Spreading tall fescue and perennial ryegrass: what we learned

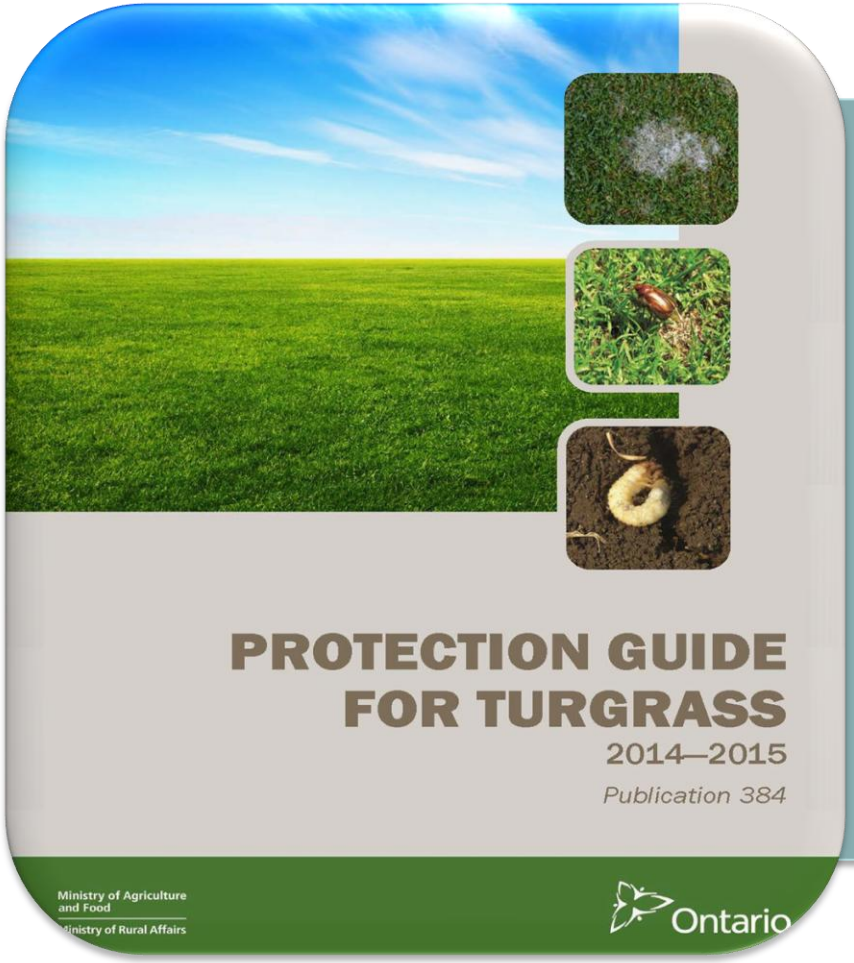
Pam Charbonneau

OMAFRA Turfgrass Specialist

Dr. Michael Brownbridge

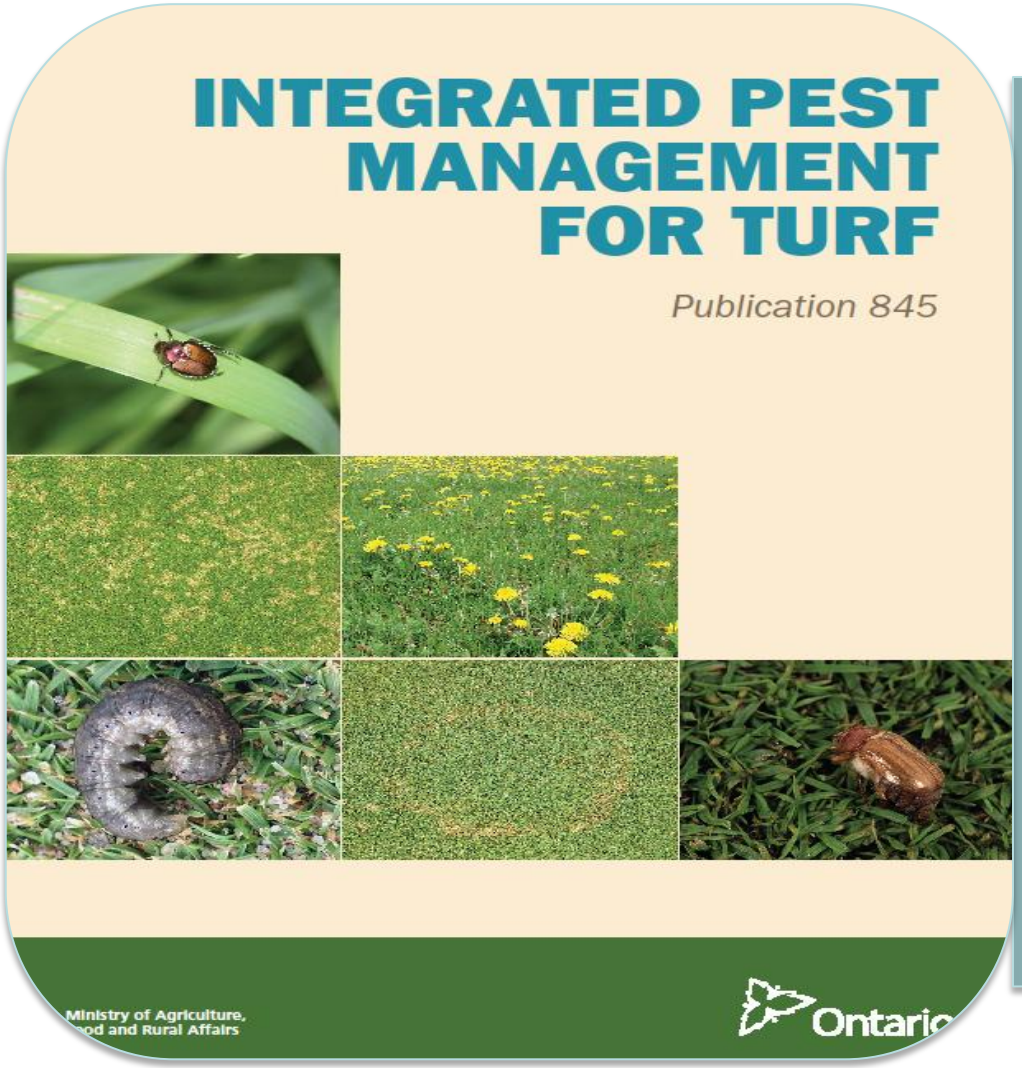
Vineland Research and Innovation Centre

New OMAFRA Publication 384



- Protection Guide
- Web only

New OMAFRA Publication 845



- Replaces Pub. 162 and 816
- Dr. Tom Hsiang and Pam Charbonneau
- 103 colour photos
- Available in Feb. 2015

ONturf blog

@ONturf - Twitter

RTF, RPR and Home Lawn Mix Trial

Collaborator – Dr. Michael Brownbridge, VRIC

Seeded Sept. 21, 2011 at GTI

- Rhizomatous tall fescue (**RTF**) (Barenbrug) - **2.5 kg/100m^2**
- Regenerative perennial ryegrass (**RPR**) (Barenbrug)– **3.0 kg/100m^2**
- Home lawn mixture (50% Kentucky bluegrass, 20% perennial ryegrass 30% fine fescue) (**HLM**) (Quality Seed) – **2.0 kg/100m^2**

Irrigated and non-irrigated

- Irrigated plots were irrigated to supply **25 mm of water** in a one week period during June, July and August (2012 only)

