Results Summary to Aid Interpretation of Figures

(Preliminary information, not for citation or distribution without consent of authors)

**Flower Production –**

Flower counts were highly sensitive to timing of flower production so results focus on the number of days required for individuals to produce flowers. Flower onset occurred early in low water treatment group (approx. 7 days earlier, Slide (S) 17), and was delayed in our herbicide treated mixed containers by about three weeks as compared to non-treated mixed containers (S. 18).

**Thornmint Biomass –**

Individuals were largest in our ACIL monoculture and smallest in mixed containers (herbicide treated and non-treated, S. 19). There were no differences between herbicide treated and non-treated mixed containers at the conclusion of main experiment (12 weeks, S.19). After extension period (16 weeks, S.19), individuals that were treated with herbicide were larger than their non-treated counterparts (delay likely due to initial dieback in some). Container densities impact individual size, but only compared to containers with single individual (S. 21). No differences observed among containers with more than one individual.

**Brachypodium Biomass –**

All main effects were significant but plant sizes are largely driven by plant treatment group. Reduced sizes in treated and non-treated mixed containers (S. 22). Increased growth response to nitrogen addition observed (S. 22), none observed in ACIL. Plant sizes decrease as container densities increase (S. 23).

**Thornmint Leaf Metrics –**

Higher leaf tissue nitrogen content and larger leaf surface area for individuals grown in monoculture and in herbicide treated group (S. 25). Supports biomass results, herbicide treatment/competitor removal beneficial to vegetative growth of thornmint.

**Soil Nitrate –**

Lower nitrate levels in high water treatment group, likely leaching loss due to high mobility of nitrate ion (S. 26). No differences among plant treatment groups after main experiment (12 weeks) but differences in extended group (16 weeks, S. 27). Non-treated containers used remaining soil nitrate more quickly than treated containers. Likely due to higher density in non-treated containers. Identity effect present in density series (S. 28). Lower nitrate levels in two plant monocultures as compared to two plant mixed containers.

**Soil Ammonium –**

Decreased soil ammonium levels in BRDS monoculture and herbicide treated containers in main experiment (12 weeks, S. 29). Differences no longer present in extended group (16 weeks, S. 29). No clear pattern at higher densities (S. 30). Indicates changes in belowground cycling, preferential uptake of ammonium or conversion to nitrate in the herbicide treated group at the end of 12 weeks (S. 31).

**Herbicide Conclusion/Recs –**

Fusilade treatment and removal of competing exotic species is beneficial to the vegetative growth of thornmint however lethal and non-lethal impacts to thornmint due to Fusilade observed. Delay in flower production, approx 15% mortality among treated ACIL, additional 39% showed initial dieback. Responses were highly variable, some individuals completely unaffected. Temporary impacts to belowground nitrogen cycling also observed. Results here may be due to the addition of a surfactant (NoFoamA) or the herbicide concentration used (1%).

Fusilade is still appears to be our most economic and effective method to treat invasive grasses near occurrences (>90% kill rate), however use caution when applying. Use lower concentrations if possible and avoid broadcast applications near sensitive species until more information is available. Take advantage of offseason precipitation events to apply herbicide outside of growth season for ACIL. Monitor pops following management action.