

# GRDC Grains Research Update

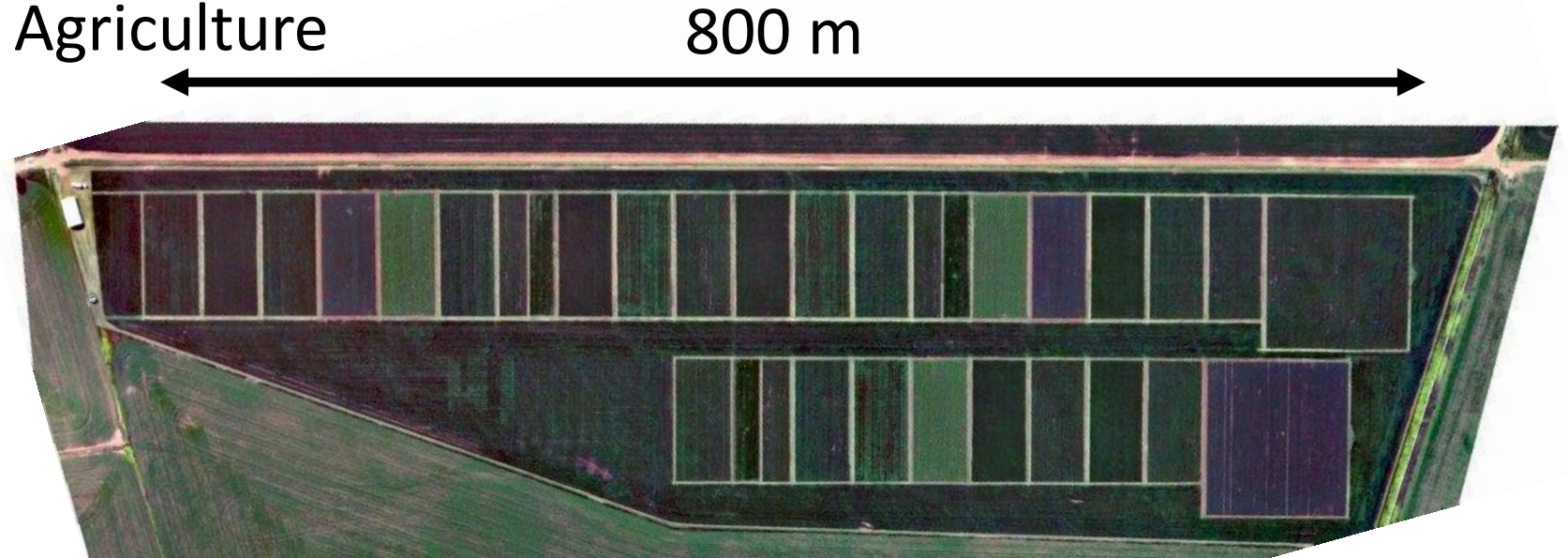


## **Rainfall, rotations and residue on wheat performance**

**Ken Flower, Neil Cordingley, Phil