RTF, RPR and Home Lawn Mix Trial

Fertility

- Fertilized 3 x per season 20-5-10 at a rate of 50kg/ha of N

Mowing

- Mowed weekly at 5 cm height of cut

Extreme and Extremely Lucky Research

2012 Drought tolerance and recovery

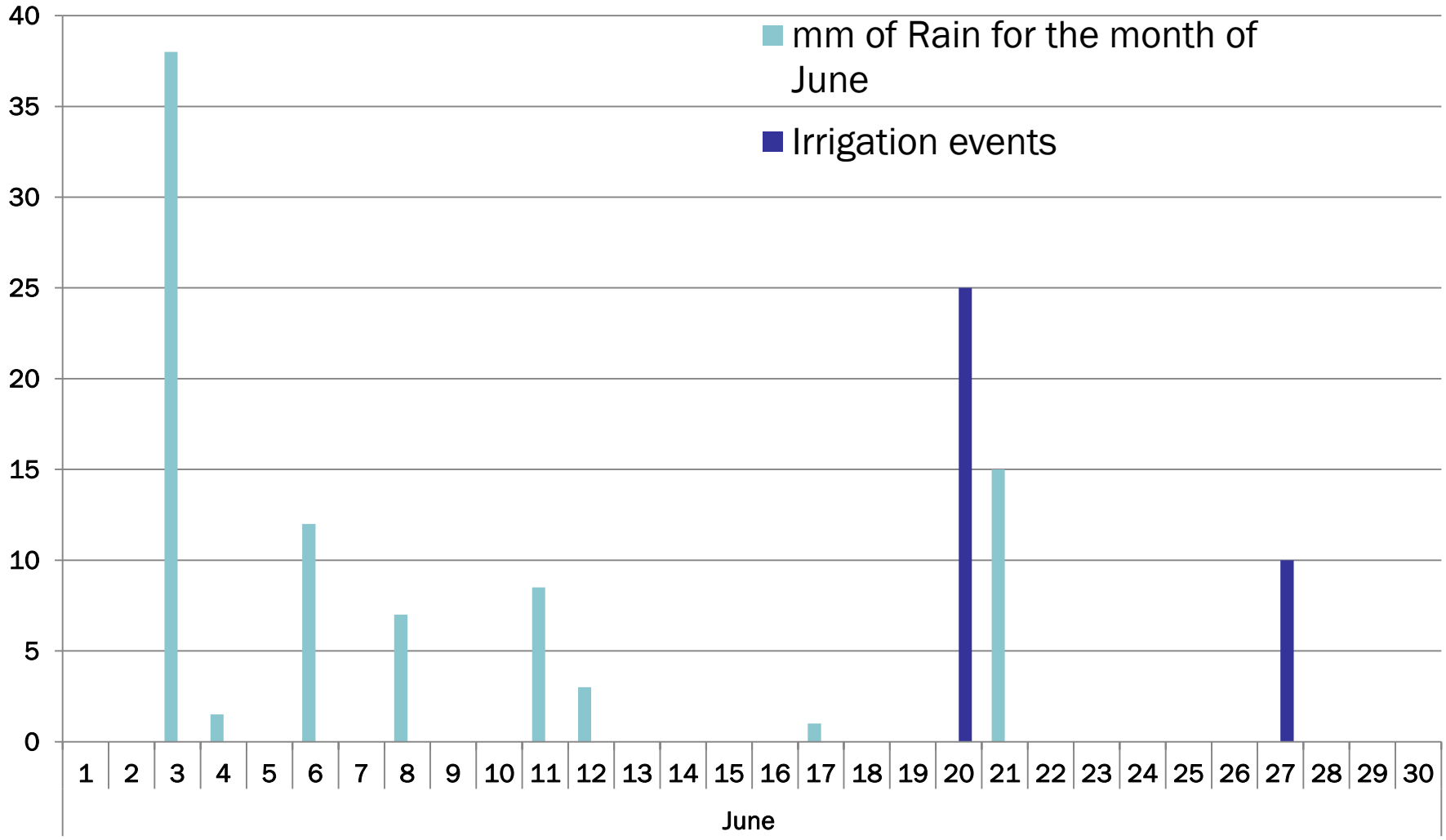
- 2013 Normal rainfall

2013/2104 Winter - Polar vortex winter survival and recovery

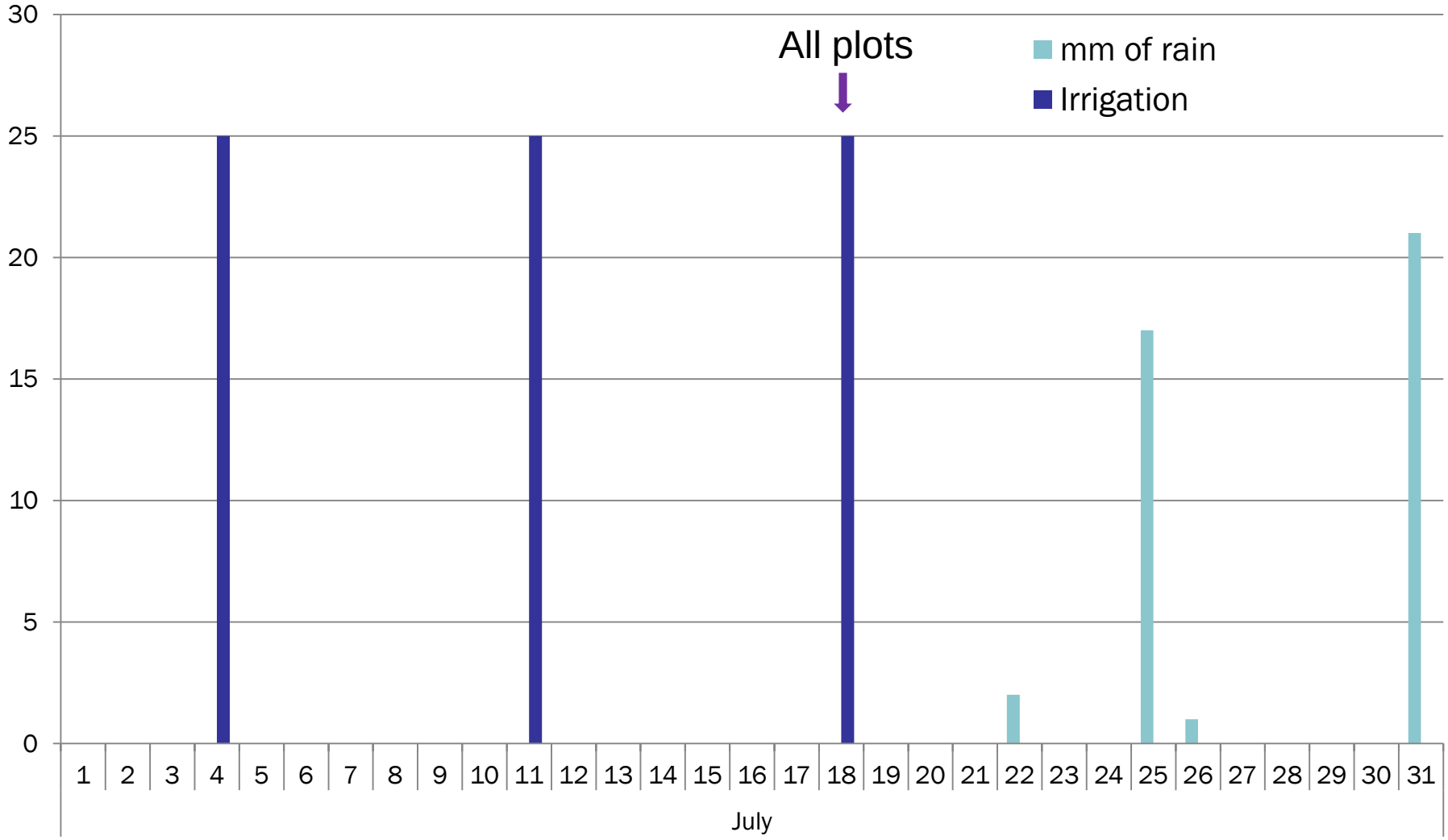

Vineland

Each irrigated plot was irrigated separately with a flow meter and hose end nozzle.

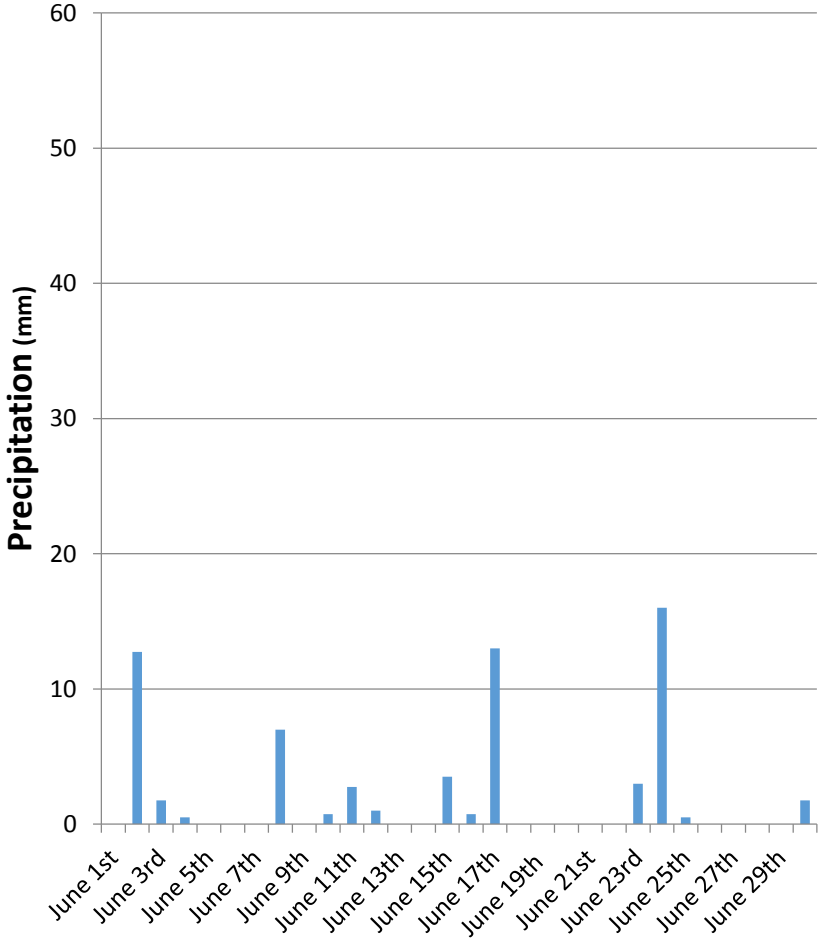
Rain and irrigation for June 2012



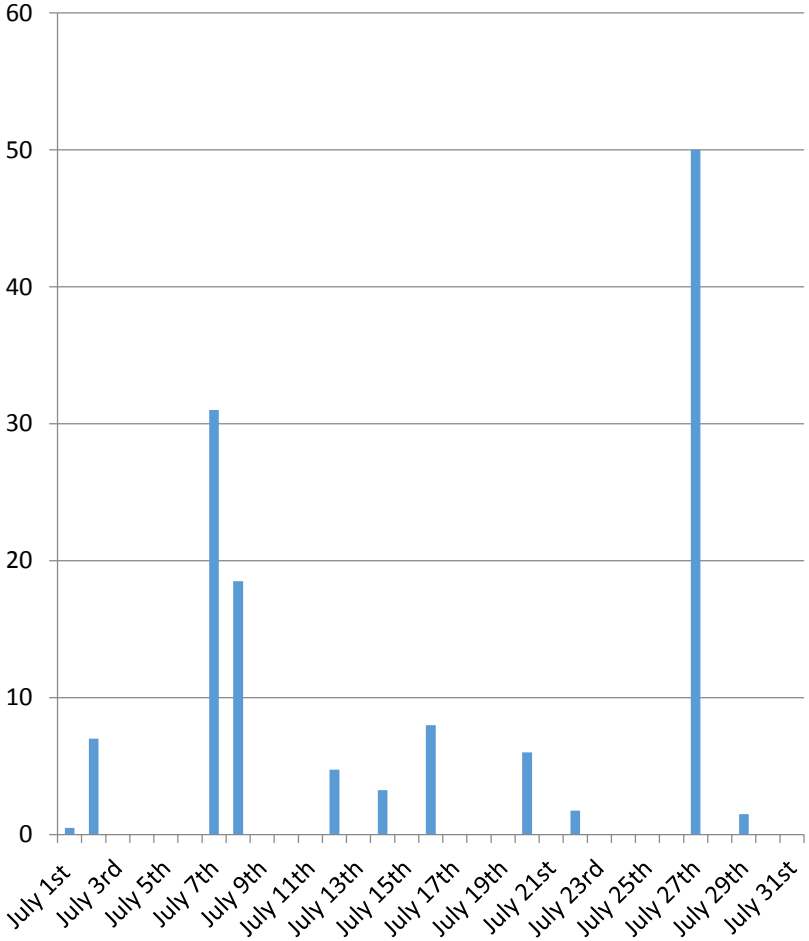
Rain and irrigation for July 2012

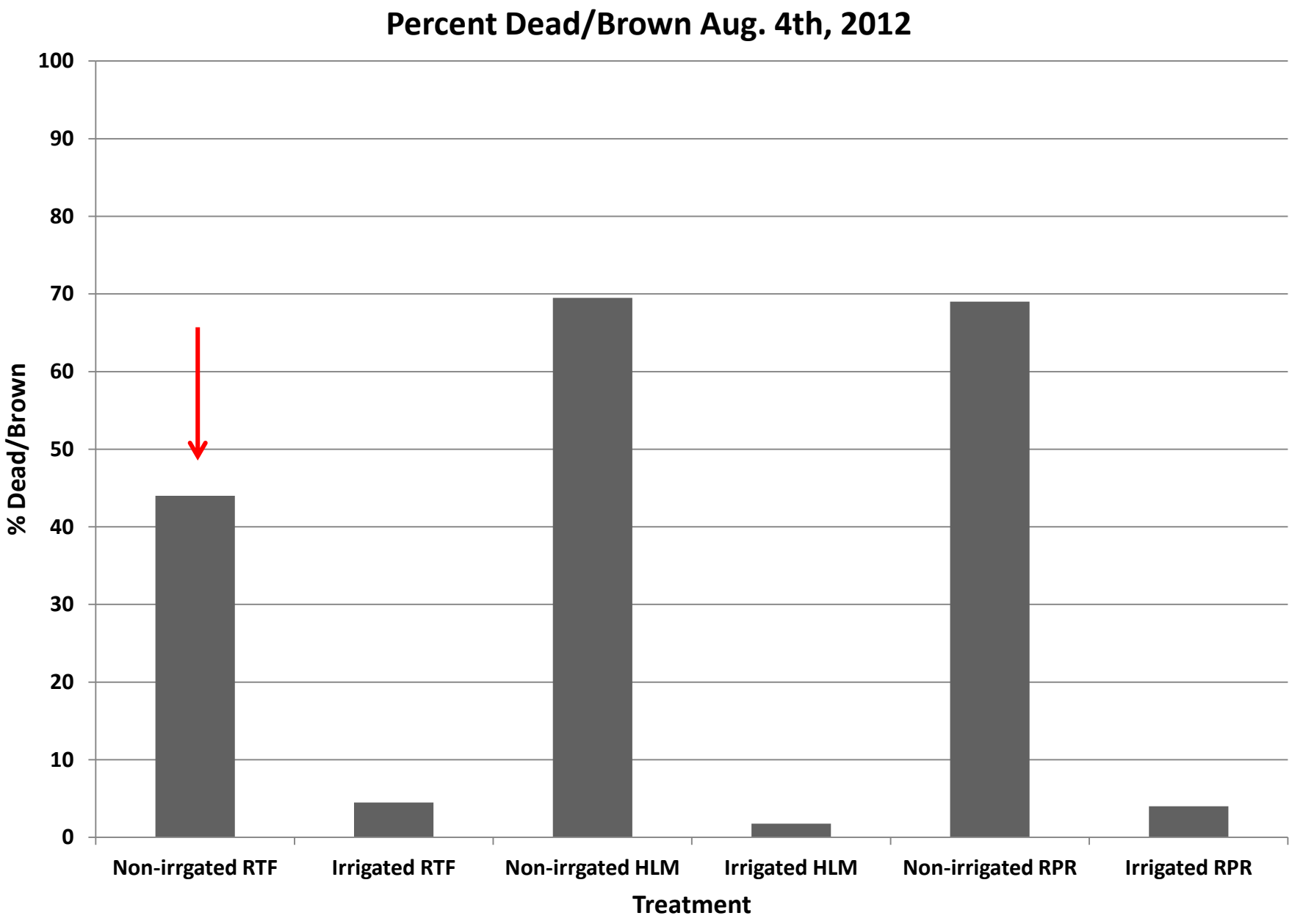


Rainfall June 2014 (mm/day)

