



## Hit crabgrass where it counts.

Score extra points when you use new Echelon™ herbicide to control crabgrass on your course. Echelon will knock out preemergent crabgrass as well as postemergent crabgrass – up to four leaf. It is the only dual-action herbicide in the game that not only controls crabgrass, but also controls tough sedges and other stubborn weeds like goosegrass in the same preemergent shot. That's a win for your budget, and for your time.

Score more information about Echelon at [www.fmcprosolutions.com](http://www.fmcprosolutions.com). Or contact your local FMC sales representative or your local authorized FMC Sales Agent.

*Echelon. Expect More.*

Always read and follow label directions. FMC and Echelon are trademarks of FMC Corporation.  
©2008 FMC Corporation. All rights reserved. FSP-069601 01/08NK

**FMC**

FMC Professional Solutions

1-800-321-1FMC • [fmcprosolutions.com](http://fmcprosolutions.com)

  
**Echelon**™  
HERBICIDE

# Research

and disease. The depleted root system and lower energy reserves make it more difficult for the plant to recover from any type of injury from heat, cold, excessively dry or wet conditions, or disease. Weeds become more common because the turf plant is unable to compete effectively with them for moisture, light and nutrients.

And to complete this ugly picture, turf growing in shade is damaged frequently by overwatering and overfertilization with nitrogen. This occurs because plants grown in shade are growing more slowly and, therefore, require less of all nutrients for growth and survival. The quantities of water and nitrogen that are essential for growth of turf in sunny locations can be fatal to turf grown in shade.

## THE BIG PICTURE

Shade affects turf management and golf course playability on a larger scale. Expect increased

weed pressure and an increase in your fungicide budget because of the increased susceptibility of shade-grown turf to disease. Consider the cost/benefit of separate irrigation and fertilization programs for shady areas. Make golfers aware of the likelihood of increased pest and stress problems on shaded turf.

Additionally, shade produces some specific problems, depending on the turf type and turf height of cut:

**Golf courses with warm-season turfgrass on fairways.** Shady areas will suffer from competition with cool-season turf varieties in the forms of weeds such as *Poa annua* or from purposefully overseeded varieties that fail to die during the summer. This leads to bare spots, especially because of weakened warm-season turf. Additionally, spring/summer transitions won't be successful in shady areas because cool-season species likely will survive throughout the summer.

**Greens in partial shade.** Moss, algae, weeds and disease will increase in shady areas, and turf will be thinner and more susceptible to damage from traffic. Shady areas will be wetter unless it's possible to irrigate the green selectively with less frequent irrigation in shady areas.

## MANAGING TURF IN SHADE

Tree pruning or removal are frequently the only solutions to shade problems. If, despite your best efforts, these aren't options at your golf course, it's inevitable turf quality will be compromised somewhat. However, there are some steps you can take to help minimize the damage:

**Raise mowing heights** to increase leaf area and photosynthesis. For example, Bunnell and McCarty (2004) have shown that a 50-percent increase of mowing height (from 1/8 inch to 3/16 inch) can increase the quality of TifEagle Bermudagrass greens significantly. Comparable



**eXtremely Fast**

# TERRA SPIKE® XF (Extra Fast)

**High Productivity**  
Decompact and aerate your turf at an operating speed of up to 3.7 mph.

**Wiedenmann**  
North America, LLC  
Savannah, GA

Phone (912) 790-3004  
Toll free (866) 790-3004  
Fax (912) 790-3005  
[www.terraspike.com](http://www.terraspike.com)  
[www.wiedenmannusa.com](http://www.wiedenmannusa.com)

**Wiedenmann**

**Faster than a speeding bullet (almost).**

[www.golfcourseindustry.com/readerservice](http://www.golfcourseindustry.com/readerservice) - #55

# Bragging Rights



Sure, you'll have the right to brag about using a rotor that lasted a phenomenal 10 times longer while using up to 23% less water...

...or you could just let the playability of your course and your bottom line do the ~~talkin~~.

*bragging*



The best just got even *better*...  
Introducing the **NEW** Rain Bird® **EAGLE™** Rotors.