Ward and Shane Micin**

# 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

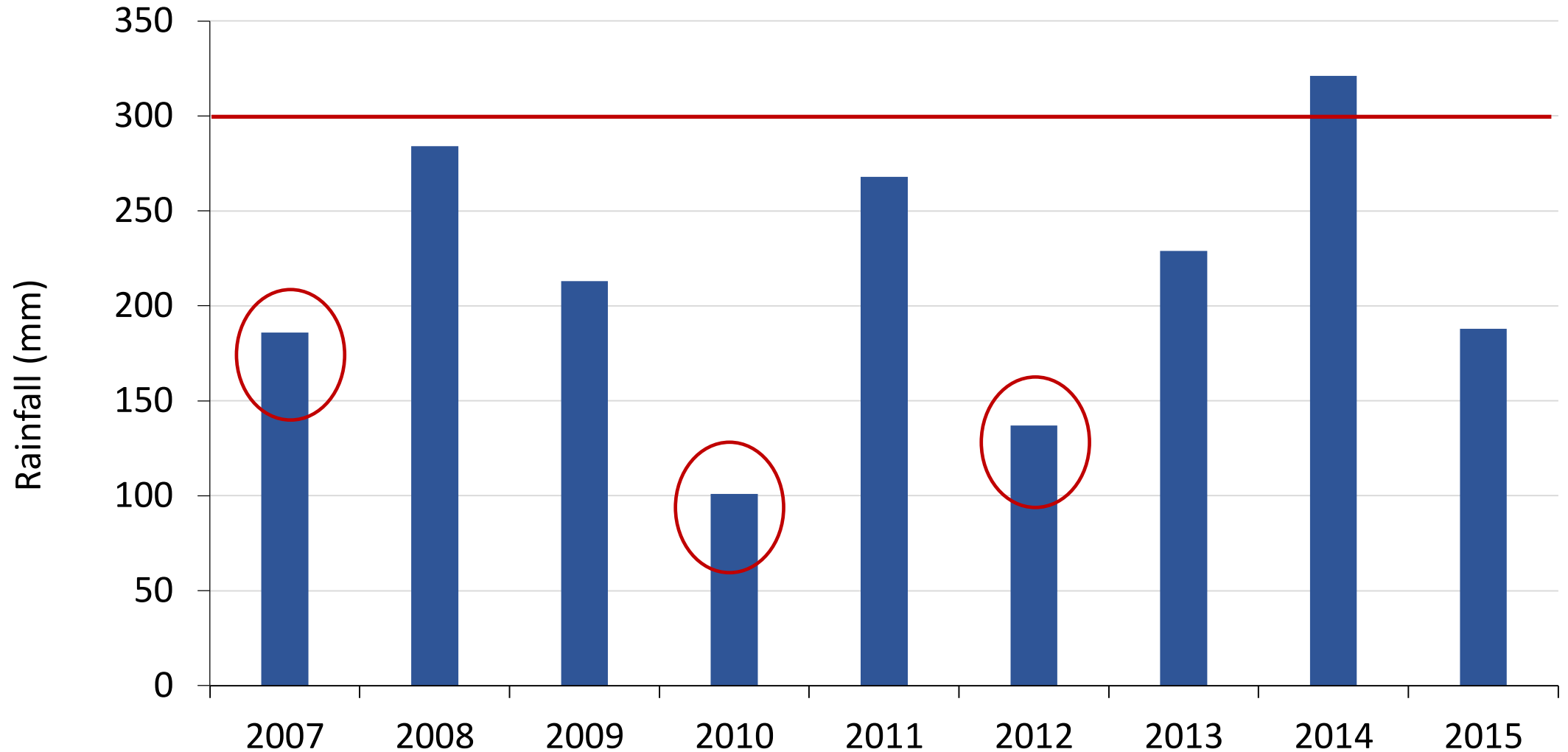
Spread/retain (higher residue level)



