



**>> AERIAL VIEW OF THE NANCY G. HELD EQUESTRIAN CENTER**, Albion College, Albion, MI. Thanks to Mark Frever, CSFM for this photo.

when the summer sun is at its most severe northwestern azimuth,” Kamrath noted.

The facility required two sets of stables: one for equestrian training and events near the covered facility, and a second set of stables near the polo fields for the polo ponies. Kamrath noted that infrastructure planning was also essential.

“In both stables, adequate trailer parking for unloading and loading of the horses was a paramount planning need and we were able to accomplish that goal. This trailer space helped also to determine the road master plan for the project. Roads needed to be 28 feet wide for two lanes in order to have adequate trailer maneuverability as well.”

The facility also included ‘run-out’ or exercise space near the events facility for horses to warm up and exercise prior to events. An additional eight to ten turnout paddocks, a minimum of 50 x 50 feet, were also incorporated.

“The stables themselves needed to be 10 x 15 feet for each horse, have plenty of fresh water available, excellent air circulation and ease of access for both horses, trainers and riders,” Kamrath said.

Housing was needed not just for equine residents, but for humans as well, Kamrath noted, so on-site apartments of about 20 x 20 feet were provided between both the polo stables and equestrian stables. A central cooking/grill area for the trainers was built in as well. The ancillary sports facilities on the campus—tennis and golf (as well as a clubhouse)—were planned so as to be non-intrusive to the horses, stables and equestrian activities.

At its core, however, says Kamrath, planning for a facility has to take into account the needs of the users: in this case, the kind with four legs and a tail.

“In general, it is critical that the well-being of the horse and allowing it to reach its full potential should be kept uppermost in mind,” he notes. ■

*Mary Helen Sprecher wrote this article on behalf of the American Sports Builders Association. Available at no charge is a listing of all publications offered by the ASBA, as well as their Membership Directory. For info, 866-501-2722 or [www.sportsbuilders.org](http://www.sportsbuilders.org).*

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# Fungicides

## Armor Tech ([www.utaarmortech.com](http://www.utaarmortech.com))

Product name	Active Ingredient	For use in/on
<b>Clearscape ETQ</b>	Tebuconazole plus ETQ	ETQ technology enhances turf quality by protecting it from heat, UV light and other stress factors while tebuconazole controls an thracnose, dollar spot, brown patch, pink and gray snowmold, gray leaf spot and other diseases
<b>Echo Ultimate ETQ</b>	Chlorothalonil plus ETQ	An 82.5% spray-dried granule formulation combines ETQ technology to enhance turf quality by protecting turf from heat, UV light and other stress factors with trusted chlorothalonil for the preventative control of dollar spot, brown patch, leaf spot, gray leaf spot, anthracnose and other diseases
<b>Echo 6F ETQ</b>	Chlorothalonil plus ETQ	Easy-to-use 54% flowable formulation combines ETQ technology to enhance turf quality by protecting turf from heat, UV light and other stress factors with trusted chlorothalonil for the preventative control of dollar spot, brown patch, leaf spot, gray leaf spot, an thracnose and other diseases
<b>Clearscape</b>	Tebuconazole	Controls anthracnose, dollar spot, brown patch, pink and gray snowmold, gray leaf spot and other diseases
<b>Echo 720, Echo Ultimate, Echo Zn</b>	Chlorothalonil	Protects turf and ornamentals from more than 75 diseases
<b>ProPensity 1.3ME</b>	Propiconazole	Enhances cool-season turfgrass establishment and controls dollar spot, brown patch, anthracnose, summer patch, snow molds, Fusarium patch, powdery mildew, stripe smut, gray leaf spot and other diseases in turf and ornamentals
<b>Proplant Propamocarb Tee-1-Up</b>	hydrochloride	Prevents and cures many Pythium diseases including damping-off, cottony blight, grease spot and root rot
	Chlorothalonil,	Contains 3-to-1 ratio of chlorothalonil to thiophanate-methyl for control of dollar spot, leaf spot, gray leaf spot, brown patch, snow molds, anthracnose and other turf diseases in cool- and warm-season turf. Also controls diseases in ornamentals
	Thiophanate- Methyl	
<b>Tee-Off 4.5</b>	Thiophanate-methyl	Proven systemic chemistry controls anthracnose, summer patch, gray leaf spot, brown patch and other diseases in cool- and warm-season turf. Also controls ornamental diseases

## Bayer Environmental Science ([www.backedbybayer.com/golf-course-management](http://www.backedbybayer.com/golf-course-management))

