeding rate pounds per 1,000 sq ft	
	Greens	Lawns**
Perennial ryegrass	30	8-15
Red fescue	25	8-15
<u>Poa trivialis</u>	10	3-5
Bentgrass	5	*
Annual ryegrass	*	10-20
Kentucky bluegrass	*	3-5

* Not recommended

** Includes athletic fields and fairways where rate is a factor of the degree of cover and color desired.

ties on greens, a preventive fungicide program must be continued as long as environmental conditions dictate.

Since use or play on most overseeded areas is continuous, these areas must be mowed regularly. Since seedling turf is injured easily by traffic, precautions must be taken during the first few weeks of overseeding. As mowing frequency is a factor of cutting height, lawns and athletic fields may be mowed for the first time seven to 10 days after germination. Mowing on greens can begin almost immediately.

As with other turfgrass areas, no more than 30 to 40 percent of the leaf surface should be mowed at any one time. The daily mowing height on greens is raised for the first two or three mowings to 3/8 inch. Although surfaces may be slightly slower, this practice assures seedling survival and development.

Mowing height should be lowered by 1/32-inch weekly to 1/4- to 7/32-inch

maintained on putting surfaces. New overseedings are easily damaged by mower and equipment traffic. Walk-behind mowers are often preferred for the first several mowings. Triplex mowers and other heavy equipment should be used with care. Although seedlings do not cut very cleanly during the first two to three mowings, double-cutting and clean-up passes must be avoided.

Fertilization needs

Overseedings are usually fertilized at the time of seeding with a complete 12-4-8 grade fertilizer at the rate of 1 lb. of nitrogen per 1000 sq. ft. This will provide the essential nutrients for seedling development and avoids the potential of salt burn injury to seedlings. Additional fertilizer applications are withheld two to three weeks until the seedlings are less prone to injury.

Soluble nitrogen sources are the most effective for overseedings, primarily because of the cooler temperatures during overseeding period. An application of fertilizer to provide 1 lb. of nitrogen per 1,000 sq. ft. every three to four weeks on greens and four to six weeks on lawn turf will provide aesthetically pleasing and serviceable turf.

It is important to remember that fertilizer materials should always be applied to dry leaf surfaces and watered to prevent foliar damage. **LM**

Technological advances have solved some problems with overseeding, but new ones have appeared.

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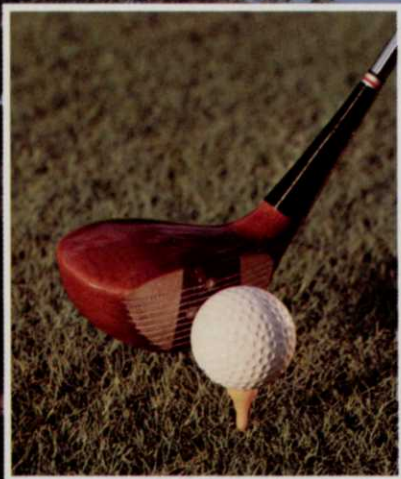
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**From
sweet spot**

...to dollar spot (!?!%!!)



On Design

by Will Perry, managing editor



In a New England garden

Thanks to the work of Carol R. Johnson & Assoc., we're able to step back in time—to the mid-1880s when English-style gardens softened the urban landscape of many New England towns. This historic garden is the central focus for a group of restored 19th century houses in University Green, Cambridge, Mass.

The garden was designed to soften the height and mass of a new condominium complex and to integrate it into the rest of the historic district. Because it rests above an underground parking garage Johnson used polystyrene foam as a fill material and to complement a lightweight wire mesh product that acts as a drainage material. Expanded shale was used as a fill material under walkways and the structural loads were estimated for each square foot of the garage roof. All the plant life was tested by Johnson to be sure it could thrive in the 12 inches of soil available.

The garden itself features arched, lighted entryways, brick walks, granite cobble walls, a manicured lawn and shade trees to provide an overall sense of tranquility. Flowering fruit trees, perennial flower borders, a kitchen herb garden with bird bath and a grape arbor give added layers of detail, enrichment and a sense of place and offer color throughout the growing season.

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