

GRDC Grains Research Update

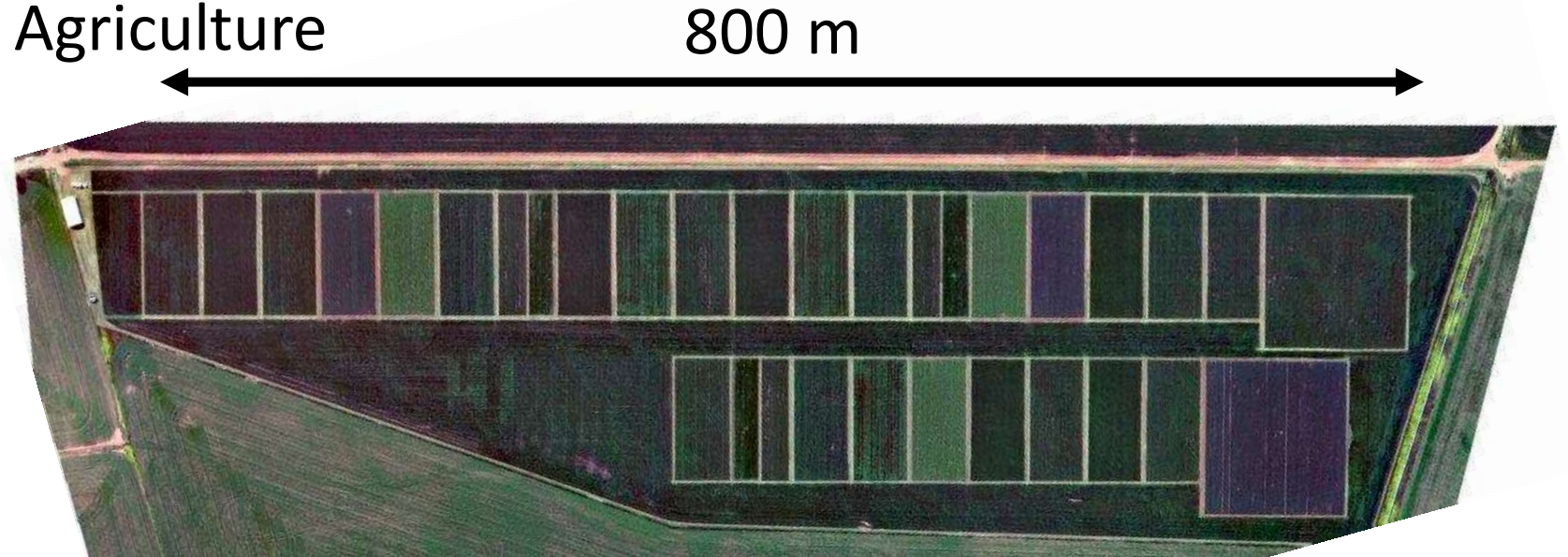


Rainfall, rotations and residue on wheat performance

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Rotations/treatments (2007-2015)

- Cunderdin College of Agriculture
- Red sandy clay loam
- Plots - 36 m x 80 m
- 4 tmts
- 3 replications



- 1 Monoculture wheat
- 2 Continuous cereals (cereal/cereal/cereal) – any of wheat, oat, barley
- 3 Max diversity (cereal/legume/brassica)
- 4 Max profit (cereal/cereal/legume or fallow)

Rotations/treatments

Year	Monoculture wheat	Cont. cereal	Max diversity	Max profit
Residue Mgt	Retain	Retain	Retain	Retain
07	Wheat	Oat cover crop	Wheat	Wheat
08	Wheat	Barley	Vetch/oat cover crop	Barley
09	Wheat	Barley	Canola	Lupin
Residue Mgt	Retain	Retain/Wrow burn	Retain/Wrow burn	Wrow burn
10	Wheat	Wheat	Wheat	Wheat
11	Wheat	Wheat	Field pea	Barley
12	Wheat	Wheat	Canola	Field pea
Residue Mgt	Retain	Retain/Wrow burn	Retain/Wrow burn	Wrow burn/Wrow+till
13	Wheat	Wheat	Wheat	Wheat
14	Wheat	Wheat	Chickpea	Barley
15	Wheat	Barley	Canola	Fallow

