Sports Turf Establishment- *From N to Mycorrhiza*

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Sports Turf Grow-In Experiment

Experimental Process

- Solicited cooperators
  - Follow each company's recommended protocol
  - Included treatments to separate out each component of each protocol
- Kentucky bluegrass blend
- 90:10 Spec. sand:Dakota Reed Sedge Peat

From N to Mycorrhiza??

- **Biostimulants**
  - cytokinins, AA's etc.
- **Mycorrhiza**
  - ***"form a mutualistic relationship with the roots of most plant species"***

Experimental Process

- **Two planting dates:**
  - Mid-summer (Suboptimal)
  - Late-summer (Optimal)
- **37 treatments; 111 plots**
- **Analyze**
  - Fertilizer
  - Mycorrhizae
  - Biostimulant
  - Liquid (foliar) fertilizer

Treated Control Andersons Golf Products

- **Preplant incorporated**
  - 21-3-20 Poly S
  - 16-25-12 Poly S
  - A-TEP Hi-Mag
    - 3.3#N, 2.5 #P, 2.4 #K / 1000 ft^2

  Weekly applications after germination
  - 17-3-7
    - 0.8 #N / 1000 ft^2
- **Also used in combination with other products**

Company 1

- Mycorrhizae (Mix with seed)
- Biostimulant (Preplant)
- Fertilizer (Preplant)
  - Slow release N-38%N
  - Slow release N-40%N
  - 16-25-12
- Recommended use rates
- Used alone and in combination

Company 2

- Mycorrhizae (Mix with seed)
  - every 30 days)
  - biostimulant
- Fertilizer
  - 4-6-4 (Preplant + 30 days)
  - 5-2-4+Fe (60 + 90 days)
- Recommended use rates
- Used alone and in combination

Company 3

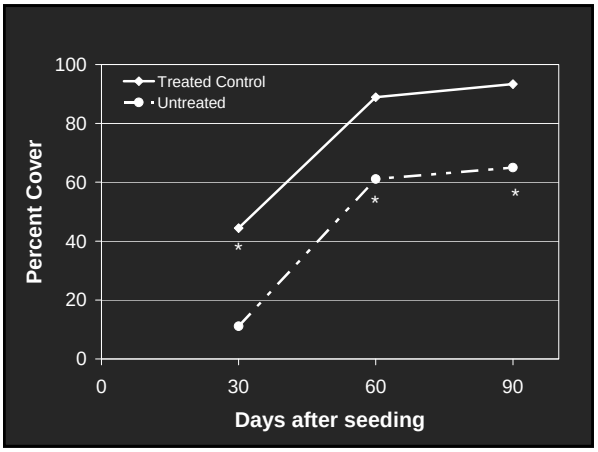
- Preplant
  - Fert/biostim Blend
- Foliar (Weekly after germination)
  - Foliar N 19-1-6
  - Foliar P 6-12-6
  - Foliar K 3-0-10
  - Foliar Silica 2-0-16
  - Organic Source 4-0-1
- Recommended use rates

