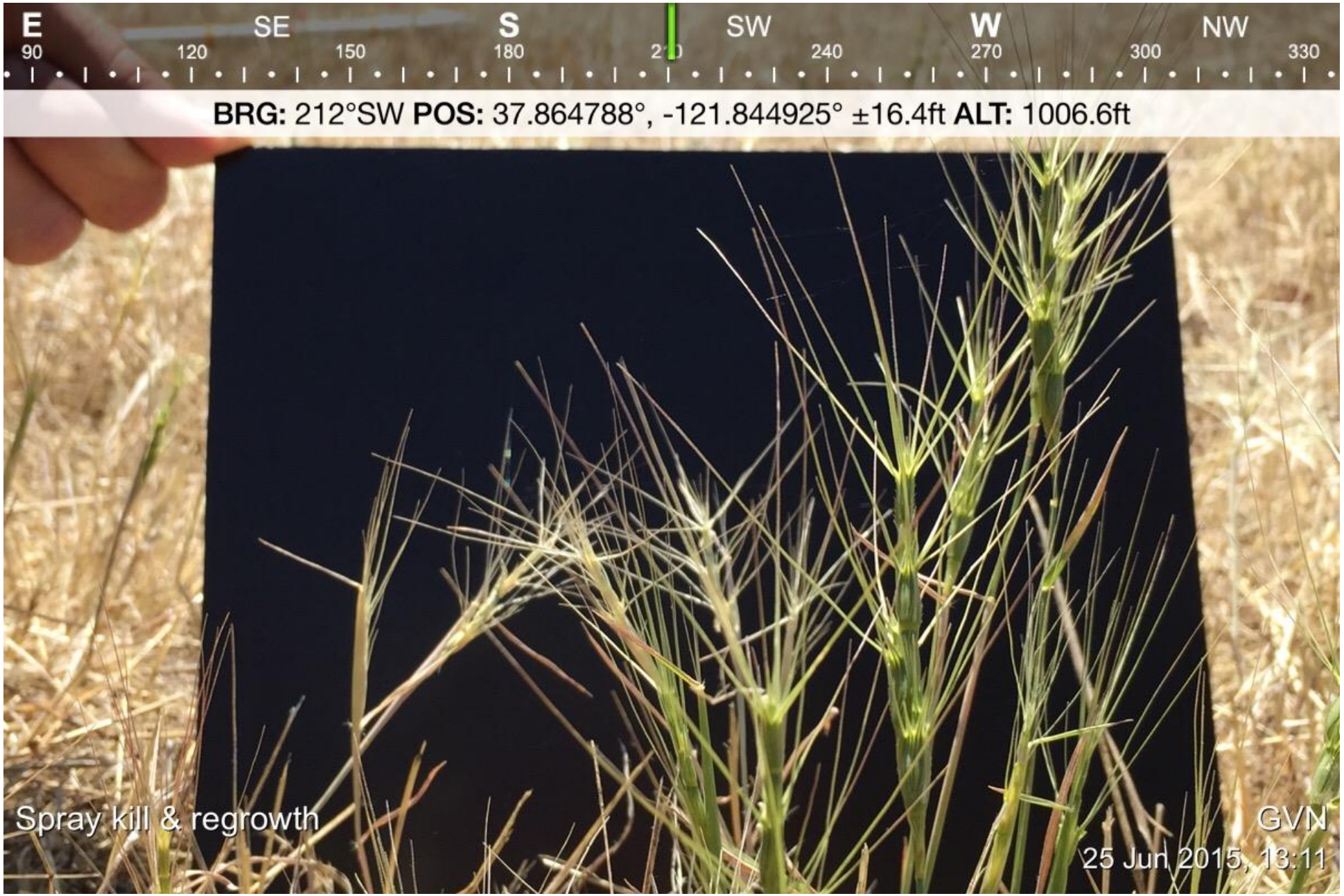
B A D G R A S S



2 0 1 5

EBRPD IPM Department Pamela Beitz & Casey Brierley

Integrated Control Method

- Timed Mowing and Line Trimming
- Follow-Up Hand Pulling and Spot Spraying
- Expensive but effective on small scale
- Reduces Herbicide use/avoids collateral damage
- May benefit native grasses and forbs

Barb Goat Grass
Aegilops triuncialis

- Colonizes serpentine soils, vernal pools, oak woodlands, refugia
- Up to 5 years seed viability
- “Evil twin” seed guarantee at least a 2nd year
- Not palatable once the seed head emerges
- Readily tillers and reproduces after mechanical treatment
- Roads appear to be major vector
- Thatch promotes BGG germination/suppresses competitors
- Matures late in the season after other annuals have senesced