Product name	Active Ingredient	For use in/on
<b>26 GT</b>	iprodione	Anthracnose (suppression), brown patch, dollar spot, Fusarium blight, Fusarium patch, gray snow mold, leaf spot, pink snow mold, red thread
<b>Armada 50 WDG</b>	trifloxystrobin, triadimefon	Turf diseases: Anthracnose, brown patch, dollar spot, fairy ring, fusarium patch, gray leaf spot, large patch, leaf spot, pink snow mold, pink patch, rapid blight, red thread, rust, stripe smut, southern blight, summer patch, take-all patch Ornamental diseases: Anthracnose, black spot, downy mildew, leaf spot, Lophodermium needlecast, pine rust, powdery mildew, rust, scab, stem and cone rusts, tip blight
<b>Armada 50 WP</b>	trifloxystrobin, triadimefon	Turf diseases: Brown patch, dollar spot, fusarium patch, gray leaf spot, leaf spot, pink patch, pink snow mold, rapid blight, red thread, rust, Southern blight, stripe smut, summer patch, take-all patch Ornamental diseases: Anthracnose, black spot, downy mildew, leaf spot, powdery mildew, rust, scab
<b>Banol</b>	propamocarb hydrochloride (Chemical name: Propyl-3)	Phytophthora, Pythium blight, Pythium damping off, Pythium root rot
<b>Bayleton 50</b>	triadimefon	Anthracnose, Bermudagrass decline, brown patch/rhizoctonia blight, copper spot, dollar spot, fusarium blight, gray snow mold/Ty phula blight, pink snow mold/Fusarium patch, powdery mildew, red thread, rusts, Southern blight, stripe smut, summer patch, take-all patch, zoysia patch/large brown patch
<b>Bayleton FLO</b>	triadimefon	Anthracnose, Bermudagrass decline, brown patch/Rhizoctonia blight, copper spot, dollar spot, fairy ring, Fusarium blight, gray snow mold/Typhula blight, powdery mildew, pink snow mold/Fusarium patch, red thread, rusts, Southern blight, stripe smut, summer patch, take-all patch, Zoysia patch/large patch
<b>Chipco 26019 FLO</b>	iprodione	Turf diseases: Anthracnose (suppression), brown patch, corticum red thread, dollar spot, Fusarium blight, gray snow mold, large patch, leaf spot, pink snow mold Ornamental diseases: Aerial web blight, Alternaria leaf blight, Alternaria leaf spot, blossom blight, Botrytis blight, daffodil leaf scorch, Fusarium leaf spot, Helminthosporium leaf spot, ink spot, ray blight, Rhizoctonia stem and root rot, tulip fire
<b>Chipco Signature</b>	aluminum tris	Anthracnose, bentgrass deadspot, Pythium diseases, summer turfgrass decline, yellow tuft
<b>Chipco Triton 70 WDG</b>	triconazole	Anthracnose, brown patch, dollar spot, gray snow mold, large brown patch, large patch, pink snow mold, red leaf spot, red thread, rust, summer patch, take-all patch
<b>Chipco Triton FLO</b>	triconazole	Anthracnose, brown patch, dollar spot, gray snow mold, fusarium patch, large patch, red thread, rust, summer patch, take-all patch, waitea patch
<b>Compass 50 WG</b>	trifloxystrobin	Turf diseases: Anthracnose, brown patch, gray leaf spot, leaf spot, red thread, snow mold, yellow patch Ornamental diseases: Black spot, leaf spot, rust, scab
<b>Interface</b>	iprodione and trifloxystrobin	Brown patch, Curvularia, dollar spot, fusarium blight, fusarium patch, gray snow mold, large patch, leaf spot, necrotic ring spot, pink patch, pink snow mold, rapid blight, red thread, rust
<b>ProStar WG Reserve</b>	flutolanil	brown patch, brown ring patch (Waitea), fairy ring, gray snow mold, large patch, pink patch, red thread, southern blight, yellow patch
	chlorothalonil and triconazole	Anthracnose, brown patch, brown ring, dollar spot, fusarium patch, gray snow mold/Typhula blight, leaf spot, pink patch, pink snow mold, red thread, rust, summer patch, take-all patch
<b>Tartan</b>	triadimefon and trifloxystrobin	Anthracnose, brown patch, dollar spot, fusarium patch, gray leaf spot, leaf spot, pink patch, pink snow mold, red thread, rust, Southern blight, stripe smut, summer patch

## Syngenta ([www.syngentaprofessionalproducts.com](http://www.syngentaprofessionalproducts.com))

Product name	Active Ingredient	For use in/on
<b>Daconil Action</b>	Chlorothalonil +	Multi-site fungicide controlling turf diseases like Dollar Spot, Anthracnose and Brown Patch while delivering a boost of PR proteins