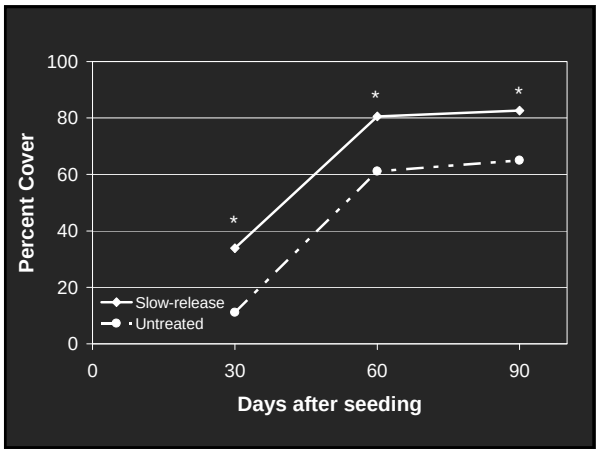
Company 4

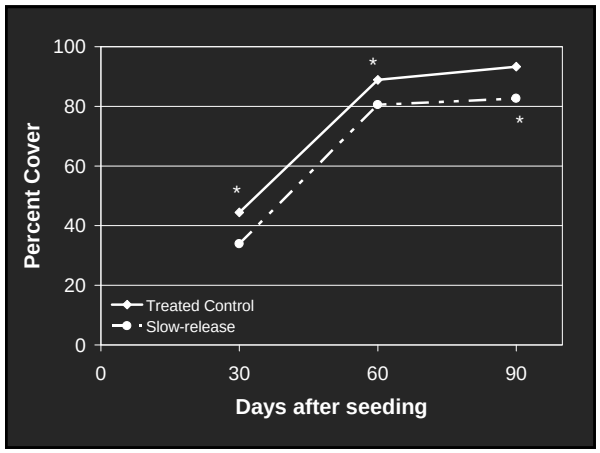
- Preplant
  - seed nutrients
- Foliar (Weekly after germination)
  - Even weeks
    - experimental 103
    - micronutrients
    - humic based nutrients
    - non-fungicide pathogen protection
  - Odd weeks
    - experimental 203
    - Foliar silica
    - organic amino acids, proteins, and carbohydrates
    - non-fungicide pathogen protection
- Recommended use rates
- Summer seeding did not include Foliars with Conventional fertilizers

Company 5

- Preplant
  - Conventional Fertilizer
- Foliar (Weekly after germination)
  - Foliar 1
  - Foliar 2
  - Foliar 3
- Recommended use rates




Percent Cover
100
80
60
40
20
0
0
30
60
90
Days after seeding
Slow-release
Untreated
*
*
*


Percent Cover
100
80
60
40
20
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30
60
90
Days after seeding
Treated Control
Slow-release
*
*
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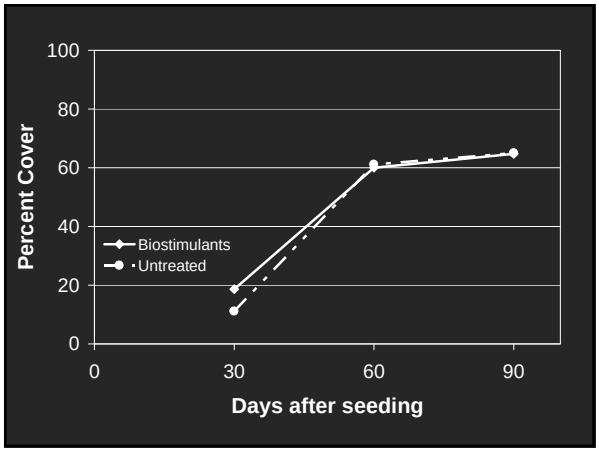
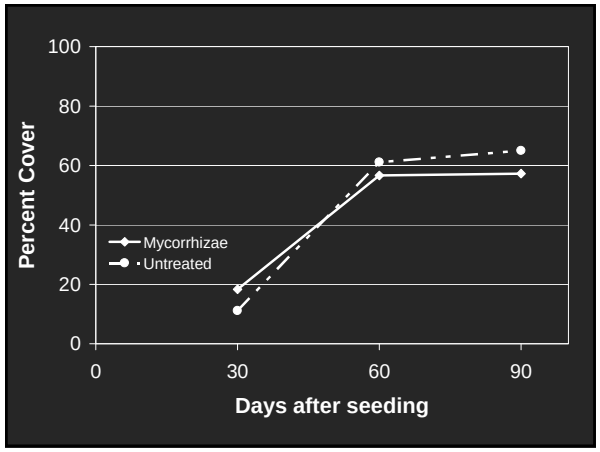
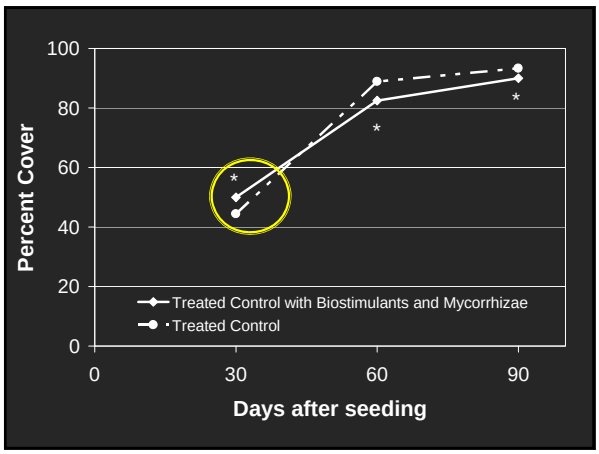

Percent Cover
100
80
60
40
20
0
0
30
60
90
Days after seeding
Biostimulants
Untreated


Percent Cover
100
80
60
40
20
0
0
30
60
90
Days after seeding
Mycorrhizae
Untreated