Medusahead

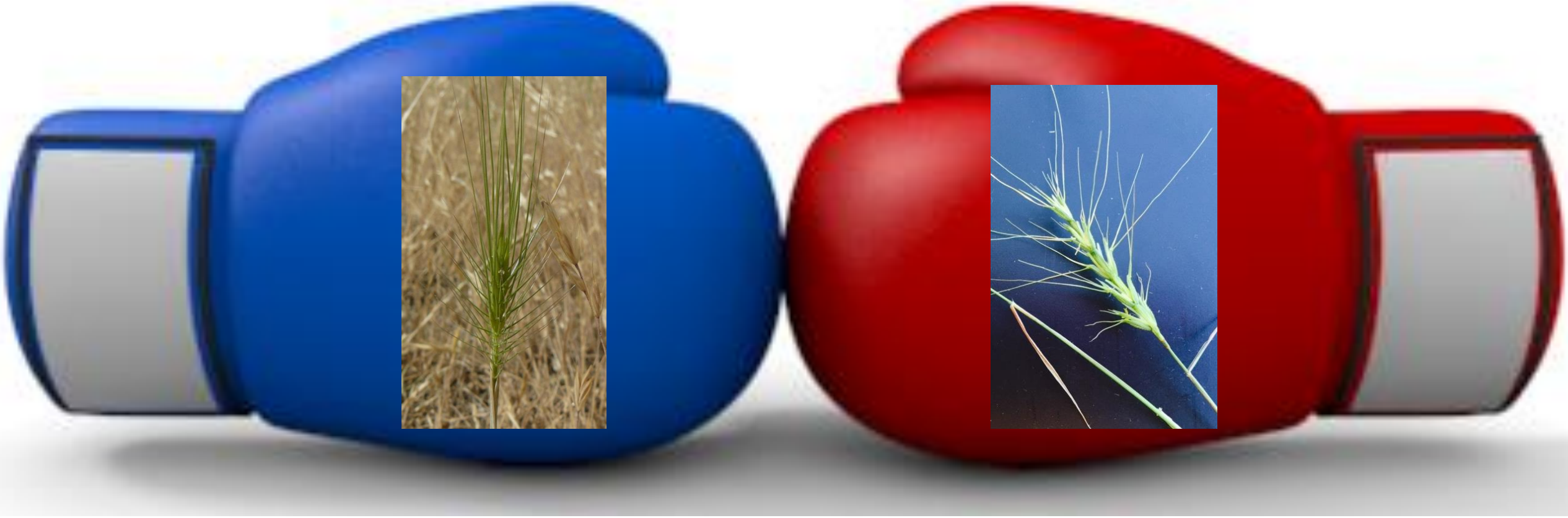
Elymus caput-medusae

- Threaten native perennial communities and listed plant species
- Up to 2 years seed viability
- Most seeds germinate the following season
- Provides little wildlife value; not palatable to cattle after seedhead emerges
- Roads and animals appear to be major vector
- Thatch promotes MH germination/suppresses competitors
- Matures late in the season after other annuals have senesced

Vulnerabilities

- Late summer maturation
- Relatively short lived seed bank
- Fire increases germination
- MH: most seeds germinate the following season

Medusahead vs. Barbed Goatgrass



The Plan

- Line Trim as close to mineral soil as possible or mow on lowest setting
- Re-treat regrowth
  - Spot spray w/ glyphosate product
  - Hand Pull
- Quick Quantitative sampling before and after

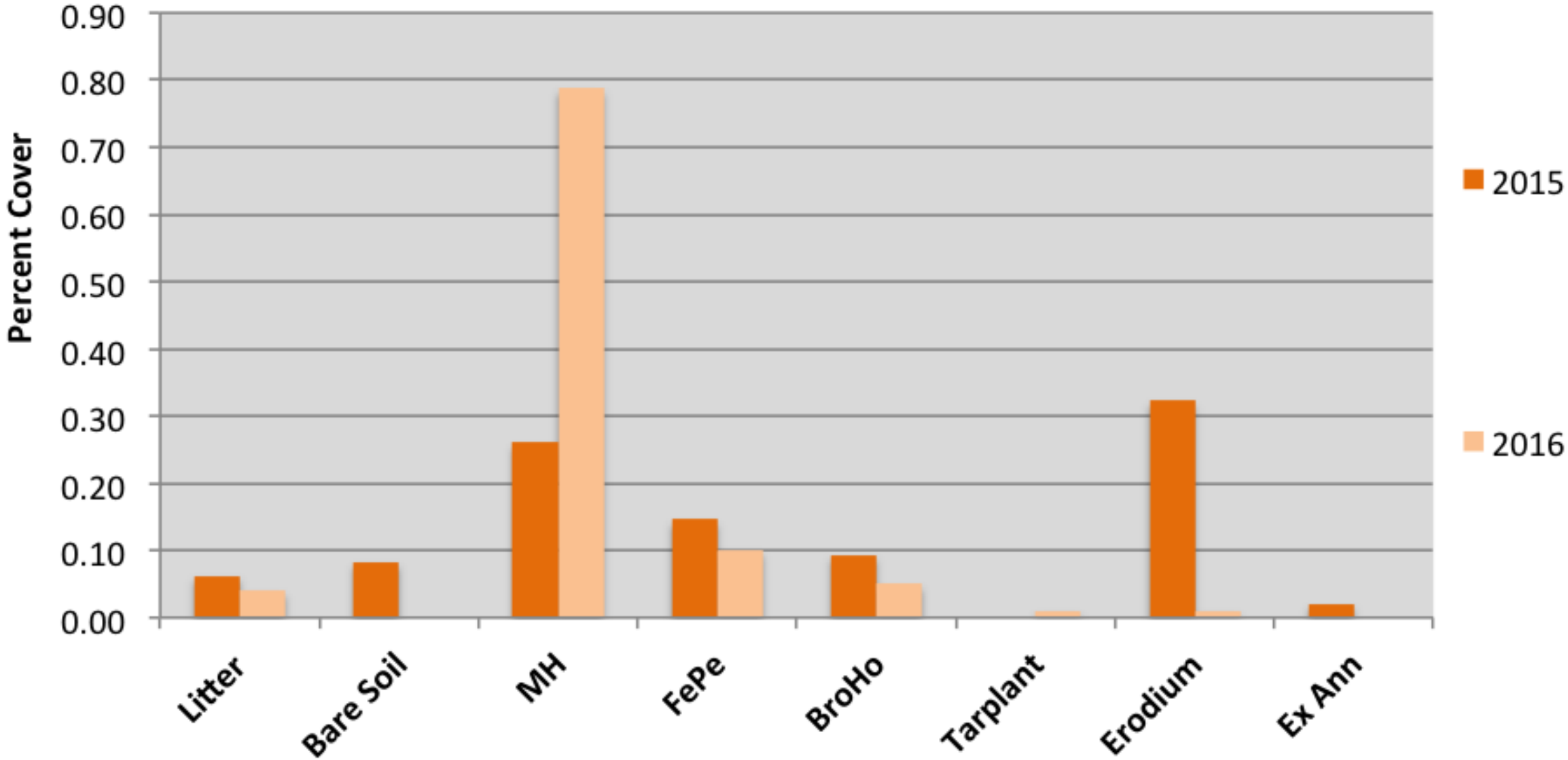
Timing is Critical

- Fresh Stamens
- Open spikelets
- Old Stamens stuck to side
- What percentage of population in flower?

