Irrigated Biodiesel Canola Response to N Fertilization in Columbia Basin

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World Class. Face to Face.

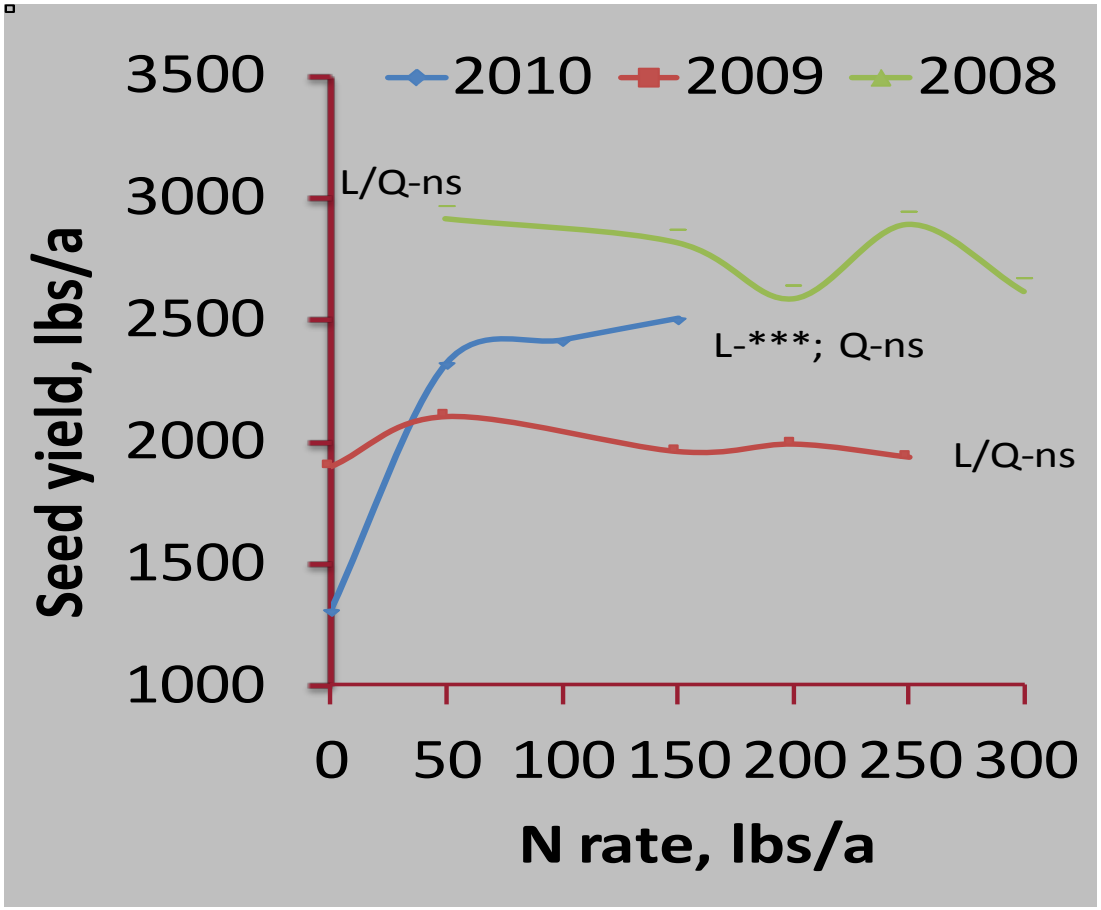
Background

- Very few acres are dedicated to oil seed crops in PNW
- Canola has the potential to fit into the current cropping systems
- Objective was to develop N recommendations to maximize seed & oil yield and quality of irrigated winter canola

