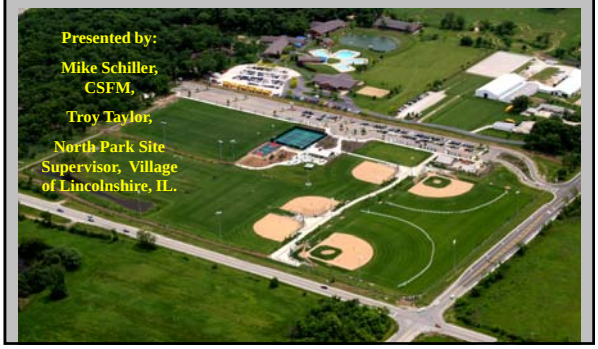
A Comparison of "Organic-based Fertilizer to Synthetic/Mineral Based Fertilizer



An Important Piece of Information

- If you are here to gather scientifically backed information on the use of Organic Fertilizers, then this session may not be for you.
- I will however during the course of the session try to present our findings from the comparisons we undertook this past growing season.
- I also will attempt to present some ideas that may open your mind to some new thoughts on helping you grow healthy plants.

A Comparison of "Organic-based Fertilizer to Synthetic/Mineral Based Fertilizer

- This distinguished looking, hard working gentleman is Troy Taylor, Site Supervisor at North Park.
- Troy did all the labor on this project and our hope was that he would be here with me to co-present this program.
- Due to pending shoulder surgery Troy cannot be with us, and extends his best wishes to all.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **North Park is located in Lincolnshire, Illinois.**
- **ILSTMA Complex of Year 2005.**
- **STMA Complex of Year 2006.**
- **Opened for play in 2001.**
- **Site covers 67 acres.**
- **Cory Purintun assists Troy in the care of this site.**

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- 5 Softball/Baseball Fields.
- Site is utilized by kids leagues of all ages.
- When utilizing the outfield turf, up to 11 soccer fields can be set up on site depending on sizes of playing fields needed for competition.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **South side of the property is the maintenance building it is approximately 40' x 60' and houses the shop, office and some storage.**
- **Next to the shop is a detention area approximately 80' x 160' which is flooded weather permitting for ice skating.**
- **The rink is also used for mites soccer when dry during the soccer season.**

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **In the South Central area of the park is a concession/restroom facility.**
- **There are 2 tennis courts, 1 basketball court and playground areas for the little kids as well as for the older kids.**

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **Along the entryway and parking areas are a number of native vegetation areas.**
- **These areas are low maintenance and help buffer rain and irrigation water on the site.**

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **To the East side of the property is an Illinois Dedicated Nature Preserve.**
- **This area acts as a natural buffer to the Interstate highway to the East.**
- **This Sensitive area and the fact the site begins the Headwaters of the West Fork of the North Branch of the Chicago River has led the Village to begin the use of "Green Products".**

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **Not only Does the Village have the Chicago River to consider…**
- **The Des Plaines River is just a bit to the west of the site and bisects the Village throughout the entire community.**
- **Having two major waters travel through the village makes going green the utmost importance to the village and it's employees.**

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- The Village Of Lincolnshire Board of Trustees has stated in their Long Term Goals: "***Investigate additional methods and alternatives to improve municipal operations with 'Green' initiatives which are economically and environmentally sound through education, research and evaluation.***

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- North Park is the first attempt at utilizing "Organic Based" Fertilizer at a Park site.
- Future plans will depend on what we can learn from this comparison.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

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A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **What was the intended purpose of our season long experiment?**
- ***To see if there would be any noticeable differences between the turf utilizing the Synthetic/Mineral fertilizer and the turf utilizing the "Organic Based" fertilizer.***

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **The fields in the South East Corner of the property were chosen for our comparison.**
- **Fields #4 and #7 were each divided in half for the comparisons.**
- **Each field had the "organic based" products placed on the North side of the playing surface.**

What is the definition of Organic Fertilizer?

- Naturally occurring organic fertilizers include manure, slurry, worm castings, peat, seaweed, sewage, and guano. Green manure crops are also grown to add nutrients to the soil.
- A fertilizer made of natural materials that undergoes little or no processing and includes plant, animal, and/or mineral materials.
- Material of animal or plant origin containing one or more fertilizer nutrients, usually not all immediately available to the plants.
- Fertilizer made from natural substances rather than chemicals. Examples of organic materials would include compost.
- A fertilizer derived from animal or vegetable matter.
- Substances made up of one or more unprocessed materials of a biological nature and may include unprocessed mineral or minerals.
- The first product that usually comes to mind when you think "Organic" is Milorganite. It has been a main stay of the industry for over 40 years.

