Practical Record Keeping for the
Sports Turf Manager

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Introduction

Many successful turf managers have either created or built systems that they rely on to assist them with the management of their facilities. In this manual we will look at few of the systems and strategies that have been very helpful to me throughout my career. This step-by-step look into these systems will hopefully provide you with ideas or concepts that may be beneficial to you in the management of your facilities.
Table of Contents

I. Written Sports Field Management Plan
   a. Department Information
   b. Facility Goals
   c. Best Management Practices
   d. Integrated Pest Management
   e. Trials / Studies
   f. Soil & Water Test
   g. Field Fact Sheets
   h. Field Specific Management Calendars
   i. Fertilizer & Agronomic Plan Spreadsheet
   j. Field Maintenance Costing Spreadsheet
   k. Maintenance Activity Logs
   l. Chemical & Fertilizer Application Records
   m. Product Cheat Sheets
   n. Application Record
   o. Field Maps

II. Equipment Management
   a. Rolling Stock List
   b. Equipment Replacement Cycle
   c. Equipment Replacement Plan
   d. Equipment Maintenance Record

III. Budgeting Records & Spreadsheets
   a. Budget Summary Spreadsheet
   b. Budgeting Worksheet
   c. Salary Survey
   d. Salary Projection Worksheet
   e. Salary Summary
   f. Over-Time Summary
   g. Health & Medical
   h. Dental
   i. Optical
   j. IPERS
   k. FICA
   l. Life / AD & D
   m. LTD
   n. Budget Justification Worksheets
Table of Contents

IV. Miscellaneous Records
   a. Daily Maintenance Work Records
   b. Monthly Maintenance Work Records
   c. Product Order Sheet

IV. Appendix
   a. Fertilizer & Agronomic Plan Spreadsheet
Written Sports Turf Management Plans

Section I

John Netwal, CGCS
MISSION STATEMENT

The mission of the North Scott Community School District, a unique blend of rural and metropolitan opportunities, is to produce graduates with the capacity to be successful in a changing world, by incorporating abundant resources and offering a broad-based curriculum in a respectful, safe environment.
Residents in the North Scott Community enjoy the better of two worlds – life in smaller progressive communities, close to the amenities of the large Quad Cities metropolitan area. Within our boundaries, which cover 220 square miles, you will find nine individual communities. Our schools are an integral part of these communities.

The North Scott Community School District was formed in 1956, when 14 individual townships and small school districts agreed to consolidate. Our district has five elementary schools, a junior high and a high school. The district serves nearly 3,000 students in its K – 12 programming.

The North Scott Community is very proud of the districts facilities and its sport turf areas. Recently, the district added a new 2.5-acre sand based soccer field in 2001. This state of the art field was built to USGA standards normally used for golf green construction. Our other sport turf fields also have seen similar attention over the years and are a source of community pride.

The maintenance of all our district grounds and sport turf areas are done in house by our grounds department. The department consists of three full time and two summer seasonal employees, who maintain approximately 115 acres of school grounds and sport turf areas. This staff is the districts can do guys, they not only take care of our grounds, but they handle countless other task for the district. It is through their dedication and commitment that the North Scott Community enjoys these fine facilities and sport turf areas.
DISTRICT GOALS

The North Scott Community School District is interested in maintaining top quality athletic facilities for its students and community.

The primary emphasis will be to ensure the highest level of safety for all participants and reduce sports related injuries.

Serve as an industry leader in sport field management, for the benefit of the community and its reputation for excellence.

Build upon the reputation of the Community and District.
BEST MANAGEMENT PRACTICES

Thoroughly understand the needs of each field performance requirements and what is necessary to meet those goals.

Thoroughly understand the turfgrass species requirements for optimum performance and what is necessary to meet those goals.

Thoroughly understand the soils physical and chemical requirements necessary for healthy plant growth.

Implement a strict integrated pest management strategy utilizing cultural, biological and chemical controls to keep populations below set economic thresholds.

Irrigate judiciously, with deep infrequent cycles periodically stressing turf to encourage root development and deeper rooting.

Monitor traffic, pest and turf conditions to head off turf failures.

Aerify, turf when ever possible to increase soil aeration and relieve compaction.
INTERGATED PEST MANAGEMENT

North Scott Community School District has adopted an integrated pest management philosophy that incorporates the following strategies for keeping pest problems to a maintainable and acceptable level.

These strategies are as follows: pest identification, monitoring, set economic threshold limits, biological and cultural practices including chemical inputs if necessary.

