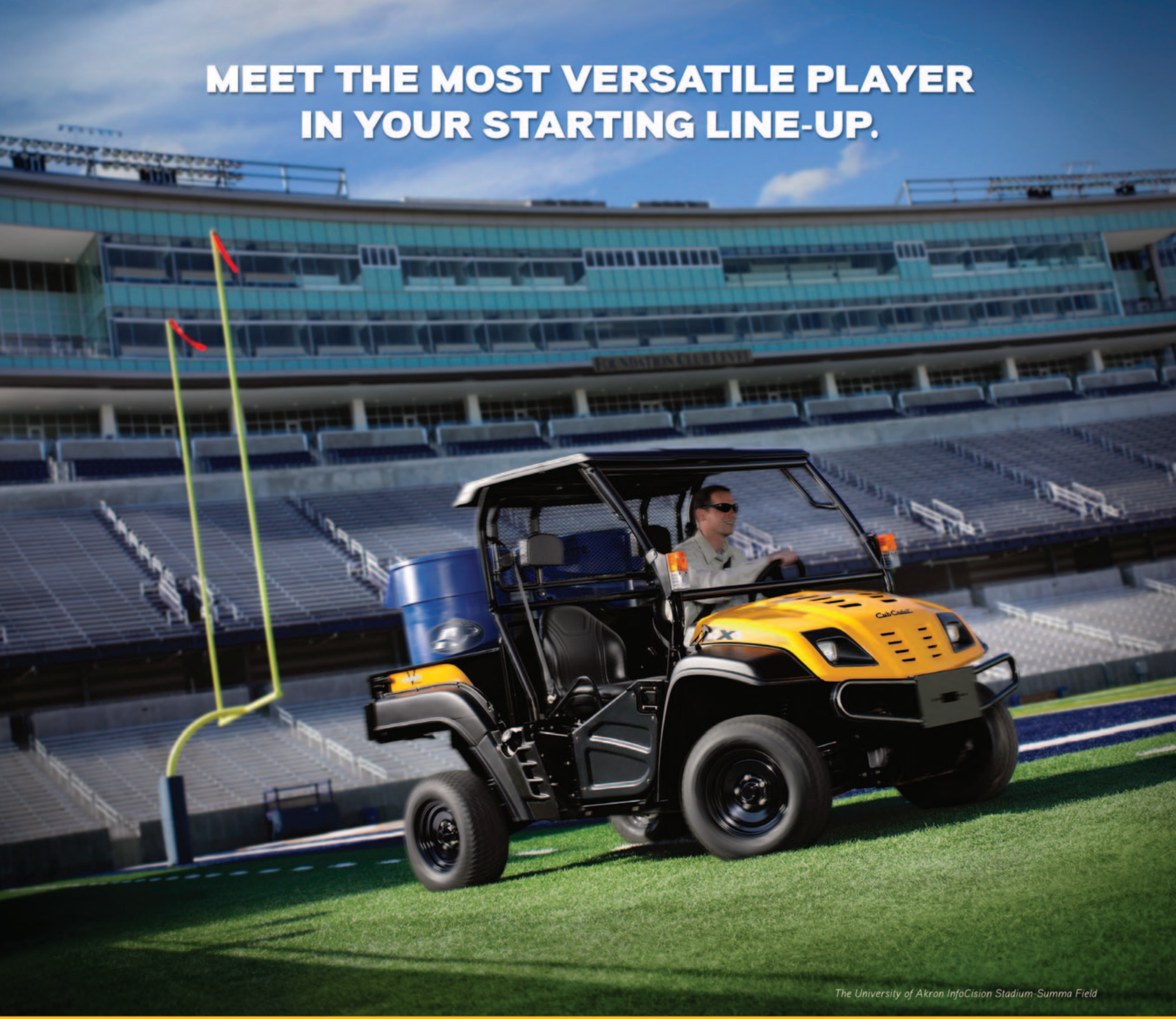
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