

Managing *Poa*

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Situational Weeds

- bentgrass in KBG or PR
- tall fescue in KBG or PR
- annual bluegrass in KBG, PR, TF, FF, CB, BMG
- nimblewill
- quackgrass
- yellow or purple nutsedge
- BMG in cool season turf
- Escaped Penisetum
- Dallisgrass, rescuegrass, other warm season grasses

Generalities

- selective control is difficult
- many have potential for phytotoxicity to desired turf
- Als are specific to species and mowing height
- multiple applications within same season
- reduce rate, reduce app interval, increase # of apps
- Apply when weed is growing
 - Warm season vs. cool season

Poa Control in Cool Season Turf

- Tenacity
 - no bentgrass safety
 - weak on stronger, less stressed Poa – selected for over a few years
- Xonerate
 - bentgrass injury
 - inconsistent
 - expensive
- PoaCure
 - expensive but effective
- PGRs
 - Anuew (prohexadione-Ca), paclobutrazol, flurprimidol – suppression over time but hit a wall
- Preemergence Herbicides
 - timing is difficult with sporadic germination throughout the year

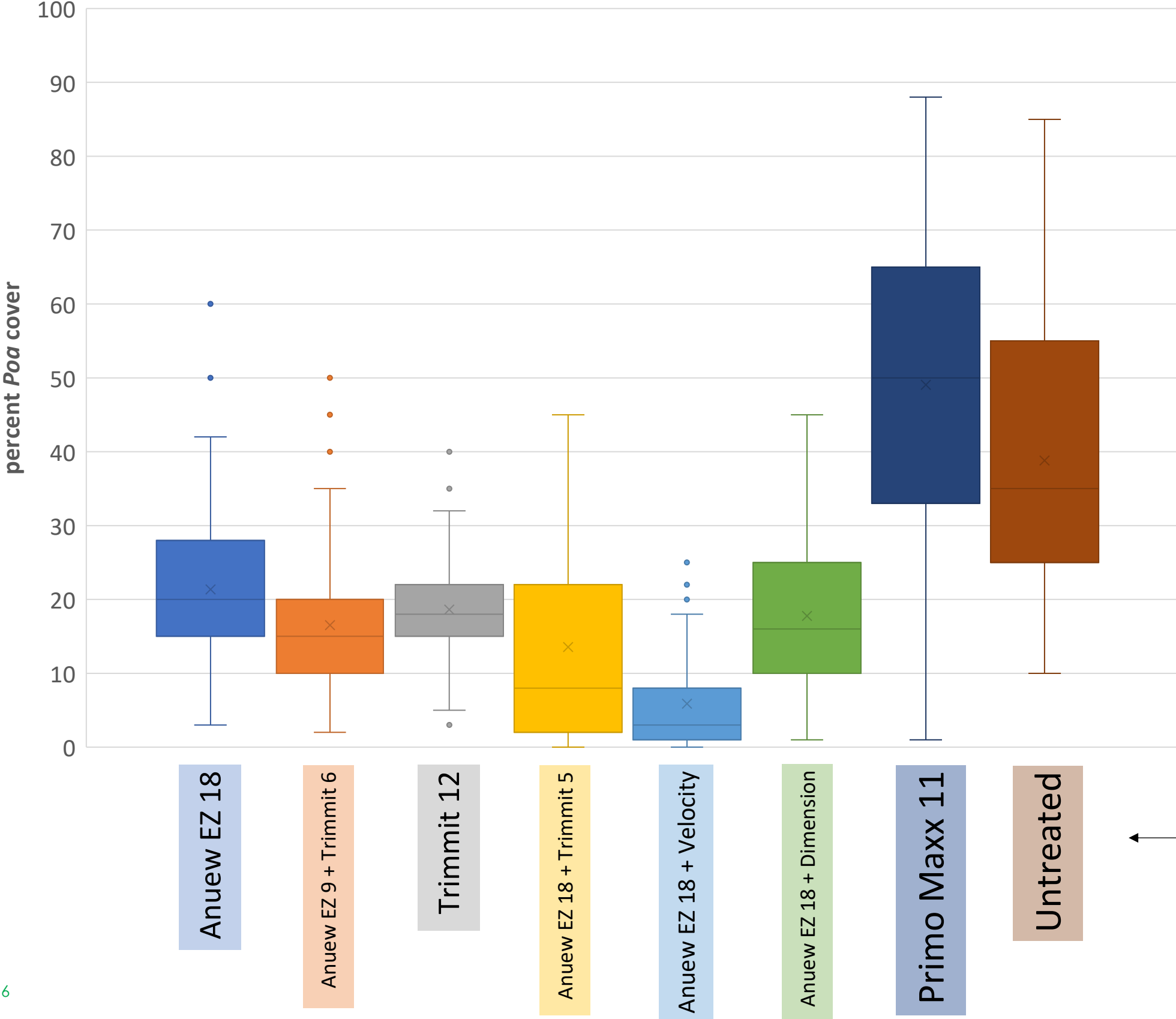
**POSTemergence Herbicide + PGR +
PREemergence Herbicide**

Poa Suppression in Bentgrass Fairways

1. Bi-weekly applications of **Anuew EZ at 18 fl oz/A (Anuew WDG 8 oz/A)** have significantly reduced *Poa* populations.
2. Bi-weekly applications of **Anuew EZ at 18 fl oz/A + Trimmit at 5 fl oz/A** have significantly reduced *Poa* populations.
3. 11 fl oz/A of **Primo Maxx** applied weekly has increased or maintained *Poa* populations.
4. The addition of Anuew EZ or Anuew EZ + Trimmit at a late-fall timing (**snow mold timing**) greatly increased *Poa* suppression.
5. Anuew EZ at 18 oz/A and Anuew EZ at 18 oz/A + Trimmit at 5 fl oz/A applied weekly for multiple years maintained high relative turf **quality**.



Annual Bluegrass Suppression with Anuew EZ Over 4 Years

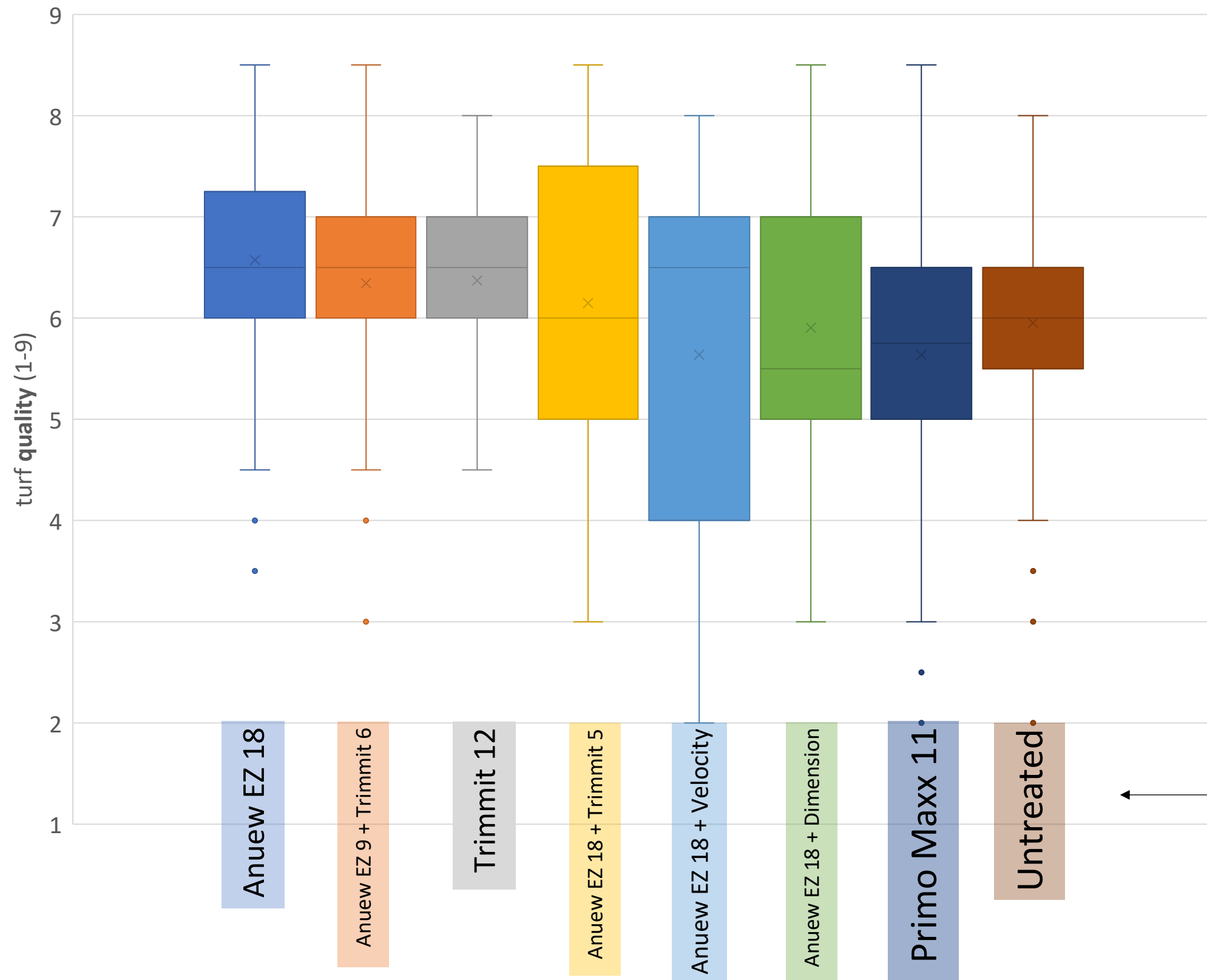


Meadowbrook Country Club, Northville, MI

- TRTs applied every 2 weeks from April to October from 2019 – 2022*.
 - Velocity applied only twice in each year 14 days apart starting in August.
 - Dimension only applied once each year at the end of August.
- Creeping bentgrass fairway starting at 35 – 50 percent annual bluegrass.
- 4 years of Poa population evaluations (18 total), 2019 – 2022, are represented in each box and whisker plot as % cover.**

Numbers after treatments represent rates in fl oz/A.

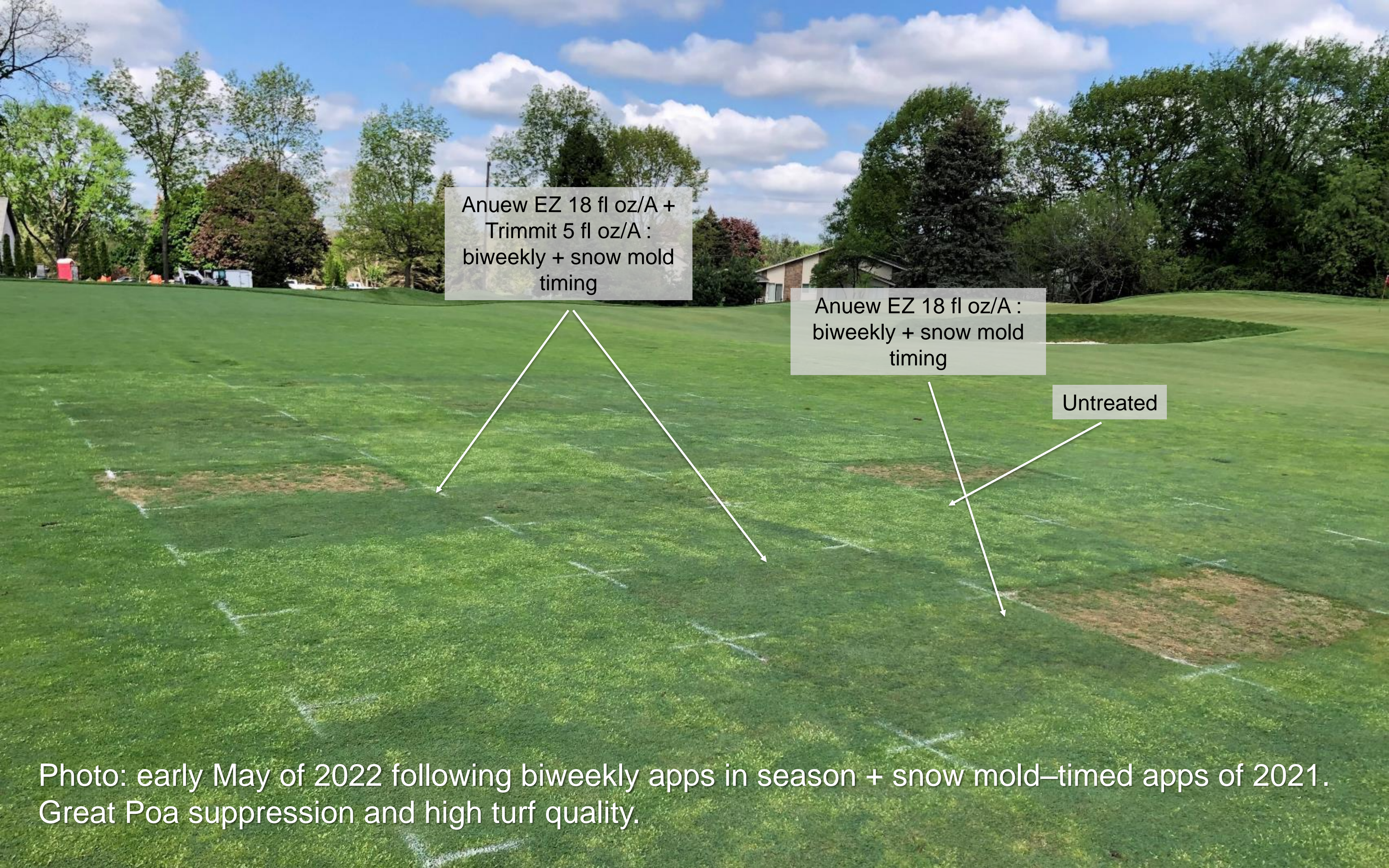
Turf Quality During 4 Years of Annual Bluegrass Suppression



Meadowbrook Country Club, Northville, MI

1. TRTs applied every 2 weeks from April to October from 2019 – 2022*.
 1. Velocity applied only twice in each year 14 days apart starting in August.
 2. Dimension only applied once each year at the end of August.
2. Creeping bentgrass fairway starting at 35 – 50 percent annual bluegrass.
3. **4 years of quality evaluations (27 total), 2019 – 2022, are represented in each box and whisker plot, where 1 = poorest quality and 9 = best quality.**

Numbers after treatments represent rates in fl oz/A.