Product name	Active Ingredient	For use in/on
		that acibenzolar-S-methyl (ASM) allow turf to defend itself naturally against pathogens and environmental stresses. Suppresses Pythium blight and Bacterial Wilt. Syngenta supports a FIFRA Section 2 (ee) recommendation for use of Daconil Action for suppression of Pythium Blight and Bacterial Wilt on both Group A and Group B Turf as listed on the federal label. Please see the Section 2(ee) recommendation to confirm that the recommendation is applicable in your state.
Headway	Azoxystrobin + Propiconazole	Delivers broad-spectrum disease control formulated to balance each active ingredient for control and optimal efficacy. Available in granular or liquid formulation to control brown patch, dollar spot, anthracnose and take-all patch.
Heritage	Azoxystrobin	Controls more than 20 turf diseases for extended intervals and improves overall turf quality. Absorbed through the leaf blade or stem and taken up by the root system for uniform distribution through the plant. Available in granular or liquid formulation to control brown patch, pythium, and anthracnose.

#### FMC Professional Solutions ([www.fmcprosolutions.com](http://www.fmcprosolutions.com))

Product name	Active Ingredient	For use in/on
Segway	Cyazofamid	Pythium blight, Pythium damping-off, and Pythium root dysfunction

#### BASF Professional Turf & Ornamentals ([www.betterturf.basf.us](http://www.betterturf.basf.us))

Product name	Active Ingredient	For use in/on
Pillar G	Pyraclostrobin and triticonazole	Label: <a href="http://www.cdms.net/ldat/ldA9G004.pdf">http://www.cdms.net/ldat/ldA9G004.pdf</a> Ex. Diseases Controlled: Dollar spot, anthracnose, patch diseases (brown patch, large patch, take-all patch, summer patch), snow molds, and leaf spots
Trinity	Triticonazole	Label: <a href="http://www.cdms.net/ldat/ld84K004.pdf">http://www.cdms.net/ldat/ld84K004.pdf</a> Ex. Diseases Controlled: Anthracnose, brown patch, take-all patch, summer patch and dollar spot

#### Dow AgroSciences

Product name	Active Ingredient	For use in/on
Dithane Rainshield	Mancozeb	Major leaf spots and blights, preventive control of rust, scab, and other key diseases.
Eagle 20EW	Myclobutanil	Dollar spot, anthracnose, summer patch, brown patch and many other turf diseases.
Fore Rainshield	Mancozeb	Broad-spectrum for preventive control of brown patch and 11 other key diseases.

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# Herbicides

## Armor Tech ([www.utaarmortech.com](http://www.utaarmortech.com))

Product name	Active Ingredient	For use in/on
Atrazine	Atrazine	Season-long control of annual grassy and broadleaf weeds in warm-season turf, conifers and ornamentals
Cavalcade PQ	Prodiamine, Quinclorac	Preemergence and extended postemergence control of grassy and broadleaf weeds
Cavalcade 65WDG	Prodiamine	Long-residual preemergence control of 30 grassy and broadleaf weeds, including crabgrass, Poa annua, goosegrass, prostrate spurge, common purslane and knotweed
Eject 4L	Quinclorac	Extended postemergence control of grassy and broadleaf weeds, such as crabgrass (including mature plants), foxtail, barnyard grass, clover, dandelion, black medic, wild violet and others.
Sim-Trol	Simazine	Both preemergence and postemergence control of nearly 50 annual grassy and broadleaf weeds in warm-season turfgrass and ornamental

## Bayer Environmental Science ([www.backedbybayer.com/golf-course-management](http://www.backedbybayer.com/golf-course-management))