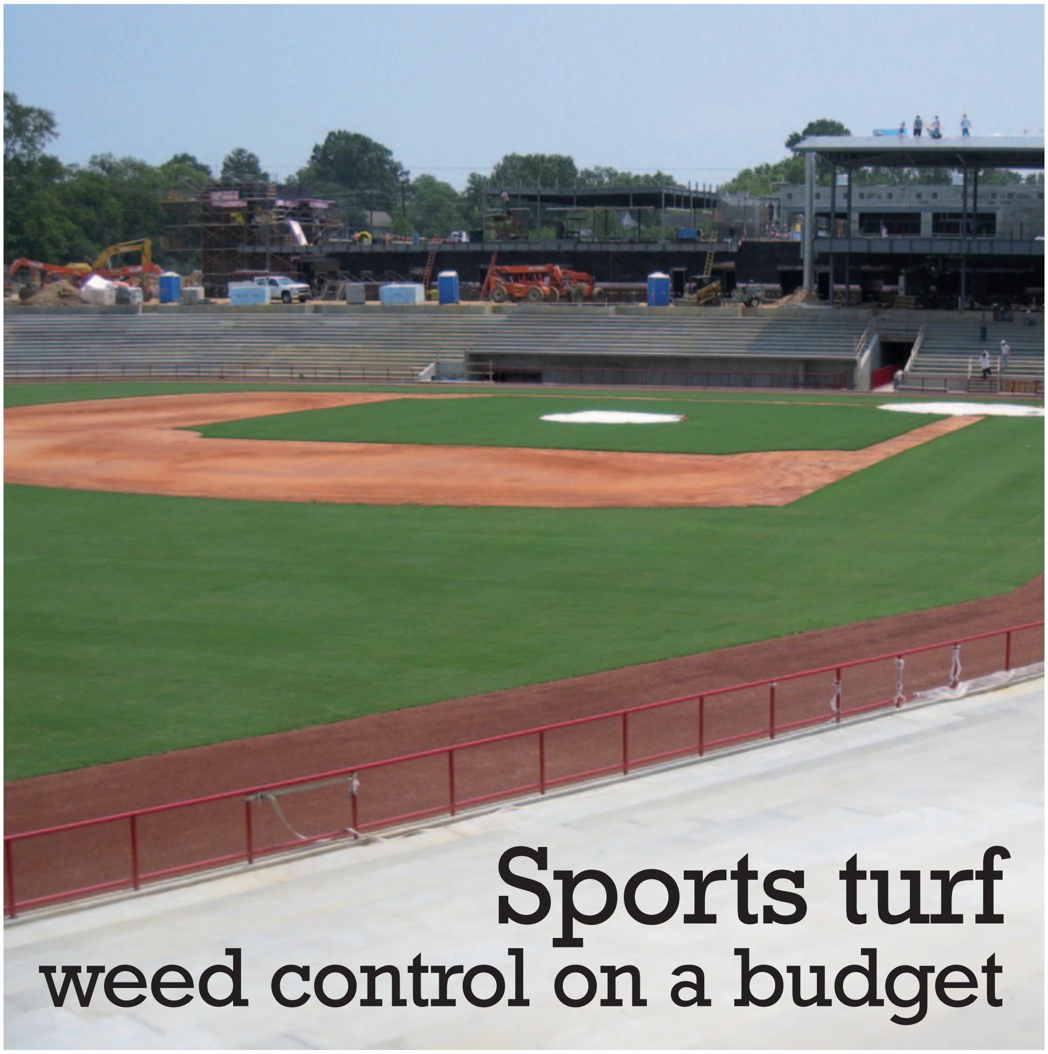
The University of Akron InfoCision Stadium-Summa Field