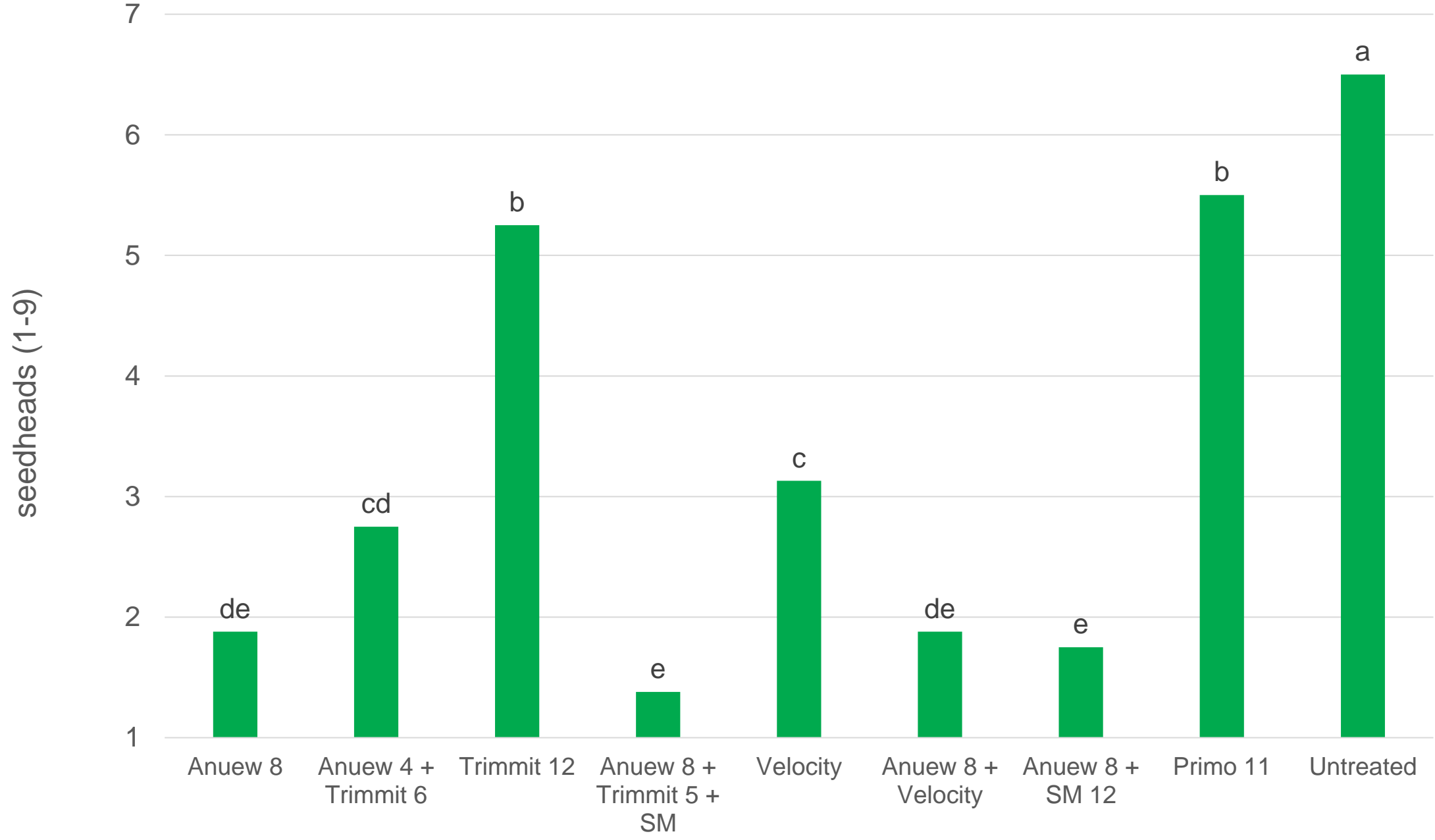
Anuew EZ 18 fl oz/A +
Trimmit 5 fl oz/A :
biweekly + snow mold
timing

Anuew EZ 18 fl oz/A :
biweekly + snow mold
timing

Untreated

Photo: early May of 2022 following biweekly apps in season + snow mold-timed apps of 2021.
Great Poa suppression and high turf quality.

Seedhead Suppression: May 16, 2022



1. TRTs including SM were treated at snow mold timings (Nov. 1, 2021).
2. All TRTs applied on May 4, 2022 for first app.
3. GDD₃₂ 200-500 would have been about April 29 – May 12, 2022. So, May 4 application date would be about 290 GDD₃₂.
4. **Note on this research: high rates!**

Key Takeaway: Anuew applied at typical spring seedhead timing and, especially, Anuew or Anuew + Trimmit applied at snow mold timing + spring seedhead timings provided excellent seedhead suppression.

Velocity[®] PM

POA MANAGEMENT HERBICIDE

- bispyribac – sodium
- Acetolactate synthase (ALS) inhibitor
 - ✓ Branched-chain amino acids:
 - ✓ valine, leucine, and isoleucine
- Half-life in soil is 3 to 7 days... and in plants it lasts 17 to 21 days
- Most cool-season turf species have good tolerance
- **Very Active** with a low use rate (5 to 45 g ai/A)



Management Program -----< **Velocity** >----- Complete Control

History

- Initially evaluated as a turf growth regulator
- Discovered the selective POST activity on Poa
- Launched in 2004 (to 2018) for use in turfgrass





Original Plot
99% Annual bluegrass
removed with Velocity in 1 year



2 years later
85% Creeping bentgrass cover
without seeding

A photograph of a golf course during the day. The scene features a lush green fairway in the foreground, a sand trap to the right, and a line of trees in the background. The sun is high in the sky, creating a bright starburst effect and casting long shadows from the trees onto the grass. A small, dark object, possibly a golf club head, is visible on the grass in the lower center of the frame.

Additional Benefits

1. Suppression of Dollar Spot
2. Selected Broadleaf Weed Control
3. Poa Seedhead Suppression

Turfgrass Tolerance

Velocity[®] PM
POA MANAGEMENT HERBICIDE

perennial ryegrass
creeping bentgrass
Fescues – tall & fine

Kentucky bluegrass

Poa trivialis

Poa annua

Bermudagrass

Zoysiagrass

St. Augustinegrass

Centipedegrass

Seashore paspalum

Velocity[®] PM

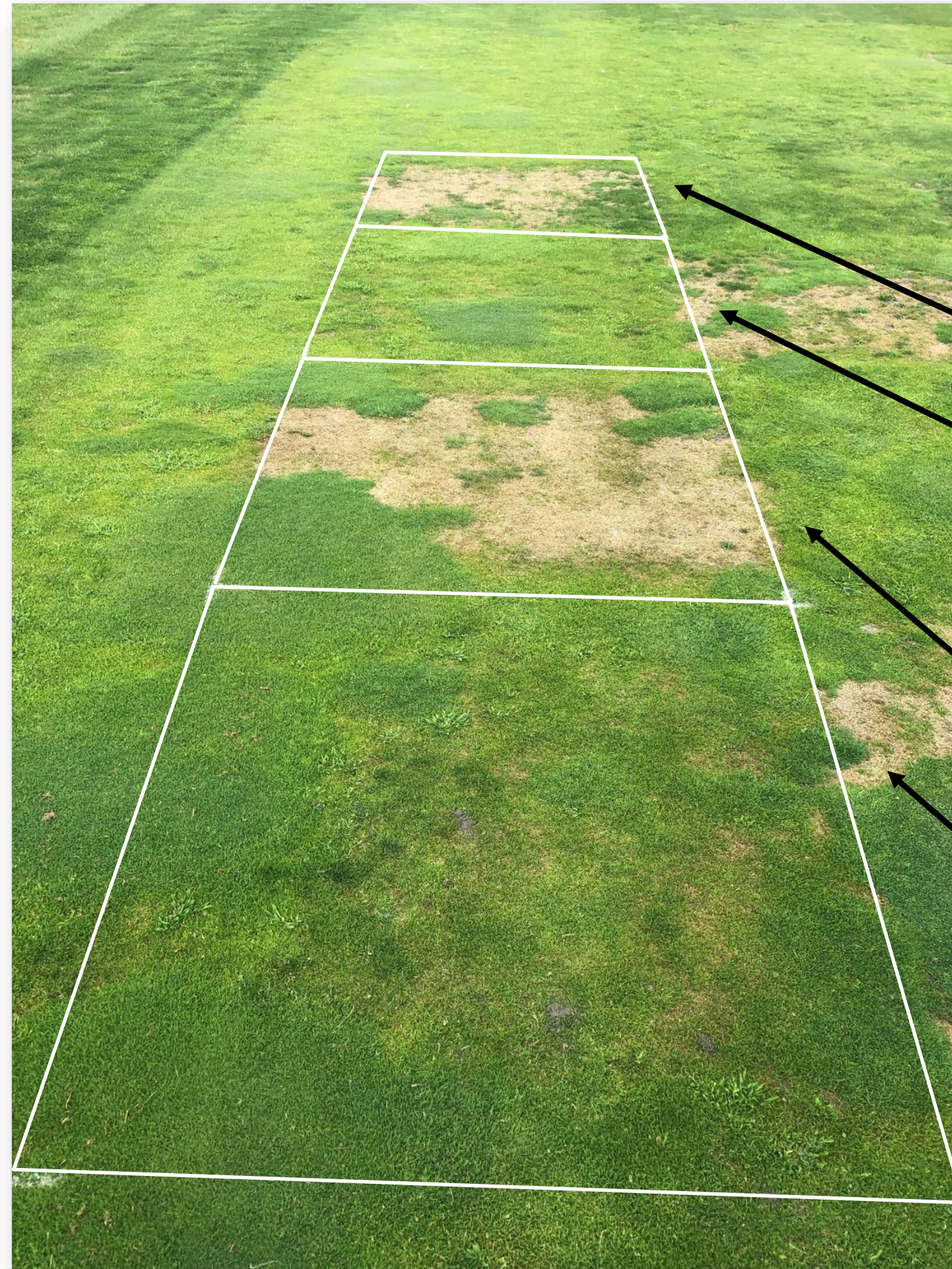
POA MANAGEMENT HERBICIDE

Goal is to create an
easy-to-follow
Poa Management Program



MSU – *Poa annua* in a Ryegrass/Bentgrass Fairway.

- Photo taken Sept. 5, 2019.
- Last app. on August 19, 2019.
- Slow conversion of more *Poa* to less *Poa* and less bentgrass to more bentgrass is necessary or preferred when the starting point of *Poa* is 15% of a turf stand or more.
- This MSU fairway is worst case scenario at approx. 80% *Poa*.



Each program applied **3 times** at 14-day intervals.