Product name	Active Ingredient	For use in/on
Acclaim Extra	fenoxaprop-p-ethyl	Barnyardgrass, foxtail species, goosegrass, hairy crabgrass, Japanese stiltgrass, Johnsongrass (seedling), large crabgrass, Panicum species, sandbur, silver crabgrass, smooth crabgrass, sprangletop
Celsius WG	thiencarbazone-methyl, iodo-sulfuron-methyl and dicamba	Broadleaf weeds: American burnweed, chamberbitter, common purslane, dollarweed, Florida betony, Florida pusley, lawn bur weed, Lespedeza, prostrate spurge, spotted spurge, Virginia buttonweed
Finale	glufosinate-ammonium	Grassy weeds: Bull paspalum, carpetgrass, Dallis grass (suppression), doveweed, large crabgrass Broadleaf weeds: Burdock, chickweed, clover, common cocklebur, dandelion, dogbane, filaree, jimsonweed, Kochia, London rocket, Malva, marestail, purslane, shepherd's purse, smartweed Grasses and sedges: Annual bluegrass, barnyard grass, crabgrass, cupgrass, fall panicum, fescue, giant foxtail, goose grass, Kentucky bluegrass, lovegrass, shattercane, smallflower Alexander, stinkgrass, windgrass, yellow foxtail Woody species: Blackberry, conifers, greenbriar
Illoxan	diclofop-methyl	Barnyardgrass, foxtail species, goosegrass, hairy crabgrass, Japanese stiltgrass, Johnsongrass (seedling), large crabgrass, Panicum species, sandbur, silver crabgrass, smooth crabgrass, sprangletop
Prograss EC	ethofumesate	barnyardgrass, burclover, canary grass, common chickweed, common purslane, green foxtail, large crabgrass, Poa annua, pre-emergent/annual grasses, redroot pigweed, smooth crabgrass, white clover, yellow foxtail
Prograss SC	ethofumesate	barnyardgrass, burclover, canary grass, common chickweed, common purslane, green foxtail, large crabgrass, Poa annua, pre-emergent/annual grasses, redroot pigweed, smooth crabgrass, white clover, yellow foxtail
Revolver	foramsulfuron	Bentgrass, centipede grass (suppression), Dallis grass (suppression), goose grass, Kentucky bluegrass, Poa annua, Poa trivialis, rye grass, tall fescue
Ronstar 50 WSP	oxadiazon	Broadleaf weeds: Bittergrass, bristly oxtongue, carpetweed, cheeseweed, common groundsel, common purslane, evening prim rose ragwort, lambsquarters, liverwort, oxalis, Pennsylvania smartweed, prostrate spurge, redroot pigweed, sow thistle, speed well, spotted catsear, swinecress, yellow woodsorrel
Ronstar FLO	oxadiazon	Grassy weeds: Annual bluegrass, barnyardgrass, crabgrass, fall panicum, goose grass, green foxtail, wild oats Broadleaf weeds: Bittergrass, bristly oxtongue, carpetweed, cheeseweed, common groundsel, common purslane, evening primrose ragwort, lambsquarters, liverwort, oxalis, Pennsylvania smartweed, prostrate spurge, redroot pigweed, sow thistle, speedwell, spotted catsear, swinecress, yellow woodsorrel
Sencor 75%	metribuzin	Grassy weeds: Annual bluegrass, barnyardgrass, carpetgrass, crabgrass, fall panicum, goose grass, green foxtail, wild oats Annual bluegrass (Poa annua), bedstraw1, carpetweed, chickweed, corn speedwell1, goosegrass1, henbit1, littleseed canarygrass, parsley-piert1, prostrate knotweed1, rabbitfootgrass, red deadnettle1, shepherdspurse, spotted spurge1, spur weed1, white clover, wild mustard
Specticle 20 WSP	indaziflam	Broadleaf weeds: American black nightshade, bittercress, California burclover, carpetweed, clover, common chickweed, common groundsel, common purslane, dandelion, doveweed, eclipta, evening primrose cutleaf, Florida pusley, hairy fleabane, horse weed, Kochia, lambsquarters, lawn burweed, Lespedeza, little mallow, oxalis, panicle willowherb, plantain, prostrate pigweed, redmaids, shepherd's purse, sowthistle (annuals), spurge, swinecress, wild mustard Grassy weeds: Annual bluegrass/Poa, cheatgrass, common barnyardgrass, crabgrass, foxtail brome, giant foxtail, goose grass, green foxtail, guineagrass, large/hairy crabgrass, mouse barley, nutsedge (annual), perennial ryegrass, rice flatsedge, smooth crabgrass, tufted lovegrass, yellow foxtail
Tribute Total	foramsulfuron, thiencarbazone-methyl, halosulfuron-methyl	Chickweed, clover, crabgrass (large, smooth), dallisgrass, dandelion, dollarweed, doveweed, fescue, goosegrass, henbit, kylinga, nutsedge, plantain, ryegrass

## DuPont Professional Products ([www.proproducts.dupont.com](http://www.proproducts.dupont.com))

Product name	Active Ingredient	For use in/on
TranXit	Rimsulfuron	Spring use of TranXit controls ryegrass to give bermudagrass the opportunity for more rapid and complete reestablishment after winter dormancy. Then follow-up with a fall application of TranXit to control annual bluegrass prior to overseeding for the winter.