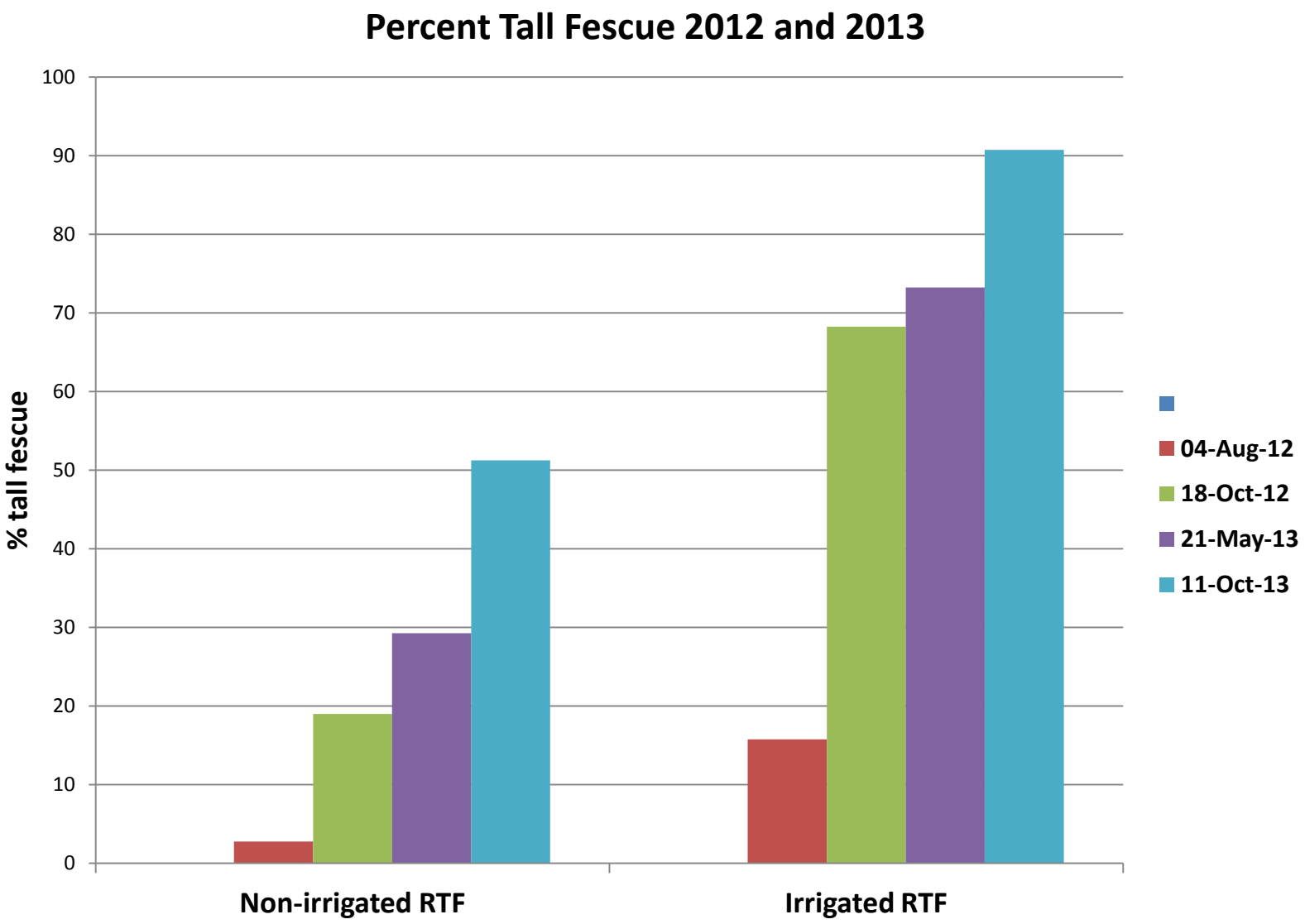


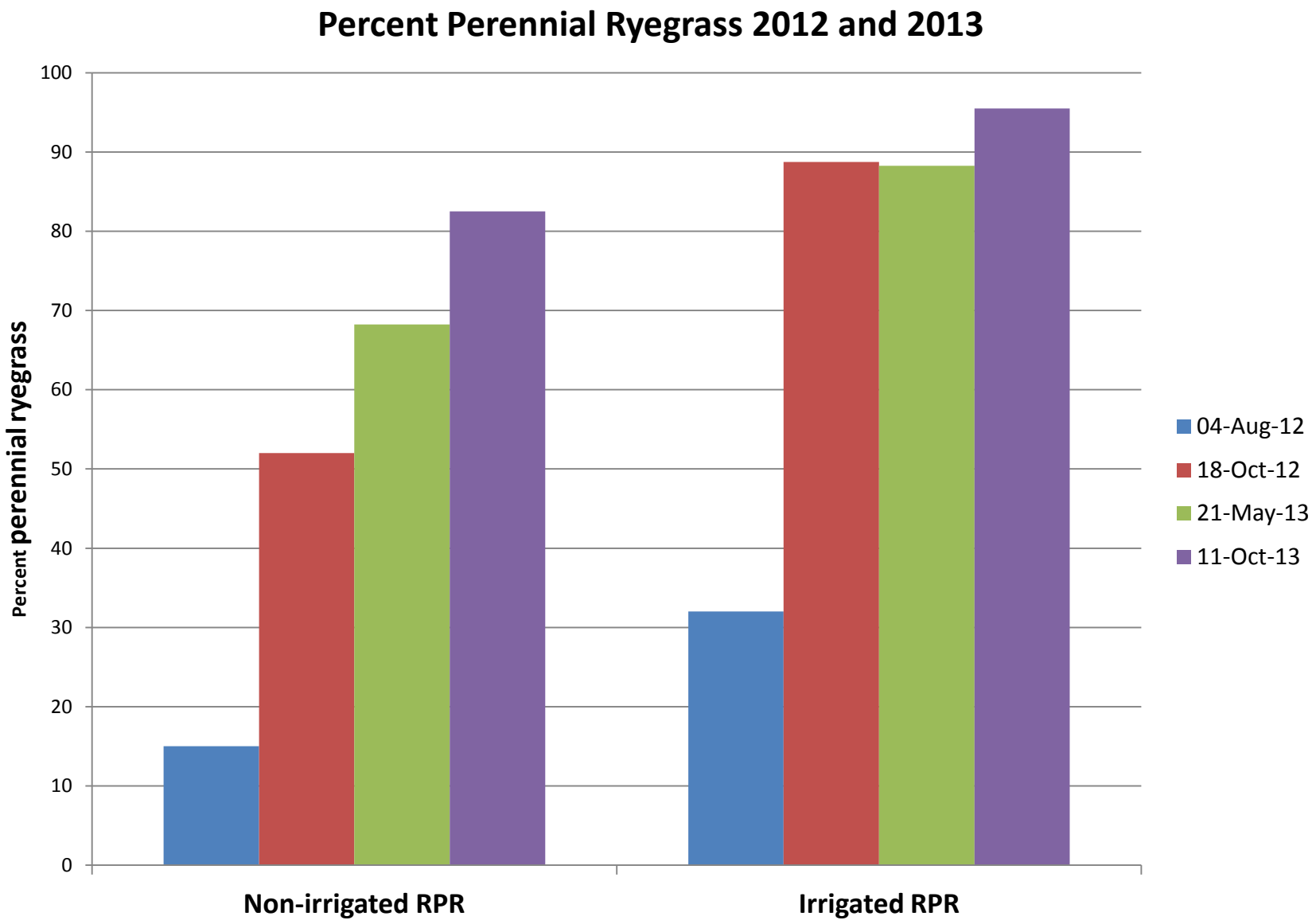
Rainfall July 2014 (mm/day)




Percent Dead/Brown Aug. 4th, 2012
% Dead/Brown
100
90
80
70
60
50
40
30
20
10
0
Non-irrgated RTF
Irrigated RTF
Non-irrgated HLM
Irrigated HLM
Non-irrigated RPR
Irrigated RPR
Treatment

Plots July 2012


Percent Tall Fescue 2012 and 2013
% tall fescue
100
90
80
70
60
50
40
30
20
10
0
Non-irrigated RTF
Irrigated RTF
04-Aug-12
18-Oct-12
21-May-13
11-Oct-13


Percent Perennial Ryegrass 2012 and 2013
Percent perennial ryegrass
100
90
80
70
60
50
40
30
20
10
0
Non-irrigated RPR
Irrigated RPR
04-Aug-12
18-Oct-12
21-May-13
11-Oct-13