Cover crop management



Residue management

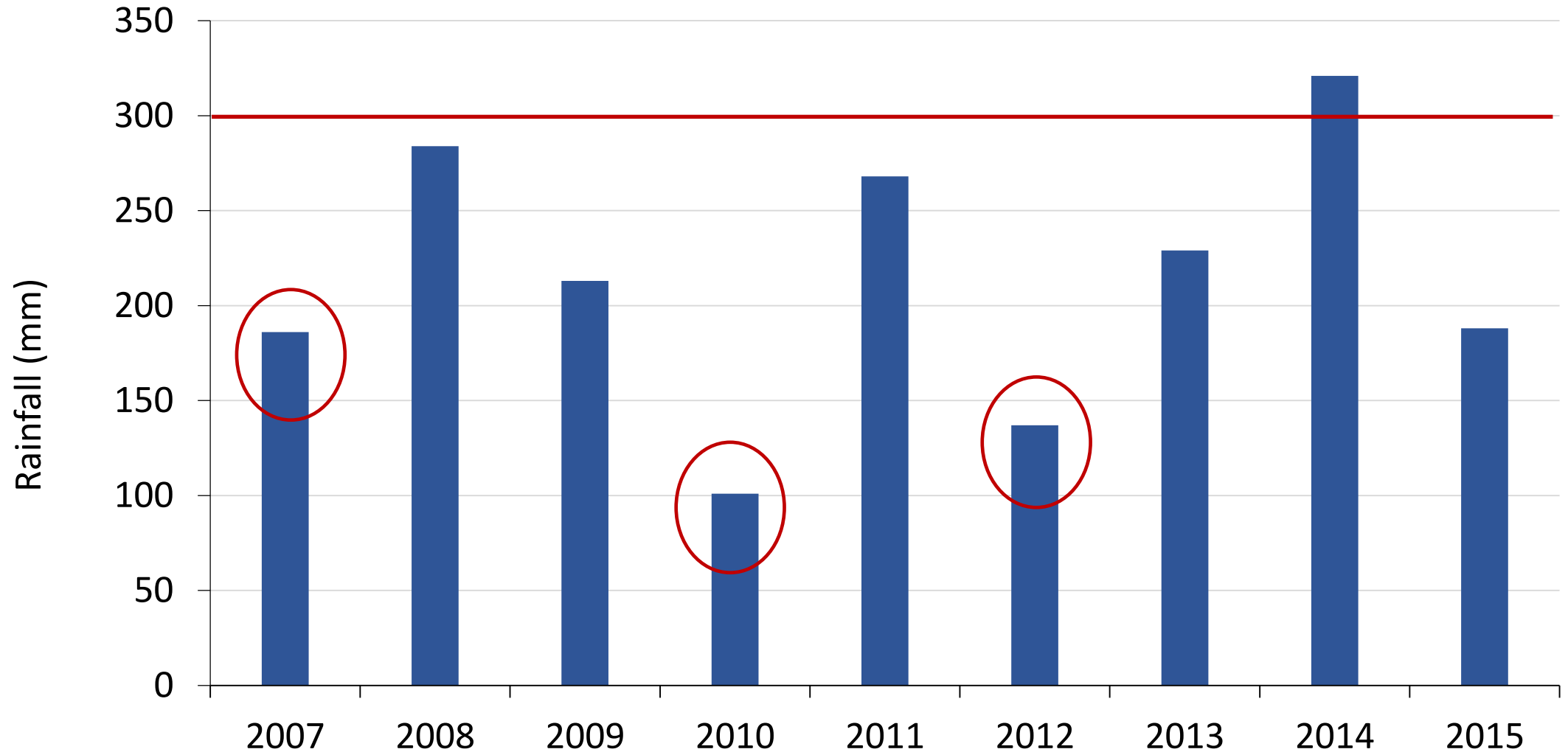
Spread/retain (higher residue level)