Sports turf weed control on a budget

OVER THE PAST SEVERAL YEARS budgets for turfgrass maintenance have been reduced dramatically. Athletic field managers have all had to adjust to the struggles associated with maintaining high quality turf with less money. One could argue that sports turf managers are affected more than any other sector of the industry during these trying times. While dollars for field maintenance continue to decline, demands on field use do not.

To conquer these challenges from a weed control perspective, sports turf managers must comprehensively evaluate their management programs to determine where valuable budget dollars should be spent. The steps presented below can be used as a guide for making weed control decisions on a restricted budget.

✓PRIORITIZE

The first step in effectively controlling weeds on a restricted budget is to realize that any program implemented most likely will not be comprehensive. While the entire facility may have been treated in the past, with fewer dollars in the budget it is critically important that sports turf managers determine what parts of their facility need to look the best (i.e., be free of weeds). Many sports turf managers grade these areas. For example, game fields for varsity sports may be deemed A-level areas, practice fields may be deemed B-level areas, and those used for band or physical education class may be deemed C-level areas.

✓TIMING

Once key areas have been identified, it is important to determine when these areas need to look the best. If fall sports predominate, weed control in early spring becomes less important. This especially rings true for those managing bermudagrass fields in the transition zone. There are significant costs associated with fall overseeding including the cost of seed, fertilizer, water (in some cases), labor for mowing, and herbicides for weed control. Chemically removing the overseeded turf in spring can cost as much as $150 per acre, in addition to the cost of selective winter annual broadleaf and grassy weed control.

On fields with minimal spring play, consider not overseeding in fall and controlling weeds with a non-selective herbicide in spring while the bermudagrass is still dormant. This strategy will provide economical control of winter annual broadleaf and grassy weeds with a single herbicide application. Lack of competition from the overseeded turf will also allow bermudagrass to recuperate from fall traffic more efficiently in spring. Research conducted at the University of Tennessee in 2009 found programs delivering non-selective herbicide applications to dormant bermudagrass to provide more effective and economical weed control than those incorporating fall overseeding and selective herbicide applications.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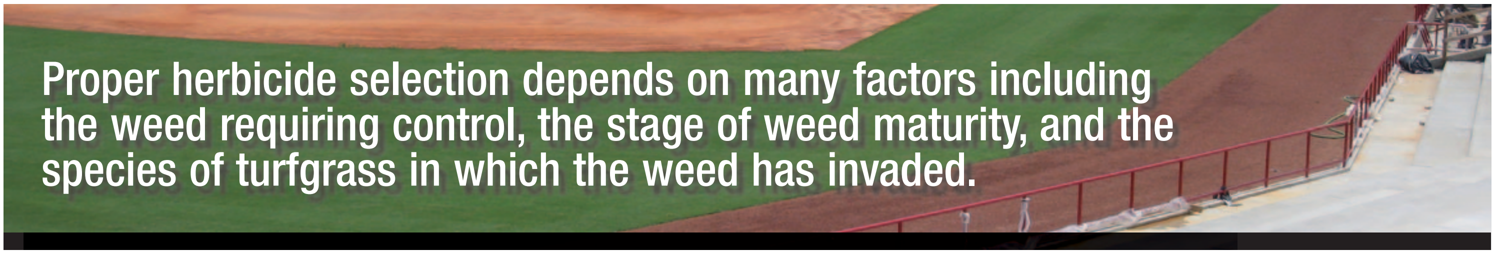


✓PRESSURE

Another important step in controlling weeds with less money is to determine the amount of weed pressure that warrants an herbicide application. This is directly related to the expectations of field users and the scope of the budget provided. While a 100% weed-free stand may have been the standard in the past, budgets may require that this be shifted to 85% or 90%. Another option is to ensure that A-level areas are 100% weed-free, while B and C-level areas remain at 70-80%. These adjustments may help stretch dollars for weed control further.

✓CULTURAL PRACTICES TO MAINTAIN DENSITY

A dense stand of vigorously growing turf is the best defense against weed invasion. Weeds only invade turf stands if there is a void in the canopy in which to do so. With fewer budgetary dollars available for weed control, sports turf managers should thoroughly evaluate their cultural practices to ensure that everything possible is being done to maintain turf density under traffic.

Practices such as selecting traffic tolerant cultivars, applying fertilizers to meet soil test recommendations, sufficiently irrigating to meet plant needs, mowing at a proper height of cut, aerfiying regularly, and applying plant growth regulators all serve to maximize turf density and consequently reduce the likelihood of weed infestations. In a world of smaller budgets, implementing cultural practices to maximize turfgrass density should be thought of as preventative weed control.

✓CALIBRATION

Calibrating spraying equipment is probably the easiest way to save money when budget dollars are limited. Studies have shown that over 80% of licensed pesticide applicators have calibration and/or mixing errors greater than 5%. These errors have been found to range from a 40% under application to a 60% over application, resulting in over 4 million dollars in lost revenue.