### Sports Field Economic Thresholds

<table>
<thead>
<tr>
<th>Pest</th>
<th>Count or Percent per sq. ft. or Area</th>
<th>Action Level</th>
<th>Curative</th>
<th>Preventative Treatment Next Season</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutworm</td>
<td>2 / sq. ft.</td>
<td>2 / sq. ft.</td>
<td>2-3 / sq. ft.</td>
<td>3-4, + / sq. ft.</td>
</tr>
<tr>
<td>Masked Chaffer</td>
<td>1-2 / sq. ft.</td>
<td>1-2 / sq. ft.</td>
<td>2-4 / sq. ft.</td>
<td>2-4, + / sq. ft.</td>
</tr>
<tr>
<td>Japanese Beetle</td>
<td>1-2 per sq. ft.</td>
<td>1-2 / sq. ft.</td>
<td>2-4 / sq. ft.</td>
<td>2-4, + / sq. ft.</td>
</tr>
<tr>
<td>Voles</td>
<td>1 / field</td>
<td>1 / field</td>
<td>1 / field</td>
<td>N/A</td>
</tr>
<tr>
<td>Mice</td>
<td>1 / field</td>
<td>1 / field</td>
<td>1 / field</td>
<td>N/A</td>
</tr>
<tr>
<td>Ground Squirrel</td>
<td>1 / field</td>
<td>1 / field</td>
<td>1 / field</td>
<td>N/A</td>
</tr>
<tr>
<td>Weeds</td>
<td>2 –3 % of Sward</td>
<td>2-3%</td>
<td>2-3%</td>
<td>3-Year Rotation</td>
</tr>
<tr>
<td>Disease</td>
<td>2 –3 % of Sward</td>
<td>2-3%</td>
<td>2-3%</td>
<td>Summer Patch</td>
</tr>
</tbody>
</table>

### Biological Program

The North Scott Community School District is establishing a Bluebird Trail as part of a biological control, environmental enhancement as well as an educational project. Twenty- four nest boxes have been erected throughout our outdoor athletic facilities in suitable habitat to attract Eastern Bluebirds. These nest boxes will be monitored throughout the season on a weekly basis from March through October. The information gathered will be recorded as well as all other observations.
## North Scott Community School Districts, Bluebird Trail Log

<table>
<thead>
<tr>
<th>Box #</th>
<th>Species</th>
<th># Eggs</th>
<th># Hatched</th>
<th># Fledged</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
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<tr>
<td>3</td>
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<tr>
<td>4</td>
<td></td>
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<tr>
<td>5</td>
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<tr>
<td>6</td>
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<tr>
<td>7</td>
<td></td>
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<tr>
<td>8</td>
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<tr>
<td>9</td>
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<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date: __________________________
FIELD TRIALS AND STUDIES

The North Scott Community School District will be conducting various turf trials once again this year for the purpose of generating information regarding our management programs. Over the years we effectively become our own researcher and evaluator of turf management practices and systems. These trials have provided us with valuable insight to what we do and why we do it.

The first field trial will be a reexamination of a trial we first did four years ago. This repeat trial will be to take a second look at the benefits of turfgrass growth regulation on a modified sand based bluegrass turf and on a native soil bluegrass turf sports fields. This trial will be replicated three times on each field by placing three 4’x 8’ sheets of plywood covers over the field prior to spraying. These fields will be sprayed on monthly basis at a tank mix of .75 oz. rate / M of Primo, April through August. Visual and photographic information will be collected throughout the season accessing the turf quality and performance of these areas. One of the replications will be strategically placed over a paint line so that the paint wear and performance observations can also be made throughout the trial.

The second field trial will be a look at a summer patch preventative trial on our sand based bluegrass soccer field. Active summer patch was observed on this field last season and we will be experimenting with Disarm 480 SC. Three sheets of 4’x 8” plywood covers will be strategically placed on the field prior to spraying. Visual and photographic information will be collected throughout the season accessing the turf quality and performance of these areas.

Our sport field costing and projection estimates will be studied in greater depth throughout the season for the second consecutive year. These time studies and field inputs will be closely monitored throughout the season to establish hard numbers that accurately account for all the inputs that go into each of our athletic fields. This will be of great interest especially in regards to all the claims be made by the second generation of artificial turf vendors. It is our hope that this study will generate unarguable facts.
Soil Test Results

In this section we take basic information from our soil test and transfer this information into this spread sheet to help us identify and track any trends that may be occurring. (See example below) We also keep all soil test records in this section of the book.