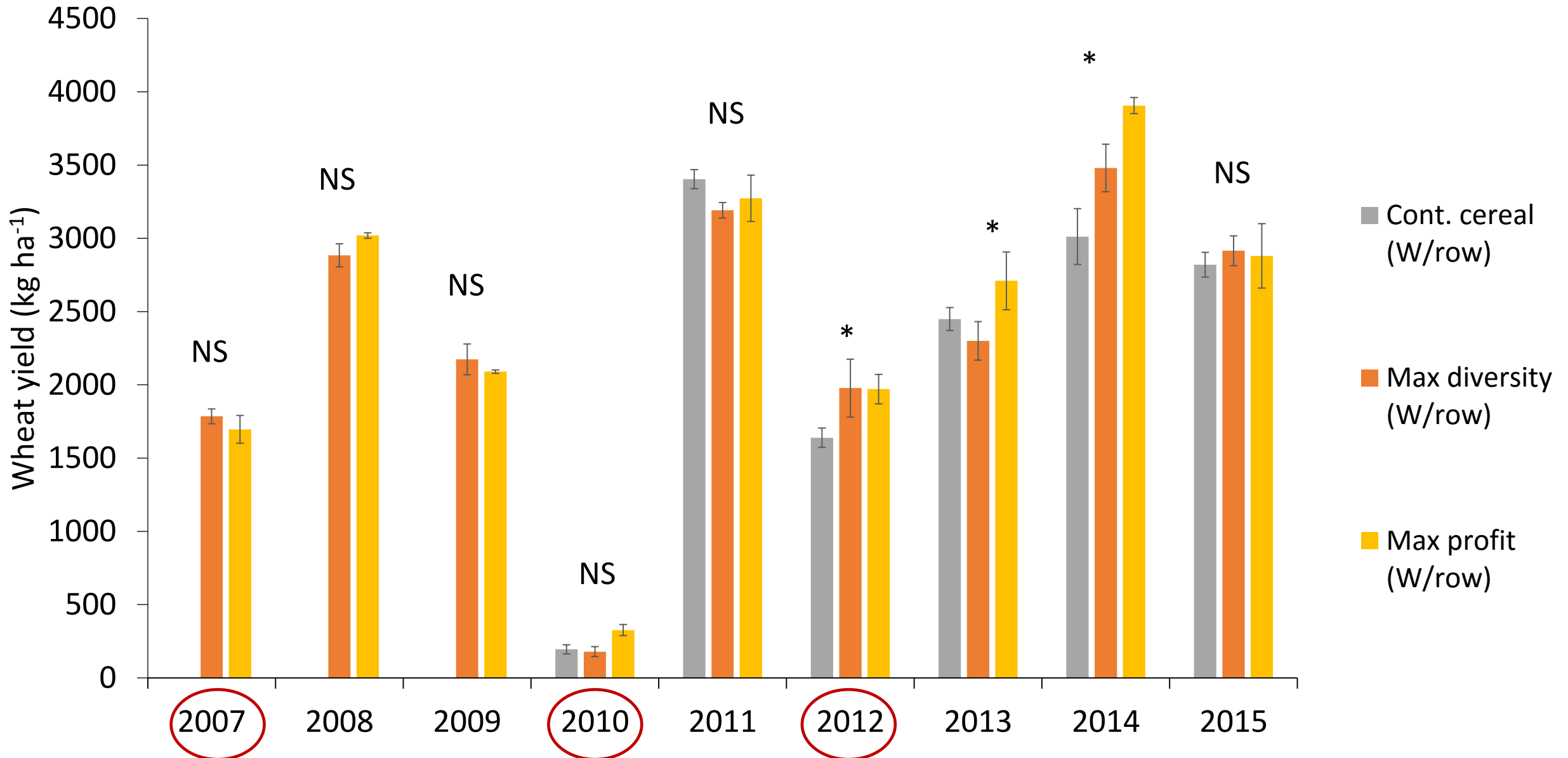
Windrow burn (lower residue level)