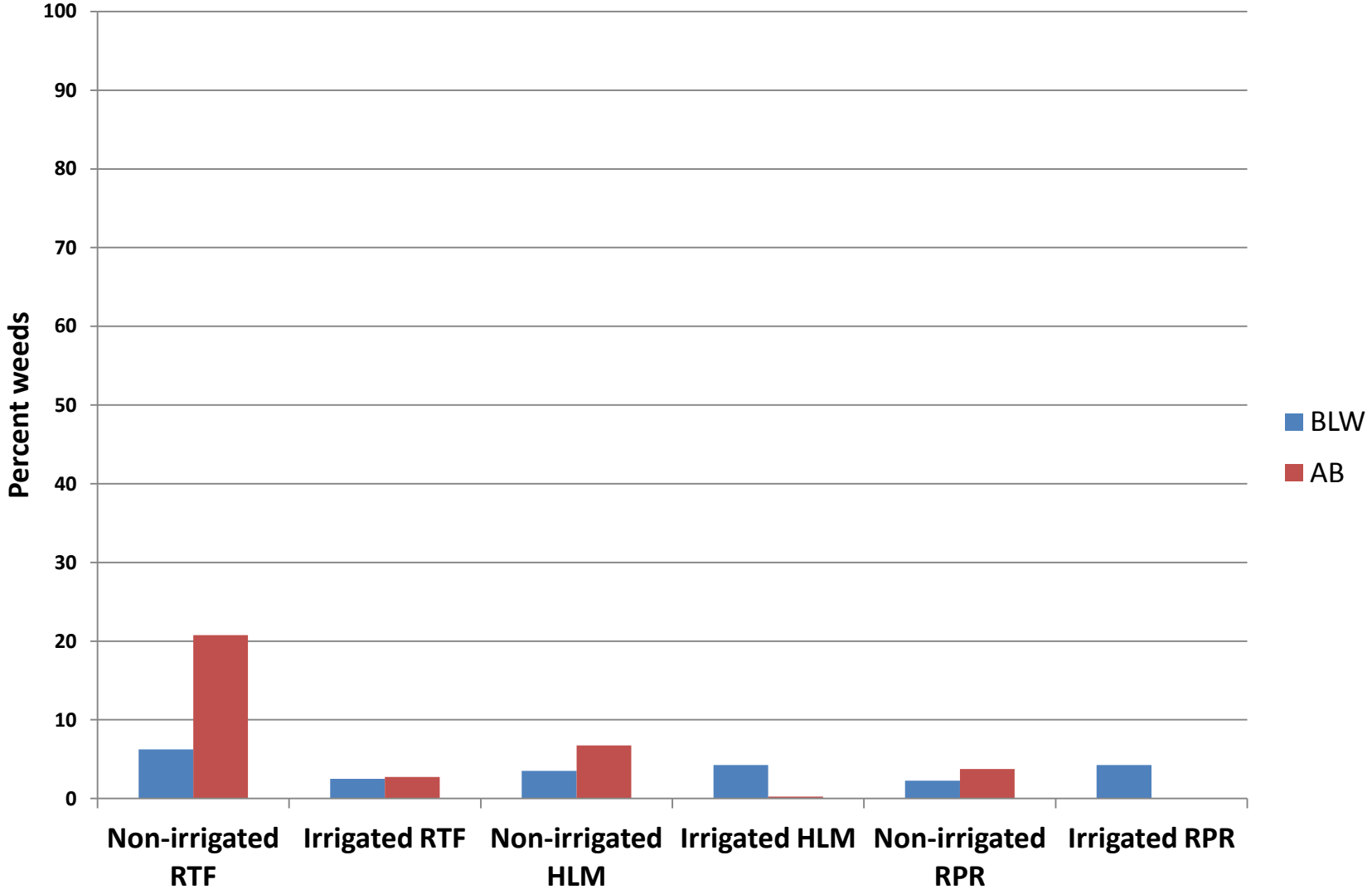
RTF Non-irrigated

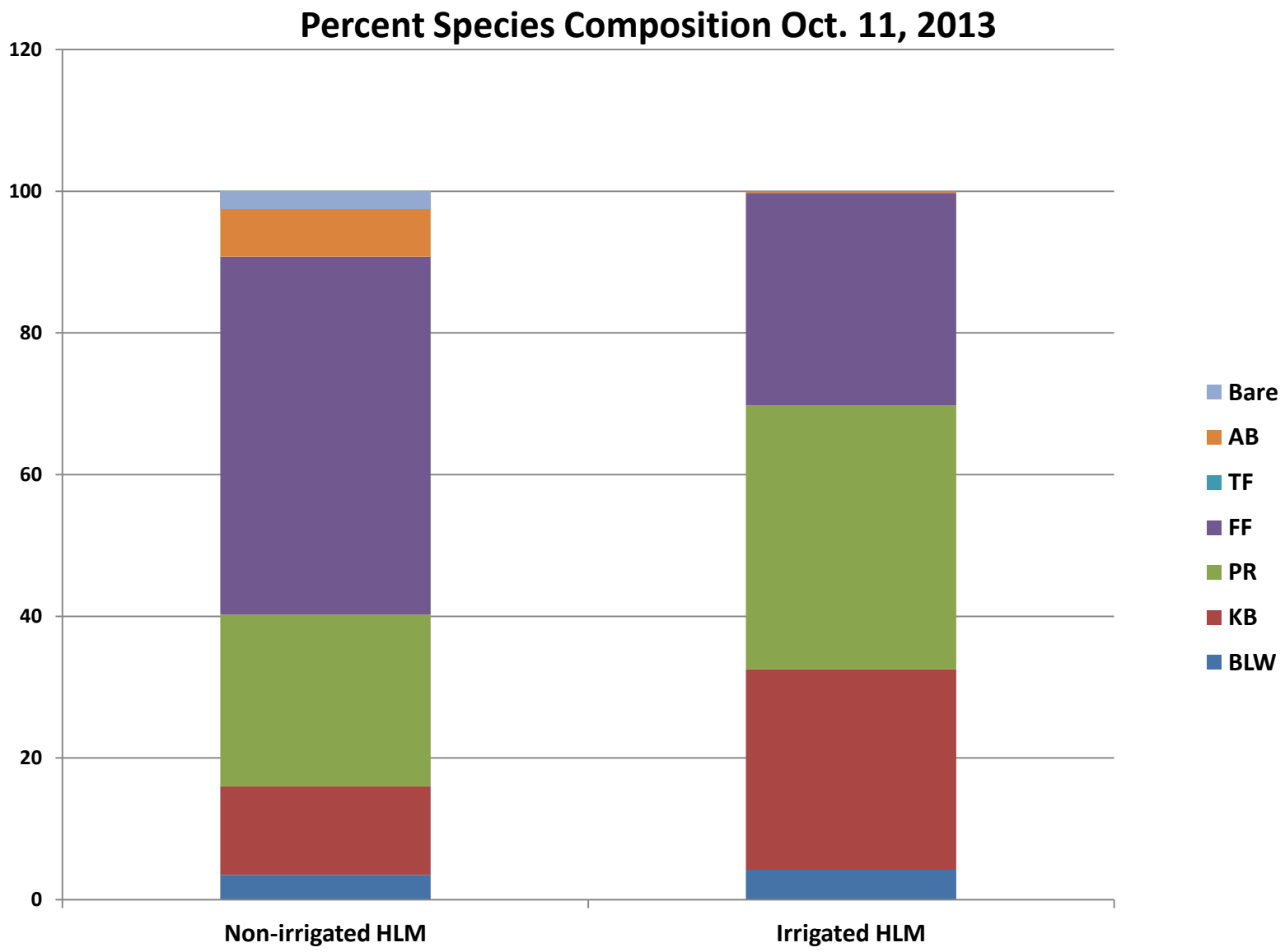
RTF Irrigated

RPR Non-irrigated

RPR Irrigated

Percent Weeds Oct. 11, 2013




Percent Species Composition Oct. 11, 2013
120
100
80
60
40
20
0
Non-irrigated HLM
Irrigated HLM
Bare
AB
TF
FF
PR
KB
BLW

Conclusions – Drought Tolerance and Recovery

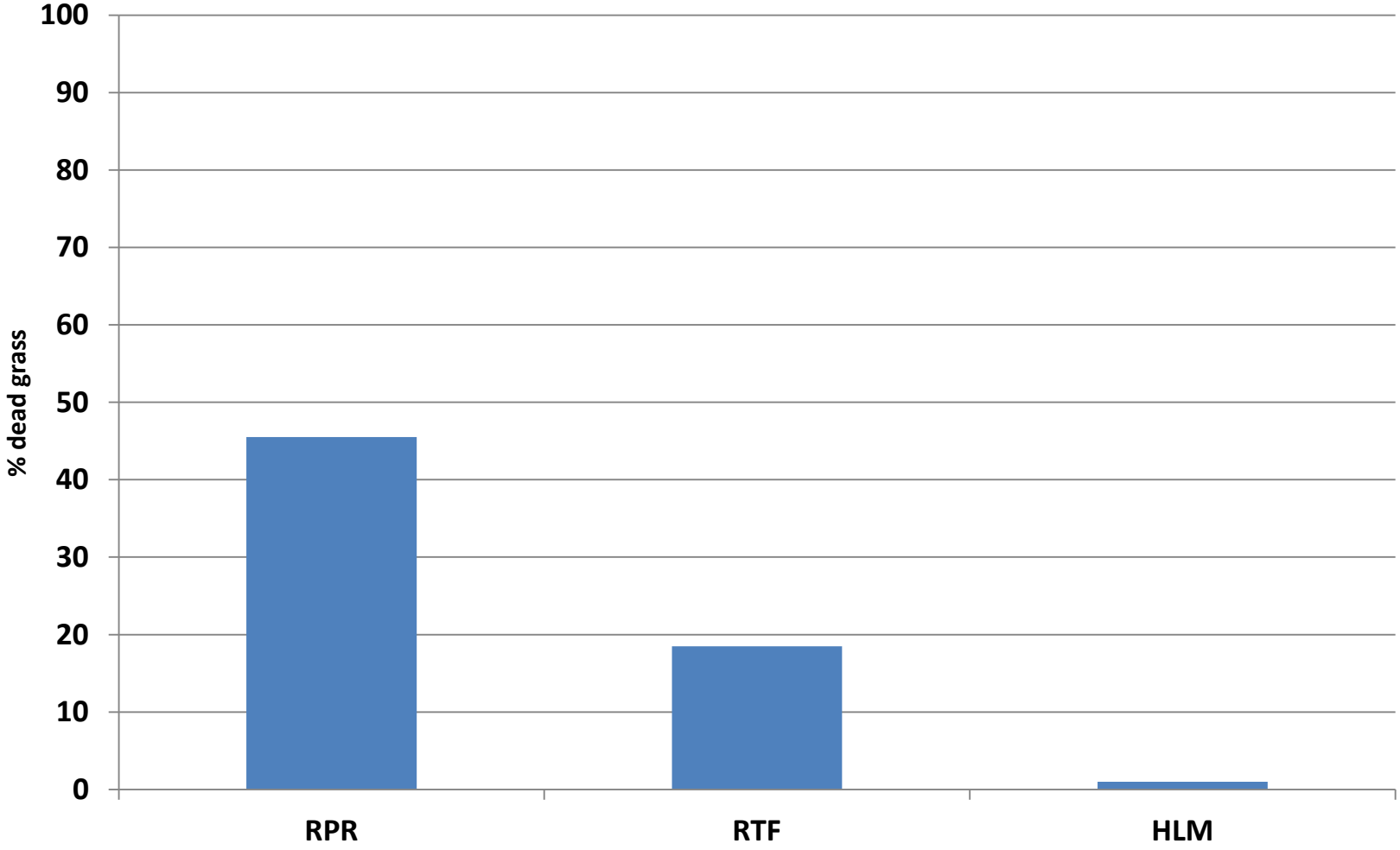
- Tall fescue
  - needs irrigation the first year of establishment
  - retained green colour best during drought
  - non-irrigated tall fescue invaded by annual bluegrass in fall

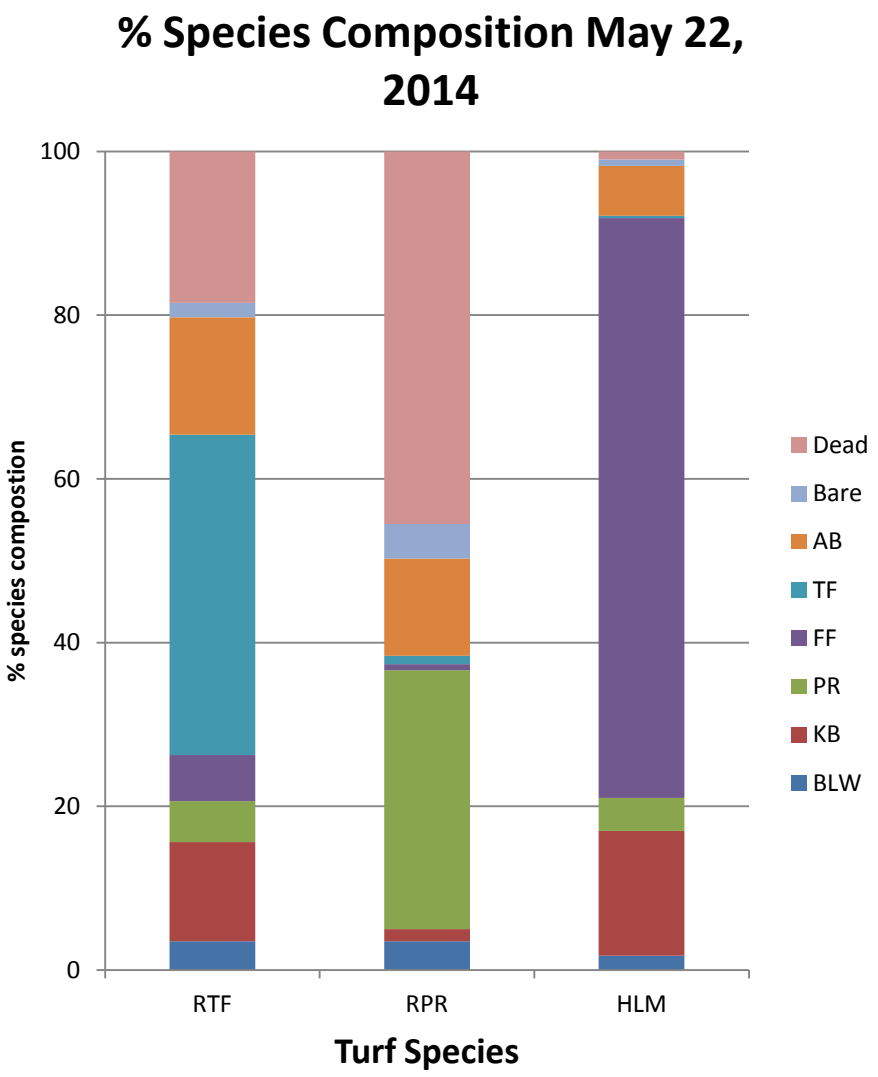
- Perennial ryegrass
  - Non-irrigated perennial ryegrass reached 80% cover after drought