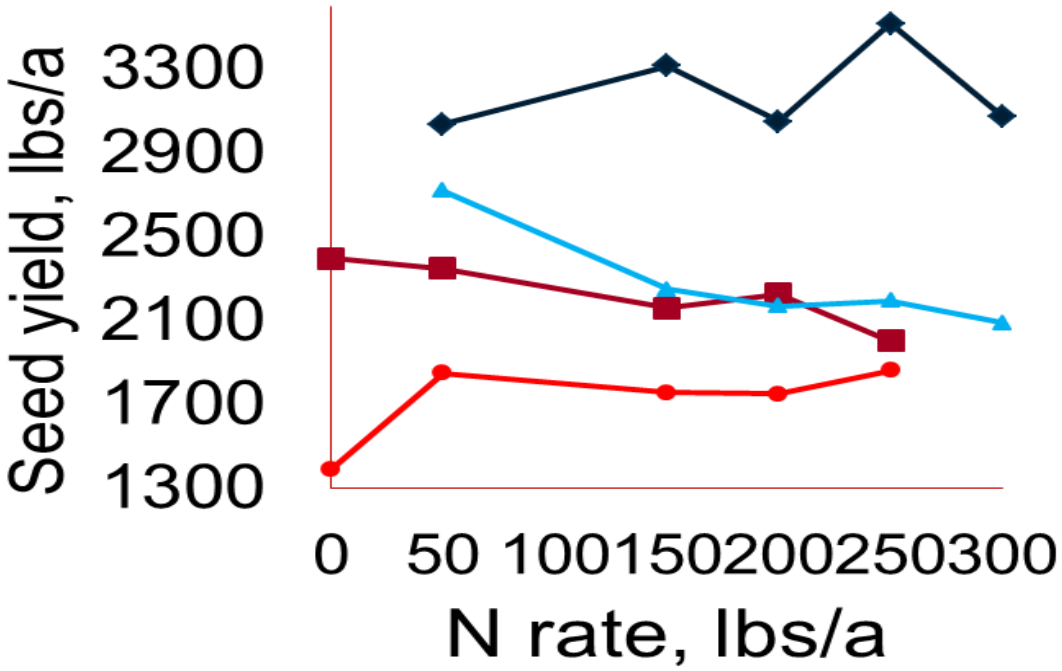
Materials and Methods

- Fall planted; spring fertilized
- Sprinkler irrigated based on soil moisture
- Randomized block design/reps
- Varieties and N rates
- Yield & soil NO_3, and more
- Data Analyses: SAS
- N rates different

Response of canola to N fertilization- averaged over varieties- Polynomial Ortho. Cont. results