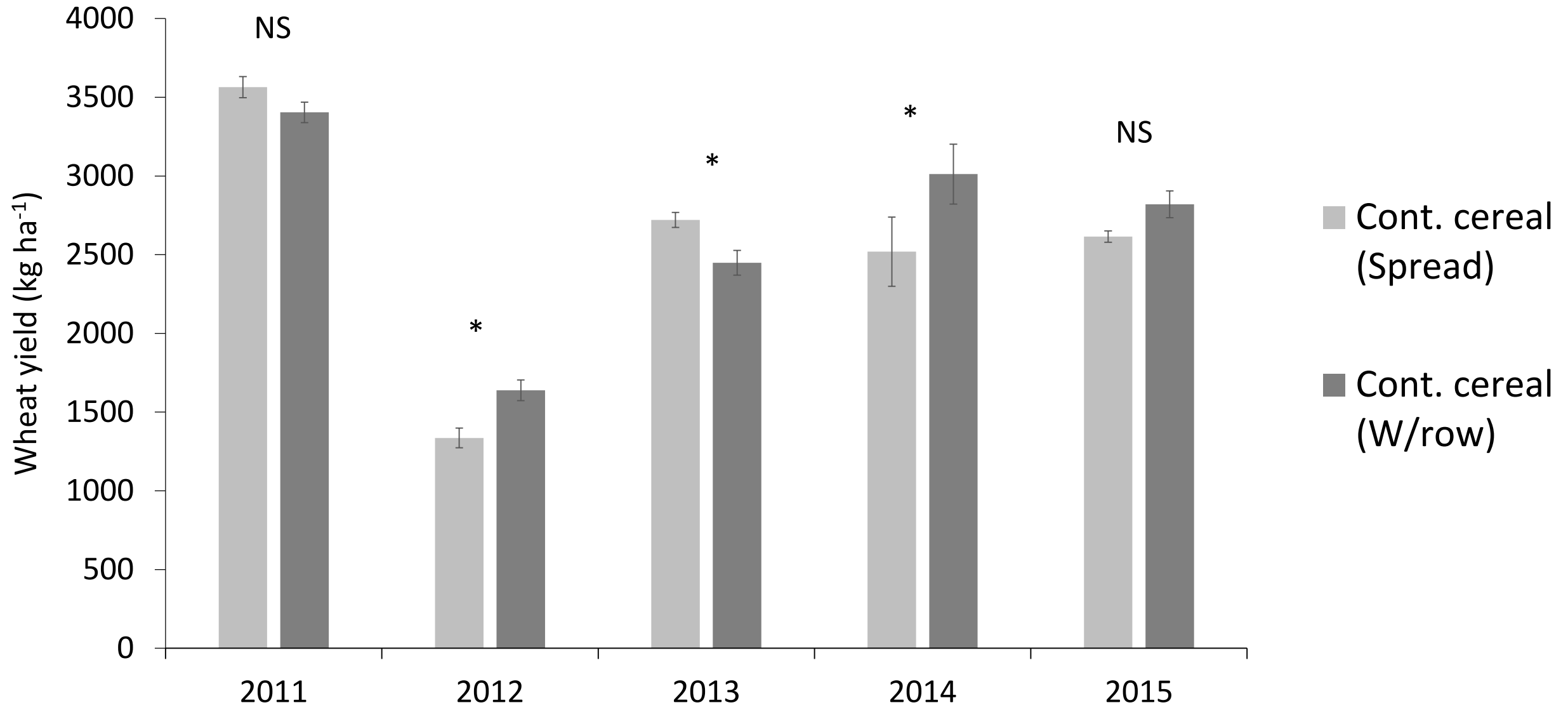
Growing season rainfall



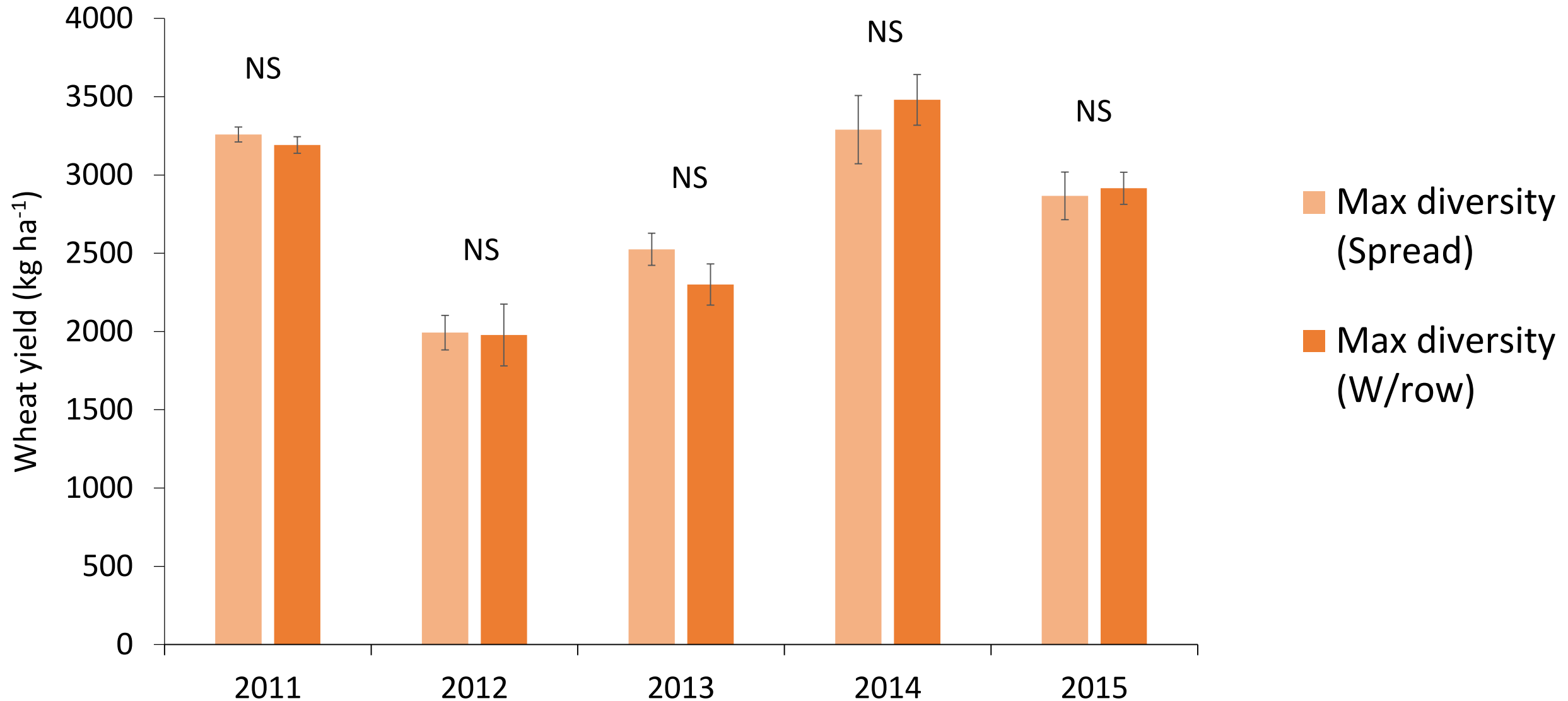
Effect of rotation on wheat yield



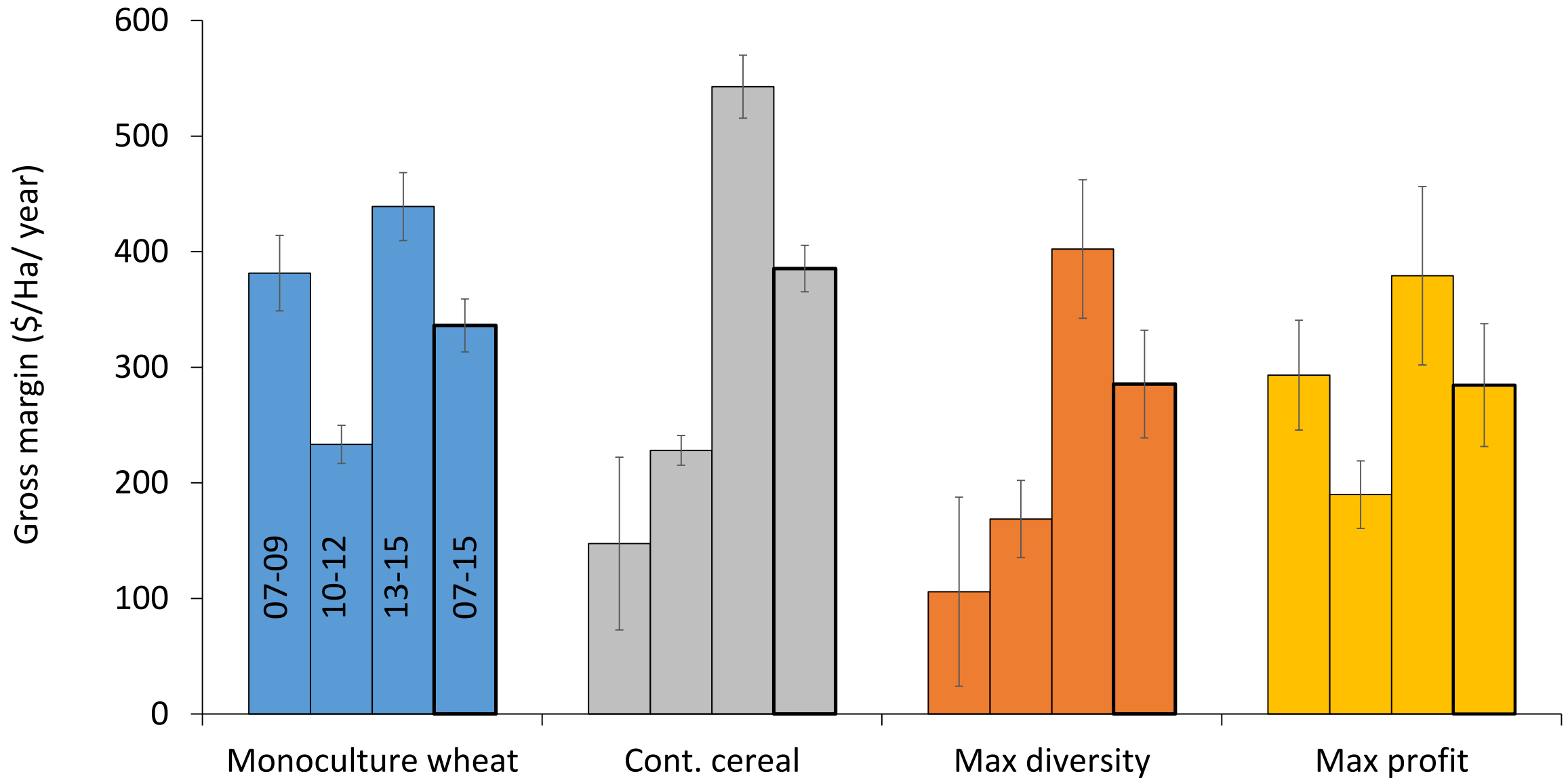
Effect of residue management on wheat yield



Effect of residue management on wheat yield



Effect of rotation on gross margin



Long term effects of rainfall, rotations and residue on wheat performance (over 9 years from 2007-2015)

- No wheat yield differences for the first 5 years
- Subsequently, monoculture wheat and continuous cereal had lower yields than rotated wheat in some years
- Heavy canola residues had no effect on wheat yield
- Over 9 years, continuous cereal had the highest gross margin