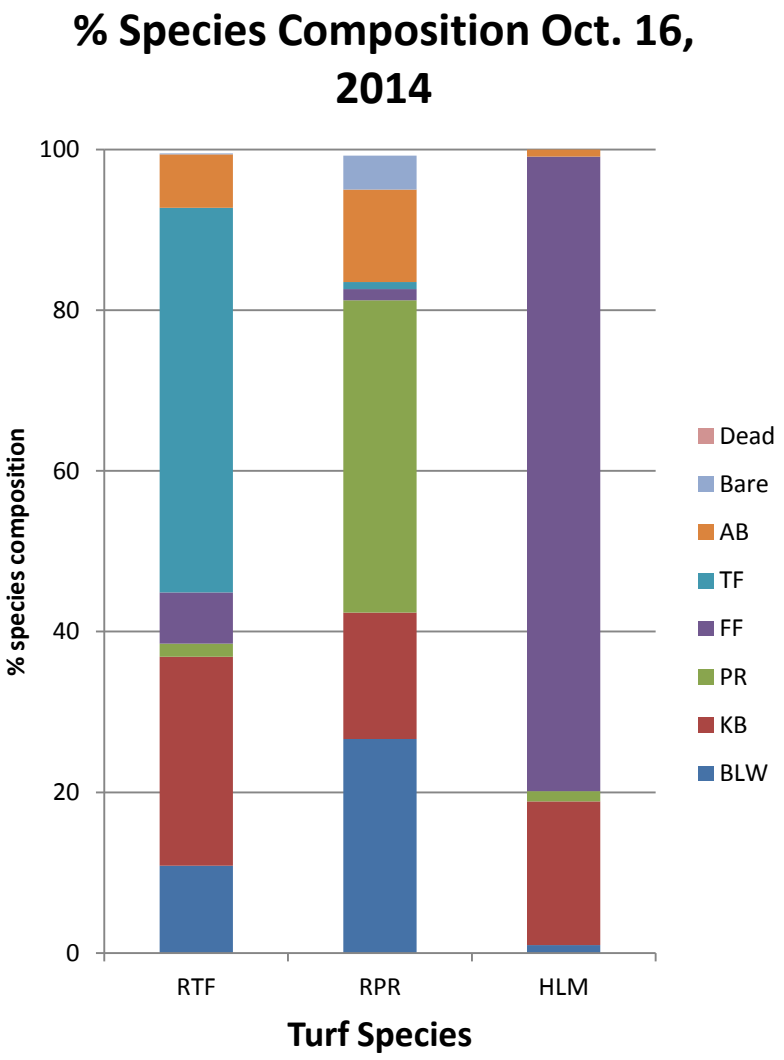
- Home lawn mix
  - non-irrigated majority fine fescue
  - Irrigated 1/3 KB, 1/3 FF and 1/3 PR

After a season of good turf growing weather – all species out-competed broadleaf weeds

% Dead grass May 2014




% Species Composition May 22, 2014
100
80
60
40
20
0
% species compostion
RTF
RPR
HLM
Turf Species
Dead
Bare
AB
TF
FF
PR
KB
BLW


% Species Composition Oct. 16, 2014
100
80
60
40
20
0
% species composition
RTF
RPR
HLM
Turf Species
Dead
Bare
AB
TF
FF
PR
KB
BLW

Spreading TF and PR and Home Lawn Mix Trial

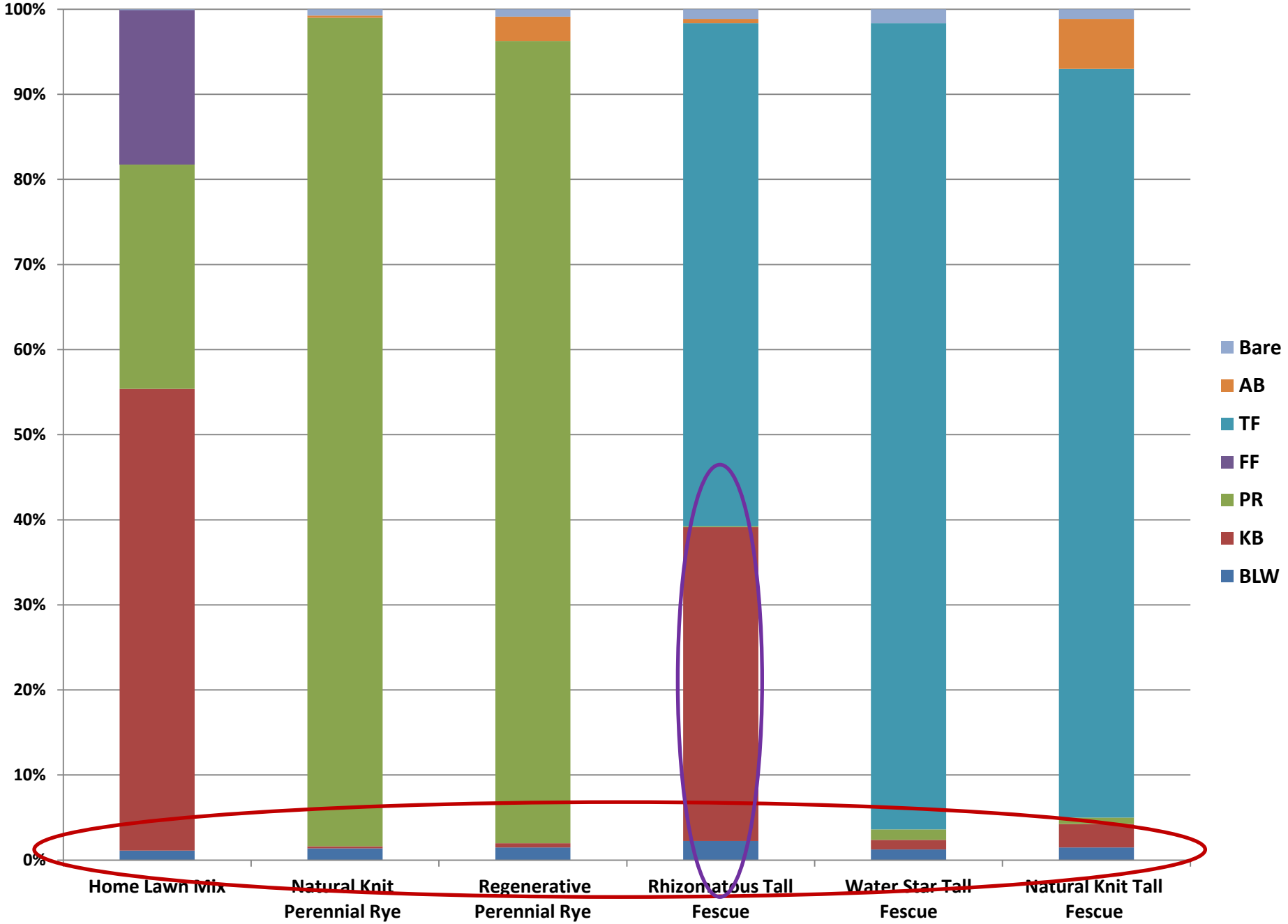
Collaborator – Dr. Michael Brownbridge, VRIC