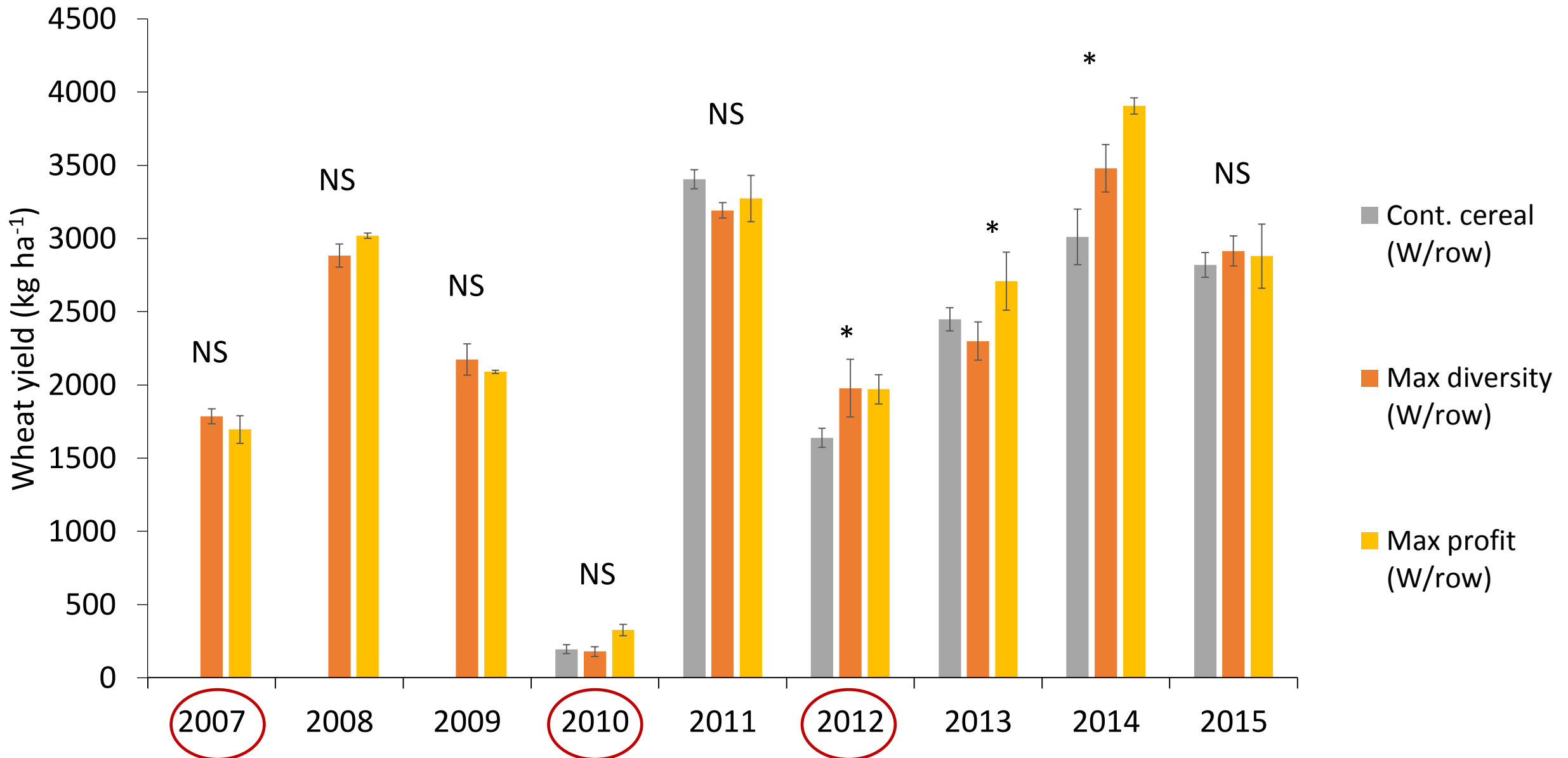
Windrow burn (lower residue level)



