



Planting Date Effects on Cover Crop Biomass Production Following Winter Wheat

Kenneth J Roche¹, Roger Elmore¹, Katja Koehler-Cole¹, Christopher Proctor¹, and Angela Bastidas¹

Department of Agronomy & Horticulture, University of Nebraska-Lincoln, Lincoln, NE 68583-0816

Abstract

- There is increasing interest in using cover crops for forage. Maximizing the fall and spring biomass potential of cover crops depends on the timely planting of the cover crops after harvesting wheat (*Triticum aestivum* L.).
- The objective of this study was to examine the effect of planting date on the biomass production of two commonly used cereal cover crops, rye (*Secale cereale* L.) and oat (*Avena sativa* L.) in a wheat-fallow-corn cropping system.
- Early results suggest an increase in biomass production with earlier planting dates. The preliminary data suggest that fall cover crop biomass production would not be a viable option for forage use, but spring forage may be an option prior to rotation to planting a cash crop.

Methods

- A RCB split plot design was used with three cover crop treatments over three planting dates with nine replications (Fig. 1).
- The trial was conducted at the South Central Agricultural Laboratory (SCAL) under rain-fed conditions located in Clay Center, Nebraska.
- Treatments: Trt 1 = Rye 60lbs/a, Trt 2 = 80lbs/a, Trt 3 = Rye:Oat (50:50) 75lbs/a, Trt 4 = control.
- Fall samples (10 ft²) were collected by hand after the first hard freeze.
- Spring samples were collected as 30' swath by mechanical harvester and sub-sampled (Fig 2.)
- All samples were dried to a constant dry mass and sorted to species.



Fig 1. RCBD split plot experimental design.