Sprayers should be calibrated at least one time per growing season, with nozzles changed regularly. Taking the time to check that spraying equipment is calibrated and operating properly will ensure that dollars are not wasted on improper herbicide applications.

✓SELECTING THE CORRECT PRODUCT

Proper herbicide selection depends on many factors including the weed requiring control, the stage of weed maturity, and the species of turfgrass in which the weed has invaded. New herbicides are entering the marketplace with a focus on broadening the weed control spectrum of a single herbicide application. These products typically combine two or more herbicides that have been sold individually into a single formulated product. Examples include Solitare (sulfentrazone + quinclorac) and Onetime (quinclorac + MCPP + dicamba). Both of these products offer postemergence control of crabgrass and various broadleaf weeds with a single application. Using a product with a wide weed control spectrum will reduce the number of herbicide applications required during the season.

✓PREPARING FOR LOSS OF MSMA

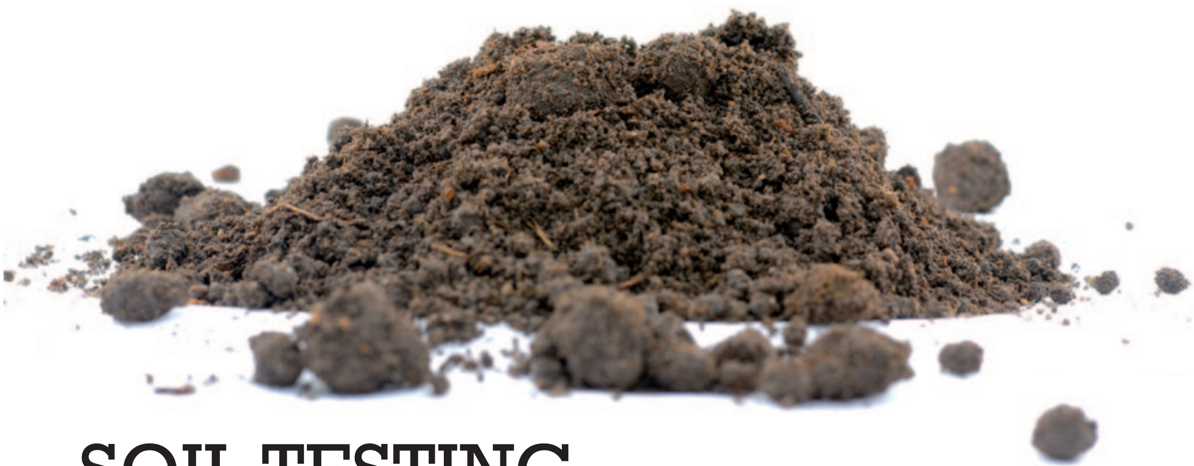
The loss of an effective, economical postemergence herbicide like MSMA will make weed control even more difficult with restricted budgets. Questions about legal applications of MSMA still linger throughout the industry. According to the EPA, registrants of MSMA for use on sports turf lost the ability to sell the product on December 31, 2009; however, distributors will be able to sell products purchased before December 31, 2009 until December 31, 2010. After December 31, 2010 existing stocks of MSMA can legally be used for weed control on sports fields until they are exhausted provided that these uses comply with the EPA-approved label and labeling of the affected product.

Considering that the window to legally apply MSMA is closing by the minute, sports field managers challenged with dallisgrass infestations should place top priority on controlling these problems as soon as possible. Researchers at the University of Tennessee are continually evaluating new compounds, as well as combinations of existing compounds, that will help soften the blow of the EPA restrictions on MSMA. To follow the latest research being conducted at the University of Tennessee, visit http://tennesseeturfgrassweeds.org.

All aspects of turfgrass management, including weed control, become challenging following budget cuts. Taking the time to evaluate why certain practices have been implemented in the past should help identify the key components of the maintenance program requiring attention (and budget dollars) in the future. ■

Dr. James T. Brosnan is assistant professor-turfgrass weed science at the University of Tennessee; Greg Breeden is weed science extension assistant at UT.

Dr. James Brosnan, University of Tennessee, Technical Editor of *SportsTurf*.



