



# Tackling Challenges

## Muscatine Soccer Complex earns top honors again

BY STEVE AND SUZ TRUSTY

**A** triple package of excellence brings a second STMA Field of the Year Award in the Parks and Recreation Division to the Muscatine Soccer Complex in Muscatine, IA. The Complex earned the honor in 1995 as well. The combination of foresight in planning, a proactive maintenance program, and a can-do approach in tackling challenges keeps this facility at the top of its game. Good enough is not acceptable.

Athletic facilities supervisor Kevin Vos, CSFM, says, "We try to maintain a high quality, safe playing surface for all user groups through the entire season. Our crew takes great pride in meeting the challenges every day for every player."

The 41-acre complex first opened for play in August 1993. The first phase of construction consisted of four native soil fields and two amended soil fields. Two additional native soil fields were added during the second phase of development in 1994.

Vos says, "The two amended-soil fields are 80 percent sand and 20 percent soil/peat. Each measures 300 by 390 feet. They have a 1 percent crown. The six native soil fields are silty-loam with a 1.5 percent crown. These field dimensions are 240 by 360 feet.

"The six original fields have underground drainage to ensure rapid recovery after rains. Buried, 4-inch tiles spaced 35 feet apart run the length of each field. These connect to a 6-inch collector drain that runs perpendicular to them at the middle of the field. Water is channeled through the 6-inch collector to the city's storm drain system and eventually to the sanitation department."

All of the fields are irrigated, the original six with a hydraulic system and the remaining two with an electric system. The irrigation systems can be programmed to irrigate each field's entire playing surface or to irrigate only critical zones such as the goal and mid-field areas. The complex's non-field turf areas without in-ground irrigation are watered by roller base sprinklers or a water reel.

The amended soils fields (numbers 3 and 4) are lighted and have bleacher seating for approximately 1,200 people. The complex also features paved parking, shade shelters

# MSC maintenance program

## Mowing: March through November

- Fields: 3 times per week with rotary mower at 1-3/4-inch height. Reel mowers used for tournaments with mowing height 1-5/8-inch.

## Irrigation: April through November

- Used to augment rainfall for total water of 1 to 1-1/2-inches per week
- Soil moisture percentage in amended soil fields is monitored on a per game basis
- Non-field turf is irrigated on an as needed basis

## Aerification: April to September

- Slice aerify twice per month: May, June, and August to October. Core aerify and drag cores in high wear areas
- Solid tine aerify weekly during heavy use season in high use areas
- Entire field aerified in May/August/October - Solid tine 1/2-inch and 3/4-inch twice per season; 3/4-inch core once per season

## Fertilization:

- (All based on twice per year soil testing results and adjusted to match turf needs)

## Amended soil fields:

- April: first application of 15-30-15 at .5 pounds of N per thousand square feet; 18-2-18 at .5 pounds of N per thousand square feet at 14-day intervals during season
- First week of July: 13-3-9 with insecticide at .5 pounds of N per thousand square feet
- 0-0-22 at 1 pound of K per thousand square feet three times per season
- 46-0-0 at 1 pound of N per thousand square feet—one dormant application
- Nutrient packet and 5% Manganese



applied at .5 ounce of N per thousand square feet at 21-day intervals

## Native soil fields:

- Spring application of 15-30-15 at .5 pounds of N per thousand square feet
- May application of 23-4-12 (SCU) at .75 pounds of N per thousand square feet
- First week of July: 13-3-9 with insecticide at .5 pounds of N per thousand square feet
- September application of 18-2-18 at 1 pound of N per thousand square feet
- 46-0-0 at 1 pound of N per thousand square feet—one dormant application
- Nutrient packet applied twice per season

## Rough:

- April application of 13-3-9 with at .5 pounds of N per thousand square feet
- Late May application of 42-0-0 (polymer-coated) at 1 pound of N per thousand square feet
- September application of 18-2-18 at 1 pound of N per thousand square feet

## Topdressing:

- Amended soil fields: 100 percent sand with same particle size as existing soil profile twice per year at 50 tons per 3.25 acres per application
- Native soil fields: once per season with