Round Valley Medusahead

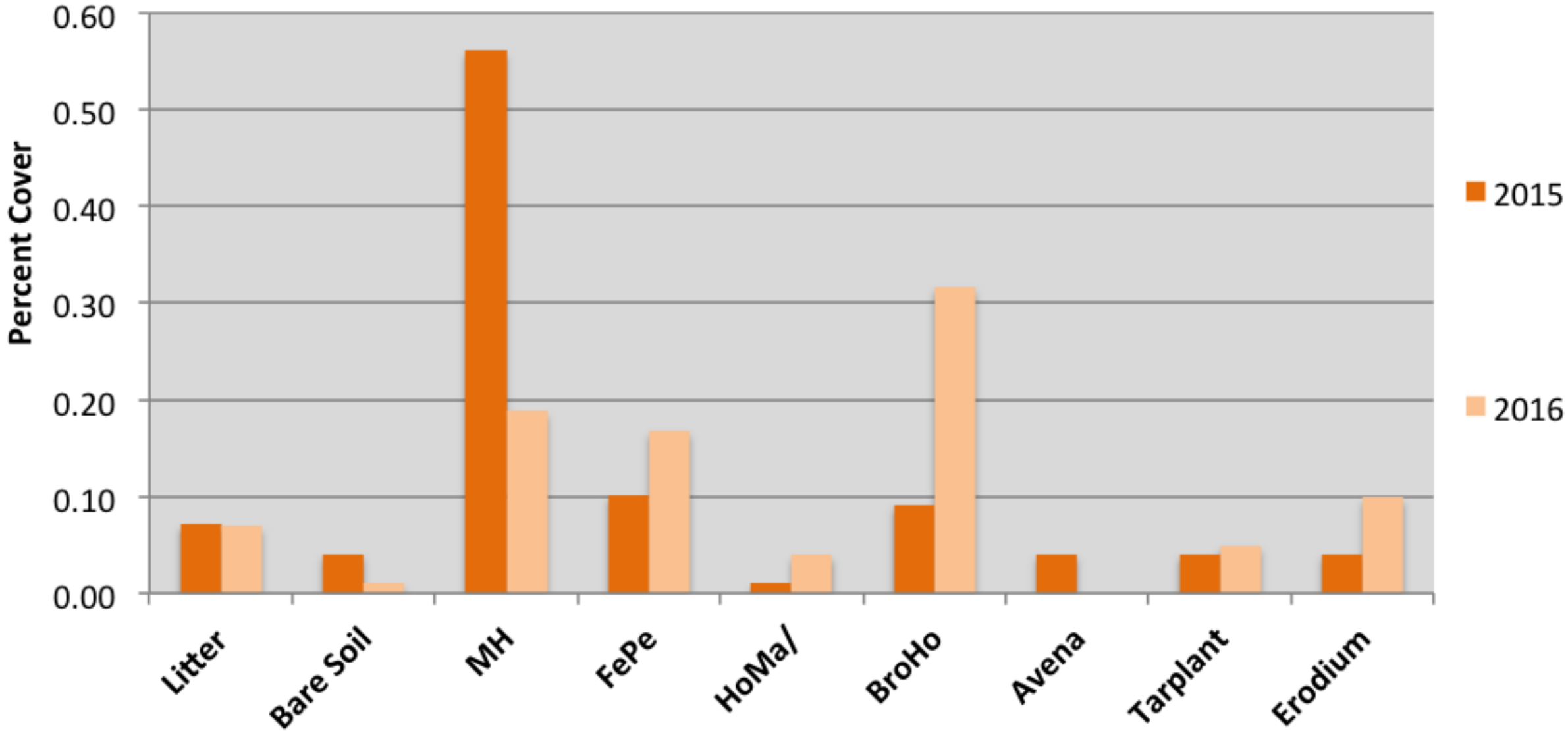
Round Valley No Line Trim

204% Increase

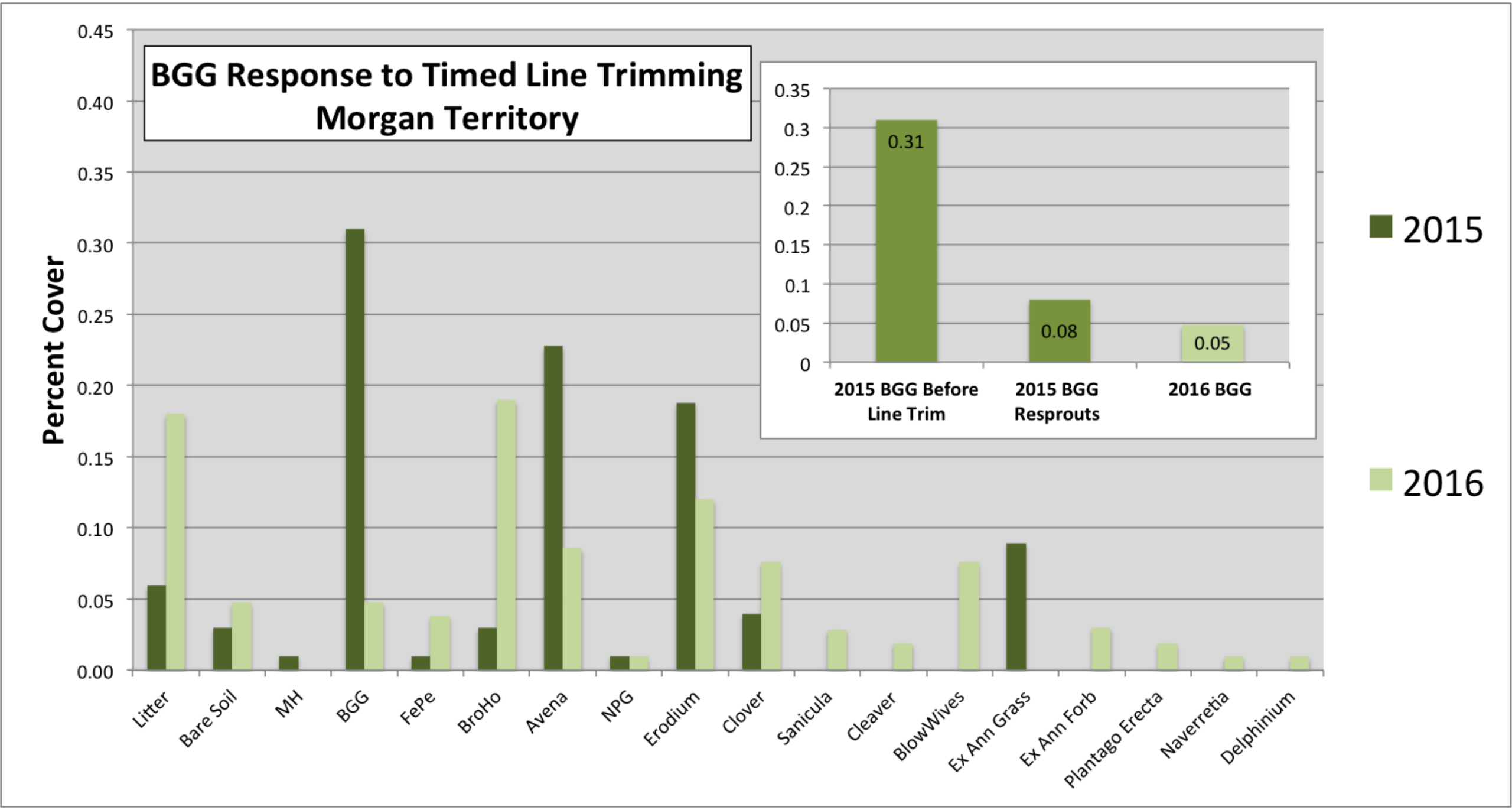


Round Valley Line Trim Plot

66% Reduction

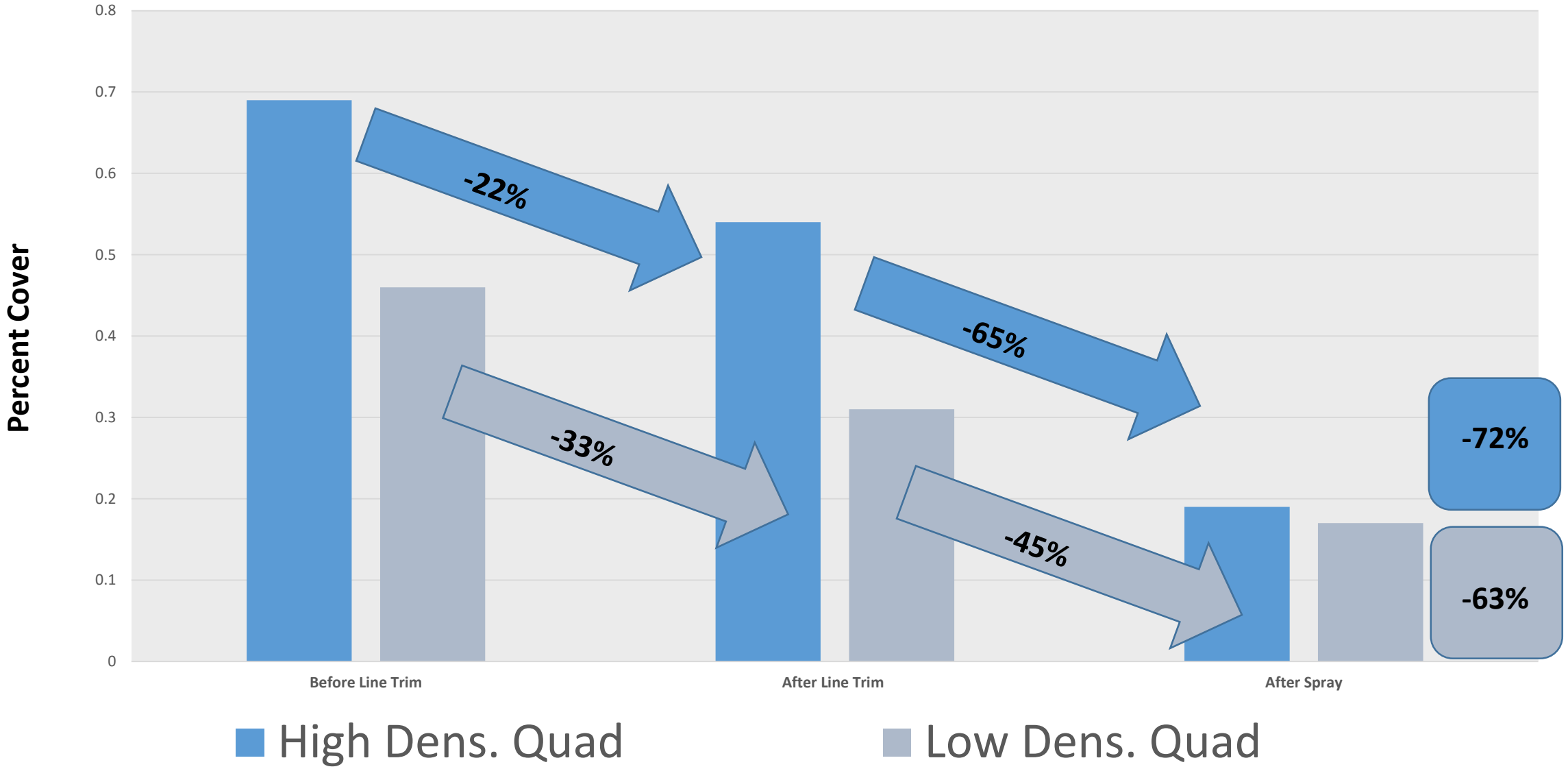