SOIL TESTING IS NOT ABOUT FERTILITY

At least not exclusively!

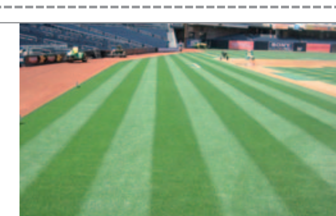
FOR OVER TWENTY YEARS I have been staring at soil tests, writing reports and recommendations. And for over twenty years I have seen, sports turf managers, and golf course superintendents make changes to their properties. Clearly they have produced better turf but more importantly they have made changes to their soil profile. They have improved drainage, strengthened rooting, increased plant recovery and they reduced fertility inputs. Why? Because they have soil tested and their soil testing programs have helped them to discover that improving the physical structure and biological profile of the soil is the precursor to good soil and plant fertility.

The four basics of good soil management are: Air Management, Water Management, Digestion Management and finally Nutrient Management, in that order. Air space in the soil allows for good water movement, without air in the soil roots will not survive and beneficial soil micro-organisms will not proliferate. With too much water an anaerobic condition will prevail and both roots and microbes will die off. With good air and water movement through the soil profile you will create the environment where beneficial soil microbes can freely multiply and in the process carbon is digested down to humus — the ultimate break down of organic matter in the soil. This humus is then used as a microbial food source to generate even more biological activity. It is the back bone of the carbon to nitrogen cycle in the soil, producing free and needed nitrogen to the plant without all the side effects of synthetic applications. If and only if the environment for microbial digestion is present in the soil will nutrient mobility take place. Microbes "eat at the table first" and all nutrient mobility from the soil is done through microbial degradation. A good soil testing protocol allows the turf manager to manipulate the soil physically, by balancing basic cations and relaxing soil particles just enough to allow better air and water movement through the soil profile. This builds a better environment for soil micro-organisms to do their job of digesting carbon, releasing nutrients into the root zone and providing buffers for water, temperature and pathogen attack. So, if 75% of good soil management deals with air, water and carbon digestion (physics and biology), is soil testing really about fertility?

The intention is to change soil physics and improve the environment for soil biology. After more than twenty years of soil testing, tens of thousands of soil tests on hundreds of sites, I have never seen the process fail if the turf manager sticks to the basics. I have, however, repeatedly been told that it cannot work, "you can't change soils physically by changing soils chemically", "there is no research to prove this", "an acre inch is two million pounds of soil much too much to change…" The truth is you can change soils physically by manipulating the soil chemically and you better if your soils are out of balance and you hope to produce better turf with fewer inputs. We are not changing clay to sand or sand to silt and we are not concerned about the entire two million pounds of soil in the acre inch, we are only concerned about the four thousand pounds or so that make up the nutrient profile particularly calcium, magnesium and potassium that affect soil flocculation which impacts soil biology and that we can change. What we are really focused on is Biological Soil Management.

According to the working models presented by Dr.

After more than twenty years of soil testing, tens of thousands of soil tests on hundreds of sites, I have never seen the process fail if the turf manager sticks to the basics.



Soil image courtesy of istockphoto.com

Background illustration courtesy of istockphoto.com

JOHN MASCARO'S PHOTO QUIZ

John Mascaro is President of Turf-Tec International

Can you identify this sports turf problem?

Problem: *Poa Annua* growing only in former paint lines
Turfgrass Area: Soccer field
Location: Orlando, FL
Grass Variety: 419 bermudagrass

Answer to John Mascaro's Photo Quiz on Page 31

Albrecht at the University of Missouri, and Dr. Bear at Rutgers University we are looking to balance the basic soil cations and striving for a profile that presents roughly 68% calcium, 12% magnesium, 5% potassium, 2 % sodium, 3% trace elements and 10% hydrogen. When a colloidal soil moves to these percentages the soil physically works better. Air and water move through the profile more efficiently building an environment where soil biology explodes and the nitrogen cycle increases. In this model if we can achieve 10% hydrogen we will always have a pH of 6.3 which is the point at which we find maximum potential nutrient mobility across the entire nutrient board. These percentages are found in the base saturation section of a complete base saturation soil test and can easily be manipulated by adding what is deficient and knocking off what is excessive. Unfortunately, not all soil tests show a complete base saturation where all six cation groups are present, calcium, magnesium, potassium, trace elements, sodium and hydrogen. Too often a soil testing laboratory will show a limited spectrum of soil cations or they will add up to something more that 100% which is not a true base saturation and makes building a quality recommendation all most impossible.