## Syngenta ([www.syngentaprofessionalproducts.com](http://www.syngentaprofessionalproducts.com))

Product name	Active Ingredient	For use in/on
Tenacity	Mesotrione	Can be used at seeding to help eliminate weeds so new grass can flourish. Pre- and post-emergent control of more than 46

Product name	Active Ingredient	For use in/on
<b>Monument 75WG</b>	Trifloxysulfuron-Sodium	broadleaf weeds and grasses in two convenient pack sizes - 8oz. bottle or one-gallon jug. Selective post-emergent herbicide for the control of sedges, certain grasses and broadleaf weeds in bermudagrass and zoysiagrass. Available in a new water soluble 0.5 gram package for spot treatments or the 5 gram size for larger areas.
<b>Fusilade II</b>	Fluazifop-P-butyl	Selective post-emergent herbicide that controls many common perennial and annual grass weeds and is rainfast one hour after application. Effective at low rates to remove bermudagrass from tall fescue and zoysiagrass.

### FMC Professional Solutions ([www.fmcprosolutions.com](http://www.fmcprosolutions.com))

Product name	Active Ingredient	For use in/on
<b>Blindside</b>	Sulfentrazone + Metsulfuron	Postemergent control of 70 broadleaf weeds including dollarweed, doveweed and buttonweed. Virtually all types of warm-season turf, even St. Augustinegrass.
<b>SquareOne</b>	Carfentrazone + Quinclorac	Crabgrass and small broadleaf weeds at time of seeding (up to one day before or 7 days after emergence on most grasses)
<b>Echelon</b>	Sulfentrazone + Prodiamine	Preemergence crabgrass, sedge, and goosegrass. Fall applications for the control of poa annua.
<b>Dismiss</b>	Sulfentrazone	Warm and cool season turf: Fast, visible postemergence control of sedges, including yellow nutsedge, purple nutsedge (2 apps), and green kyllinga.
<b>Dismiss South</b>	Sulfentrazone + Imazethapyr	Warm season turf (excluding St. Augustine). Fast, visible postemergence control of sedges, with a focus on purple nutsedge.
<b>Dismiss CA</b>	Sulfentrazone	Fast, visible postemergence control of sedges, including yellow nutsedge and green kyllinga.
<b>Solitare</b>	Sulfentrazone + Quinclorac	Postemergence sedges, crabgrass, and broadleaf weeds in a single product.
<b>QuickSilver</b>	Carfentrazone	Silvery Thread Moss (more golf related). Broadleaf tank-mix partner to speed up the results of other products.

### BASF ([www.betterturf.basf.us](http://www.betterturf.basf.us))

Product name	Active Ingredient	For use in/on
<b>Drive XLR8</b>	Quinclorac	Bindweed, Clover, Crabgrass, Dandelion, Dollarweed, Foxtail, Kikuyugrass, Signalgrass, Speedwell, Torpedograss
<b>Onetime</b>	Quinclorac, MCP-P and dicamba	Crabgrass, foxtail, torpedograss, wild violet, dollarweed and ground ivy.
<b>Pendulum 2G</b>	Pendimethalin	Crabgrass, goosegrass, oxalis, henbit, spurge and nearly 40 other broadleaf and grassy species.
<b>Pendulum AquaCap</b>	Pendimethalin	Field Sandbur, Woolly Cupgrass, Lawn Burweed, Hop Clover, Cudweed, Evening Primrose, Fiddleneck, Filaree, Puncturevine, Pennsylvania Smartweed, Annual Spurge, Chickweed Species, Yellow Woodsorrel (Oxalis).

### Dow AgroSciences ([www.dowagro.com](http://www.dowagro.com))

Product name	Active Ingredient	For use in/on
<b>Confront</b>	Triclopyr/Clopyralid	Postemergence control of 35 difficult-to-manage broadleaf weeds.
<b>Dimension</b>	Dithiopyr	Pre- and early postemergence control of crabgrass; preemergence control of more than 45 annual grassy and broadleaf weeds.
<b>Gallery</b>	Isoxaben	Preemergence control of more than 95 broadleaf weeds, including dandelion, clover, plantain and thistle.
<b>Kerb SC T&amp;O</b>	Pronamide	Pre- and early postemergence control of Poa annua and other grassy and broadleaf weeds.
<b>LockUp</b>	Penoxsulam	Postemergence control of key broadleaf and grassy weeds, including white clover, dollarweed and dandelion.
<b>Lontrel</b>	Clopyralid	Postemergence control of broadleaf weeds, including clover and thistle.
<b>Snapshot</b>	Trifluralin/Isoxaben	Preemergence control of 125 broadleaf and grassy weeds in landscape ornamentals.
<b>Team Pro</b>	Benefin/Trifluralin	Preemergence control of broadleaf and grassy weeds.
<b>Turfion Ester Ultra</b>	Triclopyr	Broad-spectrum postemergence control of oxalis, wild violet, spurge, ground ivy and other hard-to-control weeds.