In head-to-head field and lab testing among leading brands, Rain Bird® EAGLE™ Rotors lasted up to 10 times longer under the harshest operating conditions than the next closest competitor—and—had the best distribution uniformity over the widest range of variables, while using up to 23% less water to deliver a more playable course. For more amazing test results, visit [www.rainbird.com/golf](http://www.rainbird.com/golf).

**RAIN BIRD**®

# Research

results have been shown for cool-season turf as well. Even a 10-percent increase of mowing height can make a difference.

**Minimize traffic** in shady areas as a means of avoiding physical damage to this more delicate turf.

**Be prepared to treat** more frequently for weeds, disease, algae and moss.

**Decrease irrigation** in shady areas. Turf in these locations grows more slowly and, therefore, requires less water for survival. Separate irrigation systems for consistently shaded areas should be considered.

**Avoid excessive nitrogen.** Turf grown in the shade will use less nitrogen than turf grown in the sun. Keep soil total nitrogen levels between

When turf plants receive less than optimal light, they begin to change at the biochemical and molecular levels. Photo: PACE Turfgrass Research Institute



## NEW Filtration that **Removes...** **Sand, Algae and Mollusks!**



- **Lifetime** Body Warranty to Never Leak
- **316L** Stainless Steel Construction
- **Simplicity** Minimizes Maintenance
  - NO** Lubrication or Packing Seals
  - NO** Electric Motors or Limit Switches

**VALUE ADDED FILTRATION MADE IN THE USA**

**VNF**  
Filtration Systems

Simplicity with Efficiency all combined to provide the most cost effective filtration systems available.

For more information, call (303) 425-4242 • [www.valveandfilter.com](http://www.valveandfilter.com)

# FREE FAST

## GOLF COURSE INDUSTRY

Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Phone \_\_\_\_\_  
 Fax \_\_\_\_\_  
 E-mail Address \_\_\_\_\_

**For faster service fax to 330-659-4043**

Check off the reader service numbers that you're interested in and mail in this card.  
 Or visit [www.golfcourseindustry.com](http://www.golfcourseindustry.com).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360

February 2008

## GOLF COURSE INDUSTRY

Do you wish to receive/continue to receive a **FREE** subscription to Golf Course Industry?

Yes  No

Signature \_\_\_\_\_  
 Date \_\_\_\_\_  
 Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Phone \_\_\_\_\_  
 Fax \_\_\_\_\_  
 E-mail \_\_\_\_\_

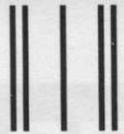
GIE Media Inc will only use your email address to contact you with relevant industry or subscription information. If you do not want to receive email from trusted 3rd parties, please check here.

What is the best way to contact you for future renewals?  
 \_\_\_\_\_ email \_\_\_\_\_ fax \_\_\_\_\_ telephone

Please allow 6-8 weeks for delivery of first issue. Incomplete forms will not be processed. Publisher reserves the right to reject all non-qualified subscription requests.

