



GOLF TURF NEWS

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Turf Research: The South

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The south provides some unique problems and challenges in growing and maintaining quality turfgrass for recreational areas. A long growing season and moderate climate bring increased demands on recreational area use. Turf research at land-grant institutions will continue to require strong support from the turf industry to provide management techniques needed to maintain adequate turf quality. Pest management will continue to play a key role in turf maintenance and evaluation of chemical and biological pest control, as well as pesticide fate in the environment, will be a major topic of research. This is a report of some of the current research at universities in the south.

ESTABLISHMENT

Florida has reported on a comparison of sod-soil type and fertilization during establishment. Mineral sand grown sod had superior rooting over organic (muck) grown sod of St. Augustinegrass. Fertilization on the sod surface was more effective than applying fertilizer to the sodbed surface before laying sod.

CULTIVAR EVALUATION AND RELEASE

Oklahoma has released a new seeded bermudagrass variety called 'Guymon'. It has a texture similar to common and will have uses primarily in low maintenance turf situations. A new centipedegrass has been approved for release by AL. Labeled as 'Centennial', it is a dwarf variety with high leaf density, short internodes and short seedheads. It also has a darker green color than common centipedegrass.

A new ST. Augustinegrass variety has been approved for release in FL called 'Floralawn'. It is resistant to chinch bugs and SAD virus, is tolerant to sod webworms and can be identified from other St. Augustinegrass varieties by enzyme analysis and morphological characteristics. Increased need for salt tolerant turfgrasses is a topic of much research in FL. A new variety of Seashore Paspalum labeled FSP-1 is being evaluated for cultural requirements and pesticide tolerance. It has superior density to 'Adalayd' and 'Futurf' and excellent salt tolerance.

CULTURAL PRACTICES

A thatch accumulation study in AL on bermudagrass found that four topdressings per year with sand reduced thatch accumulation more than a single topdressing. Neither monthly aerification nor biweekly vertical mowing provided more thatch control than twice yearly treatments of either one. Turf quality was not correlated with thatch depth. They found that activated sewage sludge produced superior turf quality, although more thatch was produced than when ammonium nitrate was applied. Thatch decomposition by white-rot fungi and topdressing treatment was studied in FL on four turfgrasses. The fungus *Phebia gigantea* reduced cellulose content of bermudagrass and centipedegrass thatch while *Coriolus vericolor* reduced the lignin content. Topdressings of sand and colloidal phosphate significantly reduced the cellulose and lignin contents of thatch although the addition of colloidal phosphate did not increase the decomposition rate.

Thatch accumulation was also studied in FL as influenced by acidity. Approximately twice as much thatch accumulated below pH 4.0 as above pH 5.0 except where addition Ca was applied. Supplemental Ca apparently aided thatch decomposition at a low pH.

The influence of growth regulators on common bermudagrass was studied in TX. A number of growth regulator including Embark Surflan, Dual and malic hydrazide were evaluated for residual effects, water use efficiency, and physiological and growth responses. There were no residual effects from growth regulator application the year before. They found that seedhead production between treatments was erratic and there was no trend due to treatment. Growth response was varied with Embark producing less wet and dry weight early in the season. Soil water content was unaffected by treatments. They concluded that future studies should include effects of multiple applications during the growing season.

Fertilization continues to be a major topic of study especially concerning evaluations of nitrogen sources. Texas reported on a study comparing a number of old and new nitrogen sources on turf quality and growth of 'Tifgreen' bermudagrass. Comparing ammonium sulfate, ammonium nitrate, urea, activated sewage sludge (Milorganite™), IBDU, ureaformaldehyde, and sulfur coated urea to the experimental material oxamide, they found a close association between shoot growth and turf quality for most of the materials. However, the granular form of oxamide produced favorable visual turf quality without

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promoting excessive vertical shoot growth. This response was sustained for 13 weeks.

Studies in FL found similar results for the oxamide materials. Additionally, nitrification inhibitors were found not to increase N availability to bermudagrass during the warm season. Another experimental material from Japan also maintained adequate turf quality without promoting excessive growth.