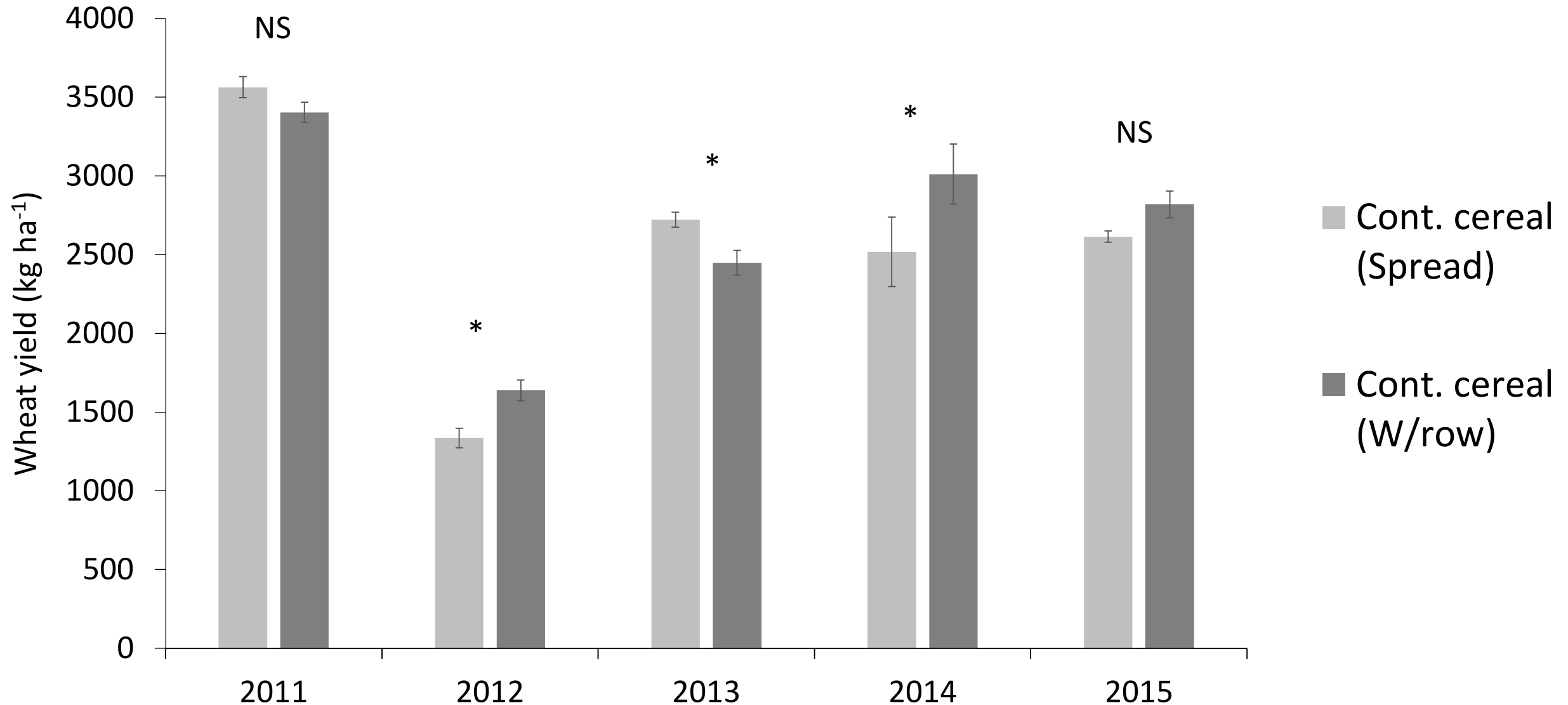
# Growing season rainfall



# Effect of rotation on wheat yield

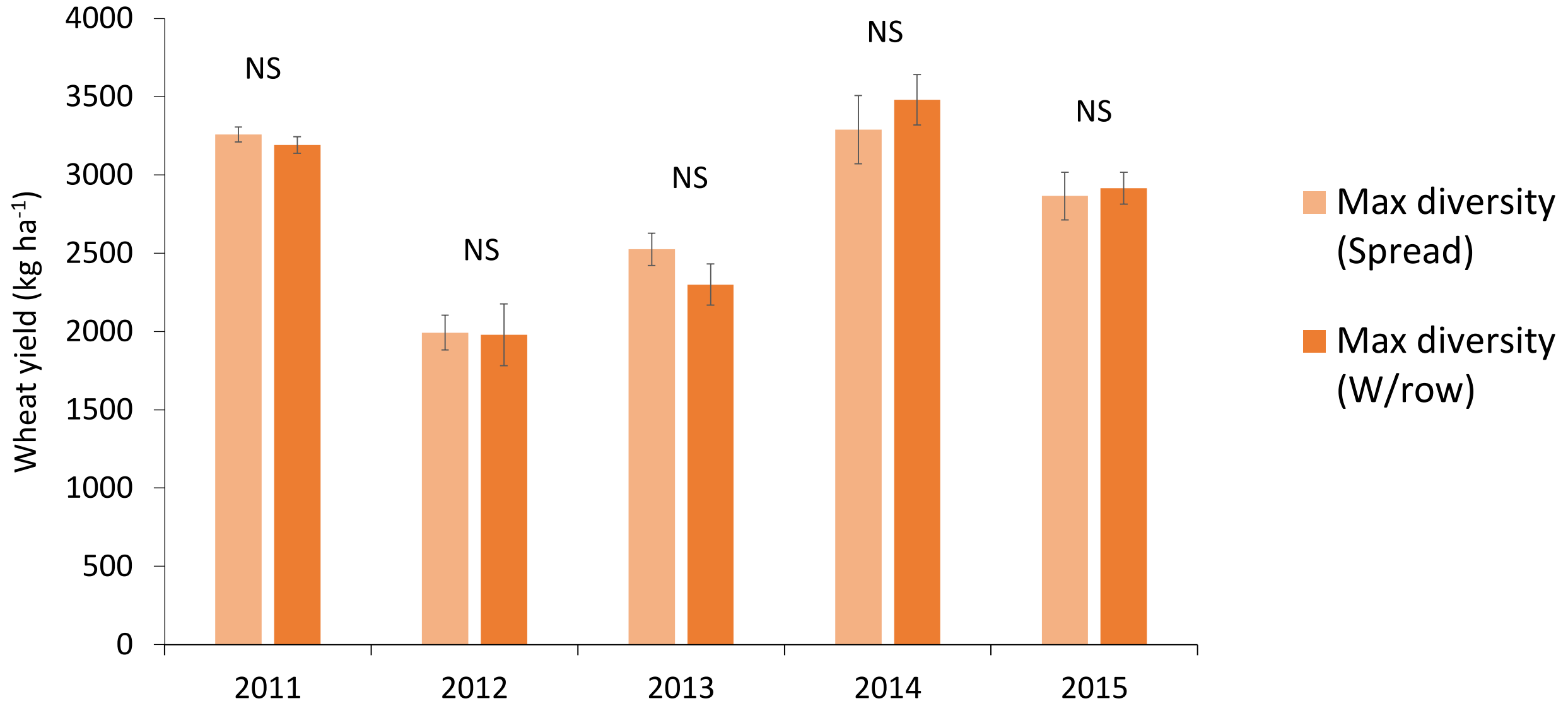