Percent Cover
100
80
60
40
20
0
0
30
60
90
Days after seeding
Treated Control with Biostimulants and Mycorrhizae
Treated Control
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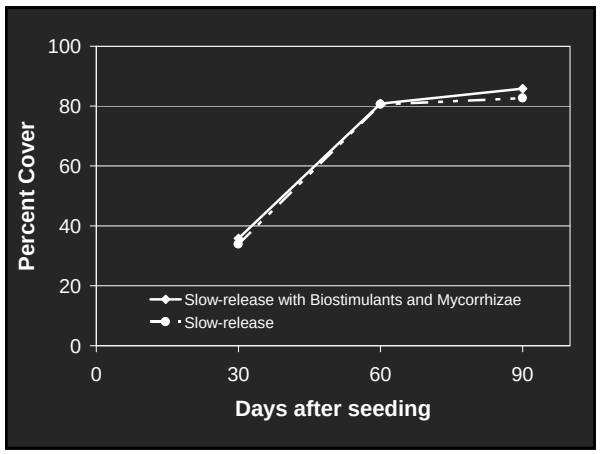
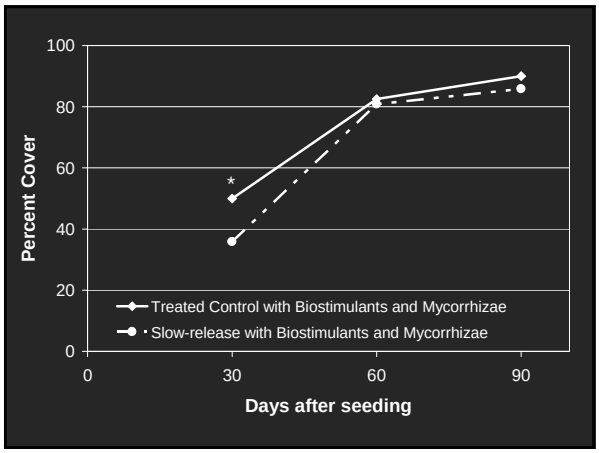
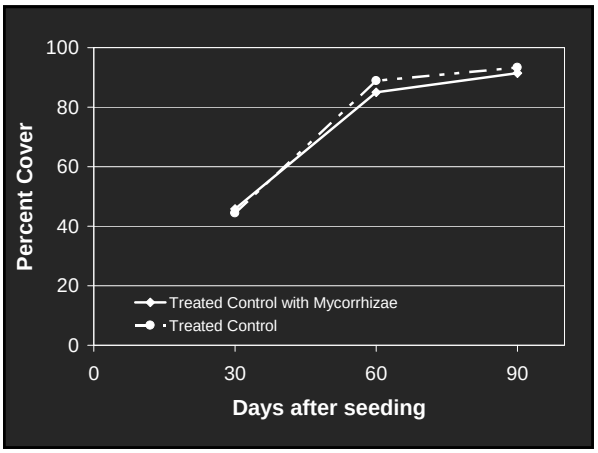
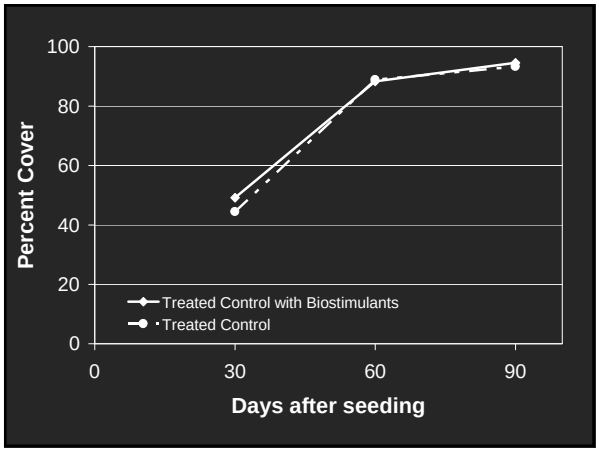
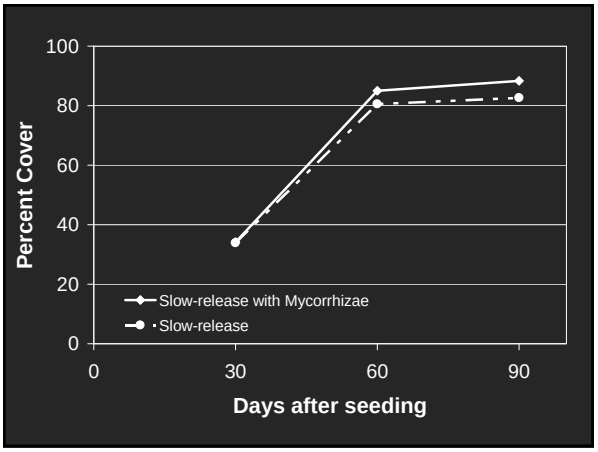
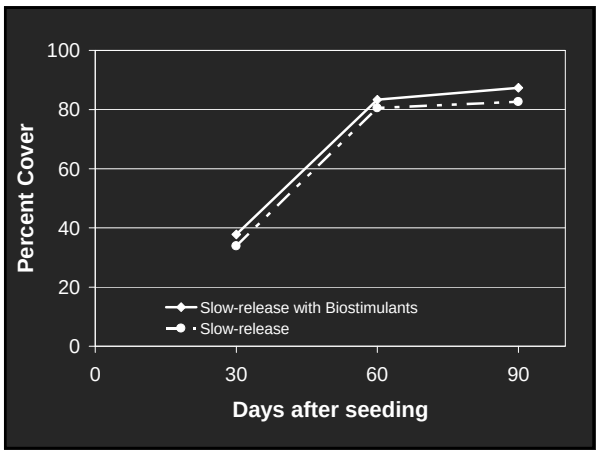