### PBI Gordon ([www.pbigordon.com](http://www.pbigordon.com))

Product name	Active Ingredient	For use in/on
<b>Barrier 50W</b>	Dichlobenil	Pre-asphalt application stops weeds and root punctures without affecting nearby trees and shrubs
<b>Bensumec 4LF</b>		An economical way to manage crabgrass, poa annua and goosegrass
<b>BrushMaster</b>		Brush and weed control with flexibility in application methods and schedules
<b>GlyphoMate 41</b>		All-in-one non-selective herbicide
<b>Katana</b>		Good for removing overseeded cool-season grasses. Controls kyllingas, sedges and broadleaf weeds with post-emergence and some pre-emergence activity. Controls ryegrass, clumpy ryegrass, poa annua, poa trivialis, tall fescue and annual ryegrass in warm-season turf.
<b>Mecomec 2.5 &amp; Mecomec 4</b>		Premium MCP-P formulation for enhanced broadleaf control in turfgrass including bentgrass
<b>Ornamec Over-The-Top</b>		Post-emergence control of grass weeds in and around ground covers, shrubs and trees
<b>PowerZone</b>		Fast-acting 2,4-D alternative for broadleaf weed control for turf with visible activity in hours
<b>Pre-San Granular 7G Herbicide &amp; Pre-San Granular 12.5G Herbicide</b>		Premium performance, selective, granular pre-emergence herbicide
<b>Q4 Plus</b>		MSMA alternative designed to replace Trimec Plus, contains four active ingredients: quinclorac, sulfentrazone, 2,4-D and dicamba
<b>SpeedZone</b>		Fast broadleaf weed control
<b>SpeedZone Southern</b>		Fast broadleaf weed control developed for southern grasses
<b>Super Trimec</b>		Extend open season on hard-to-control broadleaf weeds; 2,4-D, 2,4-DP and dicamba
<b>Surge</b>		Fast warm-weather weed control; sulfentrazone, 2,4-D, MCP-P and dicamba
<b>T-Zone</b>		Tough weeds controlled fast; contains four ingredients including triclopyr
<b>Trimec 992</b>		Registered for use in cool- and warm-season grasses
<b>Trimec 1000</b>		Low odor, low profile controller of deep-rooted perennial weeds
<b>Trimec Bentgrass Formula</b>		High degree of bentgrass tolerance; effective in wide range of temperatures
<b>Trimec Classic Brand</b>		Low odor, controls all major broadleaf weeds in turf
<b>Trimec Encore</b>		Alternative where 2,4-D is not an option

Continued on page 36

# Selecting the right topdressing material

**I**N ORDER TO HAVE A SUCCESSFUL TOPDRESSING PROGRAM, it is essential to choose the right topdressing material for the job. Soils can vary from very fine, heavy textured clayey soils to very coarse; light textured sandy soils, depending on the location. Therefore, the same topdressing material may have different results on different locations.

It is important to know the texture of the soil in your rootzone, so start by obtaining a physical analysis of your soil by a reputable testing laboratory. In addition to the proportions of sand, silt and clay in a soil, the coarseness or fineness of the sand portion, has an effect on the physical

properties of a specific classification of soil.

Medium size sand with a relatively consistent particle size usually has a higher rate of hydraulic conductivity than a material containing a more diverse blend of coarse, medium and fine particles. A principle to remember: water will move from a coarser textured soil to a finer textured soil more readily than the other way around, providing there is adequate pore space between the particles.

When using any material to modify an existing rootzone, adequate cultivation is necessary to insure proper incorporation of the material. The more a topdressing material varies from the existing rootzone in re-

lation to its texture classification and physical properties, the more cultivation is typically needed.

Without adequate cultivation there remains a very real potential for layering in the soil. Anytime there is a layer created in the soil, the interface between the layers will have the potential to negatively affect

## A few reasons for topdressing are:

### Modification of existing rootzone.

- Increase water conductivity
- Increase organic matter content
- Increase tilth (soil structure)
- Increase cation exchange capacity (CEC)

### Increase success rate of renovation thru improved soil seed contact.

### Smooth a rough uneven surface.





## JOHN MASCARO'S PHOTO QUIZ

John Mascaro is President of Turf-Tec International

*Can you identify this sports turf problem?*

**Problem:** Brown line across field

**Turfgrass area:** Football field

**Location:** Southern United States

**Grass Variety:** 419 bermudagrass

**Answer to John Mascaro's Photo Quiz on Page 33**



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hydraulic conductivity, root penetration and even air and gas exchange characteristics of the soil.