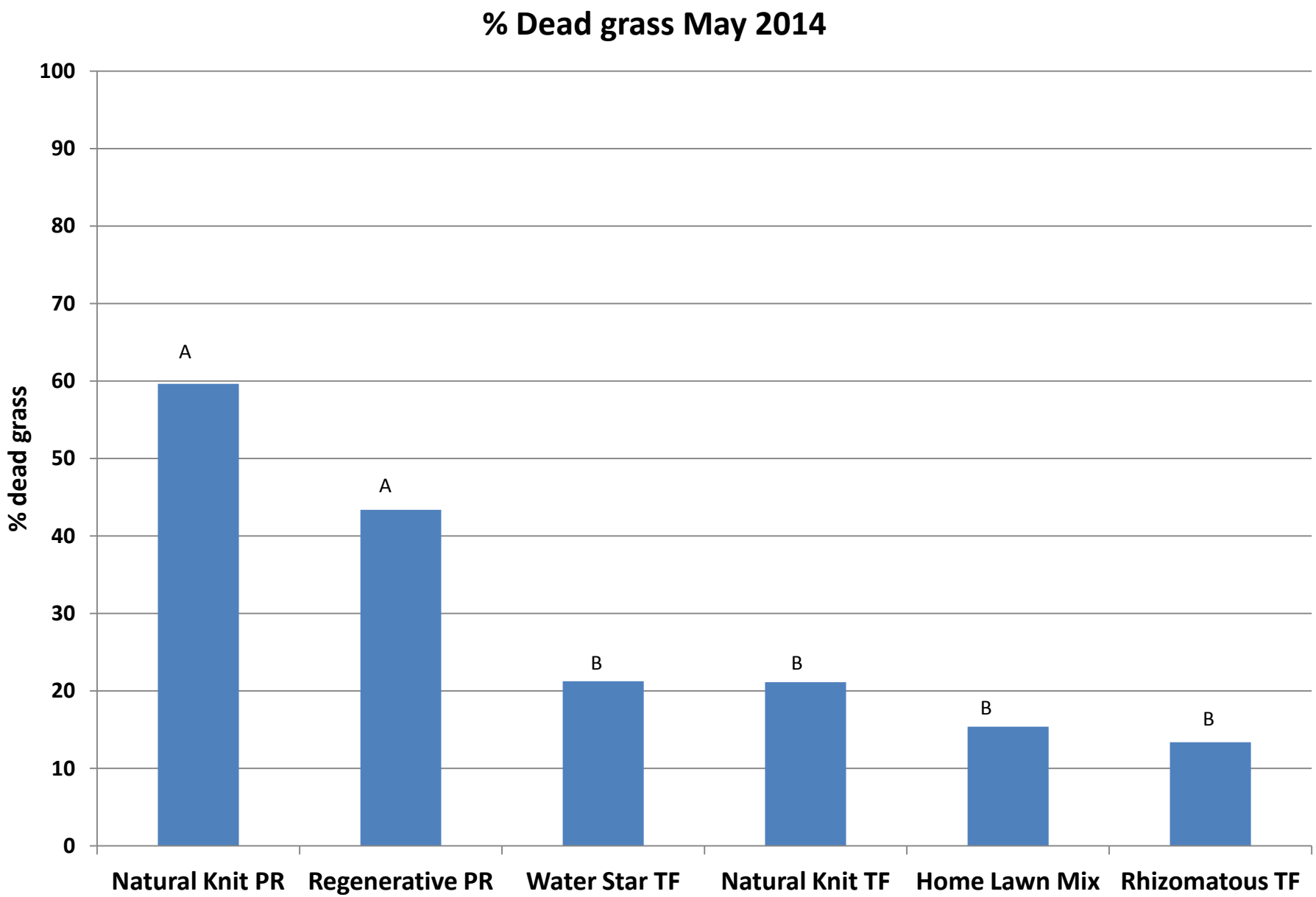
Seeded Sept. 28, 2012 at GTI

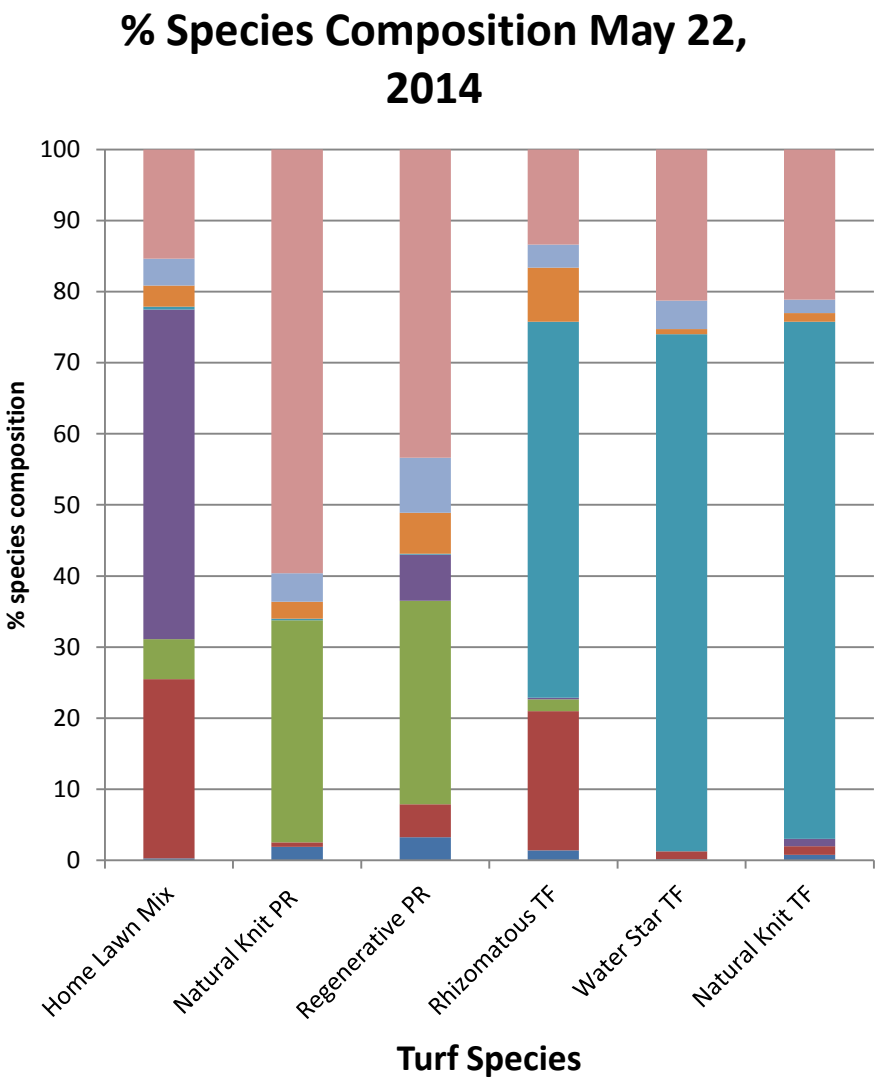
- Rhizomatous Tall Fescue (Barenbrug) 2.5 kg/100 m^2
- Regenerative Perennial Ryegrass (Barenbrug) 3.0 kg/100m^2
- Natural Knit Creeping Tall Fescue (Ledeboer) 2.5 kg/100m^2
- Creeping Perennial Ryegrass (Ledeboer) 3.5 kg/100m^2
- Water Star® Tall Fescue (Pinnington's) 2.5 kg/100m^2
- Home lawn mixture (40% KB, 40% creeping red fescue and 20% PR) (Quality Seed) 2.0 kg/100m^2

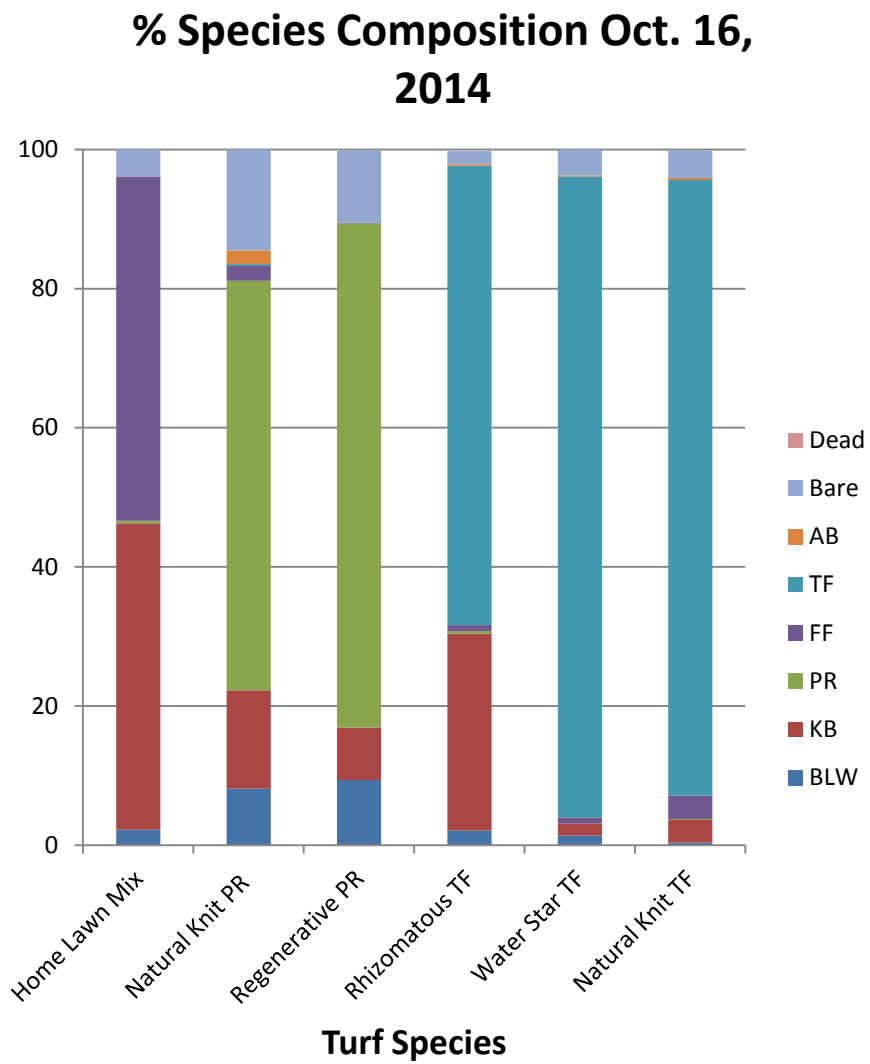

Natural knit PR
Water Star TF
Natural knit tall fescue
Home Lawn mix
Regenerative perennial rye
Rhizomatous tall fescue
June 4, 2013

% Species Composition Oct. 11, 2013




% Dead grass May 2014
% dead grass
100
90
80
70
60
50
40
30
20
10
0
A
A
B
B
B
B
Natural Knit PR
Regenerative PR
Water Star TF
Natural Knit TF
Home Lawn Mix
Rhizomatous TF


% Species Composition May 22, 2014
% species composition
100
90
80
70
60
50
40
30
20
10
0
Home Lawn Mix
Natural Knit PR
Regenerative PR
Rhizomatous TF
Water Star TF
Natural Knit TF
Turf Species


% Species Composition Oct. 16, 2014
100
80
60
40
20
0
Home Lawn Mix
Natural Knit PR
Regenerative PR
Rhizomatous TF
Water Star TF
Natural Knit TF
Turf Species
Dead
Bare
AB
TF
FF
PR
KB
BLW

Conclusions – Winter Injury and Recovery

- Perennial ryegrass
  - by far the least winter-hardy
  - did spread 30-50% RPR (2011 seeding)
  - RPR 30-70% (2012 seeding)
  - NKPR 30-60%
  - had highest broadleaf weeds
- Tall fescue
  - intermediate winter-hardiness
  - needs irrigation and a full growing season to fill in
  - Non-spreading filled in after winter injury as well as the spreading types
- Home lawn mix
  - lost the perennial ryegrass
  - ended up 50% KB and FF