Velocity PM
(120 g ai/A = 9 fl oz/A)

Velocity PM
(30 g ai/A = 2.2 fl oz/A)

Velocity PM
(60 g ai/A = 4.5 fl oz/A)

Velocity PM
(15 g ai/A = 1.1 fl oz/A)

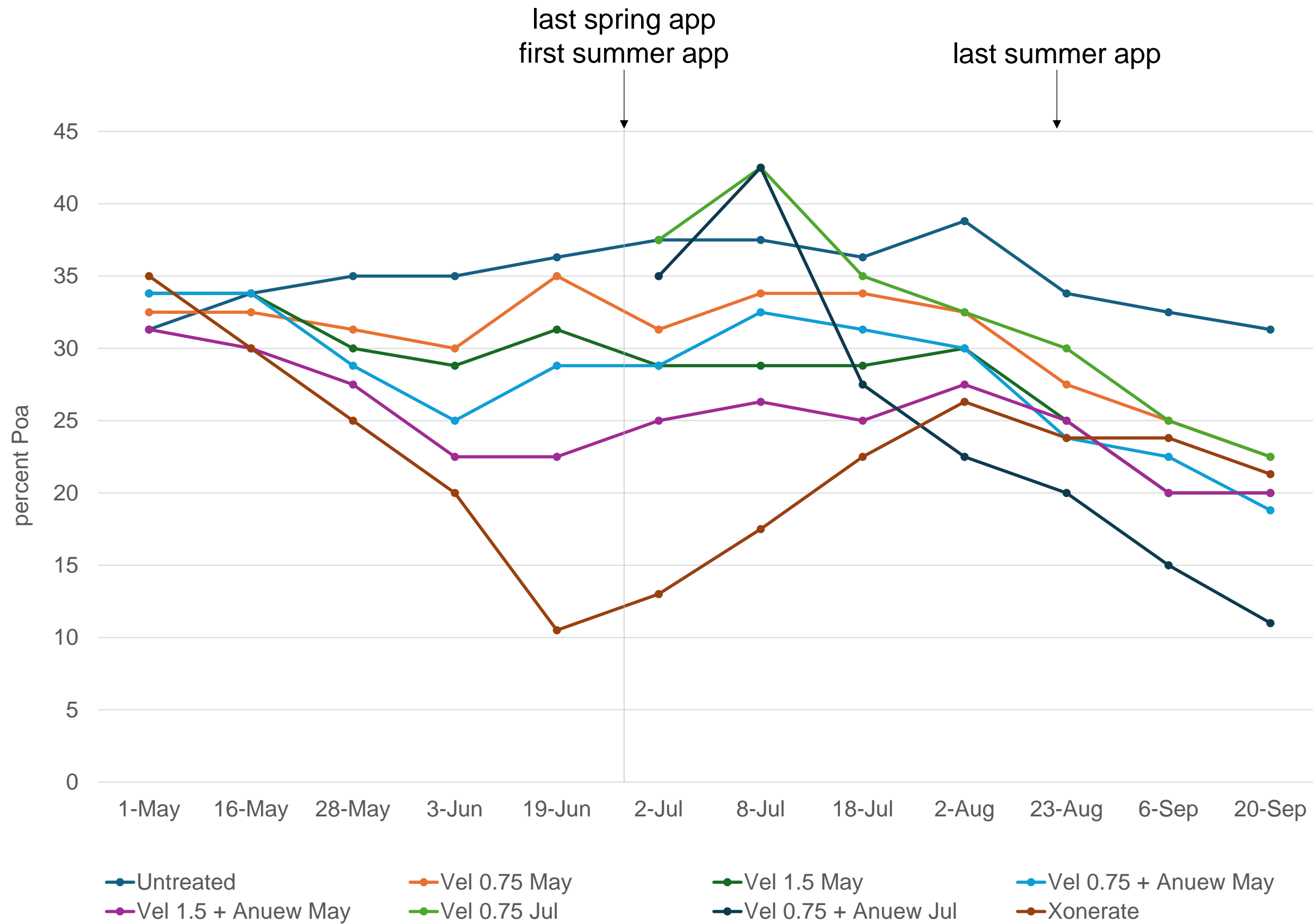
Annual Bluegrass Control – Velocity PM

Treatment		Rate	Timing	
1	Untreated			
2	Velocity PM	0.75 fl oz/A	ABCDE	May 1 Start 14 DI
3	Velocity PM	1.5 fl oz/A	ABCDE	May 1 Start 14 DI
4	Velocity PM Anuew EZ Anuew EZ	0.75 fl oz/A 9 fl oz/A 13 fl oz/A	ABCDE ABC DE	May 1 Start 14 DI
5	Velocity PM Anuew EZ Anuew EZ	1.5 fl oz/A 9 fl oz/A 13 fl oz/A	ABCDE ABC DE	May 1 Start 14 DI
6	Velocity PM	0.75 fl oz/A	EFGHI	June 28 Start 14 DI
7	Velocity PM Anuew EZ	0.75 fl oz/A 13 fl oz/A	EFGHI	June 28 Start 14 DI
8	Xonerate 2SC	3 fl oz/A	ABC	May 1 Start 14 DI

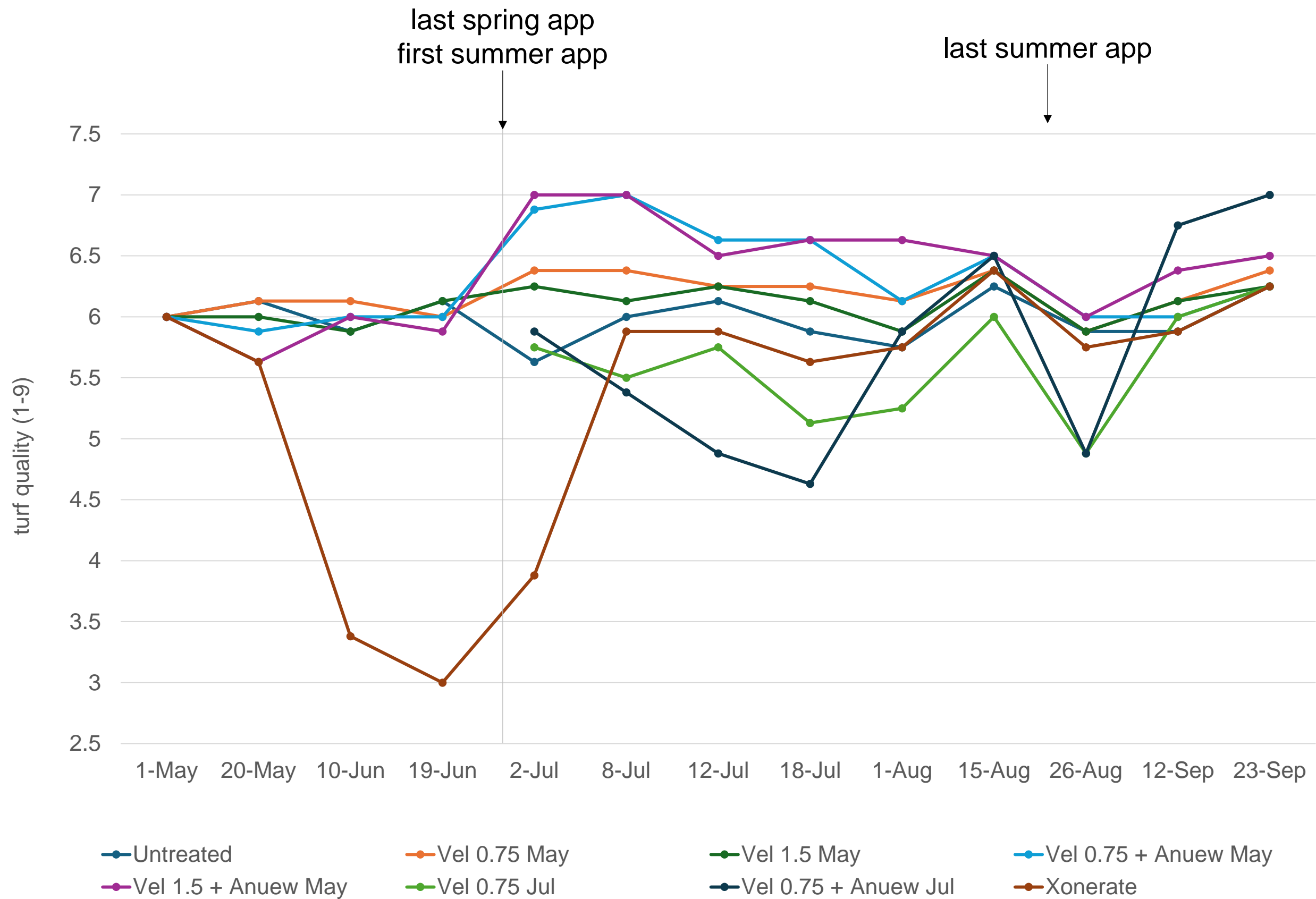
Michigan State University, Nikolai, 2024.
35/65 *Poa annua*/bentgrass fairway.

A = May 1
B = May 16
C = May 31
D = June 14
E = June 28
F = July 12
G = July 25
H = August 8
I = August 22





Key Takeaways: (1) Anuew EZ increased *Poa* control, (2) higher Velocity PM rates provided slightly more *Poa* control and (3) apps started in July provided more *Poa* control.



Key Takeaways: (1) May program starts provided better turf quality during the program period, (2) Anuew EZ additions increased turf quality and (3) higher Velocity PM rates did not decrease quality.

Conclusions

- *Poa* at MSU is very old (up to 50 years of biodiversity) and acts as a relatively strong perennial plant. Subsequently, *Poa* control efforts at MSU are rarely as effective as they may be elsewhere.
 - When applying these programs, expect increased and faster control of *Poa*.
- Programs that began on June 28th were more effective.
 - When slower *Poa* control is desired, programs starting on May 1 will be better than those started at the end of June.
 - When there is 10% or less of *Poa* infiltration, programs starting in the summer could provide faster desired results.
- The addition of Anuew EZ increased *Poa* control.
- The addition of Anuew EZ increased turf color and quality.

May 10, 2024
9 DA-A (1st app)

Apps Beginning: May 1, 2024



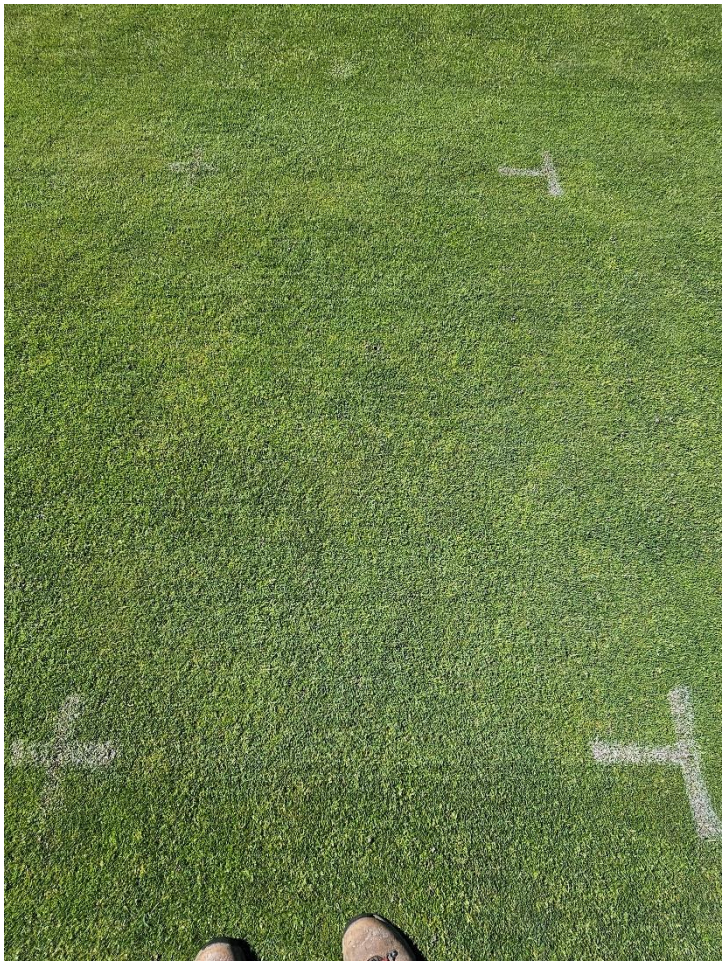
Untreated



Velocity PM
0.75 fl oz/A x5



Velocity PM
1.5 fl oz/A x5



Velocity PM
0.75 fl oz/A x5
+
Anuew EZ

June 3, 2024
3 DA-C (3rd app)

