Litter Retention – some is good, but can there be too much of a good thing?

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Acknowledgements

- Jim Romo
- Yuguang Bai
- Peggy Ryan
Litter retention for improved productivity

- Litter (carryover) reduces moisture losses and can improve grassland productivity
- Litter retention guidelines common, but the effects of very high litter accumulations rarely investigated
Objectives

- Examine relationships between litter carryover in mixed-grass prairie and:
  a) Soil moisture retention
  b) Grassland productivity
  c) Grassland species diversity
Study Area – Mixed Grass Prairie, Central Saskatchewan, Canada
Methods – collect litter from plots between 1 and 40m² at a reference site
Methods – add collected litter to 10m² study plots in fall. Productivity and diversity measured in following growing season.
Litter improved soil moisture conditions

![Graph showing soil moisture data for 2011 and 2012, with log litter mass on the x-axis and soil moisture on the y-axis.](image)
Litter improved productivity – to a point
Litter reduced species diversity

- Brown Chernozems
- Dark Brown Chernozems
Conclusions and Implications

- Litter – productivity effects are non-linear and inherently variable.
  - Litter retention targets at the peak of the curve will, on average, maximize productivity at a landscape scale
- Plant diversity is maximized at lower levels of litter than productivity
  - Heterogeneity of litter carryover essential if dual management goals of high diversity and productivity important
Thank You

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