Percent Cover
100
80
60
40
20
0
0
30
60
90
Days after seeding
Slow-release with Biostimulants and Mycorrhizae
Slow-release







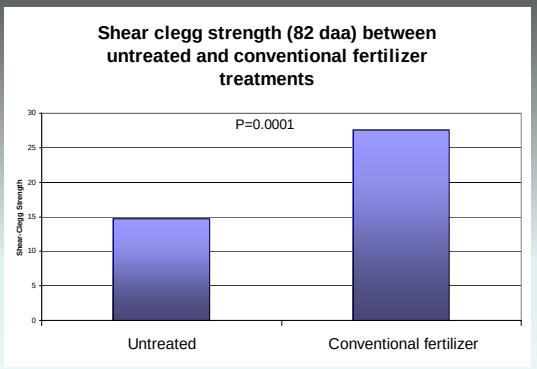




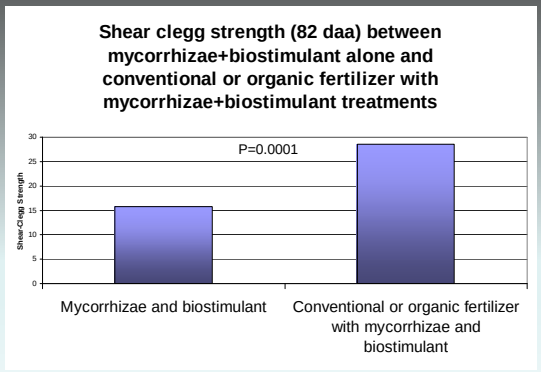
Is visual cover good enough?

Shear Clegg

Results



Results



Top Treatments

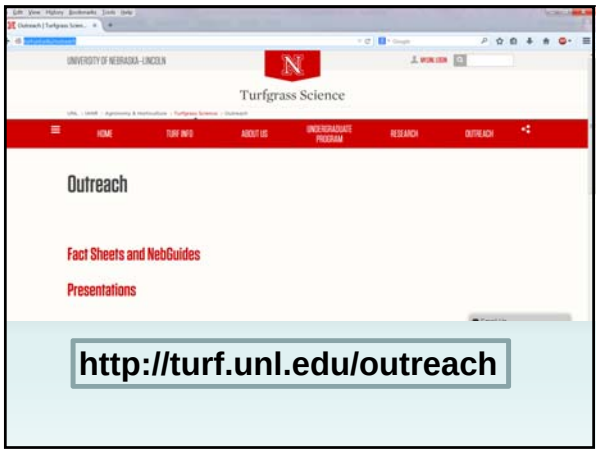
1. **Any treatment with fertilizer**
   - **Mycorrhizae and/or biostimulant did not significantly speed up establishment**
   - **Foliar fertilizers did not speed up establishment**

Bottom Treatments

1. **Untreated**
2. **Mycorrhizae and/or biostimulant alone**

Bottom Line for ***Establishment***

- **Amount of N and P applied**
  - **At establishment**
  - **During first 30 days after germination**
- **Readily available fertilizers provide best establishment**
  - **Quick vs. slow release**
- **Little benefit was realized from mycorrhizae, biostimulants or foliar fertilizers**
- **Shear strength was consistent with cover ratings**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