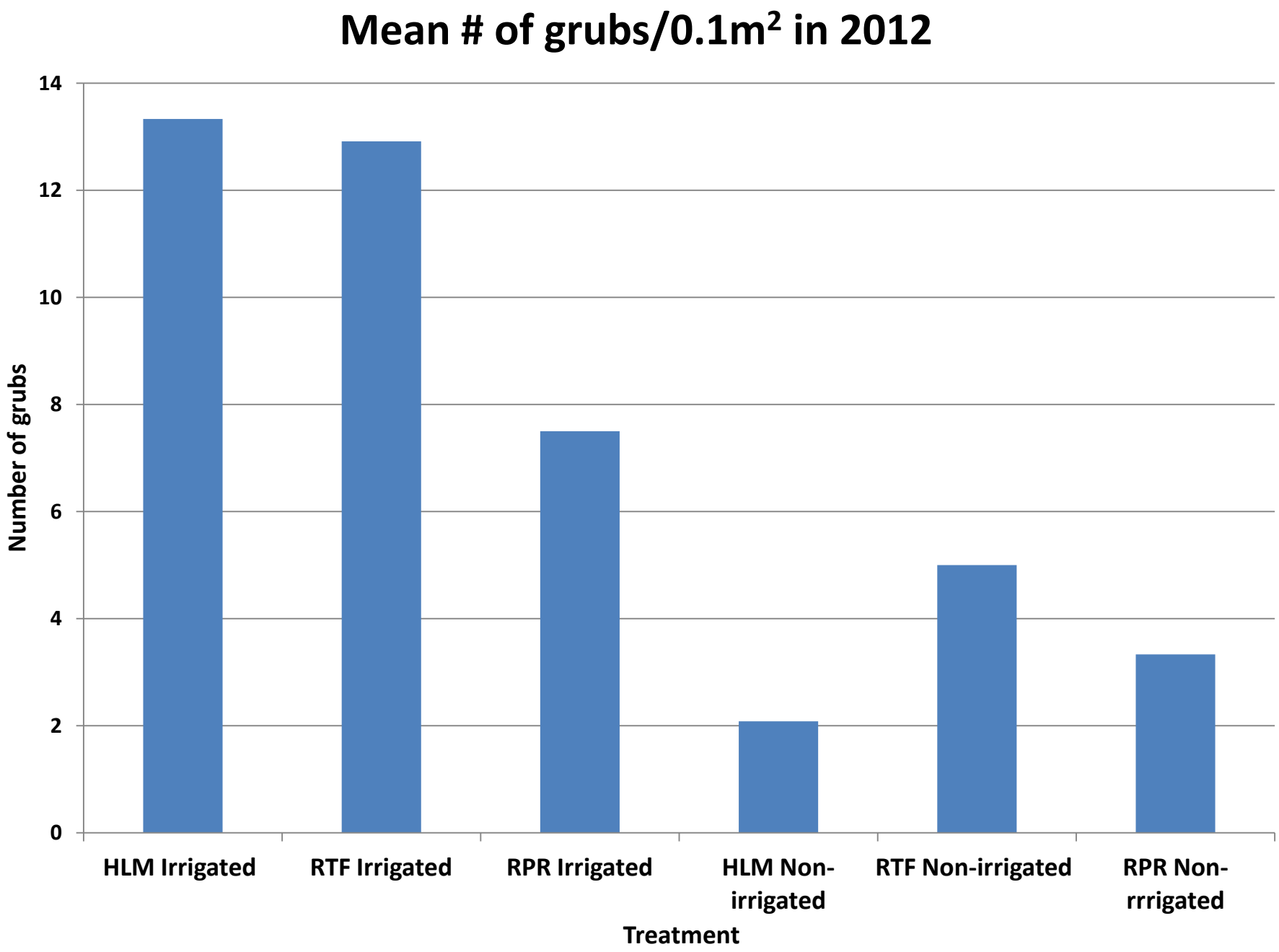

PENGUIN
PLUNGE

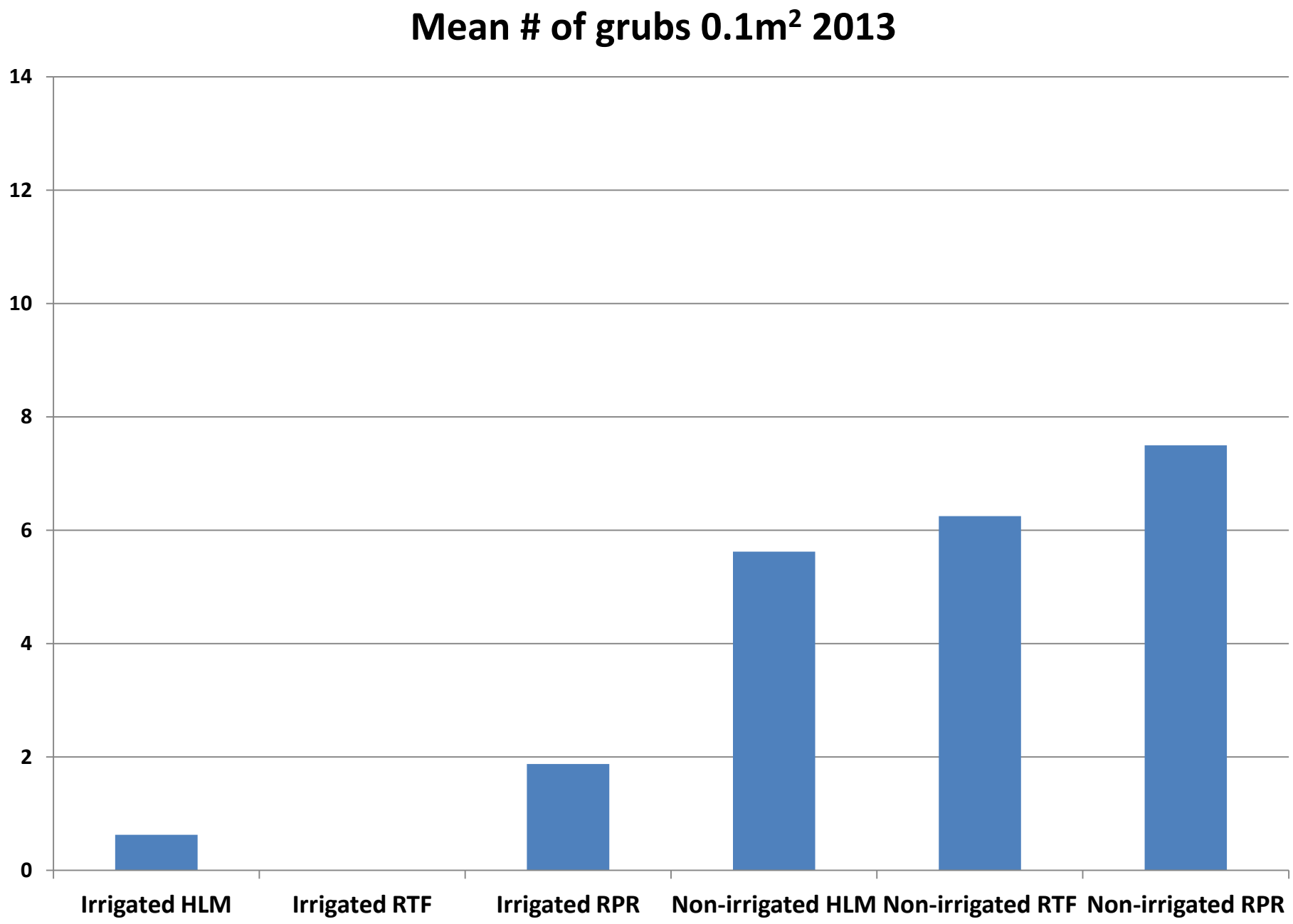
Grubs

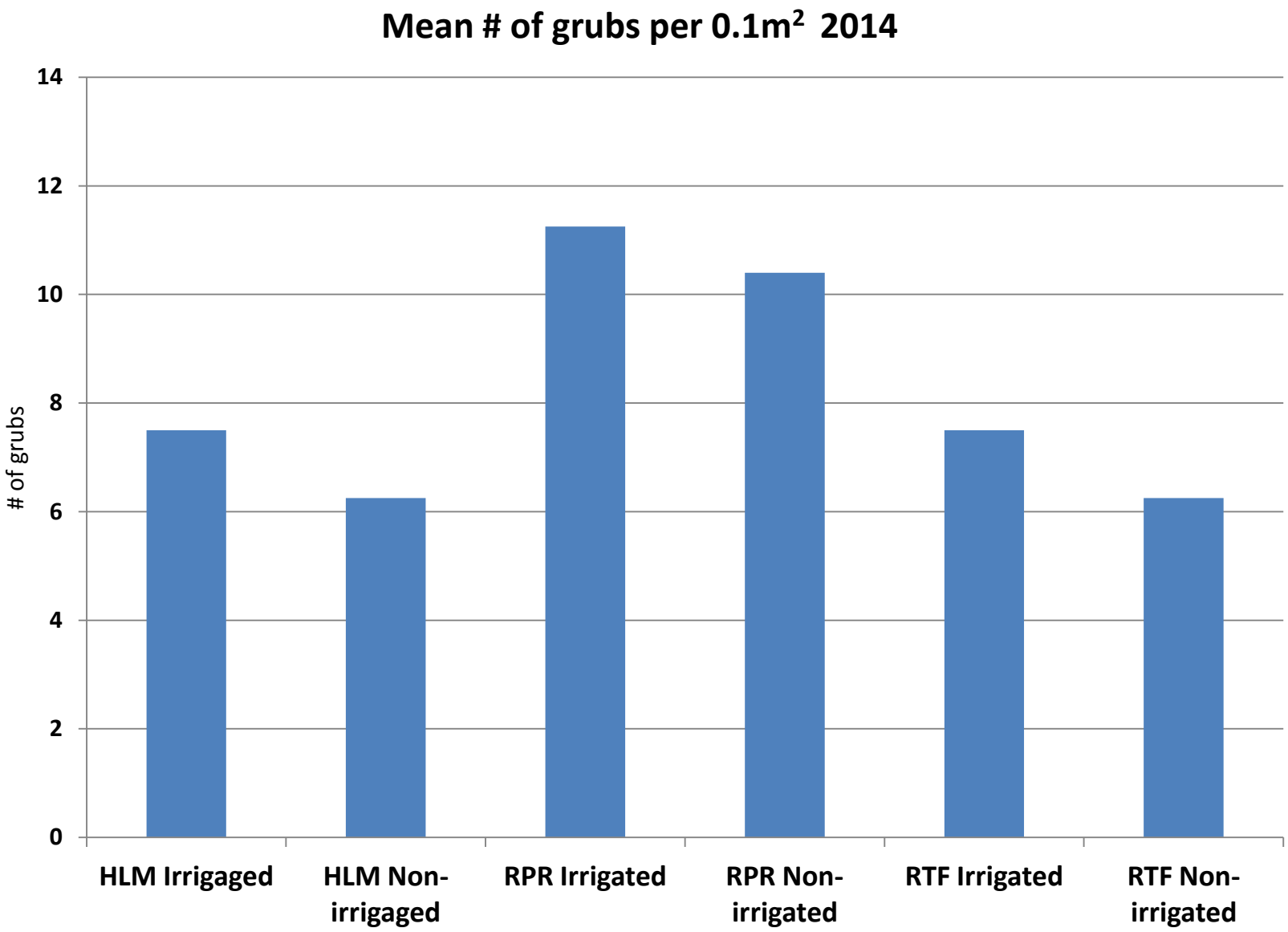
HLM Non-irrigated

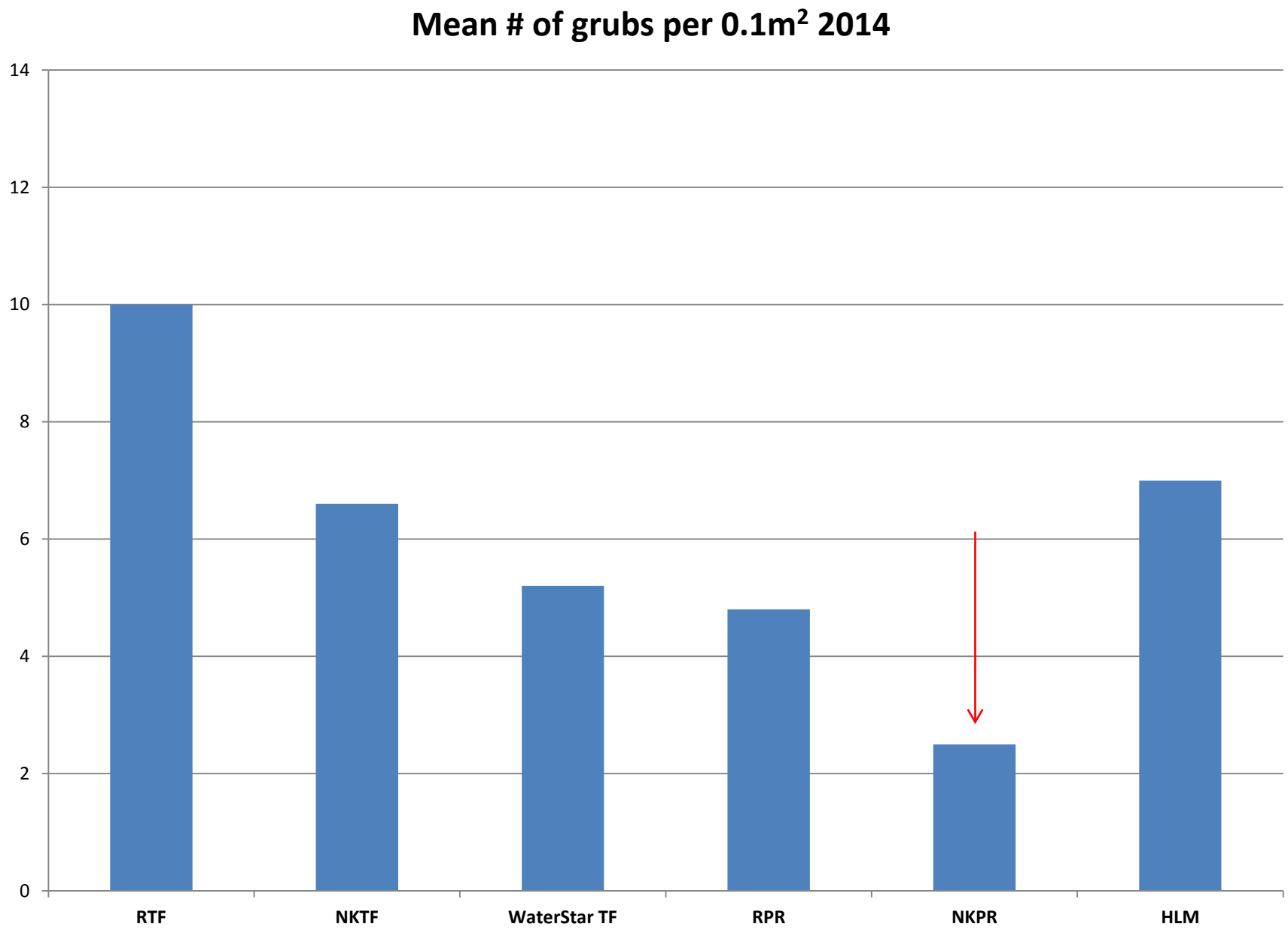
HLM Irrigated


Vineland


Mean # of grubs/0.1m² in 2012
Number of grubs
14
12
10
8
6
4
2
0
HLM Irrigated
RTF Irrigated
RPR Irrigated
HLM Non-irrigated
RTF Non-irrigated
RPR Non-rrrigated
Treatment


Mean # of grubs 0.1m² 2013
14
12
10
8
6
4
2
0
Irrigated HLM
Irrigated RTF
Irrigated RPR
Non-irrigated HLM
Non-irrigated RTF
Non-irrigated RPR


Mean # of grubs per 0.1m2 2014
14
12
10
8
6
4
2
0
# of grubs
HLM Irrigaged
HLM Non-irrigaged
RPR Irrigated
RPR Non-irrigated
RTF Irrigated
RTF Non-irrigated


Mean # of grubs per 0.1m2 2014
14
12
10
8
6
4
2
0
RTF
NKTF
WaterStar TF
RPR
NKPR
HLM

Anecdotal information 2012

Irrigation effect

- Irrigated RTF and HLM plots had more grubs
- Better egg survival or female adults preferred laying there

Skunk digging preference

- Irrigated home lawn mix plots were preferred by skunks
- Species composition easier to dig (fine fescue)