Apps Beginning: May 1, 2024



Untreated



Velocity PM
0.75 fl oz/A x5



Velocity PM
1.5 fl oz/A x5



Velocity PM
0.75 fl oz/A x5
+
Anuew EZ

June 17, 2024
3 DA-D (4th app)

Apps Beginning: May 1, 2024



Untreated



Velocity PM
0.75 fl oz/A x5



Velocity PM
1.5 fl oz/A x5



Velocity PM
0.75 fl oz/A x5
+
Anuew EZ

July 2, 2024
3 DA-E (last app)

Apps Beginning: May 1, 2024



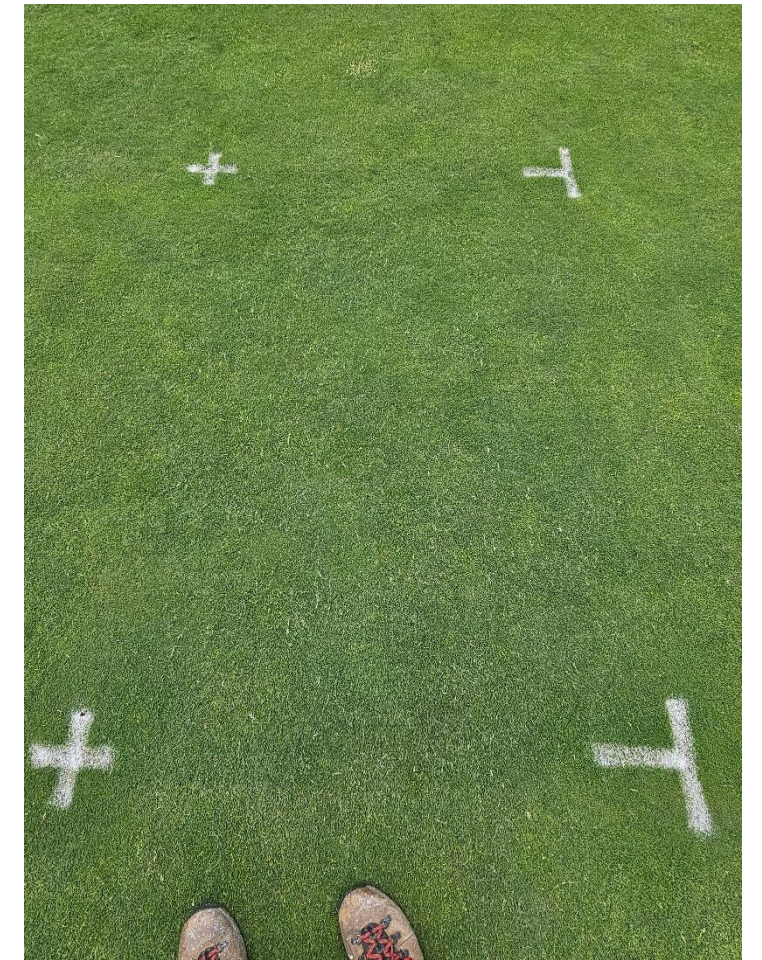
Untreated



Velocity PM
0.75 fl oz/A x5



Velocity PM
1.5 fl oz/A x5



Velocity PM
0.75 fl oz/A x5
+
Anuew EZ

July 15, 2024
17 DA-E (last app)

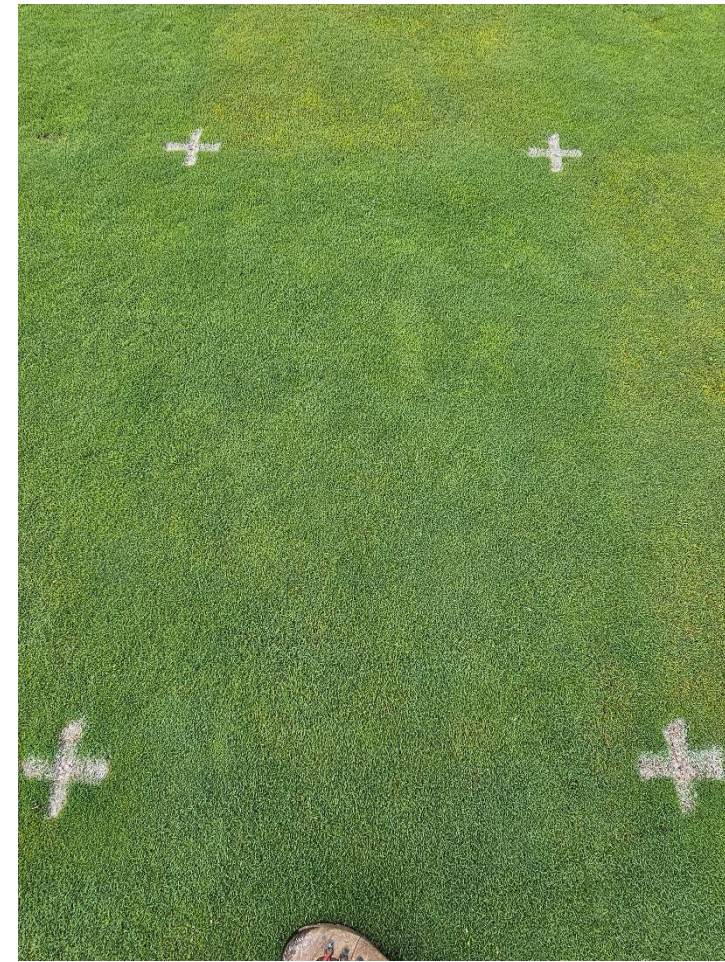
Apps Beginning: May 1, 2024



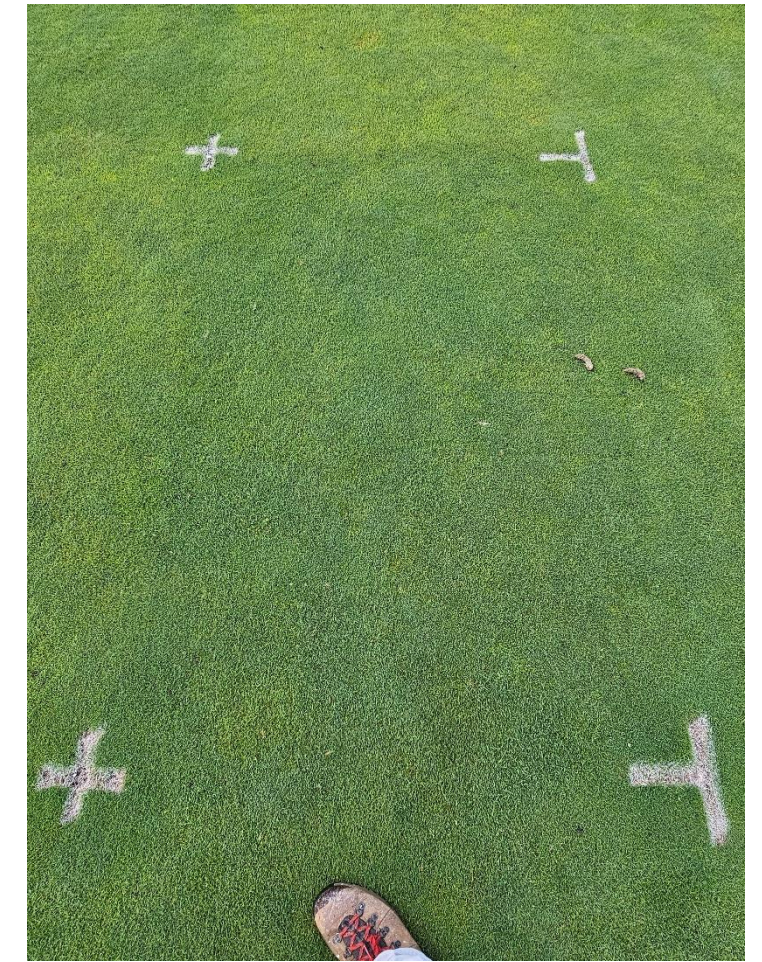
Untreated



Velocity PM
0.75 fl oz/A x5



Velocity PM
1.5 fl oz/A x5



Velocity PM
0.75 fl oz/A x5
+
Anuew EZ

July 8, 2024
10 DA-E (1st app)

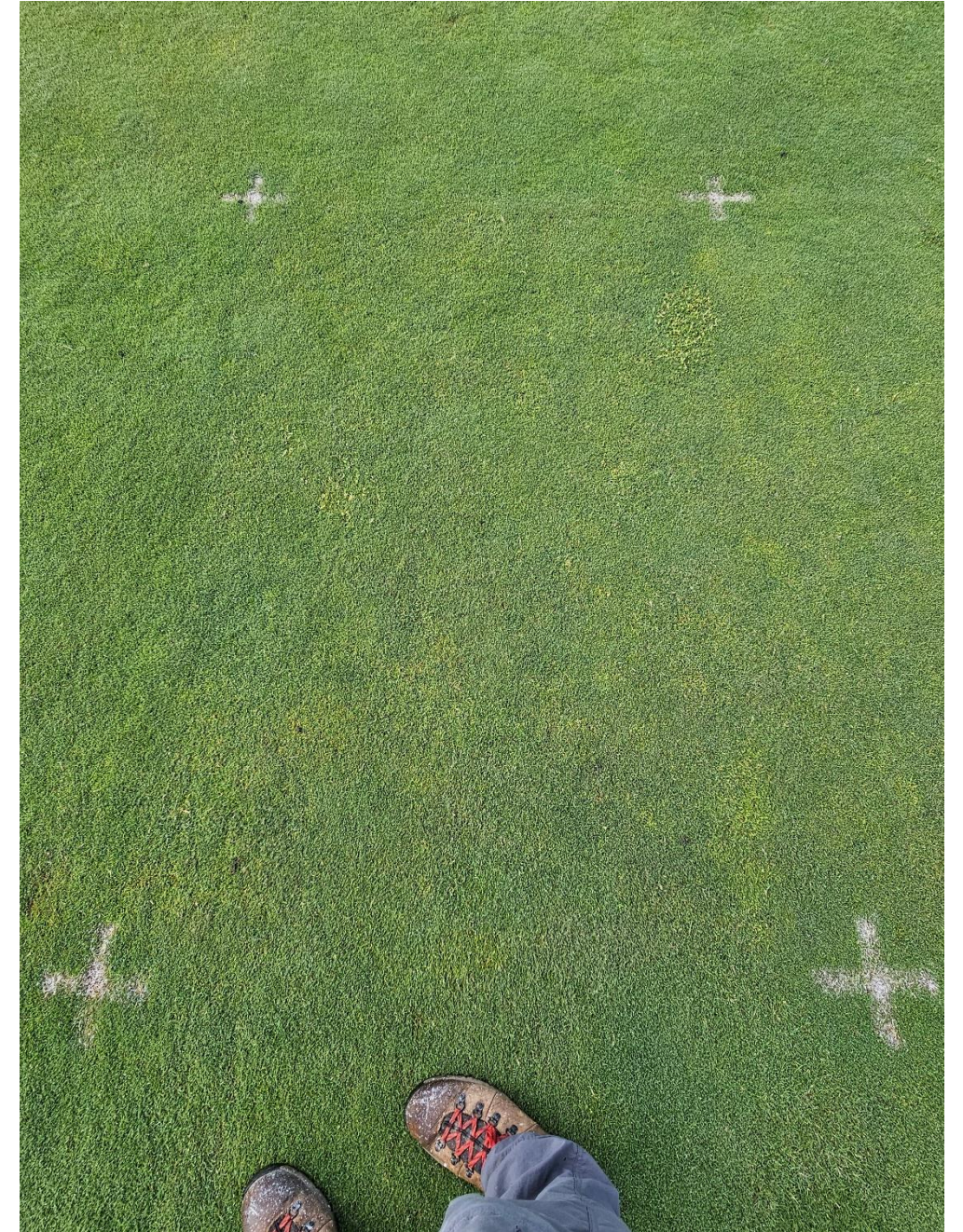
Apps Beginning: June 28, 2024



Untreated



Velocity PM
0.75 fl oz/A x5



Velocity PM
0.75 fl oz/A x5
+
Anuew EZ

July 15, 2024
3 DA-F (2nd app)

Apps Beginning: June 28, 2024



Untreated



Velocity PM
0.75 fl oz/A x5



Velocity PM
0.75 fl oz/A x5
+
Anuew EZ

July 29, 2024
4 DA-G (3rd app)

Apps Beginning: June 28, 2024



Untreated



Velocity PM
0.75 fl oz/A x5



Velocity PM
0.75 fl oz/A x5
+
Anuew EZ

September 6, 2024
15 DA-I (last app)