<p><b>1. How Do You Want to Receive Your Subscription?</b></p> <input type="checkbox"/> 1-Digital and Print <input type="checkbox"/> 2-Print Only <input type="checkbox"/> 3-Digital Only (No Print Copy Received) (a valid e-mail address is required for digital delivery) <p><b>2. What is your primary business at this location? (check one)</b></p> <input type="checkbox"/> 21-Public Golf Course <input type="checkbox"/> 22-Private Golf Course <input type="checkbox"/> 23-Semi Private Golf Course <input type="checkbox"/> 24-Municipal/City/State Golf Course <input type="checkbox"/> 25-Hotel/Resort <input type="checkbox"/> 26-Par3/Executive Golf Course <input type="checkbox"/> 27-Practice Facility <input type="checkbox"/> 29-Other Golf Course <input type="checkbox"/> 30-Golf Course Management Company <input type="checkbox"/> 31-Golf Course Architect <input type="checkbox"/> 32-Golf Course Developer <input type="checkbox"/> 33-Golf Course Builder <input type="checkbox"/> 39-Supplier/Sales <input type="checkbox"/> 99- Others (please describe) <p><b>3. What best describes your title?</b></p> <input type="checkbox"/> A-Golf Course Superintendent <input type="checkbox"/> B-Green Chairman <input type="checkbox"/> C-Director of Golf/Head Pro <input type="checkbox"/> D-Club President <input type="checkbox"/> E-General Manager <input type="checkbox"/> F-Golf Course Owner <input type="checkbox"/> G-Builder/Developer <input type="checkbox"/> H-Architect/Engineer <input type="checkbox"/> I-Research Professional <input type="checkbox"/> K-Assistant Superintendent <input type="checkbox"/> L-Golf Course Management Company Executive <input type="checkbox"/> Z-Others (please describe) <p><b>4. Number of Holes: (check one)</b></p> <input type="checkbox"/> A-9 Holes <input type="checkbox"/> B-18 Holes <input type="checkbox"/> C-27 Holes <input type="checkbox"/> D-36 Holes <input type="checkbox"/> E-Other <p><b>6. Total Annual Maintenance Budget: (check one)</b></p> <input type="checkbox"/> 1-Less than \$50,000 <input type="checkbox"/> 2-\$50,000-\$99,999 <input type="checkbox"/> 3-\$100,000-\$249,999 <input type="checkbox"/> 4-\$250,000-\$499,999	<p><input type="checkbox"/> 5-\$500,000-\$749,999  <input type="checkbox"/> 6-\$750,000-\$1,000,000  <input type="checkbox"/> 7-\$1,000,000+</p> <p><b>7. Total Course Acreage</b> _____</p> <p><b>8. Course Renovation Plans for the Next 12 Months</b></p> <input type="checkbox"/> 1-Full Reconstruction <input type="checkbox"/> 2-Partial Reconstruction <input type="checkbox"/> 3-Greens <input type="checkbox"/> 4-Tees <input type="checkbox"/> 5-Fairways <input type="checkbox"/> 6-Irrigation System <input type="checkbox"/> 7-No Renovations Planned <p><b>9. If Only a Partial Reconstruction is Planned, Please Indicate the Number of Holes</b> _____</p> <p><b>10. What is the Name of the Architect Who Designed the Course?</b> _____</p> <p><b>11. What Year was the Course Built?</b> _____</p> <p><b>12. Is this course part of a</b></p> <input type="checkbox"/> 1-Resort Chain <input type="checkbox"/> 2-Golf Course Management Company <input type="checkbox"/> 3-Municipal Course System <input type="checkbox"/> 4-None of the above <p><b>13. What is the name of the Resort Chain, Golf Course Management Company, or Municipal Course System?</b> _____</p> <p><b>14. What turf do you maintain on fairways?</b></p> <input type="checkbox"/> 1-Bentgrass <input type="checkbox"/> 2-Poa annua <input type="checkbox"/> 3-Poa/Bentgrass mix <input type="checkbox"/> 4-Bermudagrass <input type="checkbox"/> 5-Bluegrass <input type="checkbox"/> 6-Ryegrass <input type="checkbox"/> 7-Overseeded Rye/Bermuda <input type="checkbox"/> 8-Other (please describe) <p><b>15. What turf do you maintain on greens?</b></p> <input type="checkbox"/> 1-Bentgrass <input type="checkbox"/> 2-Poa annua <input type="checkbox"/> 3-Poa/Bentgrass mix <input type="checkbox"/> 4-Bermudagrass <input type="checkbox"/> 5-Paspalum <input type="checkbox"/> 6-Other (please describe)
--	--

FREE FAST



Postage  
Required  
Post Office will  
not deliver  
without proper  
postage.

**GOLF COURSE**  
INDUSTRY

PO BOX 532  
RICHFIELD, OH 44286-0532



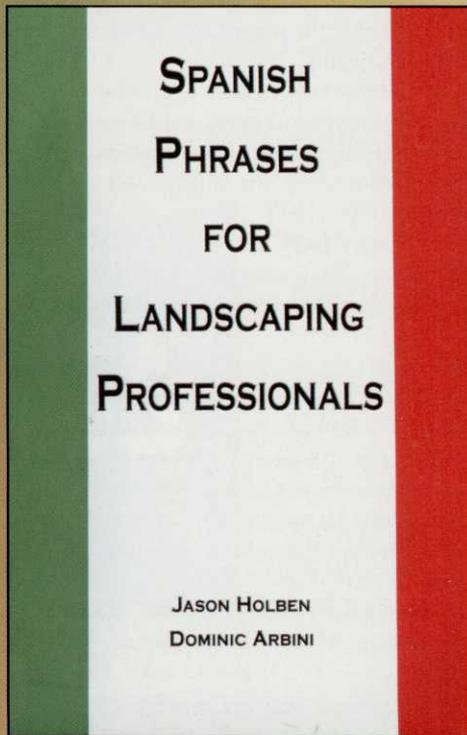
Postage  
Required  
Post Office will  
not deliver  
without proper  
postage.