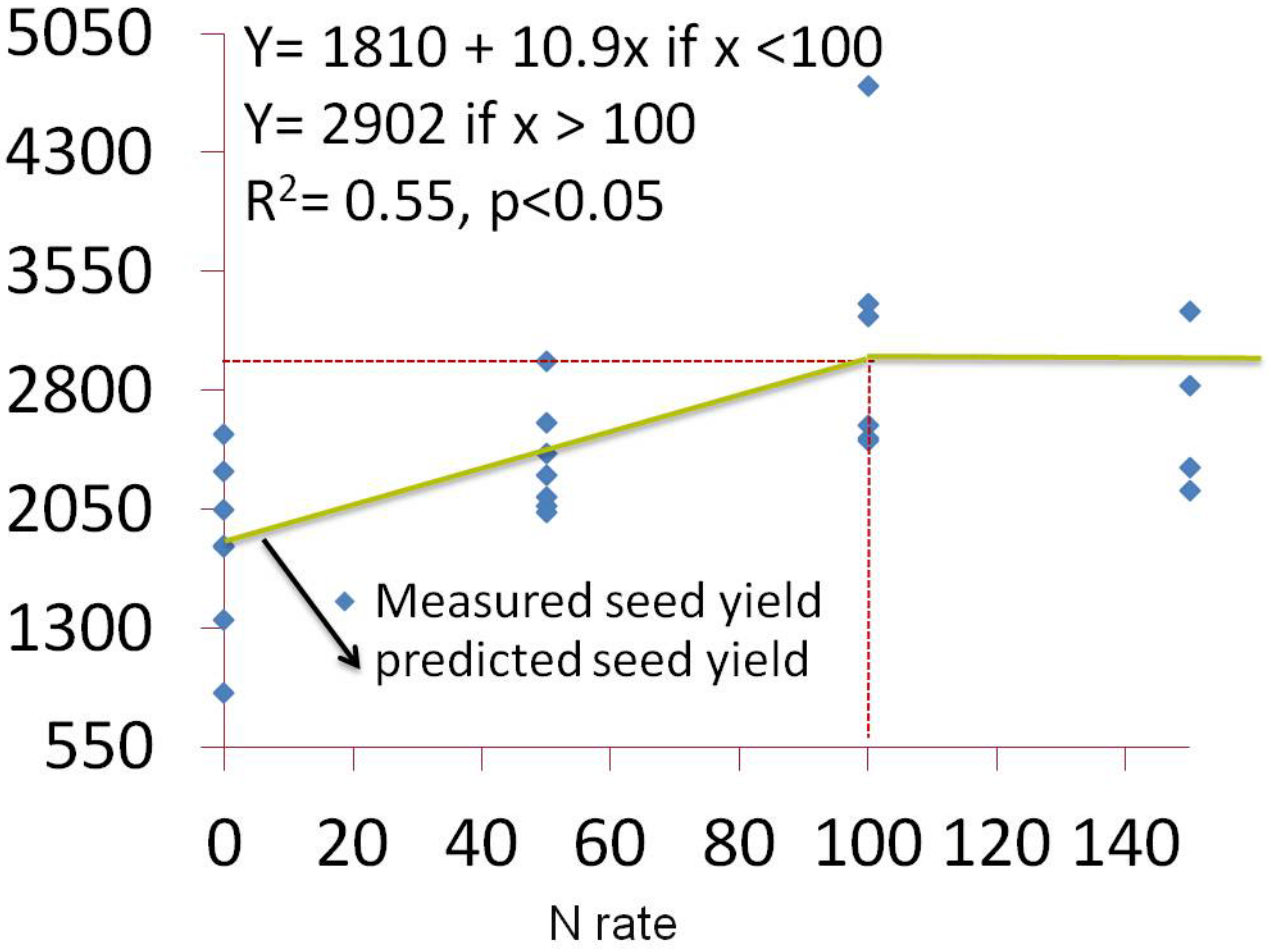


Response of Athena & Rapier to N in 2008- 2009



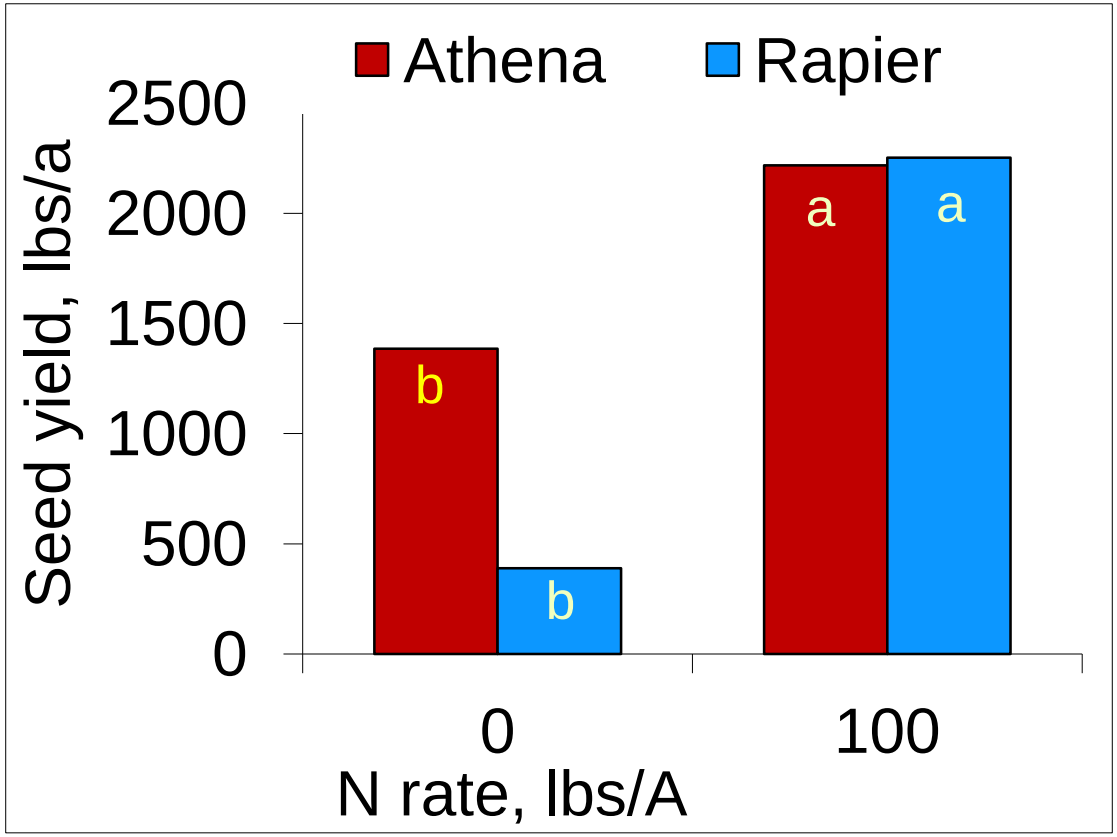
Each graph is a result of polynomial orthogonal contrast. All responses were non-significant @ $p<0.05$.