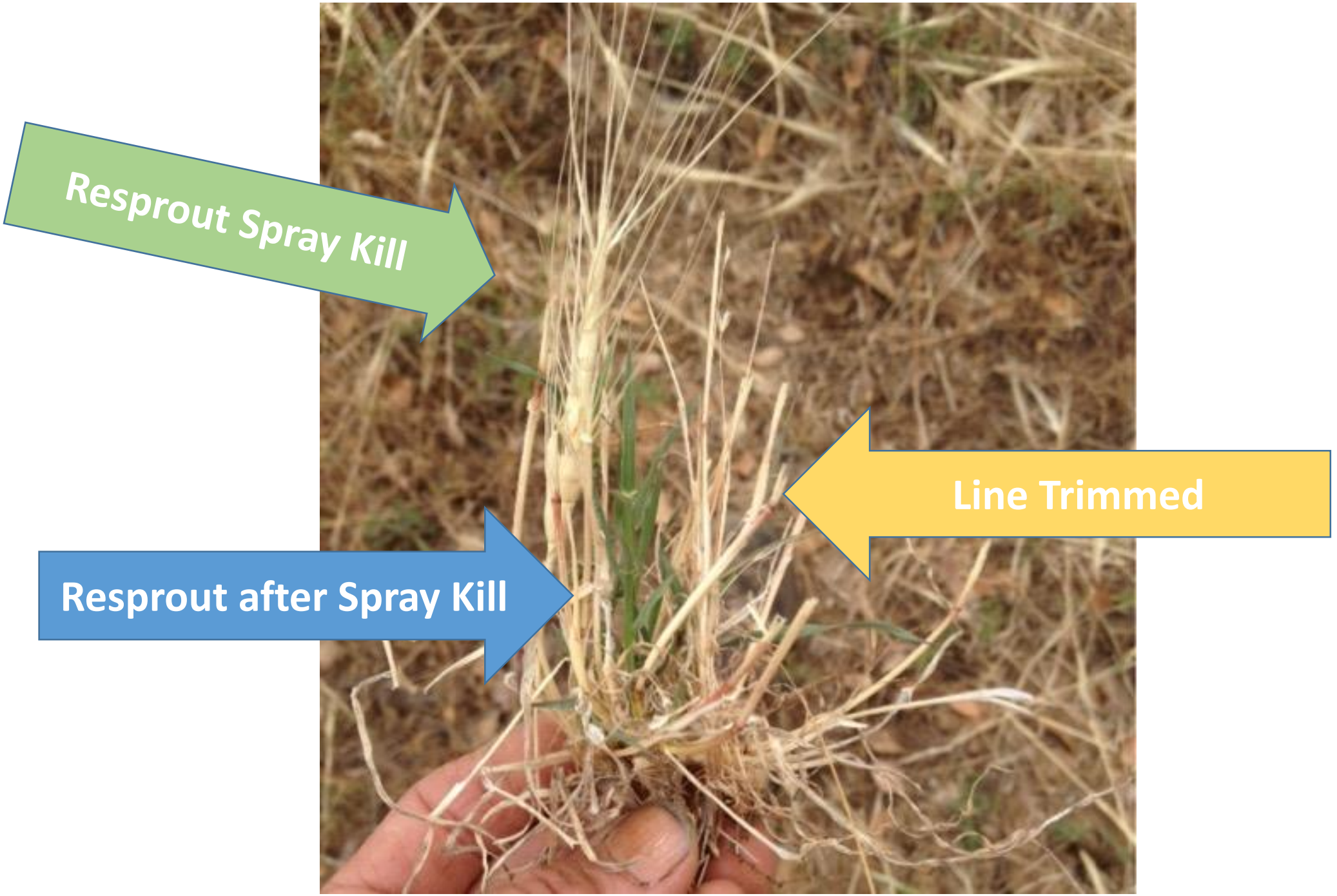

22 9 0
5
23
5


BGG Response to Timed Line Trimming
Morgan Territory
Percent Cover
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Litter
Bare Soil
MH
BGG
FePe
BroHo
Avena
NPG
Erodium
Clover
Sanicula
Cleaver
BlowWives
Ex Ann Grass
Ex Ann Forb
Plantago Erecta
Naverretia
Delphinium
2015
2016
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0.31
0.08
0.05
2015 BGG Before Line Trim
2015 BGG Resprouts
2016 BGG