100 percent sand following core aerification

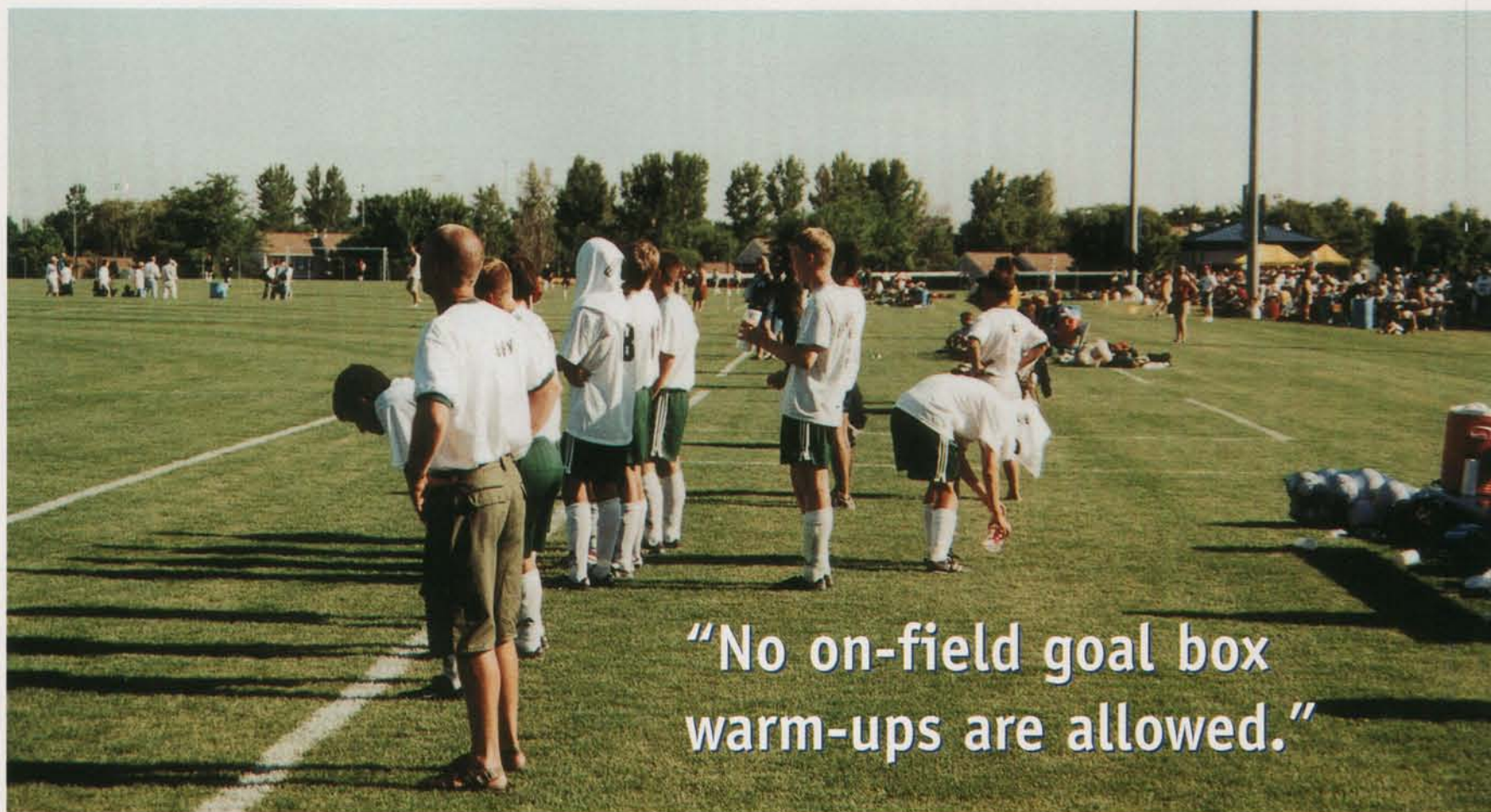
- Field drag to mix core soil with sand and into aerification holes

## Overseeding:

- As needed per field before/after games/tournaments before turf wear appears
- Methods depend on situation: slit seeding, broadcast before games and after aerification, divot mix used weekly
- Kentucky Bluegrass blend of: Midnight, Blacksburg, America, Ram I, Unique
- Perennial Ryegrass blend of: Palmer III, Manhattan III, Prelude III, Affinity, Brightstar
- Seed may be pregerminated depending on time of season

## Pesticides:

- All as needed following standard IPM practices
- Spot treatment for broadleaf and annual grassy weeds
- Grub control with fertilizer in July if scouting in spring/early summer warrants it
- Preventive fungicide application for Pythium control on six fields
- Preventive fungicide application for brown patch on four fields
- Preventive fungicide application for snow mold all fields



**"No on-field goal box warm-ups are allowed."**

and wide, paved walkways, an administration/concessions/restroom building, and a maintenance building. The park-like setting is enhanced with low-maintenance landscaping of hardy trees, shrubs, and perennials. Chain link fence surrounds the complex.

