

UPJOHN CO. WELL-TIMED, PROGRAMMED ATTACK CAN SUBDUE WHITE GRUBS

The white grub is a tough bug to beat on today's golf courses, but a well-timed, programmed attack can insure that your course's turf will not be friendly turf for these underground root munchers.

Environmental concerns have eliminated long-residual chlorinated hydrocarbons from the anti-pest arsenal, so today's golf course superintendent must rely on short-residual insecticides to get the job done. He must find an effective treatment and apply it at the proper time so it hits the grub at the most vulnerable point in its life cycle.

Superintendents who have battled the white grub are well-qualified witnesses of this pest's damage. Just ask Jim Baran, superintendent at Arrowhead Country Club, an 18-hole, 115-acre private club in North Canton, Ohio, who has won his war with the white grub.

Baran, who holds a certificate in turf grass management from Pennsylvania State University, is a member of the Northern Ohio Golf Course Superintendents Association and the National Golf Course Superintendents Association of America.

"When I first started here about 2½ years ago, I noticed there was a Japanese beetle grub problem", Baran informs. "At that time, however, the club felt it was financially unable to spray."

"The following year, the problem became even worse. You could take a divot and find 2-3 grubs. The grubs were in just about every area. Skunks and moles would turn up looking for grubs, damaging the turf. And because the grubs were feeding on the root system, it put the grass in a shock. So when heat stress came in late June or early July we had large areas of dead turf."

It was agreed that something had to be done. Baran says he tried chlordane on test spots, but it had no effect at all on the grubs. He then began researching available insecticides to find one which would be safe, effective, yet economical.

"To me, safety is a big factor--I don't want my people to even get close to something that's highly toxic," Baran states. "Proxol turned out to be safe for our people to handle. Yet the insecticide was least expensive and had the highest success rate."

Baran checked with his county agent to learn when the best time would be to apply the insecticide. Fortunately, a rainy period came at about the right time--the first week in September--so Baran told his crew to load up the sprayers and begin the attack. Rain or watering is required after Proxol application to move the insecticide down through the thatch to the grubs.

"We sprayed the entire golf course, using 3¾ oz. of formulated ingredient per 1,000 sq. ft.," Baran says. "Residual effect of this insecticide is about three weeks, so we sprayed a week before peak grub population, to pick up early grubs, letting the drug residue cover the next two weeks--one week of peak population, another week to get stragglers."

Baran made a check later in the fall, when grubs could have been detected, but none were found. In the spring, when grubs again would have been evident, another check was made and, again, none were spotted. In late June, with only .08-inch of rain in 15 days--a sure stress test for the turf--there were no problems.

"We'll spot spray again this year in the fall and in another year or two, we'll do the entire golf course again," Baran explains. "We're trying to knock the

entire population down far enough so they won't bother us. As they build up, we'll hit them with a once a year fall spraying."

Baran says his program has provided an economical, yet effective, solution to white grub problems at Arrowhead Country Club, where a total maintenance program--including fungus and weed control--is carried out on a continuing basis.

ABOUT DORMANT OILS

Dormant oils are designed to be mixed with water. The rates vary depending upon the pest in question. In some cases, an insecticide is added to the oil to improve the effectiveness of the treatment.

Consider the temperature before applying an oil. It should not be applied if the temperature is below 40 degrees Fahrenheit or will go down to freezing shortly after applying the oil. On some evergreens, injury may occur if freezing temperatures appear within three weeks after treatment. Oils applied after October 1st, may increase cold damage to some trees. An oil may also cause plant burning if applied when the temperature is 90 degrees Fahrenheit plus during or immediately before hot, dry weather or on plants suffering from drought.

Oil sprays should not be used on certain plants because the result will be burning. Sugar maples, hemlock, larch, Cryptomeria, Japanese maples, beech, hickory, walnut, butternut, mountain ash, maidenhair, ferns, Cocos palms and African violets fall into this category. Oil will also injure Douglas fir flower buds and will remove the blue color from blue spruce. Oil applied in August or September on fruit trees may affect fruit color and solids content.