What is the definition of "Organic Based" Fertilizer

- There is really no definition of "Organic Based" Fertilizer that I can find, rather it is a phrase picked up and utilized and possibly originated by Olsen Distributing to name a particular product line that Bob Olsen has developed with the help of his blenders.
- What Mr. Olsen has done is to combine an Organic Fertilizer with added selected mineral or synthetic fertilizers to his blend of organics.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **The definition of Synthetic Fertilizer:** ***Commercially prepared mixtures of plant nutrients such as nitrates, phosphates and potassium applied to the soil to restore fertility and increase crop yields.***

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- The real difference I have seen thus far between "Organic Fertilizers" and "Synthetic Fertilizers" is the time it takes for the nutrients to become available to the plant when using Organics.
- The "Organic Fertilizers" must be broken down in most cases by microbial activity to become available to the plant.
- While in my observations, "Synthetic materials **USUALLY** become available to the plant by irrigation or precipitation releasing the nutrients to be broken down and made available to the plant.
- In some cases it is a combination of both processes that make nutrients available to the plant.
- ***Now remember these are my observations and not scientific research***.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- The plan for our season long comparison was to:
- Apply 2 – 4 #'s of N to each field during the season as required.
- Mow turf at a height of 2 ¾" as needed while not removing more than 1/3 of the leaf tissue at any one mowing.
- Irrigation as needed to keep turf healthy and actively growing.
- Airification and topdressing as needed and time allowed.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **Soils** on site are modified native soil that was in the area.
- It is predominantly heavy clay loam which has been modified and amended by adding Calcined Clay at about 20-25% by volume as the topsoil's were replaced on site after major site work and perimeter drainage were installed.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **What happened over the course of the year?**

1. We experienced quite possibly one of the nicest turf growing seasons I can remember in my 38+years in the turf industry in the Chicagoland area.
2. We did also experience one of the wettest years in Chicagoland with approximately 59" of precipitation during the calendar year 2008.
3. The following slides will give you an idea of weather, precipitation and usage for the months of May through October on these two fields:

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Field #4 May 2008
- Avg. Hi 65.61
- Avg. Lo 44.03
- Precipitation 3.03"
- 42 Practices
- 11 Games
- 1 day of play cancelled by wet grounds

- Field #7 May 2008
- Avg. Hi 65.61
- Avg. Lo 44.03
- Precipitation 3.03"
- 39 Practices
- 22 Games
- 2 Days of Play cancelled by wet grounds

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Field #4 June 2008
- Avg. Hi 80.30
- Avg. Lo 60.63
- Precipitation 3.81"
- 14 Practices
- 6 Games
- 2 days cancelled because of wet grounds

- Field #7 June 2008
- Avg. Hi 80.30
- Avg. Lo 60.63
- Precipitation 3.81"
- 21 Practices
- 17 Games
- 2 days cancelled because of wet grounds

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Field #4 July 2008
- Avg. Hi 83.00
- Avg. Lo 64.03
- Precipitation 3.35"
- 0 Practices
- 0 Games

- Field #7 July 2008
- Avg. Hi 83.00
- Avg. Lo 64.03
- Precipitation 3.35"
- 16 Practices
- 4Games

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Field #4 August 2008
- Avg. Hi 81.81
- Avg. Lo 63.58
- Precipitation 1.00"
- 6 Practices
- 1 Games

- Field #7 August 2008
- Avg. Hi 81.81
- Avg. Lo 63.58
- Precipitation 1.00"
- 14 Practices
- 4Games

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Field #4 Sept. 2008
- Avg. Hi 74.40
- Avg. Lo 56.37
- Precipitation 10.98"
- 21 Practices
- 8 Games
- 10 days cancelled due to wet grounds

- Field #7 Sept. 2008
- Avg. Hi 74.40
- Avg. Lo 56.37
- Precipitation 10.98"
- 56 Practices
- 20 Games
- 8 days cancelled due to wet grounds

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Field #4 Oct. 2008
- Avg. Hi 61.03
- Avg. Lo 44.48
- Precipitation 2.01"
- 23 Practices
- 24 Games
- 3 days of Heavy frost

- Field #7 Oct. 2008
- Avg. Hi 61.03
- Avg. Lo 44.48
- Precipitation 2.01"
- 63 Practices
- 28 Games
- 3 days of Heavy frost

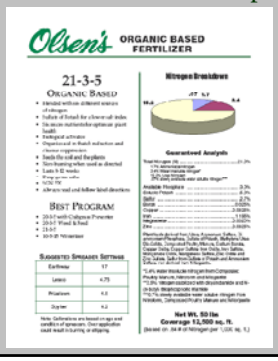
What were the Fertilizers used in the comparison?