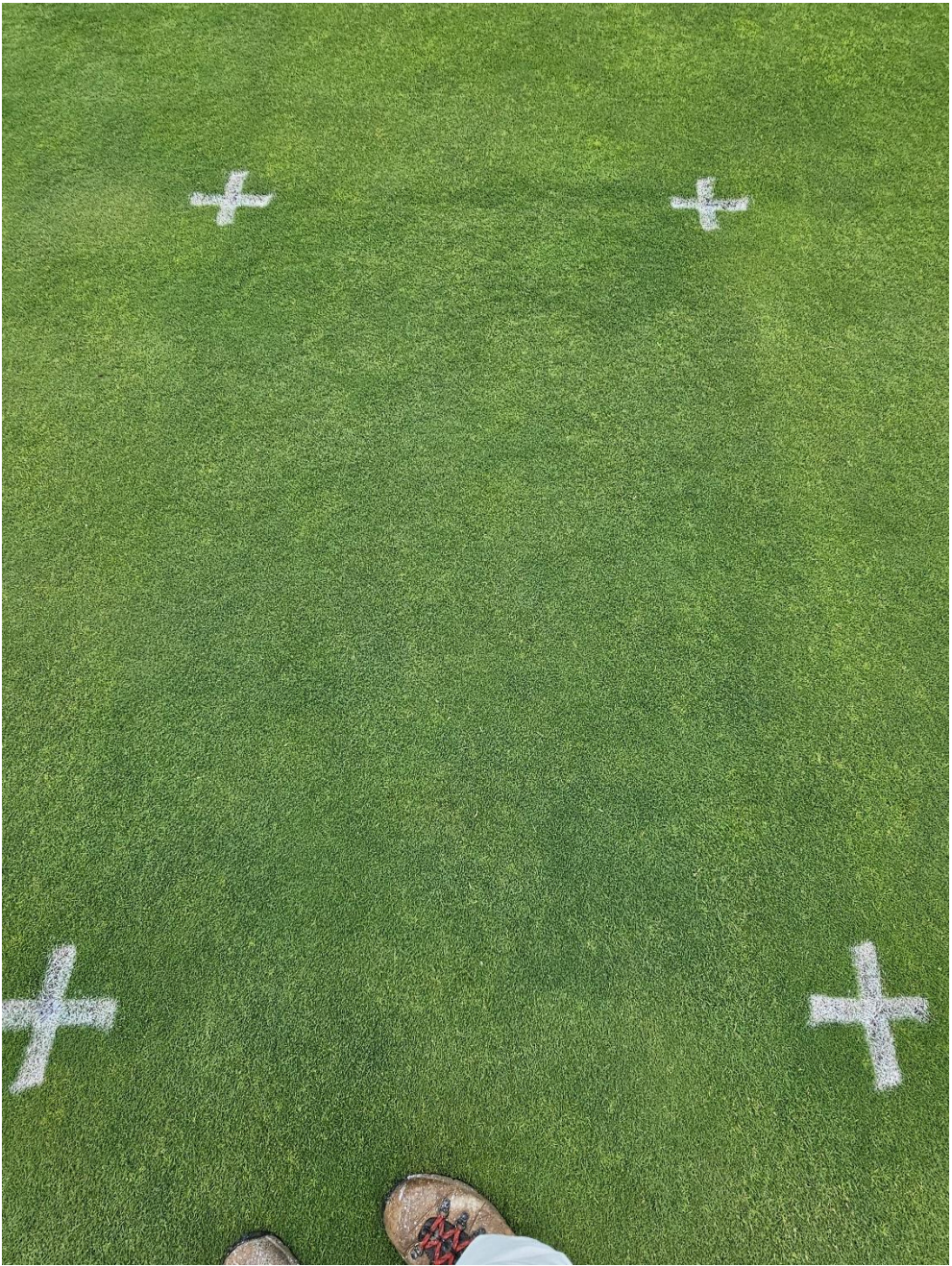
Apps Beginning: June 28, 2024



Untreated



Velocity PM
0.75 fl oz/A x5



Velocity PM
0.75 fl oz/A x5
+
Anuew EZ

September 30, 2024
39 DA-I (last app)

Apps Beginning: June 28, 2024



Untreated



Velocity PM
0.75 fl oz/A x5



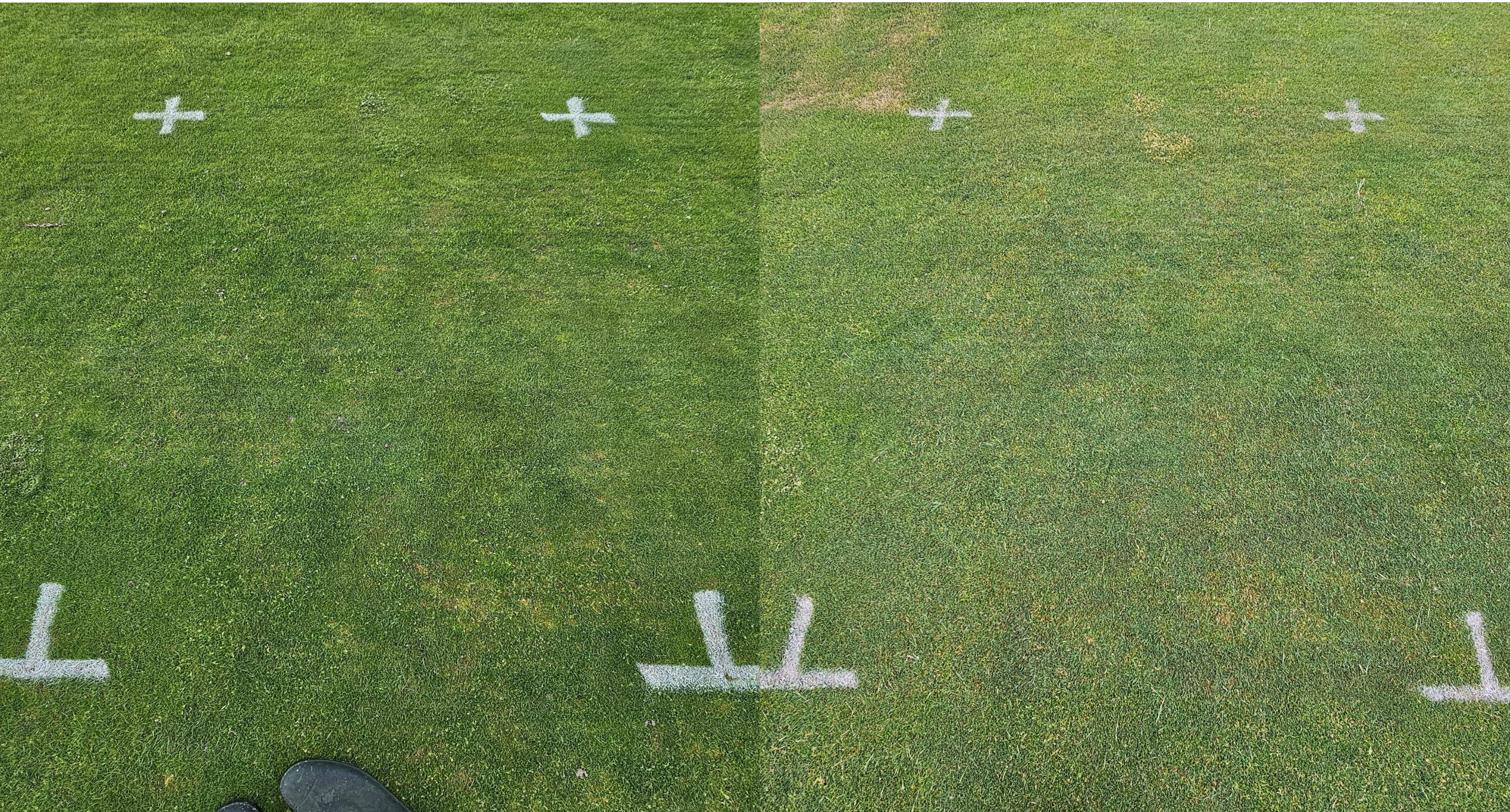
Velocity PM
0.75 fl oz/A x5
+
Anuew EZ



5/1/24

Xonerate @3fl oz/A after 3 apps (5/1, 5/16, 5/31)

6/5/24



5/1/24

Velocity @ 1.5 + Anuew @ 9 fl oz/A after 3 apps (5/1, 5/16, 5/31)

6/5/24



Photo: July 18
6 DA 2nd App of
Summer
Programs

White Arrows:
Velocity PM
0.75 fl oz/A
Summer
Program

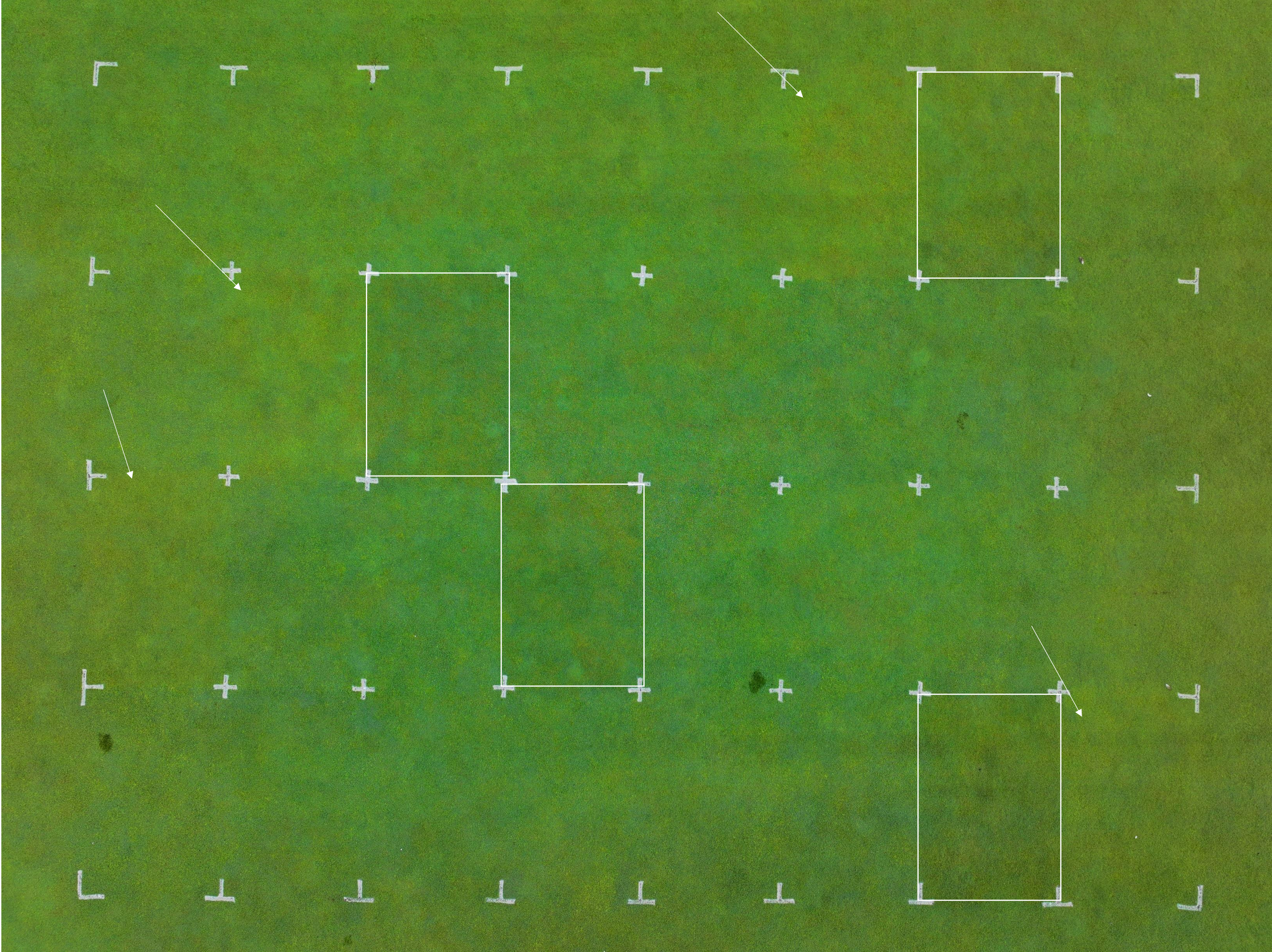
Red Arrows:
Velocity PM
0.75 fl oz/A +
Anuew EZ
Summer
Program