<table>
<thead>
<tr>
<th>Soccer Field</th>
<th>Adequate Target Levels</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Organic Matter</td>
<td>0.5 to 10.0</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>Nitrate N ppm</td>
<td>26 to 40</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Phosphorus ppm</td>
<td>11</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Potassium ppm</td>
<td>191 - 300</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Magnesium ppm</td>
<td>-</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td>Calcium ppm</td>
<td>267.0</td>
<td>857</td>
<td></td>
</tr>
<tr>
<td>Sulfur ppm</td>
<td>10 to 25</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Zinc ppm</td>
<td>1.3 to 3.0</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Manganese ppm</td>
<td>4.1 to 12.0</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Copper ppm</td>
<td>1.0 to 2.0</td>
<td>.7</td>
<td></td>
</tr>
<tr>
<td>Iron ppm</td>
<td>7.1 to 20.0</td>
<td>9.7</td>
<td></td>
</tr>
<tr>
<td>Boron ppm</td>
<td>1.0 to 1.5</td>
<td>0.6</td>
<td></td>
</tr>
</tbody>
</table>

| Soil pH | 5 to 8.4 | 7.1 |
| Buffer Index | - | - |
| Excess Carbonate | - | - |
| Soluble Salts mmhos/cm | < 1.00 | .18 |
| Sodium ppm | 0.4 | 11 |

Actual % of Total CEC

| % K | 3 to 7% | 3.0 |
| % Mg | 15 to 20% | 16.4 |
| % Ca | 65 to 75% | 79.7 |
| % Na | < 5% | 0.9 |
| % H | 5 to 10% | 0.0 |
| Total CEC | 1.6 | 15.4 |
North Scott Community Schools

Sand Based Soccer Field

Program Year: 2009
Built: 2001
Field Size: 109,000 sq. ft.
Construction: Sand Based, USGA Golf Green Specifications.
Turf Species: “Sure Shot” Low Growth Bluegrass.
Expectation Level: Very High.
Nutrient Target: 6 #’s N, 1.8#’s P and 4.6 #s K / m.
Annual Events: 23, Annual Events for both Boys and Girls Programs.
Practice: Everyday April 1st – June 10th
Special Events: Junior High Football, Two Games / Week, September - October
Over Seeding: Annual Program with “Sure Shot” Kentucky Bluegrass, 4-5 lbs./m.
Topdressing: Monthly
Aeration: Bi-Monthly, 6” to 8” Deep Tine, Alternating between Core & Solid Tine
Growth Regulator: Primo, Monthly during Growing Season.
Herbicide: Broadleaf Control Two-Year Rotation (2006), Pre-emergence Annually if Necessary. (Drive 75 DF @ .36/m) Two applications, May 1st and June 1st
Fungicide: Summer Patch Control Preventative (Disarm @ .18 oz. /m) Four Applications / Season, End of April & June, Mid-September & October
Insecticide: Scouting Treatment if Necessary.
North Scott Soccer Field Maintenance Program

April
- First seasonal mowing at 1” height of cut two-times / week in-season.
- Fertilize with 18-5-9 50% SCU @ 5 lbs / m.
- Topdress with straight sand @ .5 lbs /m.
- Apply Primo growth regulator @ .5 oz./m.
- Disarm 480 SC @ .18 oz./m.

May
- Mow two-times / week @ 1” in-season.
- Drive 75 DF @ .36 oz./m
- Shift field setup.
- Fertilize with 15-0-30 @ 4 lbs./m.
- Topdress with straight sand @ .5 lbs /m.
- Apply Primo growth regulator @ .5 oz./m.
- Disarm 480 SC @ .18 oz./m.

June
- Mow two-times / week @ 1”in-season.
- Drive 75 DF @ .36 oz./m
- Core Aerify
- Fertilize with 18-5-9 50% SCU @ 5 lbs./m.
- Apply Primo growth regulator @ .5 oz./m.

July
- Mow one-time / week @ 1”during off-season.
- Fertilize with 18-5-9 50% SCU @ 5 lbs./m.
- Apply Primo growth regulator @ .5 oz./m.
- Topdress with straight sand @ .5 lbs /m.

August
- Mow one-time/week @ 1”during off-season.
- Fertilize with 18-5-9 50% SCU @ 5 lbs./m.
- Core Aerify
- Overseed with 2 lbs./m of Untied Seeds low growth Sure Shot blend.
- Apply Primo growth regulator @ .5 oz./ m.