Do not use oils with or following the application of certain pesticides: dinitro compounds, sulfurs, captan, Folpet, Pyrene, Karathane, Morestan, lime sulfur, wettable sulfur, Dichlone, Phaltan, or Sevin. Read your labels carefully for additional instructions.

Check your oil to see if it is still good before you use it. The mixture of water and oil should be uniform and milky-white after shaking. If it doesn't emulsify, don't use it.

Stanley Rachesky

PAUL WEISS DIES

The sympathy of the M.A.G.C.S. members is extended to the Paul Weiss family due to the death of Mr. Weiss on the middle of March. Paul was a golf course Superintendent in the Philadelphia area for many years. He was a member of the Philadelphia Golf Course Superintendents Association and a past president of the G.C.S.A.A. and a very good one. He believed in calling a spade a spade. He was a booster for the Musser Foundation. This being one of his fond projects, this editor suggests that if any of you wish to make a contribution in Paul's behalf, send the money to care of Dr. Fred W. Grau, Box AA, College Park, Maryland 20740.

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AMERICA VS. SCOTLAND

I started the second day of the tournament with a booming drive towering over the fence, the out-of-bounds fence that is! I thought to myself, here comes another 84 just like the first day. But by the end of the round, I had gotten my game together and finished up at one over par.

While relaxing after the round a man approached me and asked if I was me. After acknowledging, the man (Dick Hale) said, "You made it, can you play tomorrow"? Yes I said, now realizing that the birdie on the last hole was to give me the privilege of playing in the GCSAA-SIGGA match.

On the day of the tournament it was sunny and 70 degrees as all of us sat around the table having breakfast and getting acquainted. It may be a rare occurrence that our team represented eight different states, (Cal., Colo., Fla., Ill., N. Car., Tx., and Wash.) but it gave the GCSAA an excellent cross section of the U.S. for our Scottish friends to associate with. Questions and answers abounded with most about golf and the rest of differences in cultures and ways. The ensuing match was secondary to the conversations and comraderie that was gained during our rounds of Santa Ana C.C.

After the matches were over, everyone gathered for drinks which included shots of 15 year old Scotch brought over by the Scottish team. They vowed that for the next match that the Scotch will be consumed before the match, since they had lost 7-1. Some short speeches and presentations followed, capped off by a video tape replay of the events at the first tee.

The match was a pleasurable experience for all and a welcome change of pace from the tournament play at Industry Hills. I hope the match becomes a regular event at the GCSAA tournament so that more GCSAA members can have the chance to represent America.

Tom Robinson, H.P.C.C.

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BUILDING ROOT SYSTEMS

Between September and May the cool-season turfgrasses in the Mid-Atlantic Region will be initiating new root growth. The proper management practices of the golf superintendent at this time can enhance maximum root development. It is particularly important to encourage the strongest root growth in the fall since these roots will live longer than those formed in the spring. The following are suggestions to encourage maximum root development.

Watering - Try to restrict watering the greens from September through May. This will encourage the roots to forge deeply into the soils. Frequent watering will induce shallow rooting. Never water to soften the greens for the golfers. Besides being detrimental to the roots, this practice encourages **Poa annua**.

Aeration - Compacted soils are one of the major reasons for limited root growth on putting greens. By aerating the greens at least once every fall and spring, soil compaction is reduced. This also encourages better air and water movement in the top of the soil profile.

Vertical Mowing - For optimum playing conditions and agronomic management, the thatch layer on greens should be no greater than 1/4 inch. If thatch is greater, the blades of a vertical mower should be set into the thatch at this time. Thatch reduces turfgrass rooting by restricting fertilizer, air, and water movement to the soil where it will benefit the plant.