Irrigation studies in TX have focused on determining evapotranspiration rates, effects of irrigation frequency on turf water requirements, and an evaluation of home lawn sprinklers. They found significant variation among grass species for evapotranspiration rates. 'Tifgreen' bermudagrass and common centipedegrass had low rates while 'Texas Common' St. Augustinegrass, 'Argentine' bahiagrass and 'Adalayd' Seashore Paspalum had high rates. Few differences were noted in relative ratings as soil moisture became limiting. The exception was bahiagrass which had a low evapotranspiration rate under progressive water stress conditions, in contrast to a high rate under nonlimiting soil moisture conditions. All grass species exhibited higher evapotranspiration rates when maintained at optimum nitrogen fertility and cutting height than when at lower fertility. Water use varied by up to 50% between turf species maintained under equivalent cultural conditions. Sprinkler irrigation studies showed that the best time to irrigate lawns is between 12 midnight and 8 a.m. Water losses are 50% or less of those obtained during midday. This is the period during the day of lower wind speeds and evapotranspiration and decreased temperatures and higher humidity. In comparing types of sprinklers including oscillating, traveling, impact, rotating, stationary (buried head) and drip line, they found that many of the sprinkler applied water at a rate which exceeded the long term infiltration rate of many agricultural soil types except sands. Considerable runoff could occur with certain sprinkler types on heavy soils making it necessary to carefully match sprinkler type to soil type.

Salinity studies in FL have found cultivar differences in St. Augustinegrass. 'Seville' was found to be superior to 'Floritam', 'Floratine', and experimental line FA-108 (to be released as 'Floralawn') in growth responses to salinity in solution culture. Seashore paspalum studies have found an experimental variety FSP-1 to be more salt tolerant in solution culture than either 'Adalayd', 'Futurf', or another experimental line, FSP-2.

NEMATODES

Ethylene dibromide (EDB) has been banned for agricultural applications in the U.S. and is no longer available for nematode control. Organophosphate materials are available for use but at a higher cost per application unit. A study in AL looked at plant parasitic nematodes on bermudagrass as influenced by cultural practices. Top-dressing, vertical mowing, or core aeration treatments had no consistent effects on nematode populations. Lower populations were noted where acti-

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vated sewage sludge was used as the N source compared to ammonium nitrate. However, differences were only noted for one sampling period.

INSECTS

Much of the insect research continues to focus on the biology and control of mole crickets. Southern mole crickets (*Scapteriscus acletus*) have been found to not be a major turfgrass pest like the tawny (*S. vicinus*) or short-winged (*S. abbreviateas*) species (FL). Studies on chemical control in FL have found Oftanol™ at 2 lb ai/acre to be an effective long term material if applied prior to egg hatching (mid-May) for north and central FL. Cibe-Geigy 12223 to be called Triumph™ as also effective for long term mole cricket control.

Southern chinch bug (*Blissus insularis*) biology and control by insecticides was studied in FL. Resistance has been shown by the southern chinch bug in south Florida to chlorpyrifos, diazinon, isofenphos, primiphos-ethyl, propyl thiopyrophosphate, and trichlorfonl). The only alternative insecticide registered for control is propoxur.

Studies in TX for control of white grubs includes application timing and insecticide efficacy. In the tests, only the isofenphos EC spray was consistent in performance. Further work related to formulations and application timing is needed to determine optimum benefit from other materials.

WEEDS

Continued emphasis on weed control included studies on turfgrass tolerance, herbicide efficacy, and application timing. Studies in GA found that combination treatments of 2,4-D, mecoprop, and dicamba applied to bermudagrass cultivars in August, September, or October injured the grass immediately after treatment. Normal rates (1.0 - 0.5 - 0.08 lb ai/acre) did not affect winter survival. A triple rate delayed growth of 'Tifgreen' and 'Tifdwarf' more the following April than 'Tifway' and 'Ormond'. An additional study found that putting greens were generally intolerant to twice yearly applications of oxadiazon and that napropamide and prosulfalin reduced root growth. Of the preemergent materials tested, bensulide delayed early spring growth less than the others and did not adversely affect turf quality during the growing season.