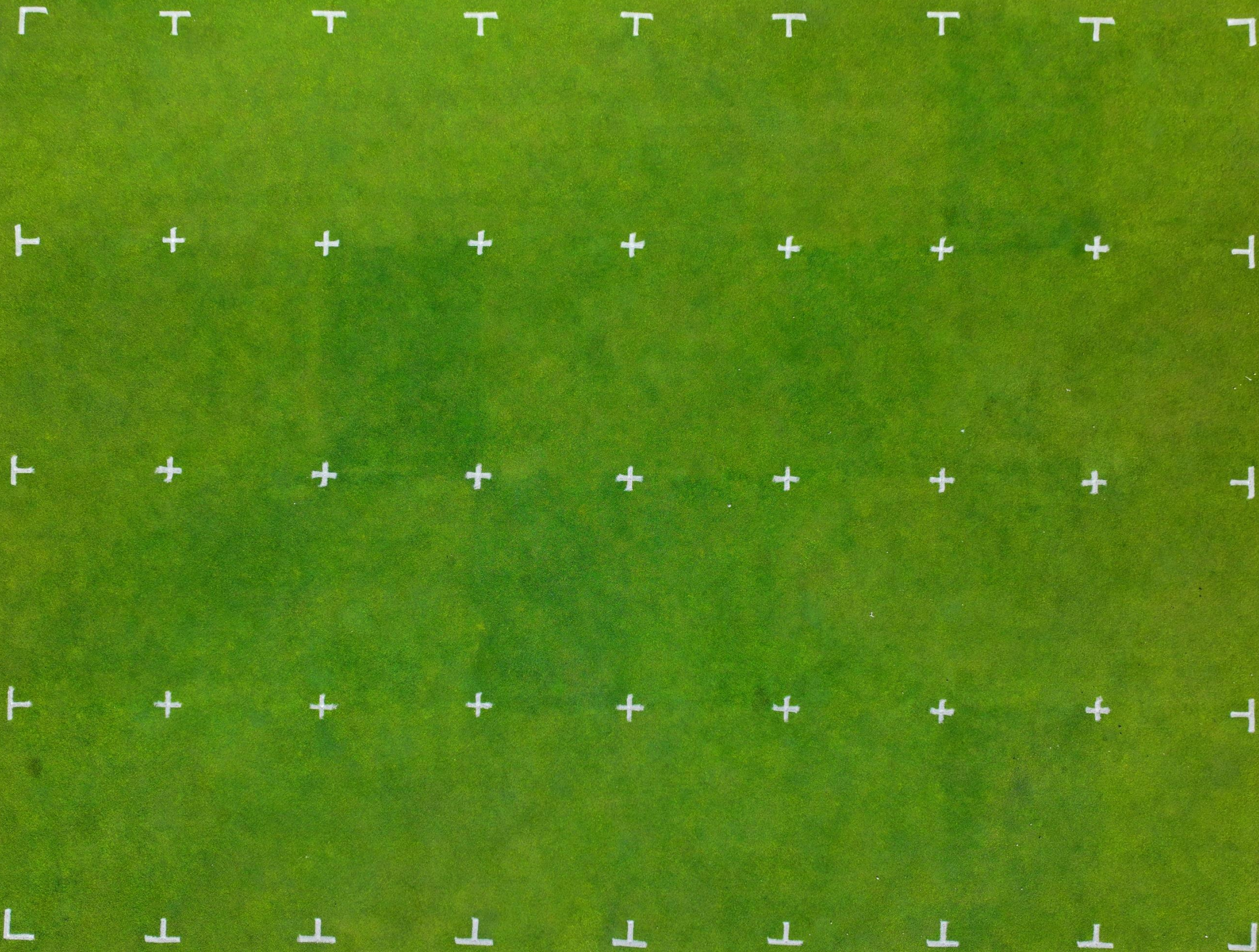
Black Box:
Spring-treated
programs (20
DA final app)

Photo: Aug 26
4 DA 5th App of
Summer
Program

White: Velocity
PM at 0.75 fl
oz/A + Anuew
Summer Apps

Arrows: Velocity
PM at 0.75 fl
oz/A
Summer Apps





September 12, 2024

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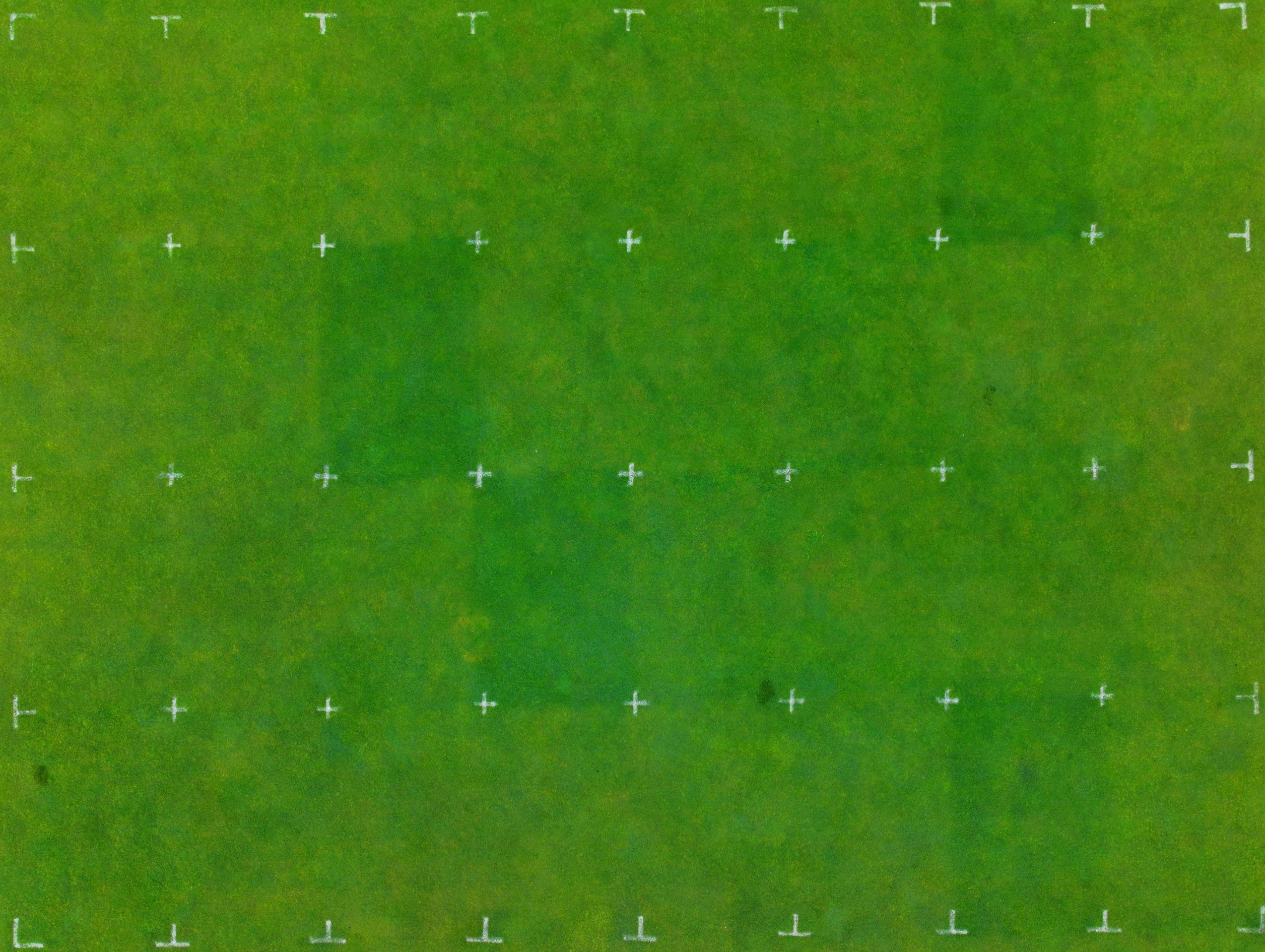
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September 20, 2024



September 23, 2024

Polling Question...

Poa annua Control – ‘Penncross’ Bentgrass Tee

Treatment	Rate	Timing
1	Untreated	
2	Velocity PM 0.75 fl oz/A	ABCDE
3	Velocity PM 1.5 fl oz/A	BCD
4	Velocity PM 4.5 fl oz/A	C

Settle, CDGA, 2024

Bentgrass Tee – Established in 2020 (native soil)

Treatment area began with 30 – 50% *Poa* cover.