Fertilization - By fertilizing with a complete fertilizer at the rate of 1/4 pound nitrogen per 1,000 square feet every three to four weeks in the fall, the roots greatly benefit. Fertilizer at this time is consumed largely by the roots instead of the leaves and stems. Do not over-fertilize or apply fertilizer in the early spring of the year, particularly in March, April, and early May. This will over-stimulate the plant, reducing root growth. Potassium sulfate applications at the rate of 1 1/2 pounds

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from the bag per 1,000 square feet also help roots in the spring and fall.

Herbicides - The preemergent herbicides used for crabgrass, goosegrass, and **Poa annua** control have side effects on the roots. Are you using these materials wisely? Remember, the grass leaves and stems are not as easily affected by these materials, so injury is not readily visible.

Air and Light Quality - Greens which have poor air and light quality were hardest hit by the high temperatures of this past summer. Improve these factors by removing trees and branches along the lines of the prevailing winds and of the rising and setting sun, and the whole turf plant will benefit. This is an excellent time to accomplish tree work.

Building a good root system now will pay off in reducing summer management problems. The greens will require less water, thus lessening the chances of crabgrass and goosegrass germinating. There appears to be a direct correlation between the strength of the root systems and the invasion of these weeds in our region.

All golf courses were reporting increased play in 1980 in the region, and we expected heavy play this fall. To provide the best playing conditions at this time on the greens, be sure to lightly vertical mow and topdress the greens once every 15 to 25 days if climatic conditions are favorable. Also, the greens should be mowed as frequently as possible, preferably five to six times weekly, and the Wiehle or grooved rollers should be attached to the mowers.

Patrick O'Brien

Are you in need of an assistant on your golf course. If so, contact **Loren Nagy**, 112 Syril Dr., Geneva, Ill. 60134, phone 312 - 232-4121. Presently assistant at Villa Olivia C.C.

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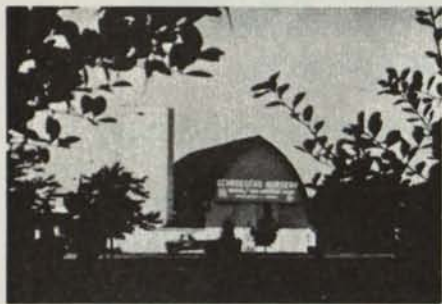
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2. Check Course - First Thing in A.M.

Greens and fine turf for disease, wilt, irrigation performance and general conditions. Staff and jobs in progress - observe equipment operation, job procedures and techniques.

3. Miscellaneous.

Trouble shooting, recordkeeping, communications, etc.

4. Check Course - P.M.

Greens and fine turf for disease, wilt, soil moisture and general conditions. Determine and program irrigation requirements. Jobs done or undone - noting good and bad.

5. Written Work Scheduling - Tomorrow.

Review weekly maintenance outline, agronomic and maintenance improvement programs, notes and staff available.

