Nutrient uptake: Some turfgrasses do it better than others

By Richard J. Hull and Haibo Liu

There has been a lot of discussion within the turfgrass community about reducing the material inputs required to maintain high quality turf. Environmental concerns, economic realities and shifting priorities in the allocation of scarce resources are all pressing turf managers to do their job more efficiently. It is estimated that as early as the next century, much of the fertilizer, water and pesticide currently used to grow turf will no longer be available.

Responses to the problem of limited resources

The US Golf Association and the Golf Course Superintendents Association of America have invested several million dollars in research intended to reduce by fifty percent the fertilizer, water and pesticides needed to grow turf of high quality. This effort was launched about ten years ago and has involved turfgrass researchers all across the country.

State agricultural experiment stations have been conducting research on integrated pest management (IPM) strategies to reduce pesticide use. They have also been evaluating various organic fertilizer materials in an effort to recycle wastes and minimize nutrient losses.

The National Turfgrass Evaluation Program (NTEP) has been comparing the quality of turfgrasses grown under low maintenance conditions with those grown under more conventional practices (see TGT, September/October 1992 and April 1995). This program is aimed at identifying turfgrass cultivars which are more efficient in their use of resources and will produce good turf with reduced material inputs.

Cultivar	Quality scores* Rhode Island	All of US
Kentucky bluegrass (1986-90)		
Blacksburg	7.4	6.3
Eclipse	7.2	6.0
Bristol	6.6	5.9
Liberty	6.7	5.7
Kenblue	5.4	5.0
Joy	5.2	5.0
Perennial ryegrass (1987-90)		
Repell	6.8	6.1
Tara	6.5	5.9
Derby	6.2	5.7
J207	6.4	5.2
J208	6.1	5.2
Linn	4.2	3.7
Tall fescue (1988-91)		
Rebel II	6.5	5.9
Apache	5.8	5.8
Jaguar	6.2	5.7
Arid	5.7	5.7
Falcon	5.4	5.5
KY31	4.1	4.7

* Quality scores: 9 = Excellent turf; 1 = Dead turf or bare ground

Table 1. Turfgrasses evaluated and quality scores at Rhode Island and nationally (NTEP data).

FIELD EDITOR'S NOTE

By Christopher Sann
Re: Article by Drs. Hull and Liu on nutrient uptake

I strongly recommend the article on turfgrass nutrient uptake by Drs. Hull and Liu to all of our subscribers. The research that they are reporting to us in this article is revolutionary. For the first time, turfgrass researchers have been able to accurately measure nutrient uptake for multiple cultivars of multiple species of turfgrass and begin to relate these measurements to results in the field.

The implications for future turfgrass managers' ability to tailor their cultivar choices precisely to their site and soil environments, and to manage nutrient and soil chemistry strategies, are spectacular.

So, don't be put off by the apparent technicalities of the discussion. It's very straightforward, and will give you a good look at what the future appears to hold in store for cultivar breeding and cultivar and nutrient management in the field.