**GOLF COURSE**  
INDUSTRY

PO BOX 2191  
SKOKIE, IL 60076-7891



# Spanish Phrases for Landscaping Professionals



“Spanish Phrases For Landscaping Professionals” is a collection of user-friendly words and phrases to help English-speaking managers and crew leaders communicate with their Hispanic employees. It covers hiring and training, safety, equipment use and maintenance, demolition, installation, light masonry, grounds maintenance ... etc. There is also a section for dealing with injuries. This book is NOT a textbook, but rather a “point and shoot” phrase book for landscapers who need to say it NOW, and who have not found time to learn Spanish while working 60-hour weeks.

#### CHAPTERS INCLUDE PHRASES FOR:

- Installation
- Sprinklers and Irrigation
- Sod and Bedding
- Planting
- Clean Up
- Mowing and Trimming
- Pruning
- Do’s and Don’ts of Operation
- Index of Key Words



**GOLF COURSE**  
INDUSTRY

**Perfect for Superintendents, Owners and Training Professionals!**

#### To Order Your Copy of Spanish Phrases for Landscaping Professionals:

1. Visit [www.golfcourseindustry.com/store](http://www.golfcourseindustry.com/store)
2. Call a GCI Store Representative at 800-456-0707
3. Mail this form to Golf Course Industry Bookstore, 4020 Kinross Lakes Parkway, Richfield OH 44286
4. Fax this form to a GCI Store Representative at 330-659-4043

Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_ Zip \_\_\_\_\_  
 Phone \_\_\_\_\_  
 Fax \_\_\_\_\_  
 Email \_\_\_\_\_

I'd like to order \_\_\_\_\_ copies of Spanish Phrases for Landscaping Professionals @ \$24.00 per copy.

<b>MERCHANDISE TOTAL</b>	\$
Ohio residents add 6.5% sales tax	\$
<b>SHIPPING &amp; HANDLING</b> Inside the United States - first item \$8.00; additional items \$4.00 each International - first item \$15.00; additional items \$8.00 each	\$
<b>TOTAL AMOUNT DUE</b>	\$

Check enclosed (Make payable to: Golf Course Industry Bookstore)

Charge my  American Express  Visa  Mastercard  Discover/Novus

Card Number \_\_\_\_\_ Exp. Date \_\_\_\_/\_\_\_\_/\_\_\_\_

# Research

3 and 20 ppm.

**Use growth regulators.** Consider using multiple applications of low rates of plant growth regulators such as trinexapac-ethyl (Primo) or flurprimidol (Cutless). These gibberellic acid inhibitors will counteract some of the negative effects of shade by increasing plant density and decreasing plant shoot elongation.

**Discontinue winter overseeding** programs for warm-season turf in shady areas to avoid bare spots because of summertime competition between overseeded varieties and warm-season turfgrass.

**Supplemental lighting** might be useful in cases where a small area (a green, for example) is in need of extra light. The most efficient and most frequently used lights are high pressure sodium lamps. These can be obtained from greenhouse suppliers or manufacturers.

**Switch to shade-tolerant turf** if possible. Some options are listed in Table 1.

**Document, document, document.** We've found that photographs and graphics are useful to document the extent of shade problems, as well as the increase in tree-generated shade throughout the years. Generally, graphic representations of the problem are the clearest way to

communicate with golfers and managers about the impact of shade.

**Aerial photography** (see Figure 1) services are available in most locations. To obtain the most useful images, they need to be high resolution, so altitudes of 5,000 feet or less and specialized 9-inch-by-9-inch negatives should be requested (commercially available satellite images are not of sufficient resolution unfortunately – at least not yet). Photos should be taken at the time of day and time of year when you believe shade causes the worst problems. If you're lucky, aerial photographs of your golf course from years past might exist in photobanks. If these photos are available, they can be useful when tracking the development of shade (and other problems such as irrigation distribution, reclaimed water) throughout time.