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SOURCE		PER CENT COMPOSITION					
Rate of Availability		N	P	K	Ca	Mg	S
ANIMAL MANURES							
M	Cattle (fresh)	0.3 - .6	0.1 - .3	0.2 - .5	0.3		0.1
	Cattle (dry)	1 - 2	0.7 - 3	1.5 - 3			
M-R	Chicken (fresh)	0.9 - 1.5	0.5 - 1	0.5 - .8	0.4		0.1
M-R	Chicken (dry)	2 - 6	2 - 4	1 - 3			
	Duck (fresh)	0.6 - 1	1.4 - 1.5	0.5			
	Goose (fresh)	1	0.5	0.5			
M	Horse (fresh)	0.3 - .7	0.1 - .3	0.5 - .6			
S	Mushroom Compost	0.4 - .7	57 - 62	0.5 - 1.5			
	Rabbit (dry)	2.3 - 2.4	1.4	0.6 - .8			
	Sheep (fresh)	0.6 - 1	0.3 - .7	0.7 - .9	0.2		0.1
	Sheep & Goat (dry)	1.4 - 2	1 - 1.5	2 - 3			
ANIMAL TANKAGE							
M-R	Bloodmeal (dry)	7 - 15	1.3 - 2	0.6 - 1			
S	Bonemeal (raw)	2 - 6	15 - 27	0			
S-M	Bonemeal (steamed)	0.7 - 5	15 - 34	0 - .2			
S	Egg Shells	1 - 1.2	0.4	0.1	HIGH		
	Fish Emulsion	5 - 10	1 - 3	1 - 2			
	Fish Meal (dry)	10	4	0			
S	Fish Scrap (dry)	3.5 - 12	1 - 13	0 - 3.8			
M	Tankage (dry)	5 - 10	6 - 10	1 - 0.5			
R	Urea	42 - 46	0	0			
PLANT RESIDUES							
	Alfalfa Hay	2.4	0.5	2.5			
	Barley Hay	1.2	0.5	1.6			
	Cantaloupe Rind		9.8	12.2			
	Clover Hay	1.7 - 3.1	0.5 - 1	1.8 - 3.5			
S	Cocoa Shell Meal	1 - 2.5	1 - 1.5	2.5 - 2.7			
	Coffee Grounds (dry)	2	0.3 - .4	0.3 - .7			
S	Compost (unfortified)	1.5 - 3.5	0.5 - 1	1 - 2			
	Corn cobs			50			
S-M	Cottonseed Meal (dry)	6 - 9	1 - 3	1 - 2			
VS	Garbage Tankage (dry)	1.5 - 2.9	1.1 - 3	0.7 - 2.2			
	Grapefruit Rinds		3.6	30.6			
S	Kelp (seaweed)	0.9 - 3.3	0.5 - 2	3 - 13			
	Leaves (various)	0.7 - 1.4	0.1 - .3	0.1 - .6			
	Oat Hay	1.3	0.5	1			
	Orange Rinds		2.9	27			
VS	Peat & Muck	1.5 - 3	0.2 - .5	0.5 - 1			
	Ryegrass Hay	1.3	0.5	1.2			
	Rye Straw	0.5	0.2	1.1			
VS	Sawdust	4	2	4			
S-M	Soybean Meal (dry)	6 - 6.7	1 - 1.6	2 - 2.3			
	Sweet Corn Fodder	1.5	0.4	1.2			
	Wheat Hay	1	0.4	1.8			
	Wheat Straw	0.6	0.1	1			
R	Wood Ashes (unbleached)	0	1 - 2	3 - 10	23		
PULVERIZED ROCK							
	Basic Slag	0	8 - 17	0	33 - 41.6	3.4 - 6.1	3
	Dolomitic Limestone	0	0	0	22	13	
	Epsom Salts (Mg sulfate)		0	0		9.6	13
	Granite Meal			3 - 5			
	Greensand (glauconite)		1.3	4 - 9.5		1.6	
	Gypsum (calcium sulfate)				22.3 - 32.6		18.6
	Limestone (Ca carbonate)				40		
	Rock Phosphate (apatite)		20 - 41	0			
SEWAGE SLUDGE							
M	Activated (dry)	2 - 6.4	2.5 -	0 - 2			
S	Digested (dry)	1 - 3	0.5 - 4	0 - 1			
S	Chicago (digested)	1.4 - 8.8	1.5 - 11.1	0 - 0.1	0 - 2.4	0.4 - 2	
S	Deerfield (digested)	1					
M-R	Milorganite (act.)	6	2	0.3	0.7	0.3	
M	Tex-Organic (act.)	4.2 - 4.8	6 - 6.7	0.5	3.9 - 4.4	1	

Rate of availability: S=slow; M=moderate; R=rapid; VS=very slow

Headings: N=Nitrogen; P=Phosphorus; K=Potassium; Ca=Calcium; Mg=Magnesium; S=Sulfur

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