The following base saturation was found on a soil test of a sports turf client: 35% Ca; 45% Mg; 2% K; 5% Na; 3% traces and 10% hydrogen. He was not able to aerify the soil because it was too hard

Soil Report

Job Name: STB Hills CC — Date: 1/1/2007

Company: Logan Labs 888-494-7645 — Submitted By:

Sample Location			Ideal				
Sample ID			1	2	3	4	5
Lab Number							
Sample Depth in inches			6	6	6	6	6
Total Exchange Capacity (M. E.)			12.00	2.74	8.89	21.03	12.80
pH of Soil Sample			6.30	5.60	6.50	7.20	6.30
Organic Matter, Percent			3-5	0.80	3.54	1.40	1.20
ANIONS	SULFUR:	p.p.m.	25-50	8	55	18	12
	Mehlich III Phosphorous:	as (P_2O_5) lbs / acre	250-500	232	284	250	242
EXCHANGEABLE CATIONS	CALCIUM: lbs / acre	Desired Value	3264	745	2418	5720	3482
		Value Found	3264	459	2308	4380	1777
		Deficit	-0	-286	-110	-1340	-1705
	MAGNESIUM: lbs / acre	Desired Value	346	200	256	606	369
		Value Found	348	138	355	2038	1369
		Deficit	-0	-62			
	POTASSIUM: lbs / acre	Desired Value	468	163	277	552	396
		Value Found	468	33	279	248	255
		Deficit	-0	-130		-304	-141
	SODIUM:	lbs / acre	20-50	30	84	176	153
BASE SATURATION %	Calcium (60 to 70%)		68.0	41.88	64.90	53.07	34.71
	Magnesium (10 to 20%)		12.0	20.99	16.64	40.38	44.55
	Potassium (2 to 5%)		5.00	1.54	4.02	1.51	2.55
	Sodium (.5 to 3%)		3.00	2.38	2.05	1.82	2.60
	Other Bases (Variable)		2.00	6.20	4.90	4.20	5.10
	Exchangable Hydrogen (10 to 15%)		10.00	27.00	7.50	0.00	10.50
TRACE ELEMENTS	Boron (p.p.m.)		1.20	0.02	0.48	0.7	0.66
	Iron (p.p.m.)		150	175	319	740	540
	Manganese (p.p.m.)		40	2	140	145	77
	Copper (p.p.m.)		5	2.4	2.08	2.7	2.6
	Zinc (p.p.m.)		10	1.8	7.44	5.5	3.5
	Aluminum (p.p.m.)		<1400	200	419	800	900
OTHER							

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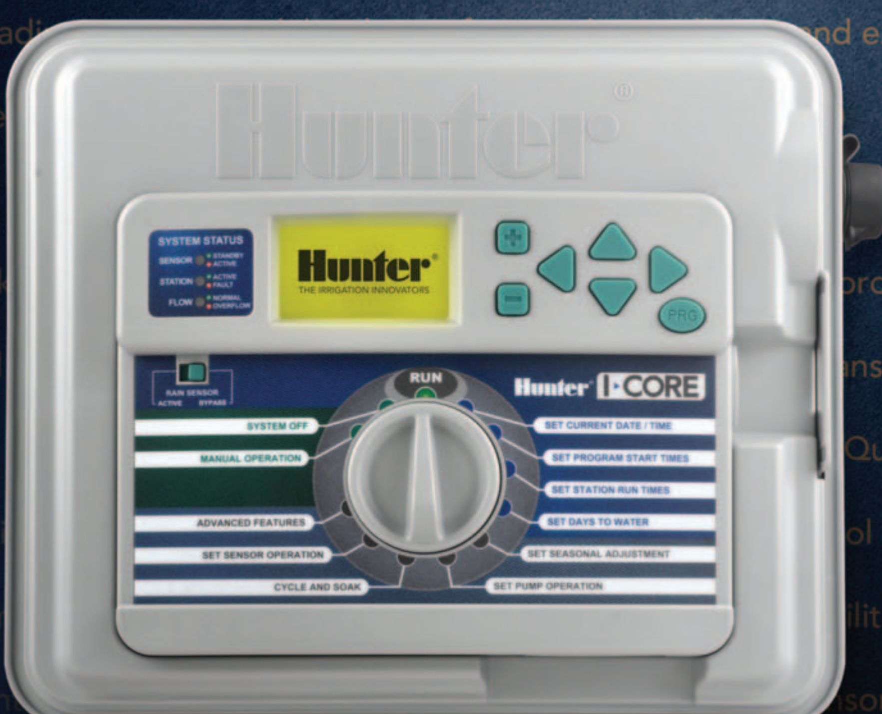