- This is a 25-5-15 that is:
- 1.95% Ammoniacal N
- 12.26% Urea Nitrogen
- 6.89% Slowly Available Water Soluble Nitrogen(SAWSN)
- 3.90 Water Insoluble N
- 5% Available Phosphate
- 15% Soluble Potash

Derived from Ammoniated Phosphate, Sulfate of Potash, Urea and Methylene Urea (water Soluble)

6.89% Slowly available Nitrogen from Methylene Urea

What were the Fertilizers used in the comparison?



A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Fertilization took place on April 29th and then again on September 3rd @ 1#N per K with both products.
- Broadleaf weed control was applied on September 25th.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Mowing Occurred:
- 6 times in May
- 5 times in June
- 7 times in July
- 5 times in August
- 8 times in September
- 5 times in October

36 total mowings from the beginning of May to the end of October.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Irrigation:
- 4 times in May
- 5 times in June
- 1 time in July
- 0 times in August
- 1 time in September
- 1 time in October to warm turf after light frost.
- Most irrigation was at .10" to .20" of water per cycle.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Rooting:
- As the next few slides will show, neither Troy or I are great at getting good photos of the soil profile showing the roots.
- We saw very little if any difference between the root masses on the two fields and the two differing fertilizers.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **The South side plugs on field 4 all through the season seemed to be a bit more crumbly.**
- **That may have been that there was a bit more Calcined Clay in the areas the plugs were pulled from.**

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Airification was done pulling cores with a Pro-Core aerator and was done early spring and again in the late fall.
- Spot airification and spiking was done in the heavy traffic areas as needed.
- Top-dressing last occurred in the fall of 2007 and utilized a mix of 20% Organic material by volume to a pulverized native soil blend as close to the original soils as could be found. Intent is to top-dress in 2009 if funding is available.

Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- The Village of Lincolnshire because it is located along the Des Plaines River and the West Fork of the North Branch of the Chicago River.
- Because they maintain properties that impact some environmentally sensitive areas they are seeking ways in which to become more "GREEN".
- Looking into the use of "Organic Fertilizers is one of the ways they hope to accomplish this.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- Several communities in the Northern Illinois area as well as many communities in Wisconsin have instituted policies that will not allow the use of Phosphorus in their fertilizer blends.
- Some have instituted policies that allow only natural or organic phosphorus or products containing less that 3% phosphorus in the blends.
- This is because of the fact that high phosphorus level runoff leads to the propagation of Algae in our lakes, ponds and waterways, reducing the quality of these waters.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- In the past Organic Fertilizers were much more expensive to use than Synthetics or Mineral Fertilizer.
- During the past 25 years I have seen a growth in the supply and differing varieties of available organic products in the market.
- No longer is a turf manager restricted to using only the long time standard organic Product "Milorganite" for his Organic Fertilizer program.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- As the cost of Mineral and Synthetic based fertilizer products continue to rise and the industry developments newer, more efficient ways of producing Organic fertilizers, I believe that Organic fertilizer programs will become a much more wildly used means of feeding our soils and thus our turf.
- Turf managers now are being made to look into the costs and availability of Organic Fertilizer programs.
- Your constituents may begin to demand Organics, if they have not done so already.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

A few new things I have learned over the course of this past year:

1. Pure Organic fertilizers are slower to respond, once applied to your turf. You must plan ahead when using pure organics so as to time your applications in advance of major events.
2. A bit of Am. Sulphate with some Urea when added to Organics give you a quick green up.
3. You can add some Nitroform urea you get a long term slow release which works well with your organics.
4. However, as I learn more about Organics, we must be cognizant of the salts, of mineral/synthetics if added as they can negate the biological activities that are part of the use of "Organic Fertilizers".