Before you can determine the proper topdressing material to use, it is important to determine why you are topdressing. A few reasons for topdressing are:

**Modification of existing rootzone.**

- Increase water conductivity
- Increase organic matter content
- Increase tilth (soil structure)
- Increase cation exchange capacity (CEC)

**Increase success rate of renovation thru improved soil seed contact.**

**Smooth a rough uneven surface.**

Two common materials used to modify a rootzone are organic materials (in the form of compost) and sand. Caution must be practiced with either material.

Sand is sometimes used to improve the drainage characteristics of a heavy textured, clayey soil. A heavy textured soil should reach approximately 85% sand by weight to have a positive effect on hydraulic conductivity. Medium to coarse size sand should be used for this purpose.

A steady supply of a uniform material, which conforms to very specific guidelines, should be consistently available. Variations in material uniformity can void the success of the most well planned program. An agronomist can best prescribe these specifications.

Leaf compost is being used more and more to topdress athletic fields. Production by private and public recycling plants alike has made it a widely available material. It is sometimes blended with sand and sold as organic topsoil. The benefit to incorporating compost into the rootzone is realized through the addition of organic matter.

The addition of organic matter can provide a number of benefits. In a light, sandy soil, organic matter can be of benefit by increasing the ability of the soil to retain moisture. This increase can combat compaction and maximize irrigation efficiency.

The incorporation of organic matter into a soil adds essential plant nutrients. Depending on the source of the organic matter, this “fertilizer effect” can be substantial and could replace one or more applications in a fertilization program. Organic matter can also increase CEC or the ability of a soil to retain nutrients. This increase is not usually necessary with heavy textured clay soils but may be of benefit in sandy soils. Note that it takes a tremendous amount of organic matter to increase soil CEC. Thus in most situations the benefit of incorporating organic matter is more a result of increase water retention and nutrient addition than increase in CEC.

The addition of organic matter can decrease the compactive tendencies of a soil and over time help to improve the soil structure (tilth) of a heavy textured soil. Tilth can be associated with the soft, fluffy texture of a well-maintained garden soil. A lack of tilth can be associated with the hard clumpy soil of a goalmouth. The benefits of organic matter can be realized in all areas of an athletic field but more noticeably in high traffic areas where existing soil structure has been destroyed.

Once soil structure is destroyed the ability of the soil to drain and maintain turf cover is severely compromised. The result is a weed-infested area of high compaction. A major cause of this destruction is playing games in wet water logged conditions where the soil is actually smeared under the stress of heavy foot traffic.

Similar materials to leaf compost are biosolids such as sewage sludge and spent mushroom compost. These materials are much the same as leaf compost in that they have high organic content but many have the added benefit of higher nutrient availability and therefore the potential for a greater “fertilizer effect.”

As with any topdressing material, care must be taken when acquiring and applying compost. A quality compost material should be adequately aged before purchase and be properly screened to eliminate all twigs and debris. It should show no resemblance to its original components and have a clean earthy odor.

The results of a compost analysis report should be requested before purchase. These results should supply a minimum of pH, percent of organic matter, soluble salt levels, heavy metal levels and the carbon:nitrogen (C:N) ratio. Included with these test results should also be a reference made to the acceptable levels of soluble salts and heavy metals. If the compost is a blended material it should also carry a physical (sand, silt, clay) analysis and have a texture classification such as loamy sand, sandy loam etc. A chemical analysis is also useful in determining the potential “fertilizer effect” of a topdressing material.

The C:N ratio is used as a barometer to measure the level of decomposition and should be less than 30:1. Higher C:N ratios can cause nitrogen supplies in the soil to become temporarily unavailable to the turf until the C:N ratio is reduced through further decomposition. This can have a negative effect on turf quality.

With compost materials as with any other topdressing material, care must be taken to provide adequate cultivation in conjunction with the topdressing procedure. The more a topdressing material differs from the existing rootzone, the more cultivation is necessary to blend the two materials. This is done to minimize the effects of layering. Applying highly organic compost to a

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mineral based soil brings with it the risk of layering. If adequate cultivation is not provided, this risk can become greater with each subsequent application. In this particular situation more is not necessarily better. An anaerobic organic layer (black layer) in the soil is a potentially devastating problem on athletic fields.

Cultivation in conjunction with topdressing should be accomplished during times of the year when there is adequate moisture available and when the turf is actively growing and is in a position to repair itself. Topdressing materials with high organic matter content such as straight compost materials should not be applied when there are inadequate moisture levels or when there is the potential for drought stress. These materials have the ability to rob the turf of available moisture when moisture is in limited supply.

Core aerification is generally the recommended means of cultivation with any topdressing application. Multiple passes done in different directions are typically recommended. Again, the intensity of the aerification procedure is governed by factors such the extent of texture variation between the topdressing material and the rootzone and the degree of thatch buildup in the area to be topdressed.