September
- Mow one-time/week @ 1”during off-season.
- Disarm 480 SC @ .18 oz./m
- Fertilize with 15-0-30 @ 4 lbs./m.
- Topdress with straight sand @ .5 lbs /m.
- Apply Primo growth regulator @ .5 oz./m.
North Scott Soccer Field Maintenance Program

October
- Mow one-time/week @ 1”, while under growth regulation program.
- Disarm 480 SC @ .18 oz./m
- Core Aerify
- Fertilize with 18-5-9 50% SCU @ 5 lbs. /m.

November
- Mow one-time per week @ 1” height of cut till top growth stops.
- Fertilize with 18-5-9 50% SCU @ 5 lbs./m.
- Topdress with straight sand @ .5 lbs /m.
- Triplex Herbicide @ 1.25 oz. / m. (three year rotation)
*** Insert Fertilizer & Agronomic Plan Worksheet ***

*** Insert Field Maintenance Costing Worksheet ***

*** Maintenance Activity Log Worksheet ***
North Scott Community Schools

Soccer Field Primo Maxx

**Purpose:** Plant growth suppression, desirable turf regulation and improved turf quality.

**General Rate Recommendation:** Primo MAXX 1EC @ .75 oz. / m

**Soccer Field:** Field Dimensions 380 x 275 = 104,500 sq. ft.

Spray Overlap Adjustment 385 x 300 = 114,000 sq. ft.

Spray Square Footage 114,000 sq. ft.

Spray Field with Two (2) Even Tank Loads.

**Equipment:** JD 4600 Spray Rig, R-15 Raindrop Nozzles, 2000 RPM, Range B, Gear 4.

**Spray Tank:** Delivers 118 gallons / Acre or 2.7 Gallons / 1000 sq. ft.

- Calibrated Andy Hamann 3-29-07

**Soccer Field Primo Maxx**

*Two (2) Tank Loads Per Application, Each Tank Load Should Do 57,000 Sq. ft.*

**154 Gallons Water / Tank Load**

43 oz. Primo Maxx 1EC / Tank

**Special Instructions:**

Spray two (2) equal tank loads once per month starting on April 12, through August 14, 2009.
North Scott Community School District
Chemical – Fertilizer Application Record

Applicator: _____________________  Mixer/Supervisor: ___________________
Date: _____________________  Application Time: ___________________

Weather Conditions during Application

Wind Direction: _____________  Percent Cloud Cover: _________________
Wind Speed: ______________  Days Since Last Rain: _________________
Temperature: ______________  Other:

Purpose

Reason for Treatment: _____________________________________________________
Location Treated: _____________________________________________________
Total Area Treated: _____________________________________________________
Equipment Used: _____________________________________________________

Product #1: _____________________  Rate/m: __________
Product #2: _____________________  Rate/m: __________
Product #3: _____________________  Rate/m: __________

Comments: ______________________________________________________________

______________________________________________________________
*** Insert Field Map ***
Equipment Management

Section II

John Netwal, CGCS
*** Insert Rolling Stock List ***

*** Equipment Replacement Cycles ***

**** Insert 10-year Equipment Replacement Plan ***

*** Equipment PM Logs ***
Budgeting Records & Spreadsheets

Section III

John Netwal, CGCS
*** Insert Budget Summary ***

*** Insert Budget Worksheet ***

*** Salary Survey ***

*** Insert Salary Projection ***

*** Salary Schedule ***

*** Over-Time ***

*** Health & Medical ***

*** Dental ***

*** Optical ***

*** IPERS ***

*** FICA ***

*** LIFE / AD & D ***

*** Budget Justification Worksheets ***
Miscellaneous Records

Section IV

John Netwal, CGCS
*** Daily Maintenance Work Record ***

*** Monthly Maintenance Work Records ***

*** Product Order Sheets ***
Appendix

Section V

John Netwal, CGCS
Fertility & Agronomic Spreadsheet

This Fertility & Agronomic Spreadsheet is perhaps one of the most useful tools that I have developed as a sports turf manager. It began as a fertility management planning tool that has evolved into a information packed management guide. This spreadsheet tracks fertility rates, product needs, application quantities, application scheduling, month and year to date totals, and budget information as well as assist with the scheduling of cultural practices for each individual sport field we maintain.

The following settings and formulas should allow you to set-up your own excel spreadsheet which you can customize to meet your needs.

Page Setup

- Landscape
- Sheet – Grid Lines Enabled
- Margins – Top 0.5, Bottom 0.5, Left 0.25, right 0.25

Row Height

- A-1: 12.75
- A-2: 20.25
- A-3: 12.75
- A-44: 12.75

Column Height

- A: 10
- B: 16
- C, D, E: 3
- F: 8.43
- G, H, I: 4
- J: 12
- K, L, M, N: 14

Cell Information

- **Cell B 4** Enter spray or application square footage for field. This square footage should include extra square footage to compensate for application overlap or broadcast overrun. This information is critical to other calculations throughout the spreadsheet and care should be utilized in estimating the actual treatment square footage for each field.