Crabgrass (*Digitaria* sp.) and goosegrass (*Eleusine indica*) control is a common problem. Johnson (GA) found napropamide equally as effective as bensulide throughout the summer. The single application granular application of napropamide was better than the wettable powder. Application in February or March followed in two months by a second application controlled goosegrass satisfactorily regardless of formulation. He also found that atrazine at 2 lb ai/a combined with bensulide at 10 lb ai/a applied in late February to dormant bermudagrass controlled crabgrass as effectively as separate applications in February and April.

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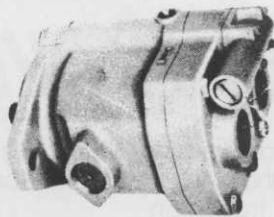
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Work in AL has found that sulfometuron methy (Oust™) gives excellent control of bahiagrass in centipedegrass. They also tested a number of diphenyl ether materials for common bermudagrass eradication and none was better than glyphosate. Tank mixtures of herbicides were evaluated on common bermudagrass (GA). Glyphosphate at 0.25 lb ai/a mixed with DCPA at 10 lb ai/a was most effective for parsley-piert (Alchemilla microcorpa) control. Bensulide at 10 lb ai/a was more effective in controlling large crabgrass (*Digitaria sanguinalis*) when applied alone than if mixed with either paraquat, or 2,4-D plus mecoprop plus dicamba.

Annual bluegrass (*Poa annua*) control in overseeded bermudagrass putting greens continues to receive a lot of research attention. Fenarimol gave 90 percent preemergent control in February and at least 75 percent control in April in a TX study. This was based on six one-half ounce per 1,000 sq. ft. applications at 2-weeks intervals. Fenarimol is currently registered for use as fungicide and more studies are planned to evaluate herbicidal activity.

In a GA study ethofumesate satisfactorily controlled annual bluegrass when applied at 1.0 lb ai/a in October and again in November but not when applied in February and March. The October and November applications reduced the quality of the overseeded perennial ryegrass but the turf recovered fully. The transition from ryegrass back to bermudagrass turf was good in the spring regardless of the ethofumesate treatment.

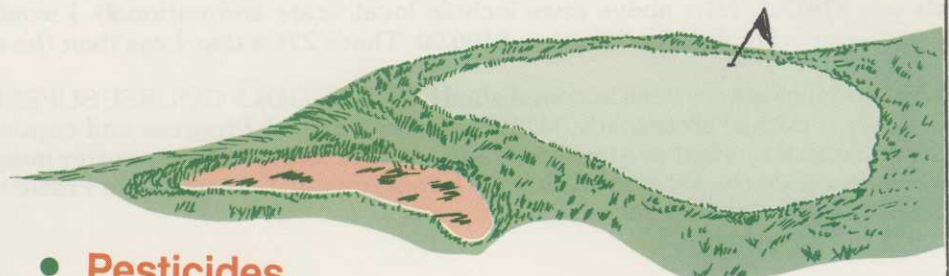
Johnson in GA evaluated postemergent herbicides for grassy weed control around the base of woody ornamentals. He found that of MSMA, MSMA - metribuzin, and acifluorfen materials at various application numbers and rates, only flowering dogwood was affected, and this was the only to MSMA. Andorra juniper, dwarf burfordi holly, Japanese holly, Yaupon holly, red tip photinia, pyracantha and flowering cherry were unaffected by herbicide treatments when spray was kept from drifting onto the foliage.

DISEASES

Tests in FL on chemical control of Rhizoctonia brown patch is St. Augustinegrass found few differences among the fungicides in checking disease advance. The tests indicated that where microelements may be limiting, a turf response from a component of the fungicide may be noticed. A similar test in FL found that Pythium specific fungicides including propanocarb, methyl amino propanoate, ethazol, and metalaxyl will significantly reduce damage when applied at the time of ryegrass seeding. Broad spectrum fungicides including triadimefon, chlorthalonil, methyl thiophanate, iprodione and buffered formaldehyde (Form-A-Turf™) were not effective in reducing disease damage.

TURF AND VERDURE July 1984

Editor's Note: This is reprinted from the July 1984 Parks Maintenance



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