When rootzone modification or turf renovation is the intent of a topdressing application, multiple passes to provide a coring pattern of a maximum distance between core holes of 2 inches and at a depth of 2 to 3 inches is recommended. The application of topdressing should be accomplished before core aerification. The cores, along with the topdressing, should be dragged into the core holes using a drag mat at the completion of the procedure. If a more rapid change in the surface conditions is desired, the soil cores can be removed after aerification; in this case it would be appropriate to topdress after soil cores are removed.

Where severe soil structure damage has occurred such as in goalmouths, it is sometimes necessary to till the area in an effort to blend the topdressing material with the damaged soil and create an adequate seedbed.

Be wary of over-cultivating with the rototiller style of equipment, especially if the soil is too dry. Rototiller style cultivators can destroy existing soil structure by pulverizing the soil into a fine grainy (dusty) material if over used. As with most soil cultivation procedures, the soil should be moist enough to hold its shape after being clenched in your fist but dry enough to crumble if rubbed between your thumb and forefinger.

It is not uncommon among sports field managers and contractors alike to incorporate topdressing into a renovation project. Topdressing can not only smooth and therefore improve the topography of a field, but also improve soil seed contact, which is critical to the success of an athletic field renovation.

When topdressing is used properly, it can provide beneficial results, which in certain situations could not otherwise be achieved as effectively. The cost of these benefits must be justified when compared to all other available options. ■

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>> **JOHN HEWITT**, who was in charge of the team that designed and built the Olympic Stadium pitch and track.

>> **CONSTRUCTION** of Olympic Stadium in London. The grass area was shortened to 90 metres long (by 71 metres wide) as opposed to UEFA-standard football pitches of 105 metres long (by 68 metres wide) to accommodate Olympic officials at either end of the track/pitch.

# Designing and building the pitch of Olympic Stadium

**Editor's note:** Thanks to STMA CEO Kim Heck for securing our coverage of this summer's Olympic Games venues via the CEO of the Institute of Groundsmanship, Geoff Webb. The IOG is STMA's second official International Affiliate Organization.

**I**n a world exclusive interview, specialist sports surface constructor John Hewitt talks to Editor Colin Hoskins of *Groundsman Magazine* about his "once in a lifetime" involvement in the London 2012 Olympic Games—the design and build of the Olympic Stadium's pitch area.

When IOC Athletes' Commission Chairman Frank Fredericks and London 2012 Chair Lord Coe joined others for the photo call on the Olympic Stadium pitch to celebrate the laying of the last of the 360 rolls of turf there, included in the out-of-camera team responsible for delivering the project ahead of schedule and within budget was John Hewitt. While the cameras rolled, John was quietly expressing a similar measure of celebration as the man charged with the design and build of the Sta-

dium's "inner bowl" area, the pitch and the running track; indeed, the complete area within the terracing at the £486 million Stadium (1 Euro = 1.28 US dollar).

For John, the laying of the final turf heralded the end of a complex and, he admits, an exhausting process that began back in 2005 when his company, Hewitt Sportsturf, was commissioned as part of Team Stadium by constructors Sir Robert McAlpine to submit a tender and specification for this show-

case element of the Olympic Delivery Authority's ambitious and exciting Olympic Park project.

"While we are renowned as constructors of football pitches, it was clear from the outset that the Olympic Stadium pitch would focus instead on track and field events, even though in the early stages the original design would have accommodated a full UEFA-size soccer pitch," says John.

"However, what we have today, an iconic venue that everyone involved with can be very proud of, bears little resemblance to the original design," he continues. "This was no surprise, because as each specialist partner imparted their knowledge and expertise to the design and specification there has been an evolu-

## The Olympic Stadium: FACTS AND FIGURES

➤ Designed to host the opening and closing ceremonies, as well as athletics track and field events, the Stadium will have the capacity for 80,000 people (in Games mode).

➤ The Stadium site covers 40 acres.

➤ The Stadium, which contains around 10,000 tonnes of steel and is the lightest Olympic Stadium to date - is an ellipse with a long axis of 315 metres and a short axis of 256 metres. It is 60 metres high above the field of play and the perimeter is 860 metres.

➤ More than 5,000 reinforced concrete columns were installed into the ground, up to 20 metres deep, to provide the foundations to support the structure. 112 steel rakers and 12,000 pre-cast concrete terracing units hold the spectator seating in place.

➤ The roof compression truss comprises 28 steel sections, each one being 15 metres high by 30 metres long and weigh 85 tons. A cable net roof provides the correct conditions for the athletes on the field of play and it covers two-thirds of the spectators.

➤ The Stadium is lit by 532 floodlights housed in 14 towers which reach 70 metres above the field of play.