A = May 15

B = June 1

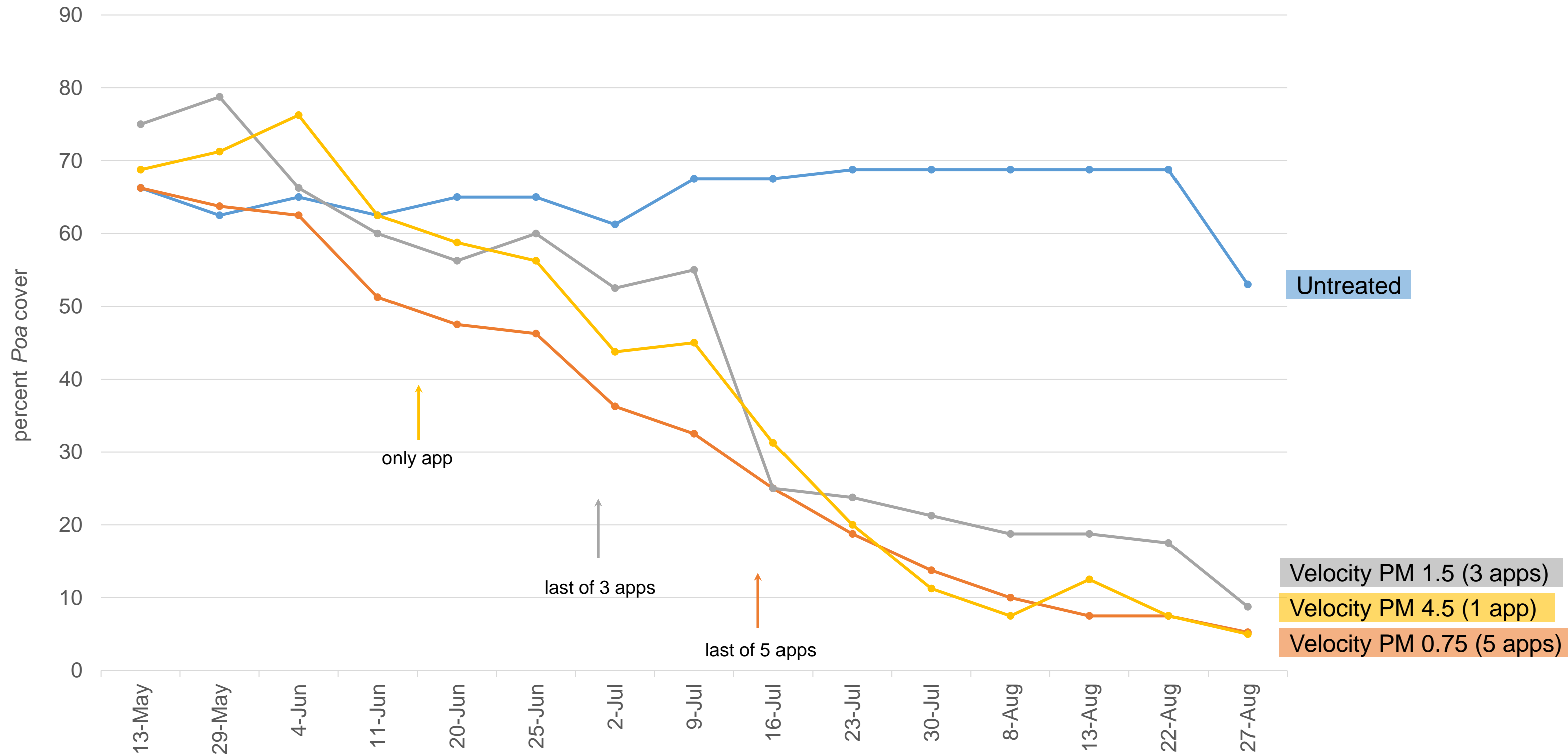
C = June 15

D = July 1

E = July 15

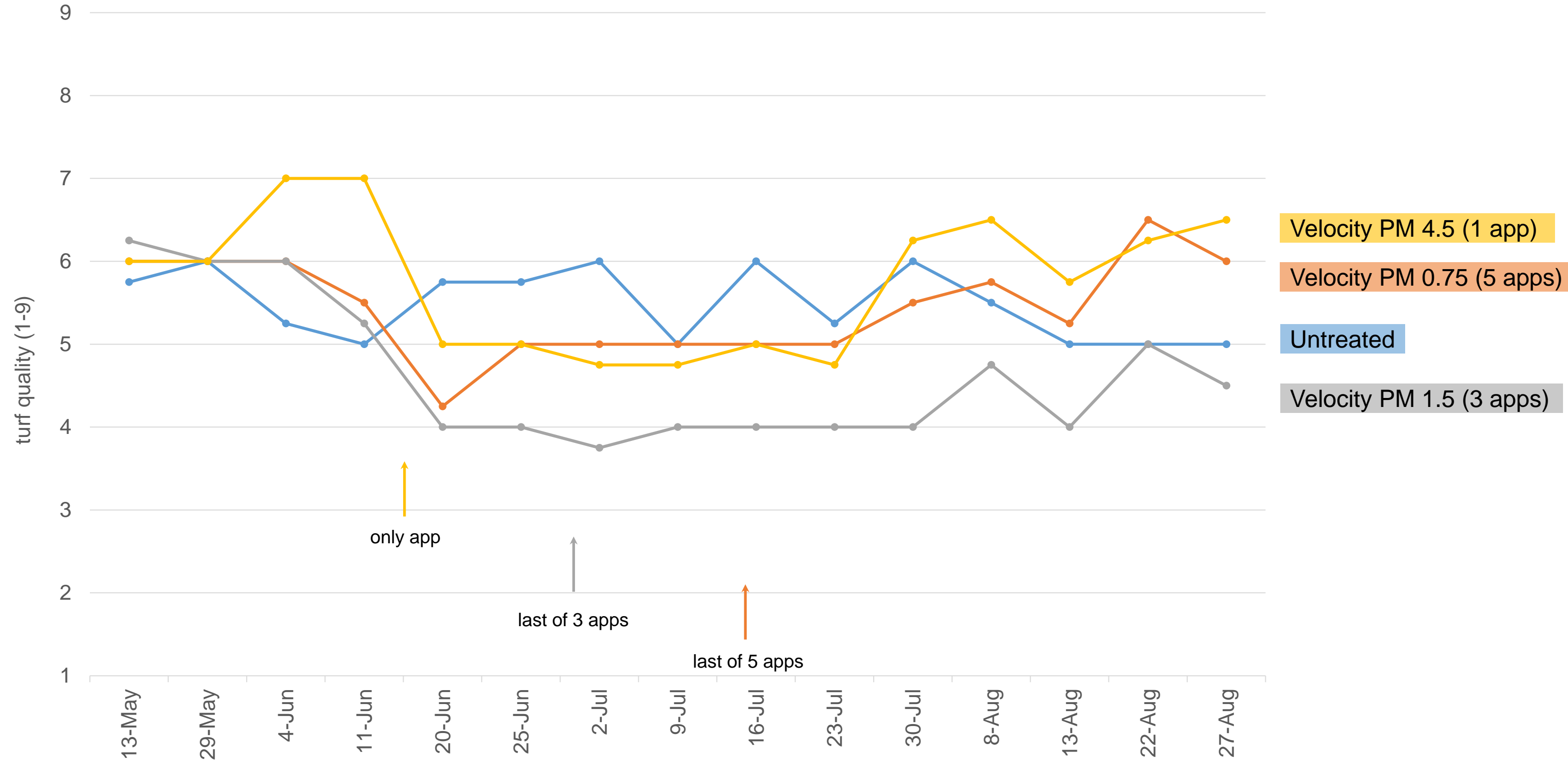


Poa annua Control



Key Takeaways: All Velocity PM programs provided excellent control of *Poa*. This *Poa* was probably weakened by the heavy shade caused by the tree-lined proximity.

Poa annua Control – Turf Quality



Key Takeaways: Velocity PM at 0.75 fl oz/A (5 apps) and at 4.5 fl oz/A (1 app) provided the most consistently acceptable turf quality during the trial period.



Velocity PM applied
at 2.25 fl oz/A.
Kansas City in early
May.



Velocity PM applied at 2.25 fl oz/A.
Creeping bentgrass fairway treated
and application extended into KBG
rough.



Velocity PM at 2.25 fl oz/A.
Creeping bentgrass fairway.
Late-May application.

7 DAT



12 DAT

Velocity PM at 0.75 fl oz/A.
Creeping bentgrass collar.
Late-May application.

13 DAT





Barton Hills, MI
Velocity PM at 0.75 fl oz/A.
Creeping bentgrass fairways.
Multiple apps at this point.
Mixed with paclo.

Heavy traffic areas looked
like this, while non-traffic
areas had less injury.



Barton Hills, MI
Velocity PM at 0.75 fl oz/A.
Creeping bentgrass fairways.
Multiple apps at this point.
Mixed with paclo.

Untreated at bottom.

Velocity PM (2.25 fl oz/A) Test Plot - KBG



5 DAT



8 DAT



11 DAT

Velocity Test Plot – Mixed Rough



Spring 2024



14 DA 2nd App
2.25 fl oz/A



20 DA 2nd App

Velocity PM: BMPs

- Heavy Poa flash after one app: increase application interval to 21 days or wait until the Poa has fully recovered.
- Decrease rate in (1) higher cut turf, (2) heavy traffic areas, (3) and stressed Poa IF slow control is desired.
- Be careful about mixing with (1) any surfactant, (2) another PGRs – especially paclobutrazol or flurprimidol, (3) or treating in combination with other Poa control programs/products.

Velocity[®] PM

POA MANAGEMENT HERBICIDE

5 Keys to Success

- Apply to healthy and actively growing turfgrass – target starting app 60 – 75F
 - warmer/hotter is better for safety and efficacy
- Application Rates
 - Less responsive than expected; 2x rate ≠ twice control
- Repeat applications over a large single dose
- Application Interval (17-day herbicide)
- Must Stick with the PROGRAM!!!

Treatment	Rate	Apps
PoaCure	0.6 fl oz/M	A-H
PoaCure	1.2 fl oz/M	ACEG
PoaCure Urea	0.6 fl oz/M 0.5 lb N/M	A-H ADG
PoaCure Urea	1.2 fl oz/M 0.5 lb N/M	ACEG ADG
Trimmit	12 fl oz/A	A-F
Trimmit Urea	12 fl oz/A 0.5 lb N/M	A-F ADG
Untreated		

Forest Akers GC West
Nursery Green

- A: May 5
- B: May 12
- C: May 20
- D: May 28
- E: June 2
- F: June 8
- G: October 7
- H: October 20

23 DAT-A
4 apps; 7 DI; 0.6 fl oz/A

34 DAT-A



45 DAT-A
6 apps; 7 DI; 0.6 fl oz/A

66 DAT-A

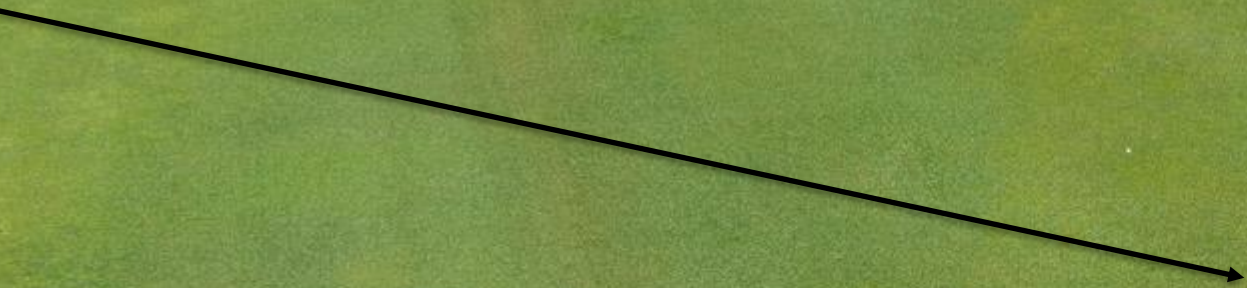
80 DAT-A



PoaCure



Untreated



Following Spring

PoaCure



Untreated




PoaCure – high rate
Cumyluron

August 30, 2018 (A)
Sept. 20, 2018 (B)
April 20, 2019 – cancelled

Hawk Hollow
Photo: May 8, 2019





PoaCure – high rate
Cumyluron

August 30, 2018 (A)
Sept. 20, 2018 (B)
April 20, 2019 (C)

Forest Akers
Photo: 27 DA-B

PoaCure – high rate
Cumyluron

August 30, 2018 (A)
Sept. 20, 2018 (B)
April 20, 2019 (C)

Forest Akers
Photo: May 1, 2019



PoaCure

Untreated

Annual Bluegrass Control on Golf Courses

1. Greens

- a. PoaCure works!; expense?
 - Be careful – weaker plants (biotypes?) respond differently than stronger
 - Program approach – PoaCure once, 2-3 years of PGRs to limit infiltration
 - Fall apps really work
- b. Anuew has shown to provide much more even regulation of cool season species – last longer or provides extra suppression of Poa

2. Fairways

- a. Balancing injury, death and overall turf quality is a difficulty
- b. Velocity PM – slow programs when Poa is prevalent
- c. PoaCure can work, but not as well – stronger plants in fairway
 - Program Approach
- d. Anuew works
- e. Trimmit works – lower rates, safened by tankmixing with Anuew
- f. PRE strategy??

3. PGR Strategy – Class A during stress and leading into stress, Class B in shoulder (fall PRE)

- a. Class A and Class B tankmixes?

4. Cultural Practices

- a. Dry downs, limit irrigation
- b. Anthracnose
- c. Limit N

Velocity[®] PM

POA MANAGEMENT HERBICIDE

Golf Course Fairways: A Simple, Effective Program

1. Year 1: Slow Conversion in Summer
 - 0.75 fl oz/A, 5 apps (3.75 fl oz/A total), 14-day intervals
 - Tankmix with fungicides, fertilizers, etc. - no issues
2. Year 2: Continue with Slow Conversion in Summer
 - 0.75 fl oz/A, 5 apps, 14-day intervals
3. Year 3: Maintenance Plan – Be Aggressive with Fewer Apps
 - 2.25 fl oz/A, 2 apps (4.5 fl oz/A), 14-day interval

Goals

1. No bare soil. Slower conversion.
2. Results. Some dead *Poa*.
3. Maintain quality of bentgrass – adding Anuew has resulted in better quality/color.
4. Year 1 – 50% reduction in *Poa*
Year 2 – remove the rest of the *Poa*
Year 3 – smoke any new *Poa* with high rates
5. Push growth and competition with N!

Poa trivialis Control

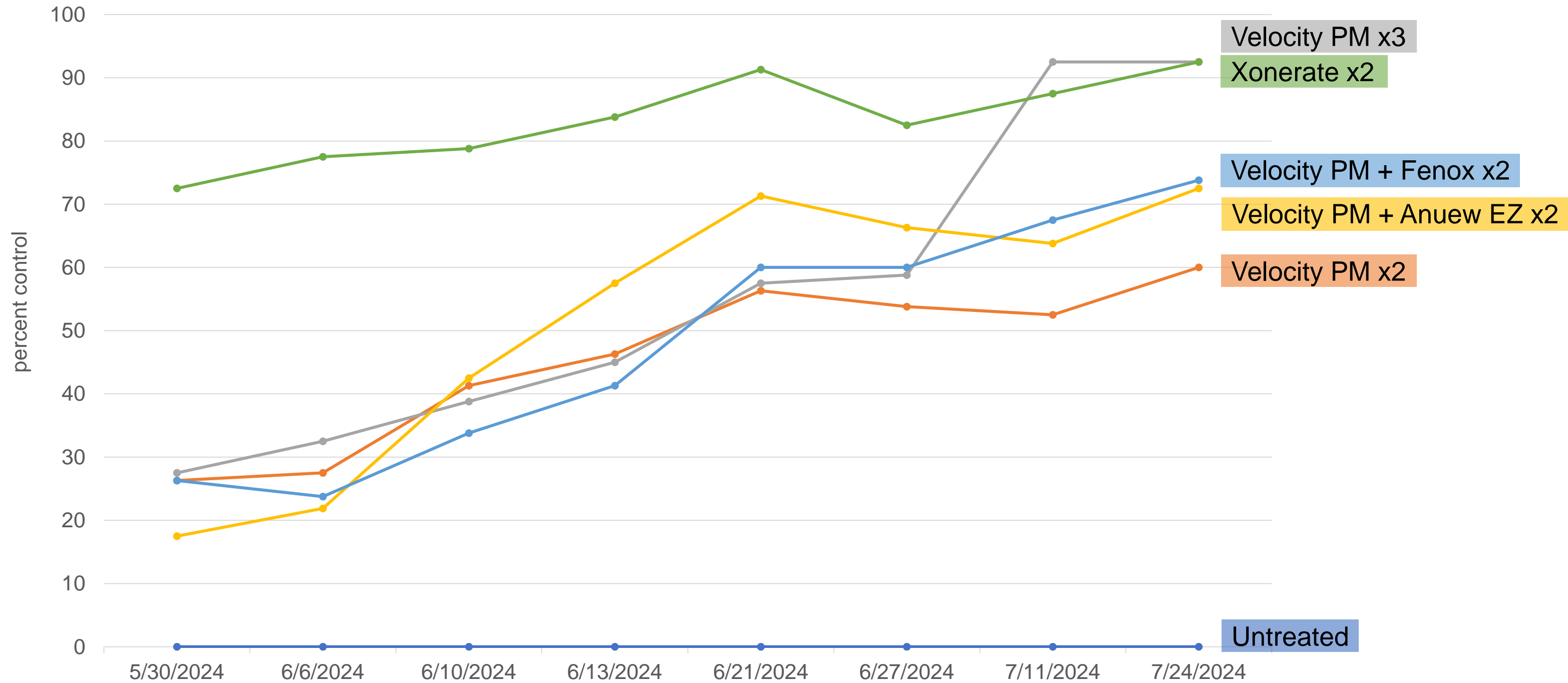
Treatment	Rate	Timing
1	Untreated	
2	Velocity PM 2.25 fl oz/A	AB
3	Velocity PM 2.25 fl oz/A	ABC
4	Velocity PM 2.25 fl oz/A Anuew EZ 13 fl oz/A Anuew EZ 22 fl oz/A	AB A B
5	Velocity PM 2.25 fl oz/A Fenoxaprop 28 fl oz/A	AB AB
6	Xonerate 6 fl oz/A	AB