- **Cell J 4** Enter actual square footage for field. This is for reference purposes.
All other cells should be filled with the appropriate headings, which are bolded on the example with the exception of the month and dates. Those will be adjusted as necessary later according to your plan and scheduling.

We also shade rows 1, 3, 5, 7, 15, 18, 20, 28, 31, 33, 41 and 44 with a light color to help setup and delineate the spreadsheet information.

**Formulas**

What makes these spreadsheets helpful are the formulas that are contained within it. With the spray or treatment square footage of your field entered in cell **B 4** you should be able to start adding the remaining formulas that will correlate to your individual field.

In cell **G 8** add formula \((C8 \times F8/100)\); this will provide you with actual amount of nitrogen applied per 1,000 sq. ft. at the selected application rate selected in cell **F 8**.

In cell **H 8** add formula \((D8 \times F8/100)\); this will provide you with actual amount of phosphorus applied per 1,000 sq. ft. at the selected application rate selected in cell **F 8**.

In cell **I 8** add formula \((E8 \times F8/100)\); this will provide you with actual amount of potassium applied per 1,000 sq. ft. at the selected application rate selected in cell **F 8**.

In cell **J 8** add formula \((B4 \times F8)\); this will give you the amount of product you will need per application based on the application rate per 1,000 you selected and the area you entered as you spray or treatment square footage.

In cell **K 8** you will need to manually enter the container size of the product you are using. If it’s a bag of fertilizer it normally comes in 50 pound bags, if it’s a specialty product they sometimes come in 25 pound bags and if it’s a sprayable product, we will use either ounces or gallons depending on how the product is packaged.

In cell **L 8** you will need to manually do some simple math and that is subtracting the product packaging size (in cell **K 8**) from the total product require for the application in cell **J 8**. This gives you the number units required for the application.

In cell **M 8** enter the cost of the materials you are using per unit, i.e. cost per 50 pound bag etc.

In cell **N 8** enter the formula \((L8 \times M8)\) to get the cost of the application.
The next step in building the spreadsheet would be to copy the formulas found in row 8 into rows 9 through 14. The formulas should change appropriately with the exception of cells J9, J10, J11, J12, J13, and J14. You will need to adjust these to all to refer back to the information contained in B4, which is your spray or treatment square footage. I normally do this manually by checking that the formula in J9 reads \((B4*F9)\) and J10 reads \((B4*F10)\) etc.

Rows 16 and 17 are where we record the month and year to date nutrient information as well month and year to date cost information. The formulas in this section of the spreadsheet are as follows and do need to be modified throughout the spreadsheet as each page will take information forward.

In cell G16 add formula \((G8:G15)\) in cell H16 add formula \((H8:H15)\) and in cell I16 add formula \((I8:I15)\) this will give you the total nutrients applied per month.

In cell G17 add formula \((G15+G16)\) in cell H17 add formula \((H15+H16)\) and in cell I17 add formula \((I15+I16)\) this will give you the Year to date nutrients applied.

In cell N16 add formula \((N8:N14)\) this will give you the monthly cost for all applications. In cell N17 add formula \((N15+N16)\) for the year to date cost.

Each month should be setup to run totals down for that specific month, all year to date totals must add the previous year to date total with the new months total to carry the year to date information forward. For example cell G30 should have the formula \((G17+G29)\) for two months year to date totals. By working this throughout the entire work sheet you should be able to track your monthly and year to date totals.
Sports Field Maintenance Costing Spreadsheet

Page Setup

- Landscape
- Sheet – Grid Lines Enabled
- Margins – Top 0.75, Bottom 0.5, Left 0.25, right 0.25

Row Height

- A-1: 12.75
- A-2: 18
- A-3: 12.75
- A-41: 12.75

Column Height

- A: 47.43
- B: 13
- C: 16.29
- D: 20.71
- E: 15
- F: 20

Cell Information

- **Cell A 2** Enter the Field Title and Program Year
- **Cell A 4** Enter Title: Activity Description
- **Cell B 4** Enter Title: Man Hours
- **Cell C 4** Enter Title: Man Hour Cost
- **Cell D 4** Enter Title: Product
- **Cell E 4** Enter Title: Product Cost
- **Cell F 4** Enter Title: Total Activity Cost