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and the metal tines of the aerifier would not penetrate the soil. When it rained the soil would not drain for days, he had very poor rooting, seed germination was weak and he had to apply over 8 pounds of synthetic nitrogen per 1000 square feet to the site each year simply to maintain color. When I asked how his soil was he responded by saying "it's not my soil, I tested it and the pH was 6.3!" He had over a 1700 pound deficiency in calcium, a thousand pound excess of magnesium, low potassium and high sodium. I recommended three applications of high calcium limestone at a rate of one ton per acre, separated by a few months, along with a lot of potassium sulfate. After the second application of lime I called him and asked if he was able to aerify the property and he reported that he could not. So I asked him if he had seen any difference and he did say that he thought they had reformulated his fertilizer because it was working a lot better. With better soil biology fertilizer will work better! One year later he called and told me that he had run his aerifier over this site and did not break a single tine, which was uncommon prior to making the soil adjustments, so he ran the machine off the treated area to an adjacent soil that was not treated and as soon as he hit that soil he broke the machine into pieces! He reduced his nitrogen inputs down to around two pounds per 1000 square feet per year, drainage was no longer a problem, rooting was strong and deep, recovery was excellent and seed germination when he needed it was very good.

Saturated Paste Report

Job Name STB Hills CC Date 1/1/2007

Company Logan Labs 888-494-7645 Submitted By

Sample Location			Ideal				
Sample ID			1	2	3	4	5
Lab Number							
Water Used			DI	DI	DI	DI	Irrigation
pH			6.3	6.5	6.5	7.1	7.1
Soluble Salts		ppm	<960	134	150	121	114
Chloride (Cl)		ppm	<50	8	4	8	10
Bicarbonate (HCO3)		ppm	<50	40	176	73	366
ANIONS	**SULFUR**	ppm	5-10	10.72	36.67	11.71	9.59
	PHOSPHORUS	ppm	1-3	0.61	< 0.1	0.38	0.46
SOLUBLE CATIONS	**CALCIUM**	ppm	40-60	42.59	25.54	14.34	13.32
		meq/l	0	2.13	1.28	0.72	0.67
	MAGNESIUM	ppm	8-12	2.06	5.74	2.11	1.95
		meq/l	0	0.17	0.48	0.18	0.16
	POTASSIUM:	ppm	15-20	25.52	10.86	24.51	13.06
		meq/l	0	0.66	0.28	0.64	0.34
	SODIUM	ppm	<20	4.56	17.39	5.17	24.82
		meq/l	0	0.20	0.76	0.22	1.08
PERCENT	Calcium		55-60	67.34	45.71	40.87	29.64
	Magnesium		18-20	5.43	17.12	10.02	7.23
	Potassium		9-12	20.96	10.10	36.29	15.10
	Sodium		2-8	6.27	27.07	12.81	48.03
TRACE ELEMENTS	Boron (p.p.m.)		0.1	0.02	0.03	< 0.02	< 0.02
	Iron (p.p.m.)		0.3	1.35	3.12	1.25	2.55
	Manganese (p.p.m.)		0.1	0.03	0.15	0.03	< 0.02
	Copper (p.p.m.)		0.08	0.07	< 0.02	0.08	< 0.02
	Zinc (p.p.m.)		0.08	0.08	< 0.02	0.11	0.06
	Aluminum (p.p.m.)			1.86	7.27	1.47	2.94
OTHER							

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