BGG Percent Reduction

Galvin Landbank No Grazing

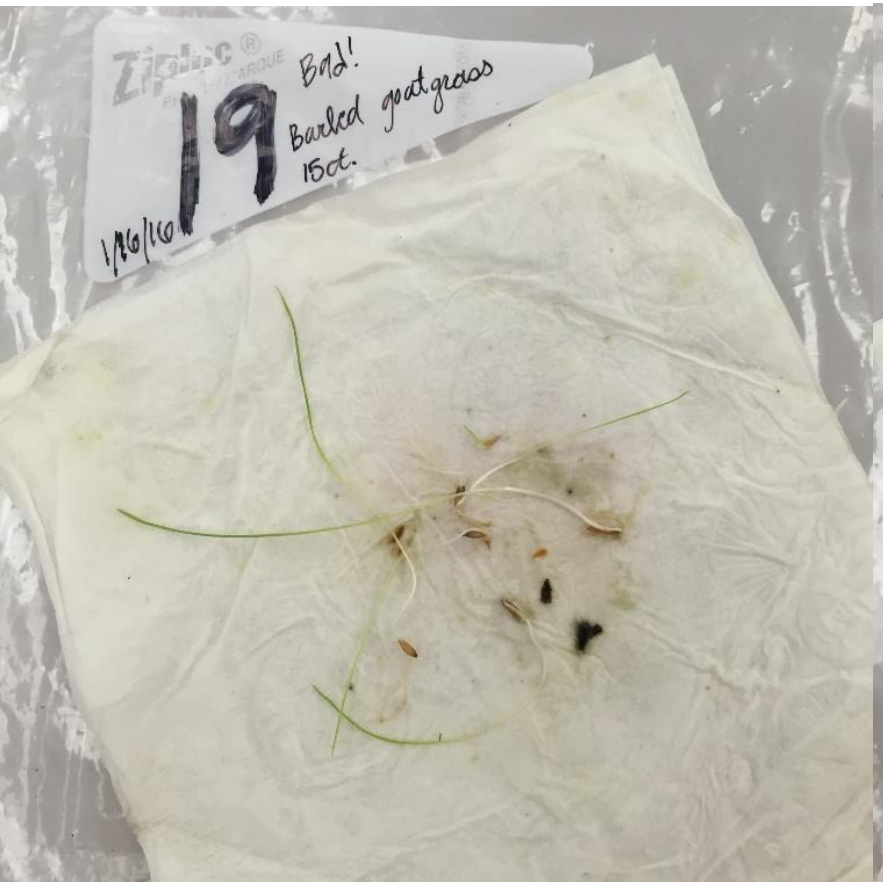



Resprout Spray Kill
Resprout after Spray Kill
Line Trimmed

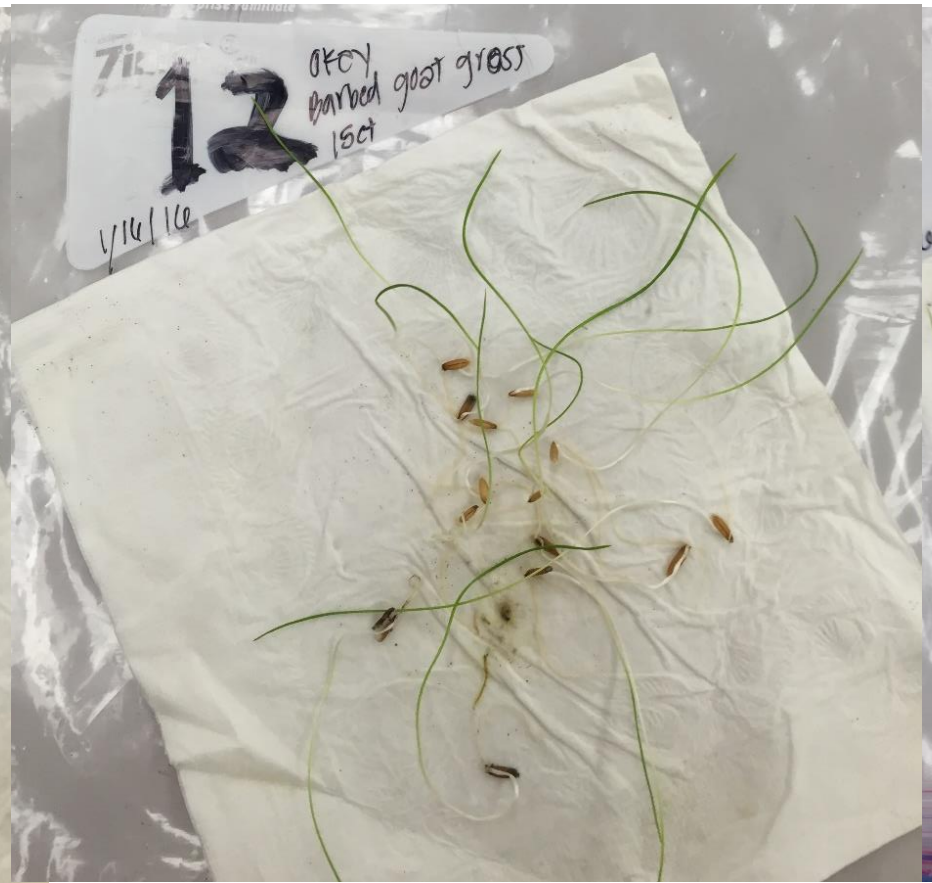

BGG regrowth in litter

Seed Viability

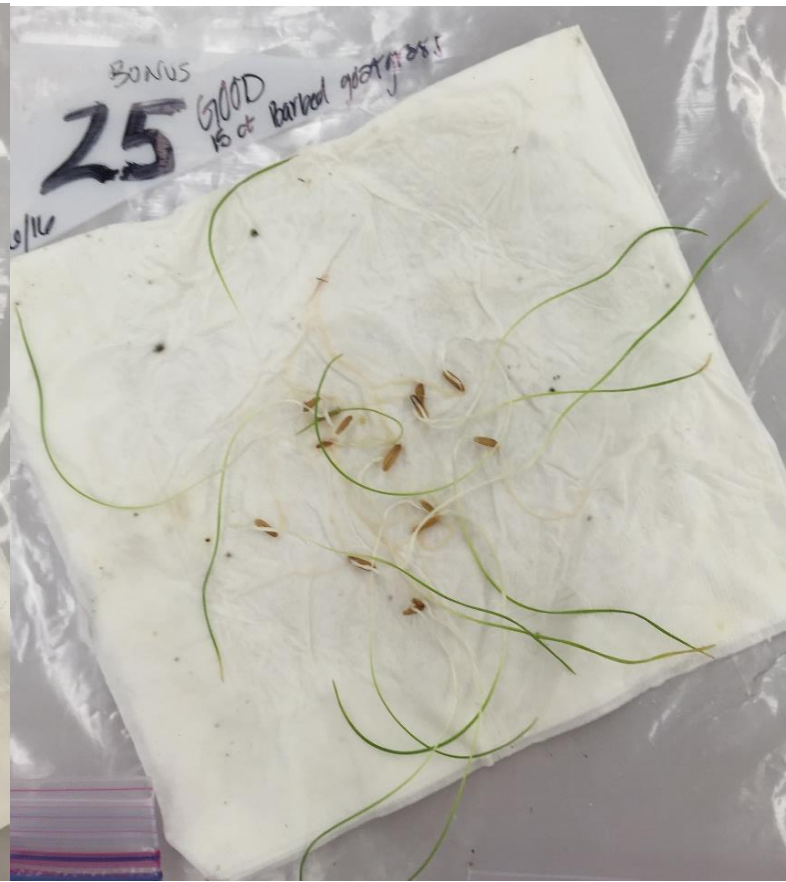
Bad Seeds 5/15 Germinated