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

5. I have finally come to understand that the typical fertilizers I have used over the past 30+ years of my career have fed the plants, but have been building salts up in our soils.
6. Salts can negate the benefits of any feeding and when salt levels are high enough they can limit growth or lead to failure of plants. (Unless of course you are growing salt tolerant plants.)
7. When creating high salts in the soil medium, we must leach them out of the soil profile for plants to maintain health.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

8. That true healthy soils are full of all types of microscopic or smaller important biologicals that help keep the soil healthy and if the soil is healthy the plants will follow.
9. Farmers and Native Americans understood that they had to replenish what they had taken from the soils, if the soil was to maintain viability and the necessities to sustain life.
10. When we fertilize as we typically do, we make the basic nutrients of the fertilizers available to the plants, so they will grow. But I have come to realize we do very little to our soils to maintain heir viability and ability to sustain life.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

11. That we need to replenish and rebuild the soils with all the little IMPORTANT items that sustain life, not just the N-P-K and micros.
12. I have learned that we can change the soils, bring them back to life if you stay with a program that includes organics.
13. Using Organics and Bio-stimulants you can improve your soils, and in doing so can reduce the chances of Disease occurrences in your turf.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

Biological Activator

A 100% Aerobic Digest of Non-Processed Organic Ingredients

BIOLOGICALS: Ectomycorrhizae, Endomycorrhizae, Actinomycetes, Aspergillus, Bacillus Subtillus, Bacillus Thuringiensis, Bacillus Cereus, Bacillus Megatarium, Lactobacillus, Azotobacter, Rhizobium Melliloti, Rhizbium Phaseoli, Rhizobium Legumonserum, Rhizobium Japonicum and Yeast Extracts.

VITAMINS: A, B-6, B-12, B-Complex, C, D, E, Biotin, Folic Acid, Niacin, Pantothenic Acid, Riboflavin and Thiamin.

PLANT PROTEINS & HERBS: Seven high protein grains for the supply of all 20 amino acids, Irish Moss, Stingin Nettle, Yarrow, Chamomile, Equisetum Horse Tail, Valarian, Kelp, Goldenseal, Fenugreek, Slippery Elm and Comfrey.

ELEMENTS (as digest consituents of Biologicals, Vitamins, Proteins, Herbs & Rock Minerals): Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Boron, Manganese, Zinc, Carbon, Iron, Copper, Iodine, Molybdenum, Cobalt, Selenium, Sulfur, Germanium and Vanadium.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- I cannot tell you specifically what each and every one of the previously noted items does.
- But I can tell you this, when applied in conjunction with an Organic based product the results are significant.
- And in the next year or two I hope to have more definitive data to prove this thought of mine

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- ***Scientifically* have we proven anything?**
- I think not!
- But we have seen that side by side on two fields, agronomically treated the equally with the exception of the fertilizers used, there was **NO SIGNIFICANT DIFFERENCE** in the turf on both fields.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **DISCLAIMER:**
- Did the outstanding growing season we had affect our results?
- I am not sure, but I can tell you based on the use of the fields, the two products side by side we saw little or no difference in the color of the turf, recuperative powers, rooting or density.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **What do we do next to follow up on this season?**

1. I am working with Troy to try and replicate this years test.
2. And this year we also hope to incorporate a pure Organic Fertilizer into the mix and observe and record all the results for a presentation in the future.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- **My final thoughts on this product.**
- I have seen the light on organics.
- I used this one and a 21-1-5 blend this past year on my lawn.
- The results were great. I truly had the greenest lawn on the block, in spite of having new walks, driveway,stoop and patio installed in late June and early July.

A Comparison of " Organic-based Fertilizer" to Synthetic/Mineral Based Fertilizer

- I believe in Organics.
- Not to be a commercial here, but I wanted to show you what my lawn looked like the second week of August.
- This was after 10 days of concrete guys working on my walks etc.
- They did not care about my turf.
- They were on it constantly till the project was completed.
- With little or no irrigation to the site.

A Closing Thought

- Our environment is a treasure we as stewards of this earth must protect. Our streams, lakes, rivers and mountains are our responsibility.
- With all the differing types of "Organic materials available to you the turf manager…
- I ask you to at least give them a try on a test plot.
- See if you may learn something.

Thank You

Troy Taylor and Corey Puritun for your hard work and providing me with the data for this comparison.

Scott Pippen their boss, who was the person making this opportunity possible.

And my bosses at Olsen Distributing for allowing me the freedom to pursue this endeavor and be able to make this presentation.

Thank You All for Spending your Friday Afternoon with me!

- If you have the need to contact me you can do so at the address below:

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