# Effect of residue management on wheat yield

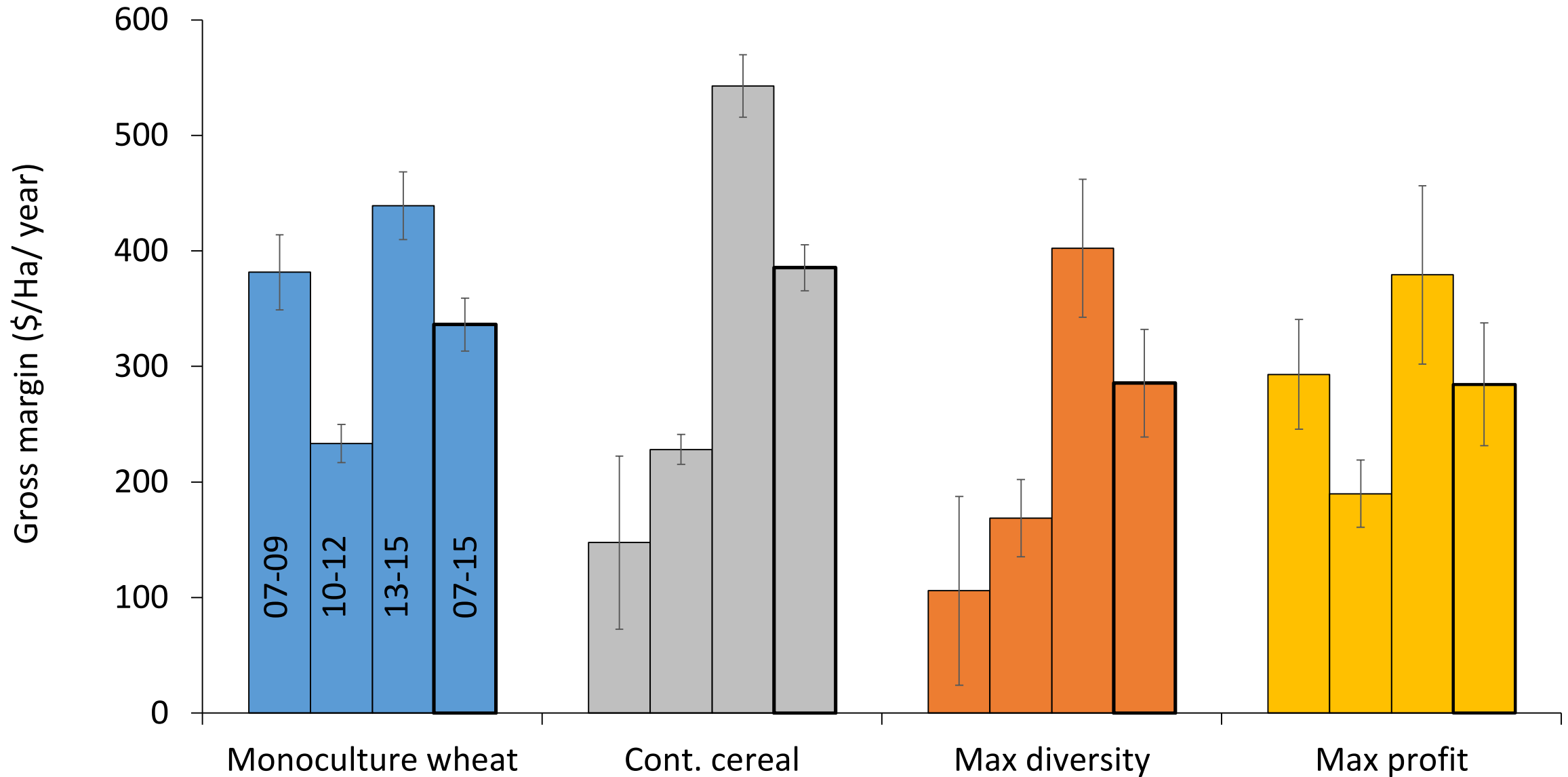




# Effect of residue management on wheat yield

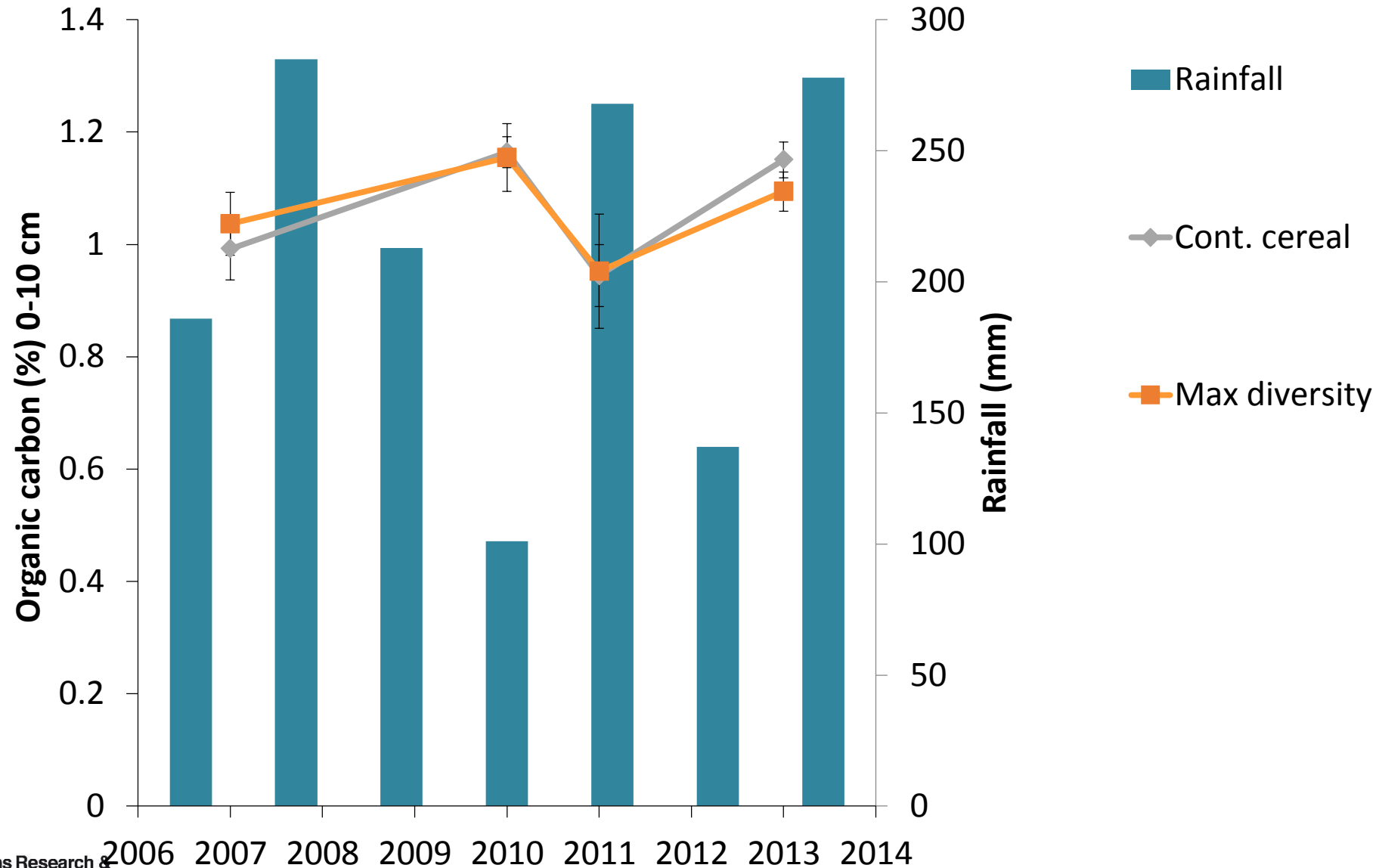


# Effect of rotation on gross margin





# Soil organic C (0-10 cm)



# 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



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## Questions?