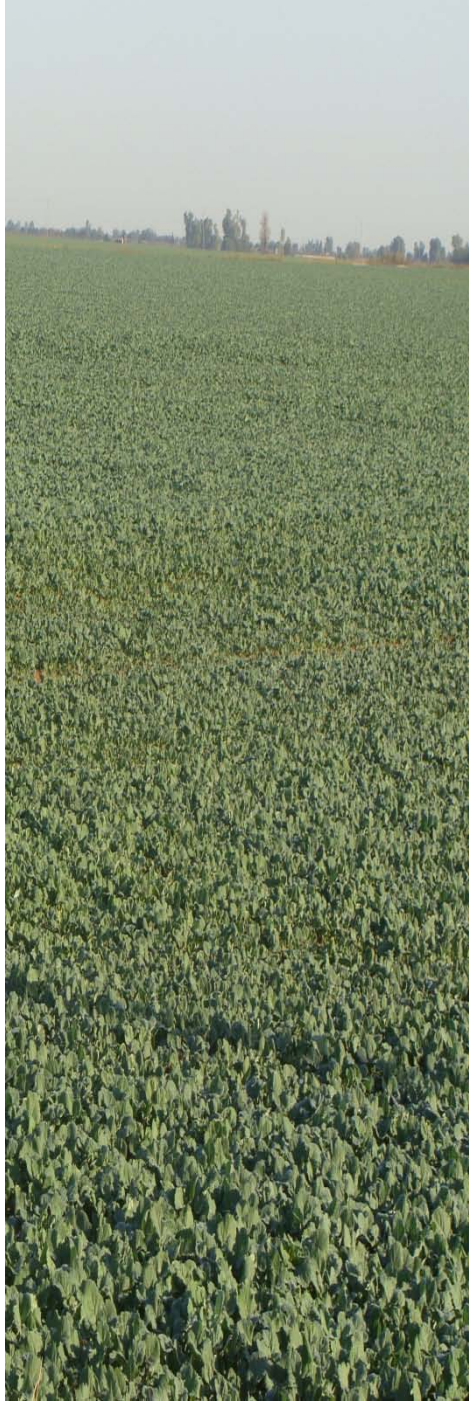
Response of Baldur to N - 2010



All units are in lbs/ac. The linear plateau model is based on replicated data; Y= vertical axis =seed yield; x= N rate

Response of Athena & Rapier to N - 2010





Canola seed yield and soil NO_3 relationship in three depth intervals

Year/Variety	0-12 in	12-24 in	24-36 in	sum	n
2008/Athena	ns	ns	ns	ns	27
2008/Rapier	ns	ns	ns	ns	27
2009/Athena	-0.52**	-0.70***	-0.56**	-0.59**	25
2009/Rapier	ns	ns	0.4*	ns	24
2010/Athena	ns	ns	ns	ns	11
2010/Baldur	0.53**	ns	0.48**	0.61***	39
2010/Rapier	0.58 p<0.1	ns	ns	0.62*	11
2008	ns	ns	ns	ns	54
2009	-0.49***	ns	ns	ns	49
2010	0.346*	ns	ns	ns	61

*, ** and *** denotes significance at 5, 1 and 01% prob., respectively using Pearson correlation; ns= not significant.

What did we learn?

- Canola varieties differ in their response to N applied.
- N fertilizer rate of 100 lbs/a is adequate for Baldur (without 30-50 lbs/a soil supplied N).
- Precision application methods that account for temporal & spatial variations are needed.
- In-season N requirement decision support is the future for irrigated canola.