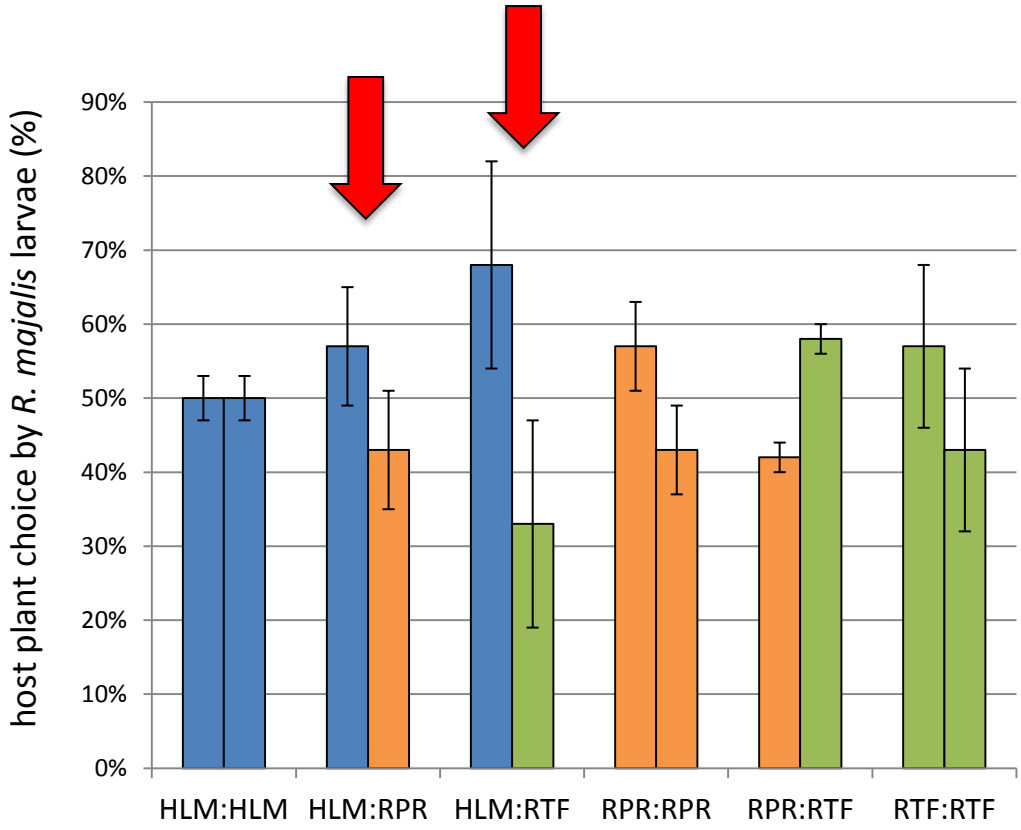
Anecdotal information

Grub infestation vs. species or irrigation

- Twice perennial rye had fewer

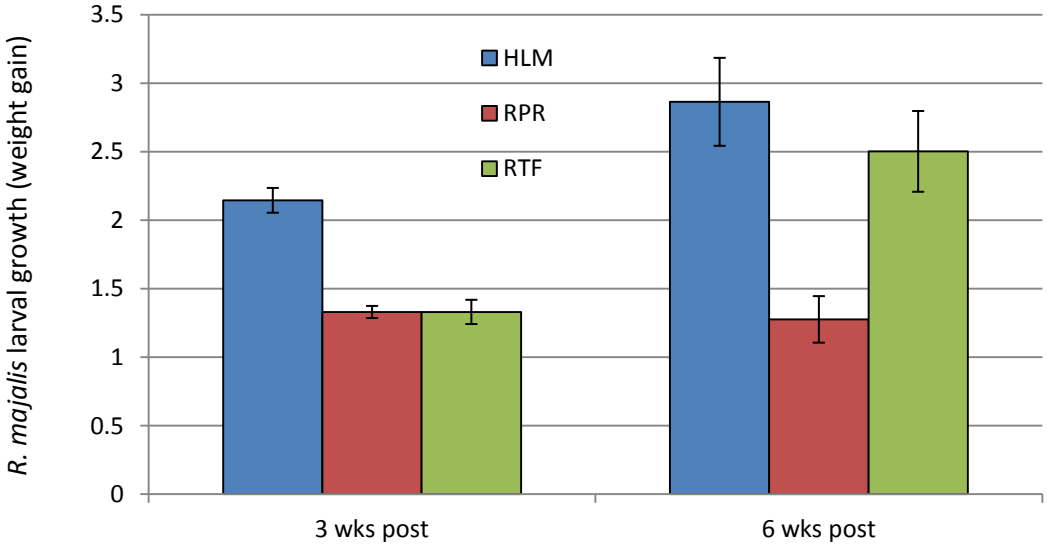
Effects of grasses on chafer grub behaviour

Preference for HLM over RPR/RTF in feeding choice tests



Growth response of chafer grubs on different grass types

- Insect development slower in RPR/RTF
- Greater window of opportunity for biopesticides?
- Complementary activity?




Détergent
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Acknowledgements

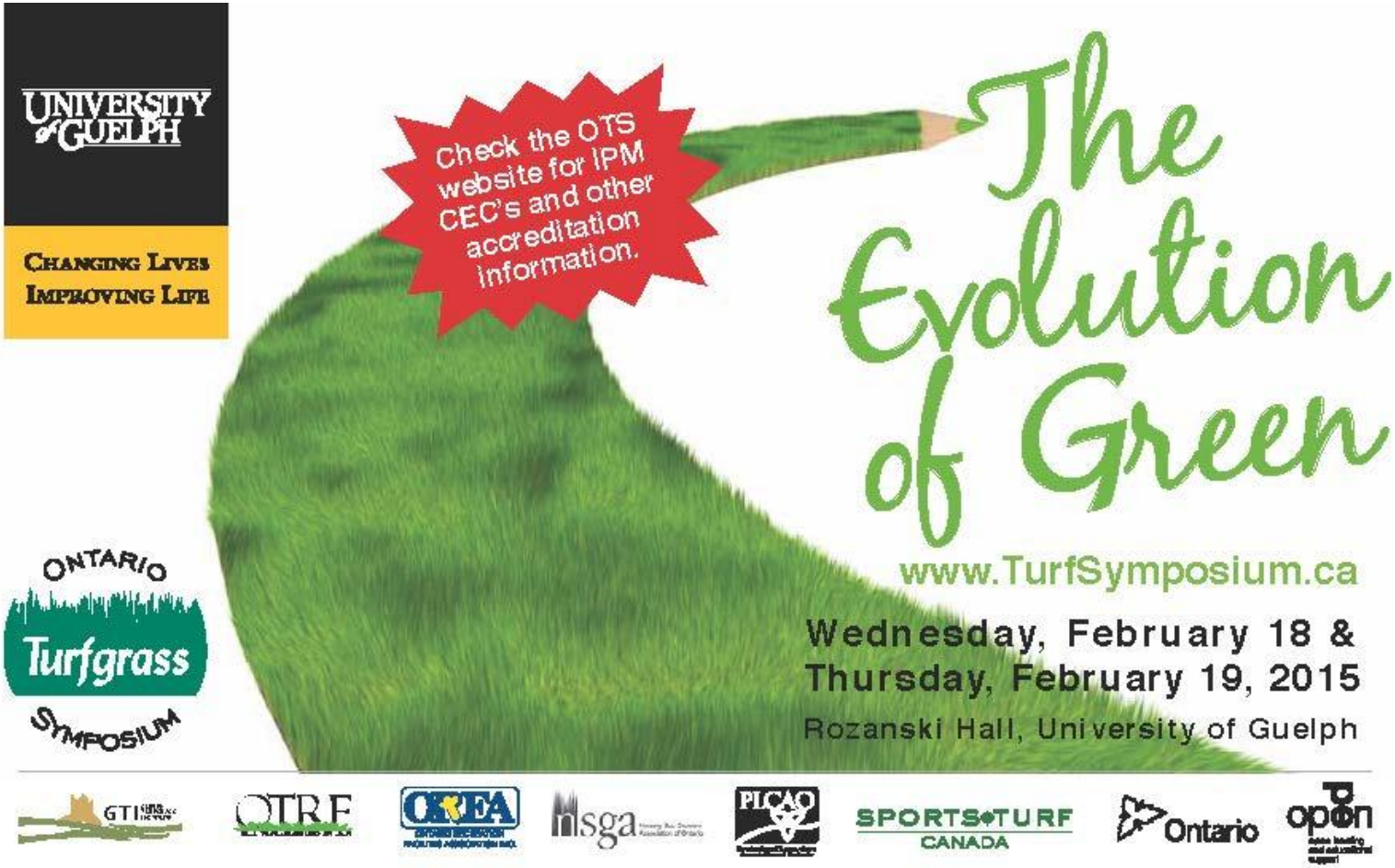
Dr. Michael Brownbridge, Paul Coté and Taro Saito, VRIC

Dr. Ken Carey and Peter Purvis and his crew at GTI

Karen Montgomery-Wilson, Emily Hartwig and Nick Papple, OMAFRA SEP

Peter Coons, Quality Seeds, Richard Reed, Lawn Life

OTS 2015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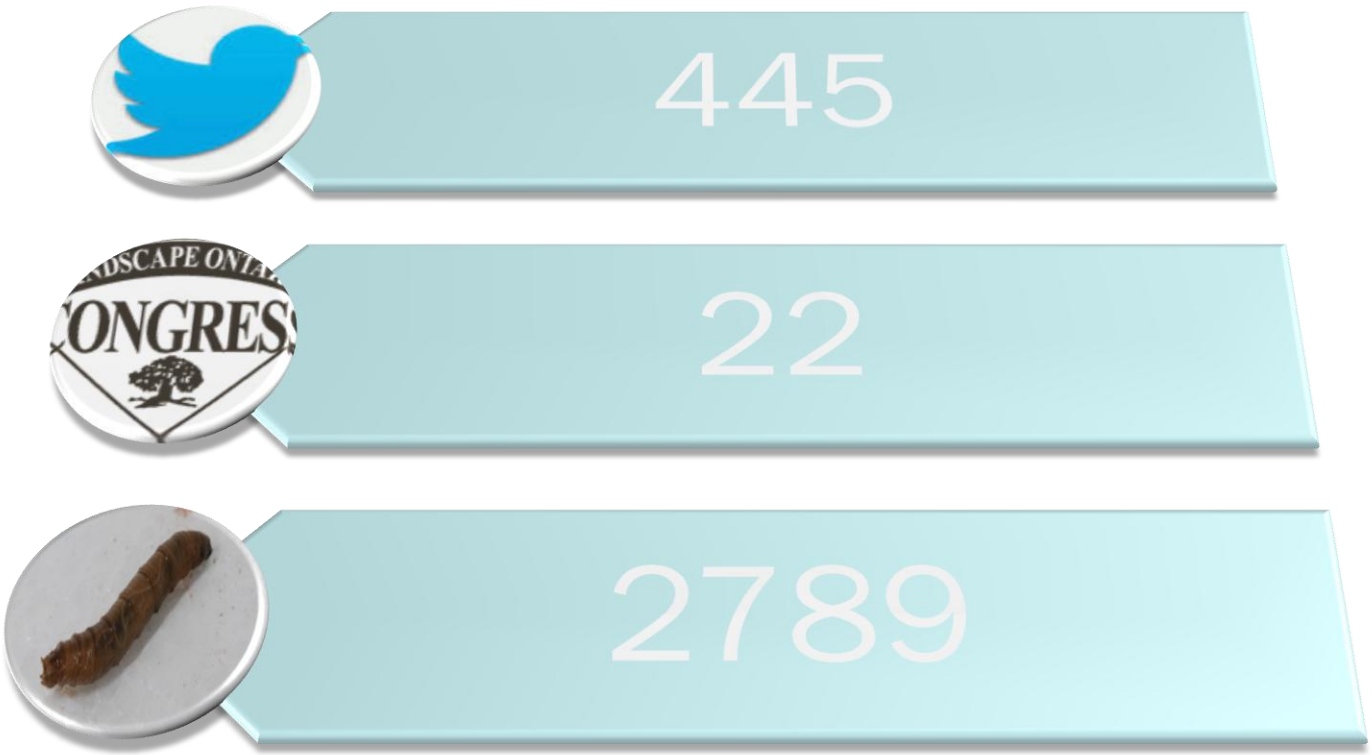
Commitment to the industry

Put all research reports on the GTI website

Links to bio-pesticide reports from GTI website to VRIC

My career by the numbers



My career by the numbers

6478

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Priceless

Thank you!

Good luck to all of you!