Vos says, "The Muscatine Soccer Complex is open for play from April 1 through November 1, and longer into November if tournaments require it. The fields play host to several area soccer clubs, five local Muscatine High School girls and boys soccer teams, local YMCA/YWCA leagues, adult open league, and area college teams. The Complex also hosts several tournaments ranging in size from 8 to 144 teams. These include the high school girls and boys district playoffs, Mississippi Athletic Conference high school tournament, girls and boys Iowa High School State Championships, the Muscatine Summer Classic, the 4-day, 96-team national recruiting College Search Kickoff tournament, and various 8- to 16-team college tournaments and clinics. By the end of October 2001, games already hosted or scheduled at the complex totaled 996.

"All games are reserved in advance and scheduled through the Muscatine Parks and Recreation Department. There are staff members working whenever there are games being played. The staff is directed to assist user groups with field assignments, observing complex rules and guidelines, field set up and teardown, and complex cleanliness. The concession stand is operated under a contract between a local business and the City of Muscatine."

### Keeping the focus on top conditions

The complex was designed to allow flexibility in field layout. Four of the native soil fields are located on a 2 1/2-acre section. For the girls and boys state tournaments, the fields are centered within this section. For other weekend play, the entire fields may be laid out to run horizontally across the area (north and south) or vertically across the area (east and west). Because of referee wear along the sideline areas, the sidelines may be moved out 3 feet or in 3 feet, while staying within the official size field for each age group. The team areas are moved at the same time, either positioning them along the 'new' sidelines, or moving both team areas to the other side of the field.

Vos says, "The fields are laid out according to precisely measured string lines in the spring and restrung every few weeks to keep the lines straight and accurate. The fields

are painted as needed. Depending on the season, games, and tournaments, plant growth regulator generally will be added to the paint. When field rotation times are tight, we'll use green paint to block out the old white lines to alleviate confusion. We match the paint shade to turf color as closely as possible. Smaller fields are laid out perpendicular to the main large fields for use by younger age groups and clinics. These fields are painted in contrasting colors.

"The first three years the complex was opened we allowed practices on the fields but maintenance costs rose each year. So starting in 1997, we eliminated full-blown practices. We do allow game-type scrimmages and non-wear intensive drills at various times throughout the year. No on-field goal box warm-ups are allowed. The coaches and teams are directed to the numerous practice goals that we frequently reposition throughout the complex. This does require extra goals and nets and all of our 'extended field' methods do increase the overall turf area that receives premium care, but these practices do help control excessive wear."



The maintenance program is equally aggressive and proactive. Divots are filled weekly with pre-germinated divot mix before and after games. Seeding is done weekly in season. Heavily used areas are core or solid tine aerified, seeded, and topdressed at various times throughout the season, before wear damage is evident. Full field aerification, either core or solid tine, is done twice per season on the amended soil fields and three times per season on the native soil fields. Sand, matching that of the soil profile, is topdressed before deep tine solid aerification on the two sand-amended fields to improve infiltration rates.

### The challenge of 2001

The amended soil fields were heavily used into the second week of November in 2000. During the first weekend, the Iowa High School Fall Soccer State Championships for private schools put 10 games on the fields within 48 hours. The next weekend, the NAIA region #7 playoffs put six more games on those fields. This was followed by continually cloudy skies and temperatures too low for recuperative turf growth. Both fields were highly stressed going into the winter season.

Vos says, "We followed our standard pre-winter practices, applying a preventive snow mold treatment and topdressing with sand to protect the turf crowns. Field 3 was

covered with a turf blanket. Since we have only one, field 4 remained uncovered.

"Before a game was played at the complex in 2001, we knew a huge challenge was waiting. It started with over 12 inches of snow that fell in early December of 2000 on unfrozen ground.

Despite the snow cover, temperatures remained warm enough to keep the ground from freezing, so there was some melting at the soil surface. Then more snow fell in January and temperatures dropped, turning the melted layer beneath the snow into a layer of ice. Approximately 10 inches of snow covered the turf until early March."

As the snow began to melt in March and the turf became visible, it became apparent that the middle acre of the amended soil fields was severely damaged from snow mold disease and winter desiccation from the ice layer. Vos says, "Nearly 70 percent of the turf in this section of these two fields (mainly perennial ryegrass) was dead. Though our other fields were less stressed entering the winter, they also suffered turf loss, but it was less extensive and concentrated in the heavily used areas."

Obviously, a full season of play was already scheduled. The Iowa Boys High School State Championships were set for June 1-2, with a 138-club team tournament scheduled for the second and third weekends of June, and the Iowa Girls High School State Championship set for the fourth June weekend.