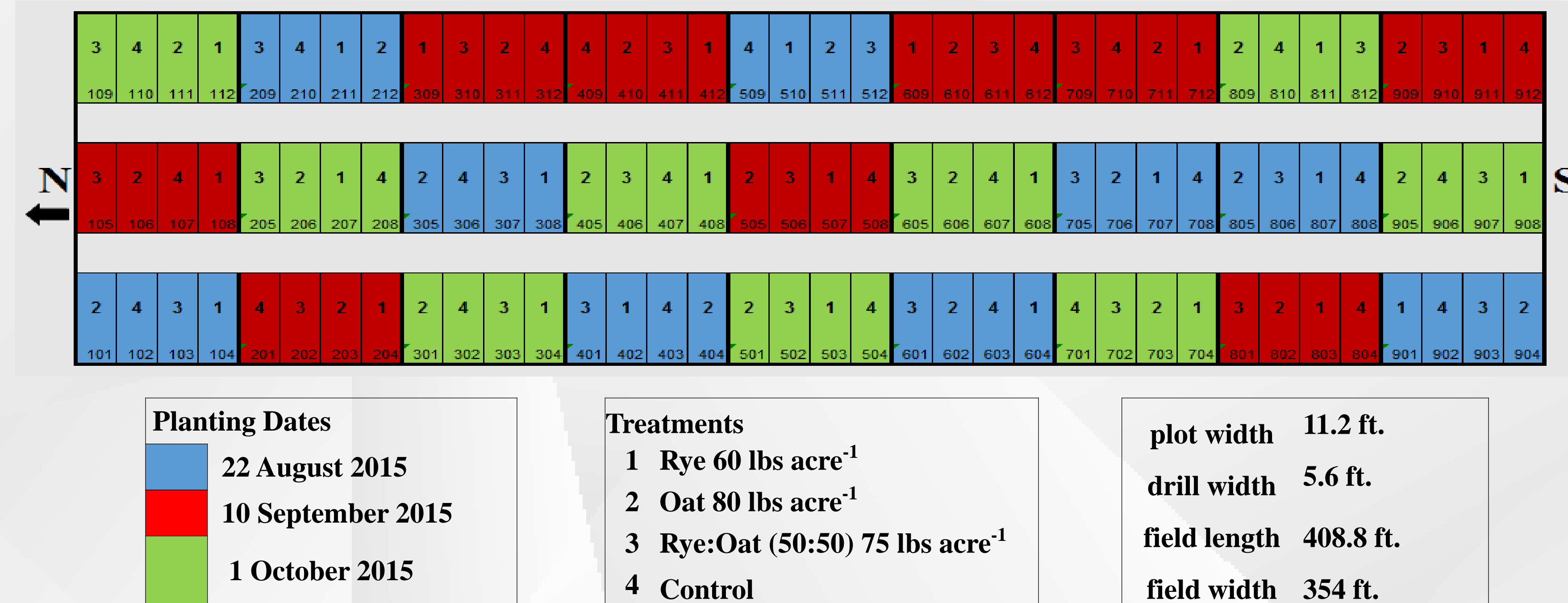


Fig 3. Fall 2015 Biomass Production

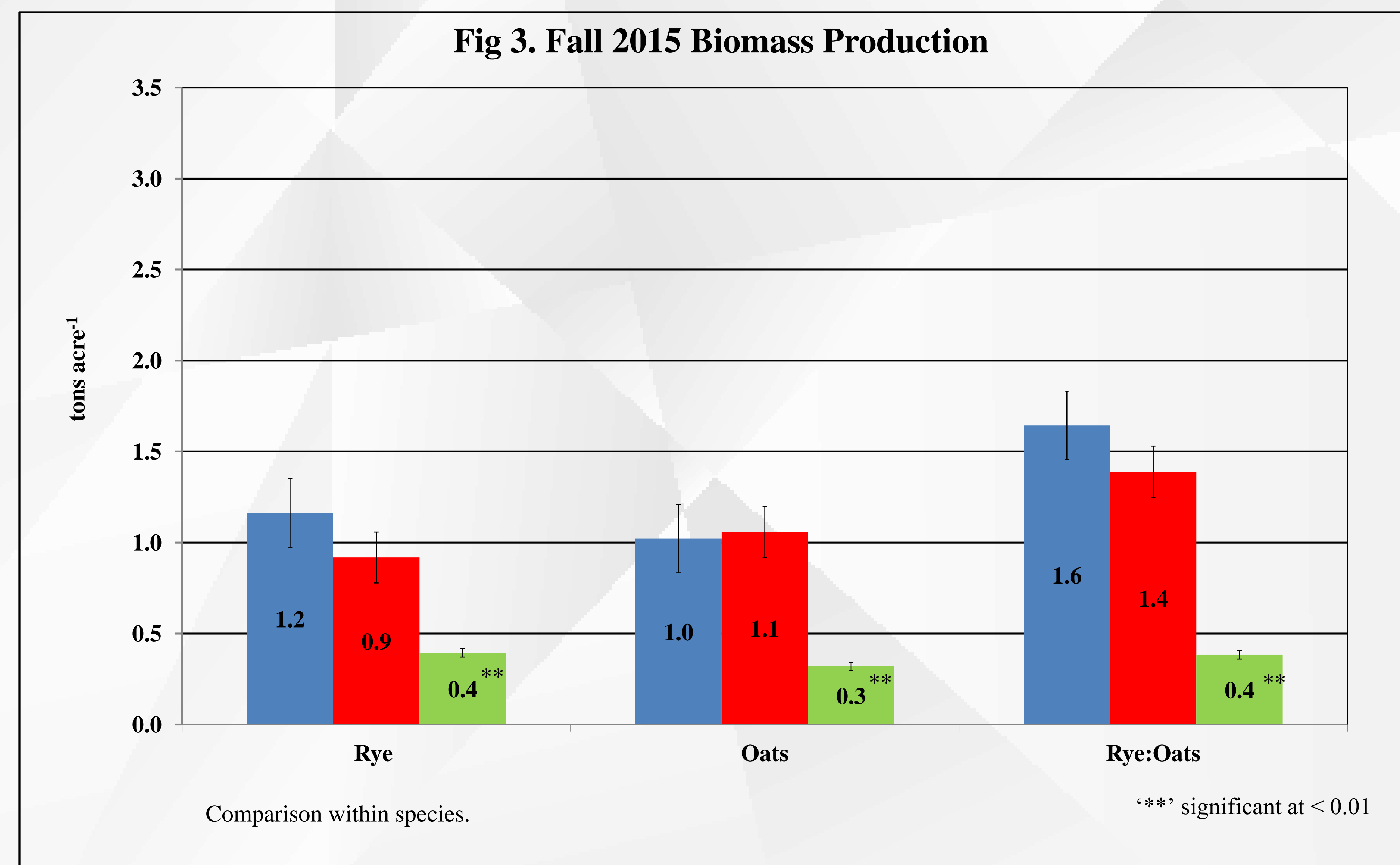


Fig 4. Spring 2016 Biomass Production

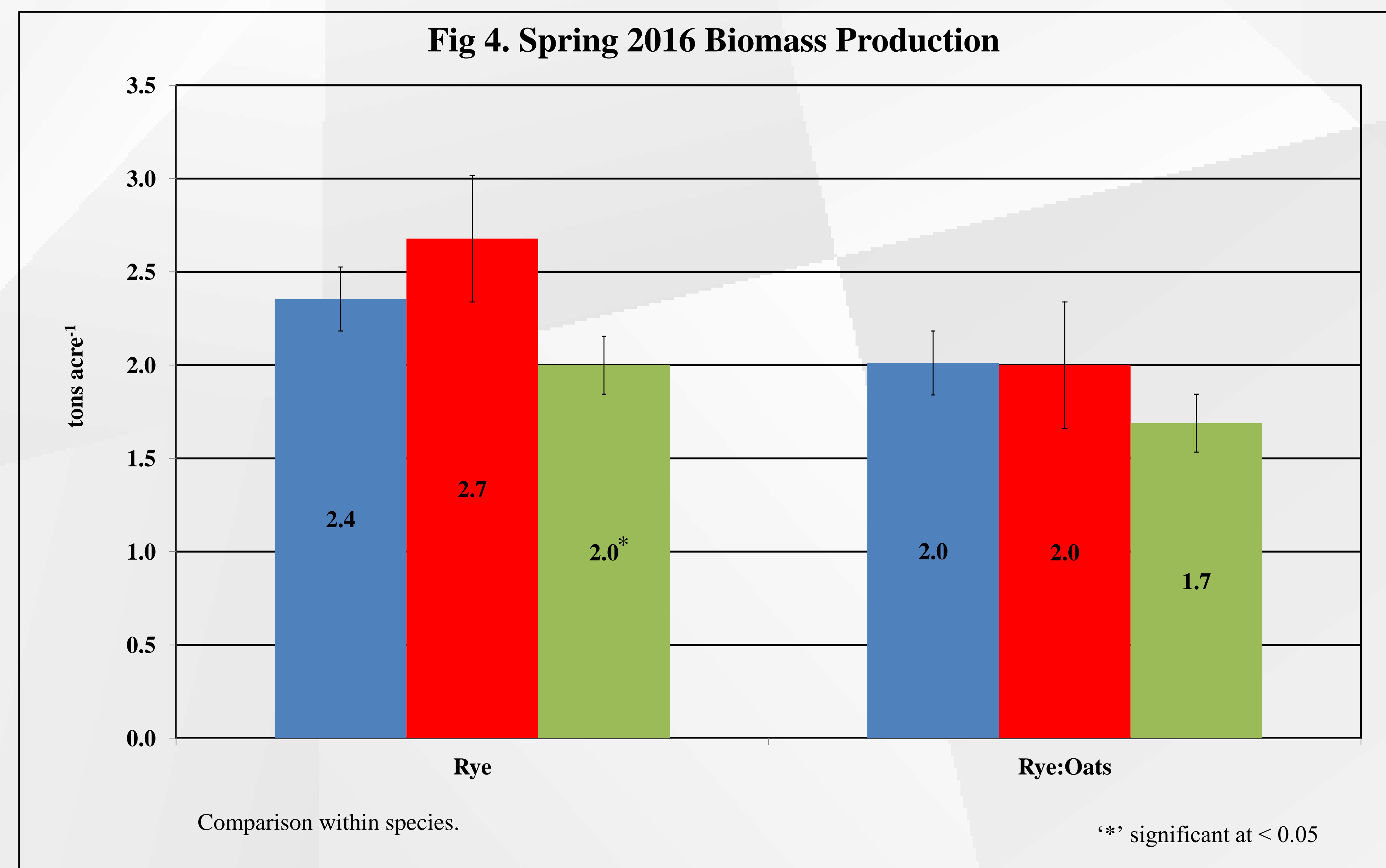


Fig 5. Winter killed oats suppressing volunteer wheat in the spring.



Results

No interaction between cover crop planting date and treatments in the fall or spring.

Fall Biomass Production (Fig 3.)

- There was a difference in the fall biomass production by planting date.
- There was **no** difference in the fall biomass production by treatment.

Spring Biomass Production (Fig. 4)

- There was a difference in biomass production by planting date and treatment.
- The difference in treatments may be accounted for because oats winter kill and do not contribute to spring biomass production in treatment three.

Discussion

- Over-all there was increased biomass production in spring growth (1.7- 2.7 tons acre⁻¹) versus the fall (0.3-1.6 tons acre⁻¹).
- Spring biomass production may have potential use as forage.
- It was visually observed that winter killed oat biomass suppressed volunteer wheat versus a control (Fig 5.). Future studies could examine this effect.
- Future studies will also look at the remnant effect of these cover crops on the following corn yield components.

Acknowledgements

Daren Redfean , Ashley Burns-Hassebrook, Gregory Dorn and the SCAL group from the University of Nebraska-Lincoln, Department of Agronomy & Horticulture.