Okay Seeds 14/15 Germinated

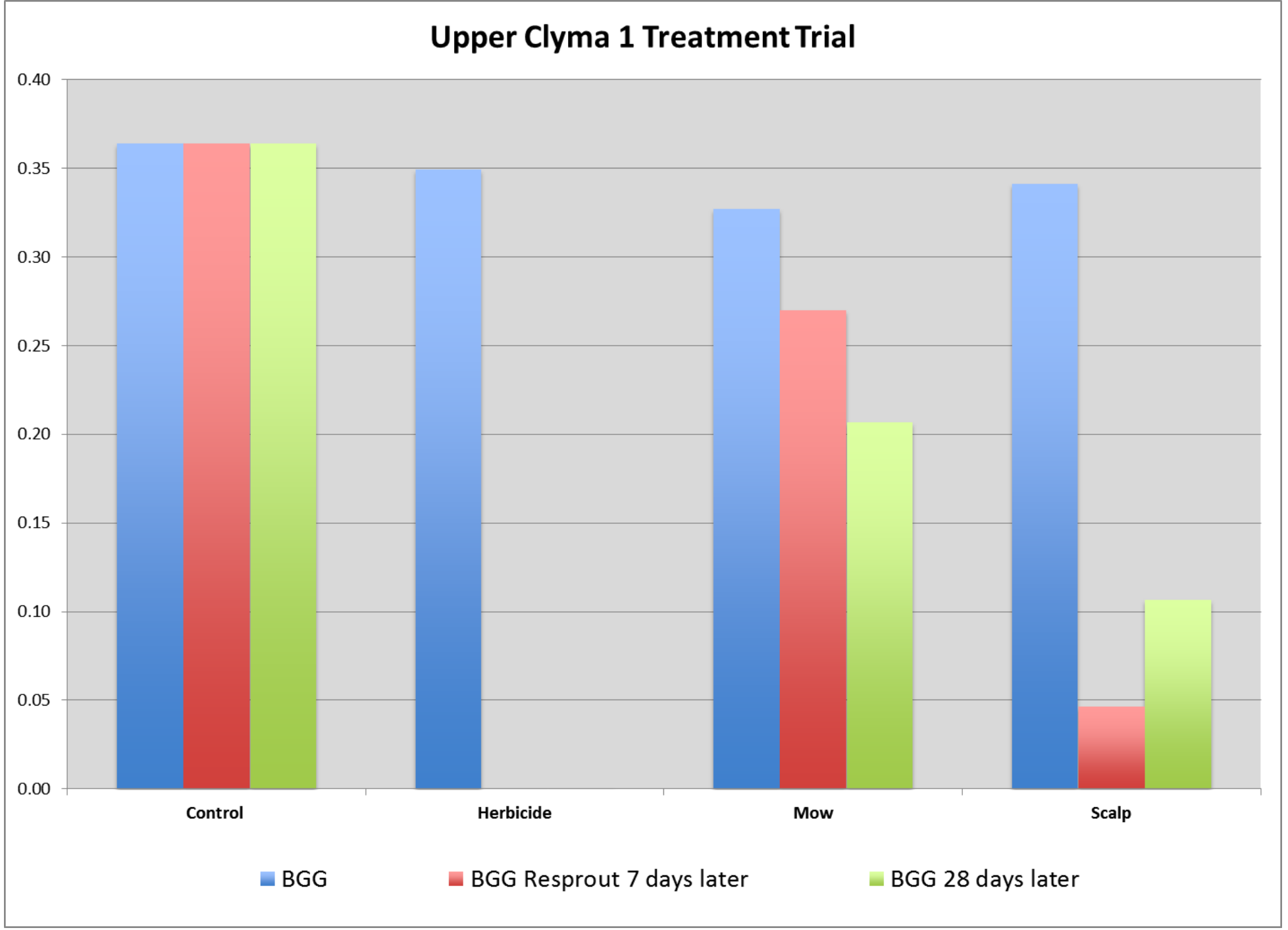


Good Seeds 14/15 Germinated



Treatment Trials

Herbicide	Line Trim	Scalp	Control


Upper Clyma 1 Treatment Trial
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Control
Herbicide
Mow
Scalp
BGG
BGG Resprout 7 days later
BGG 28 days later