**Shade analysis.** After an extensive on-site visit, companies that perform these analyses can tell you how many hours of sunlight are occurring on problem areas, which trees are contributing to the problem the most, and the effect of pruning or removal of specific trees. The expense makes this approach feasible primarily for greens, but it might be worth it to you if this type of quantitative analysis appeals

to the golfers that you deal with. While companies such as ArborCom deal primarily with tree shade, engineering companies such as RWDI can help predict the impact of a new building on turfgrass quality.

**When all else fails.** In areas of extreme shade where turf simply won't grow, consider replacement with shade tolerant plants, ground covers, or even bark or wood chip mulches. **GCI**

Wendy Gelernter, Ph.D., and Larry J. Stowell, Ph.D., are research directors with the PACE Turfgrass Research Institute ([www.paceturf.org](http://www.paceturf.org)).

## References

- Beard, J.B. 2002. Turf management for golf courses, second edition. Ann Arbor Press, Chelsea, Mich.
- Bell, GE and TK Danneberger. 1999. Temporal shade on creeping bentgrass turf. *Crop Science*. 39:1124-46.
- Bunnell, TB and B. McCarty. 2004. PGRs and higher heights: improving TifEagle greens in shade. *Golf Course Management* 72(10):93-97.
- Dudeck, A.E. and Peacock, C.H. 1992. Shade and turfgrass culture. pp. 269 to 284 In "Turfgrass," Wadlington, D.V., Carrow, R.N. and Shearman, R.C., eds. American Society of Agronomy Monograph 32. ASA Publishers, Madison, Wis.

This warm-season (kikuyugrass) fairway was performing adequately in sunny areas, even though solar radiation was 224 watts/m<sup>2</sup> – suboptimal because of the perennially overcast conditions. However, in the shaded areas, light intensity was only 17 watts/m<sup>2</sup>. As a result, kikuyugrass and *Poa annua* couldn't grow, and unsightly bare areas were the result. The only solution to this problem was a severe tree trimming and removal program. Photo: PACE Turfgrass Research Institute



# Get a Spring Tune-up With ROOTS

Get the most from your spring tune-up with ROOTS plant performance products – no matter what's on your spring check list, ROOTS has the right products, right now:

Bring course out of dormancy	ROOTS Turf Food 14-3-5
Overall turf health	TurfVigor®
Strong turf	KCS™ and StandUp®
Quick green up	AgriPlex® and Fe 8%®
Aerification	endoROOTS®

To keep your course running at top performance all season long, ask for ROOTS today.

800-342-6173 • [www.rootsinc.com](http://www.rootsinc.com)

**roots**  
Our Name Says it All



Always read and follow label directions.

The Novozymes logo, AgriPlex, endoROOTS, Fe 8%, KCS, StandUp and TurfVigor are trademarks of Novozymes A/S.

©2008 Novozymes Biologicals, Inc.

**novozymes**   
Rethink Tomorrow

BY JOHN WALSH

## The little things count, too

An accessory upgrade is part of an overall course improvement project in Nebraska

Prairie Hills Golf Course in Pleasanton, Neb., had seen better days. The condition of the course has declined during the past few years, but Nick Erdman, co-superintendent at the public 18-hole course, and his family are changing that. They're improving the course in many ways, including upgrading accessories.

The course hadn't been run correctly, Erdman says, adding it had several owners during the past five years. Erdman and his in-laws, who live in the area, bought the course in June 2007 from the previous individual owner, who also managed the course.

"The course was in pretty bad shape," he says. "We're putting a lot of money into it. Although new sprinkler heads were installed by the previous owner, we put money into every aspect – equipment, fertilizer, irrigation, cups and the two-level, 5,000-square-foot clubhouse. We spent \$5,000 on accessories, including flagsticks, tee markers, fairway markers and cup cutters."

All of the new accessories were purchased at the same time last year.

Going forward, Erdman budgeted \$2,500 a year for accessories.



Nick Erdman spent \$5,000 on accessories as part of an overall improvement project at Prairie Hills Golf Course. Photos: Nick Erdman