Vos says, "Our goal was to have a safe, consistent turf surface on all eight fields by May 19 for the high school regional playoffs. We considered resodding the dead sections of the amended soil fields, but costs and soil compatibility factors prohibited it. So I developed an aggressive renovation program. We attacked the dead turf areas with slice aeration, slit seeding of perennial ryegrass at 4 pounds per thousand square feet, broadcasting pre-germinated Kentucky Bluegrass at 3 pounds per thousand square feet, dragging in the seed, sweeping up debris, rolling, applying starter fertilizer and irrigating. I opted for a heavy rate of bluegrass despite the slower establishment rate to gain a better base for long-term playability. We rotated the turf blanket over the heavily damaged areas of fields 3 and 4 and applied additional fertilizer and a liquid nutrient mix at 14-day intervals."

Play was suspended on fields 3 and 4 from April 23 until May 19. The nearly 40 games scheduled for them were moved to the other six fields during that period. Vos notes, "The cooperation of our field users was excellent, even though changes in game times were needed to accommodate all the play. Weather conditions also cooperated. The turf responded even better than we had anticipated. We had a safe, good quality playing surface by our target date."

Vos didn't stop there. Extra applications of granular 18-2-18 fertilizer, liquid fertilizer at .10 of a pound, and the nutrient package were applied as needed to spoon feed the turf through July. He says, "From May 19 through June 30, 70 games were played on fields 3 and 4 alone. Then, 30 days later, the national college recruiting tournament drew 96 teams to spread 144 games over our eight fields. The turf held up well with only minimal damage."

The already aggressive maintenance program was stepped up one more notch throughout 2001. Aeration was increased, especially in the areas that had shown damage. More frequent fertilizer applications were calculated for steady turf growth on a



**April 11, 2001, Field #3: Here's how it looked after snow mold and ice layer damage.**



**June 1, 2001: Field #3 after turf recovery is now a quality playing surface ready for Iowa high school boys' state championships.**

field-by-field, area-by-area basis. The overseeding rate was increased in both slit seeding and broadcast applications, using an extra 1000 pounds of seed over the season, nearly double the normal amount.

Vos says, "By the end of the 2001 season, the turf had matured and we had achieved approximately 90 percent of our pre-damage density. The private school tournament had been discontinued and the NAIA was on its regular rotation to a different area, so we were able to close down play close to November 1. We did our normal winter preparation of aeration, fertilization, and topdressing and applied a combination of two snow mold preventative products. November of 2001 gave us excellent recuperative weather, so all the fields were in good condition when December's winter conditions closed in. We had a winter season of moderate temperatures and little snow cover. The fields were in top shape for spring of 2002."

Vos credits the work of his six-person staff (one full-time, five seasonal) in making the renovation so successful. He says, "They're dedicated to providing the best possible playing conditions and will do whatever is

asked, and then some, to make that happen."

While all this was taking place, Vos also was overseeing a 10-member staff (one full-time, nine seasonal) and the program for the 64-acre, 17-ball diamond complex at Muscatine's neighboring Kent Stein Park. This facility also features a picnic area, horseshoe courts, and fishing. Keeping the equipment in shape to handle all this is athletic facilities technician Randy Moeller, who splits his time between the two facilities. Vos also handles the ballfield maintenance at two other City parks.

Even more fields may be on the drawing board and they are needed. The adult soccer leagues have added Saturday evening play to their weekend schedule and youth participation is increasing at all levels. A 17.2-acre site has been donated to the City that would provide enough space for four more soccer fields and a parking area. Vos looks forward to the additional challenge.

Vos is constantly tweaking the maintenance program to produce even better results. He says, "We used more liquid fertilizer applications this spring to better match nutrient delivery to plant needs and achieve balanced growth, without those little bursts of activity. We're applying plant growth regulators to all of the turf on one of the fields and monitoring not only turf growth, but also turf health. We've always followed environmentally friendly IPM practices and, because of the success of this program, plan to eliminate all preemergent applications and deal with the few annual grassy weeds as they occur."

### **Selling the program**

Vos notes that communication is an essential component of the overall program. He says, "First, we communicate openly within our staff, including them in the planning and decision-making processes. Then we strive to communicate to our public, to our user groups, to our supervisors, to other city staff. We need to not only tell them what we need and want to do, but also why it's important. Whether it's banning practices on our fields or shutting off play temporarily to tackling renovation, we've always stressed the why. When the public understands we're taking these steps to provide a safe, uniform, high quality playing surface for their kids they're much more willing to support our efforts."

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