Evil Twin Problem & Percent Control

Seed Production

1 individual

2 seed heads with 2 fertile spikelets

2 seeds per spikelet

8 seeds/individual

Seed Bank

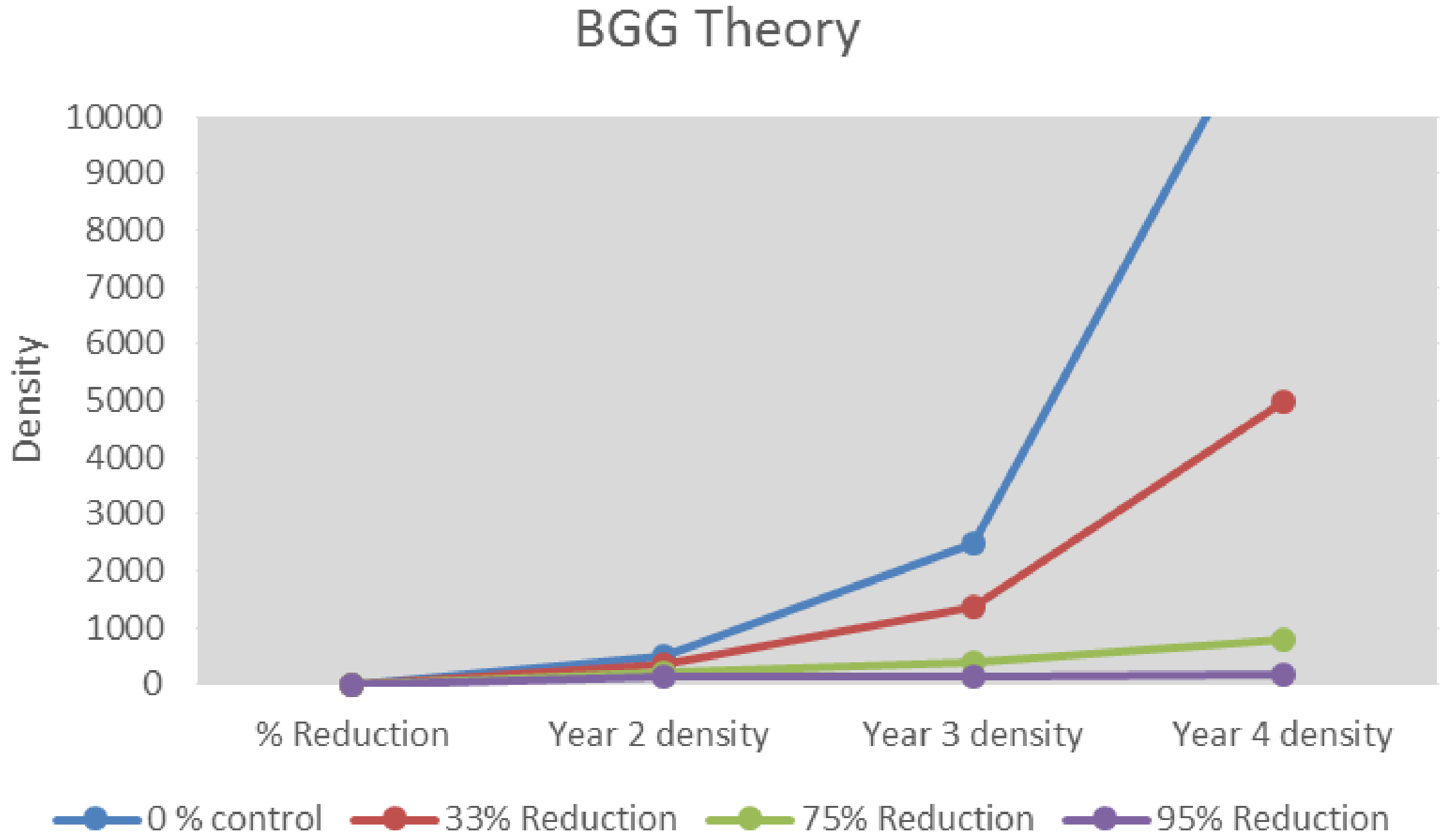
Evil twin seeds from previous year +

Seed produced from current year

Current Population

Germinated Evil Twins +

½ of the seed produced


BGG Theory
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Density
% Reduction
Year 2 density
Year 3 density
Year 4 density
0 % control
33% Reduction
75% Reduction
95% Reduction

Barbed Goatgrass Theory

% Reduction	year one	Resprouts	Year 1 Seed Production	Year 2 density	% Reduction	Year 2 Resprouts	Year 3 Seed Production	Year 3 density	% Reduction	Year 3 Resprouts	Year 4 Seed Production	Year 4 density
0	100	100	800	500	0	500	4000	2500	0	2500	20000	12500
0.33	100	67	536	368	0.33	247	1972	1354	0.33	907	7259	4984
0.75	100	25	200	200	0.75	50	400	400	0.75	100	800	800
0.95	100	5	40	120	0.95	6	48	144	0.95	7	58	173

Lessons Learned

- Proper timing at flowering stage
- Follow up, near 21 day mark
- Aim for greater than 75% control
- 3rd Treatment required for 100% seed reduction
- BGG shows robust regrowth in thatch, richer environments
- Multiple Constraints require flexibility in treatment options
- Grammicides are not registered for grazing
- Listed species require higher level of skill
- Line trimming low impact to vertebrate species
- Eliminate in one geographic area then expand out


Pbeitz@ebparks.org
Cbrierley@ebparks.org