Nangle, Ohio State U., 2024

A = May 16
B = June 6
C = June 27

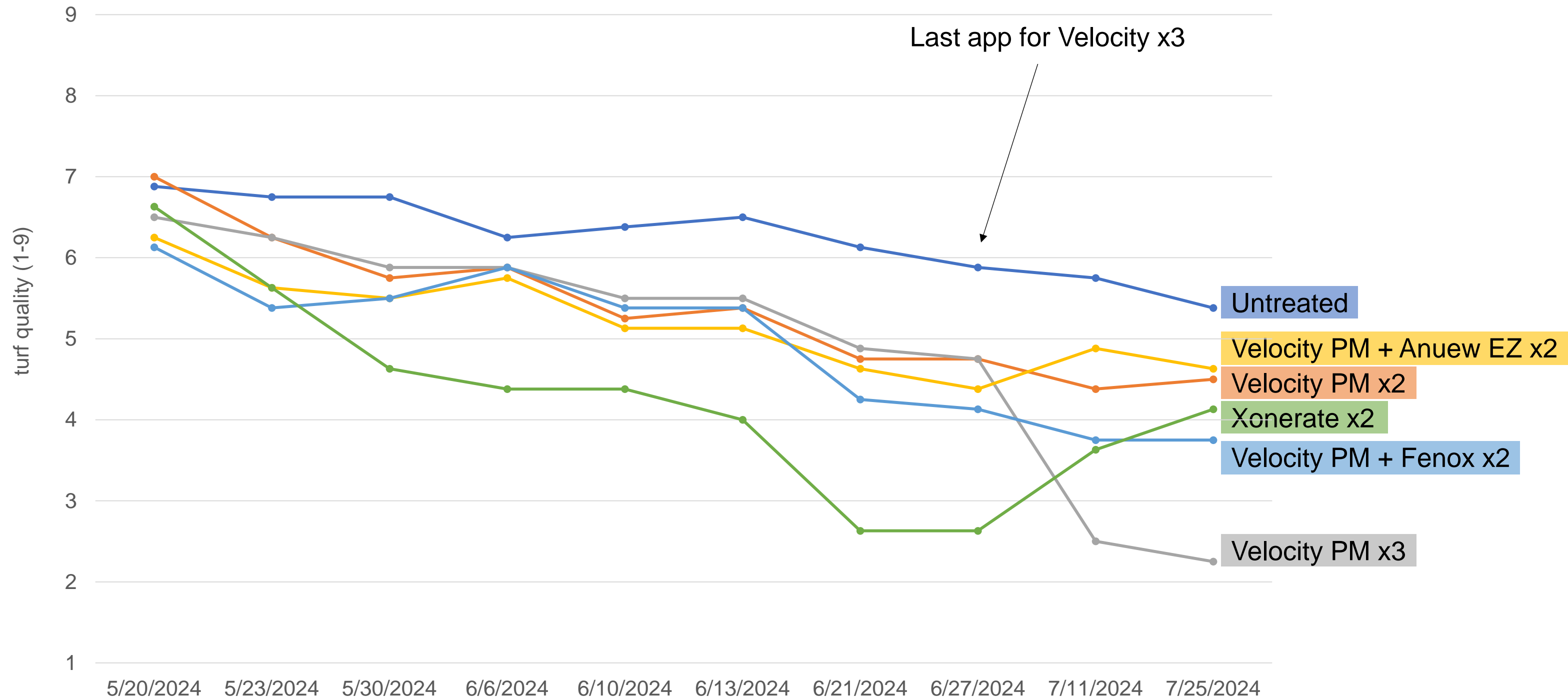
Plots began with 50 – 90% *Poa trivialis* cover.

Poa trivialis Control



Key Takeaways: All treatments provided some control of *Poa trivialis*. Velocity PM applied 3x and Xonerate provided the best control and did not statistically differ from each other in July.

Poa trivialis Control – Turf Quality



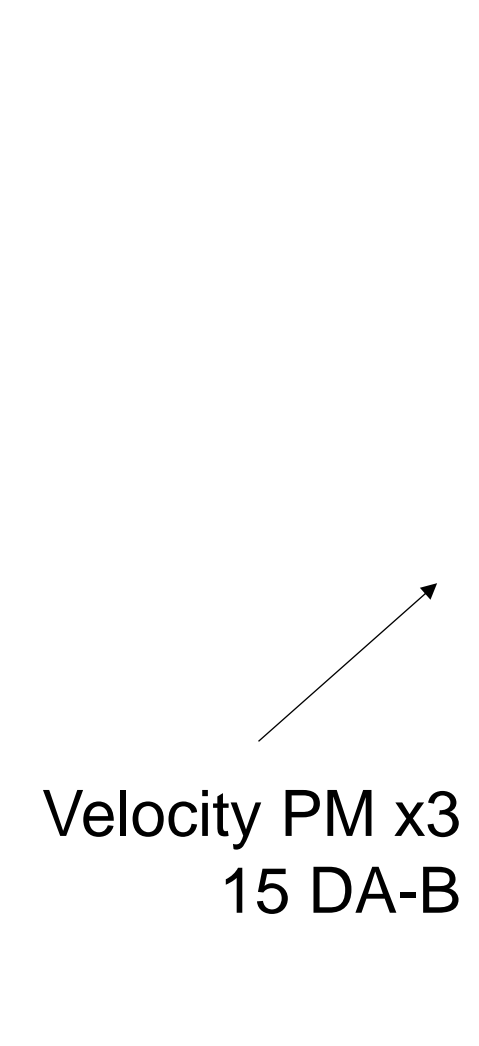
Key Takeaways: Velocity treatments provided a gradual decline of *Poa trivialis* while Xonerate caused a fast decline of *Poa trivialis* and resulted in more overall turf injury.



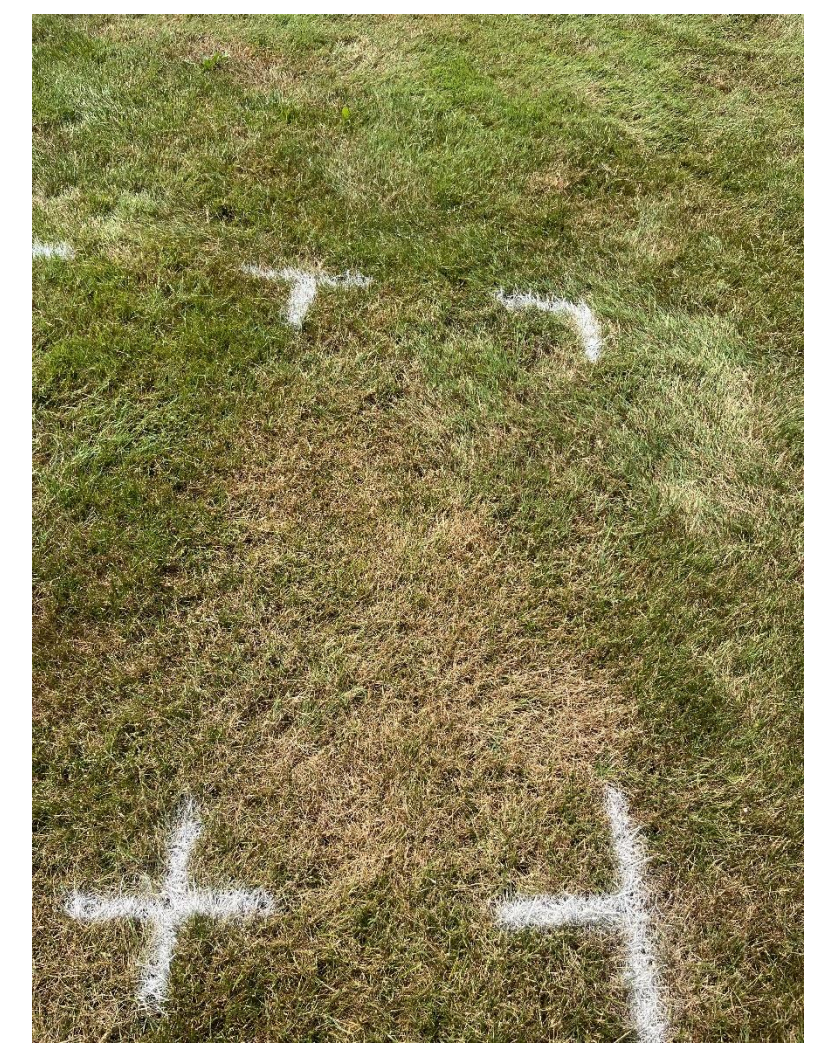
Untreated
↙



↗
Velocity PM x2
15 DA-B



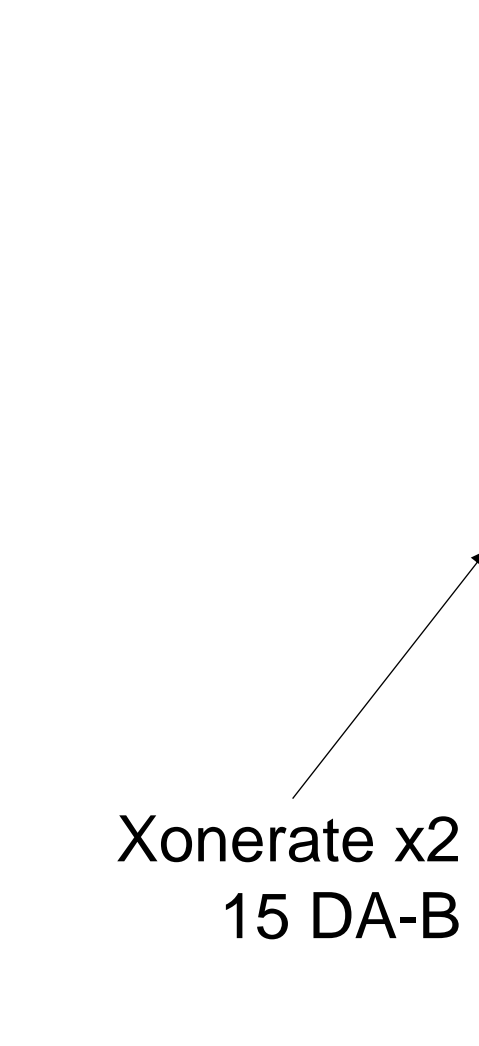
↗
Velocity PM x3
15 DA-B



Velocity PM +
Anuew EZ x2
15 DA-B
↙



↗
Velocity PM +
Fenox x2
15 DA-B



↗
Xonerate x2
15 DA-B



Velocity[®] PM

POA MANAGEMENT HERBICIDE

Lawns and Athletic Fields: A Simple, Effective Program

1. **Safe in tall fescue, perennial ryegrass, and fine fescue.**
2. **Some safety in Kentucky bluegrass but depends on variety.**
3. **Can be applied to dormant Bermudagrass and overseeded Bermudagrass.**
4. **2.25 fl oz/A applied twice 14 – 21 days apart.**
5. **Any interseeding can take place 10 days after the last application.**
6. **Do not apply on overseeded dormant Bermudagrass until 30-60 days after emergence. Use lower rates when applying earlier in this day-range.**

Thank you!
Questions?

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