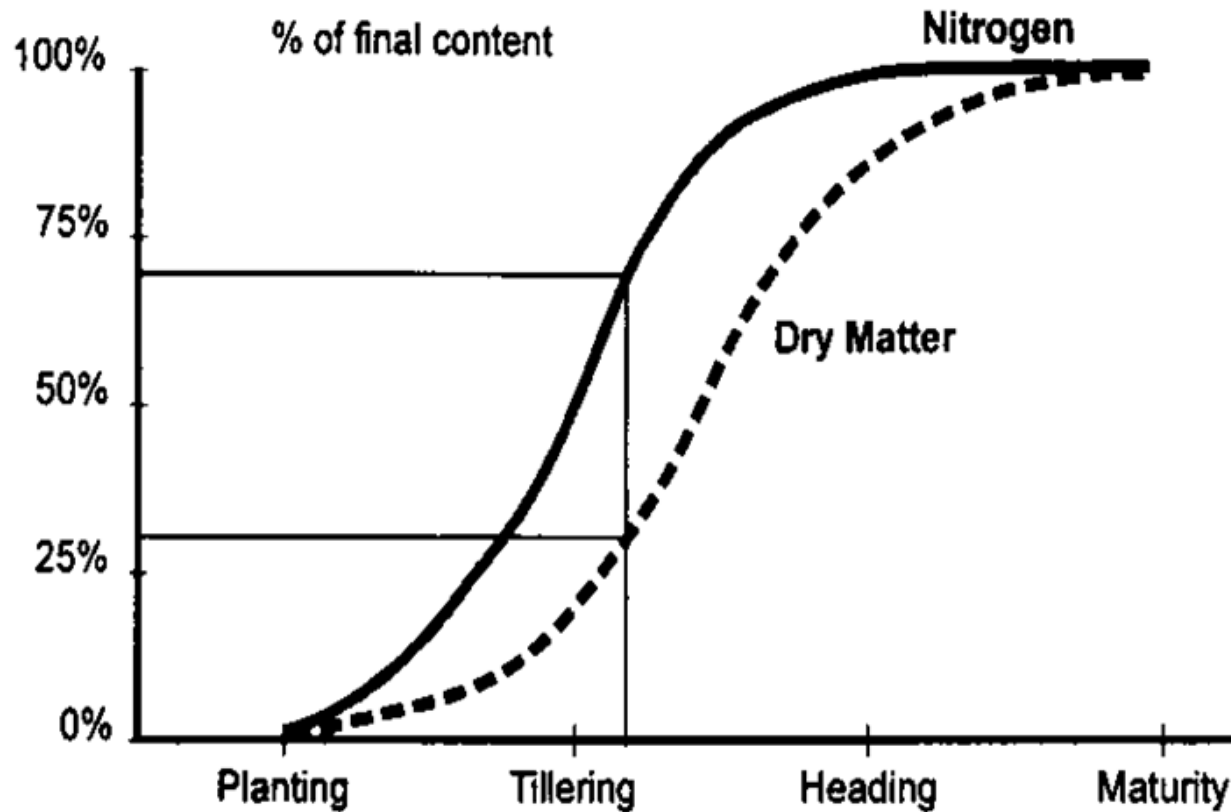


Applying lessons learned from fertigation research to irrigated and dryland crop production

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Nitrogen uptake and dry matter accumulation in cereals



Background

- **Fertigation common on-farm, but research involving replicated fertility treatments applied with irrigation systems are rare**
- **Special thanks to Ross McKenzie**
- **Thanks to ACIDF and Agrium for funding the project**

Background

- **Objective:** To determine if there are yield and seed quality benefits or detriments from N fertigation applied to wheat and canola
- **Fertigation treatments are in addition to a range of N fertility treatments applied at seeding**
- **2013-2016**
- **Jail Land site only**

Wheat and canola response to fertigation

- **Base fertilization: 0, 30, 60, 90, 120 kg N/ha mid-row banded at seeding**
- **ESN mid-row banded at 60 kg N/ha**
- **30 kg N/ha fertigation applied with 12 mm water at 1 of 3 times or all 3 times**

Fertigation timing

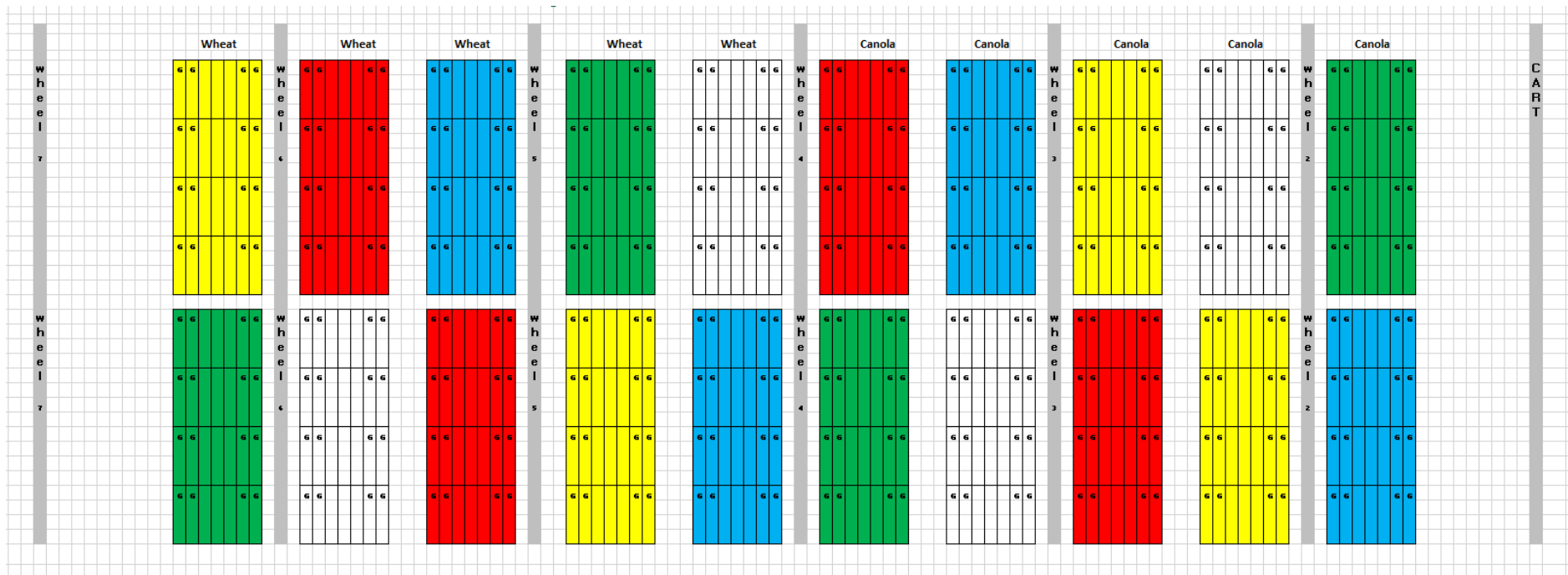
Wheat:

- Tillering
- Flag Leaf
- Anthesis
- All 3 times (90 kg N/ha total fertigation)
- No fertigation

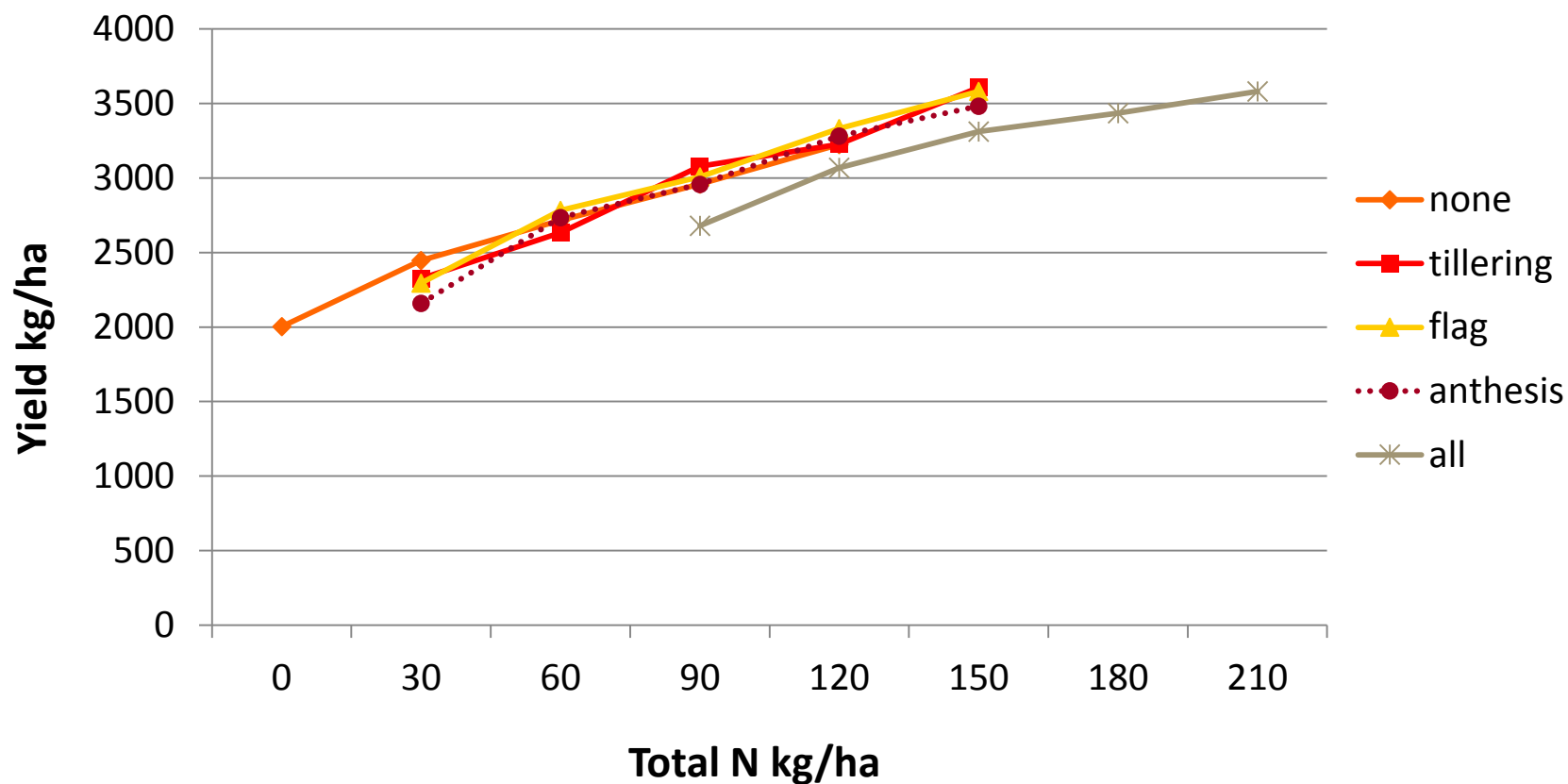
Canola

- 5-6 leaf rosette
- Bolting
- Flowering
- All 3 times (90 kg N/ha total fertigation)
- No fertigation

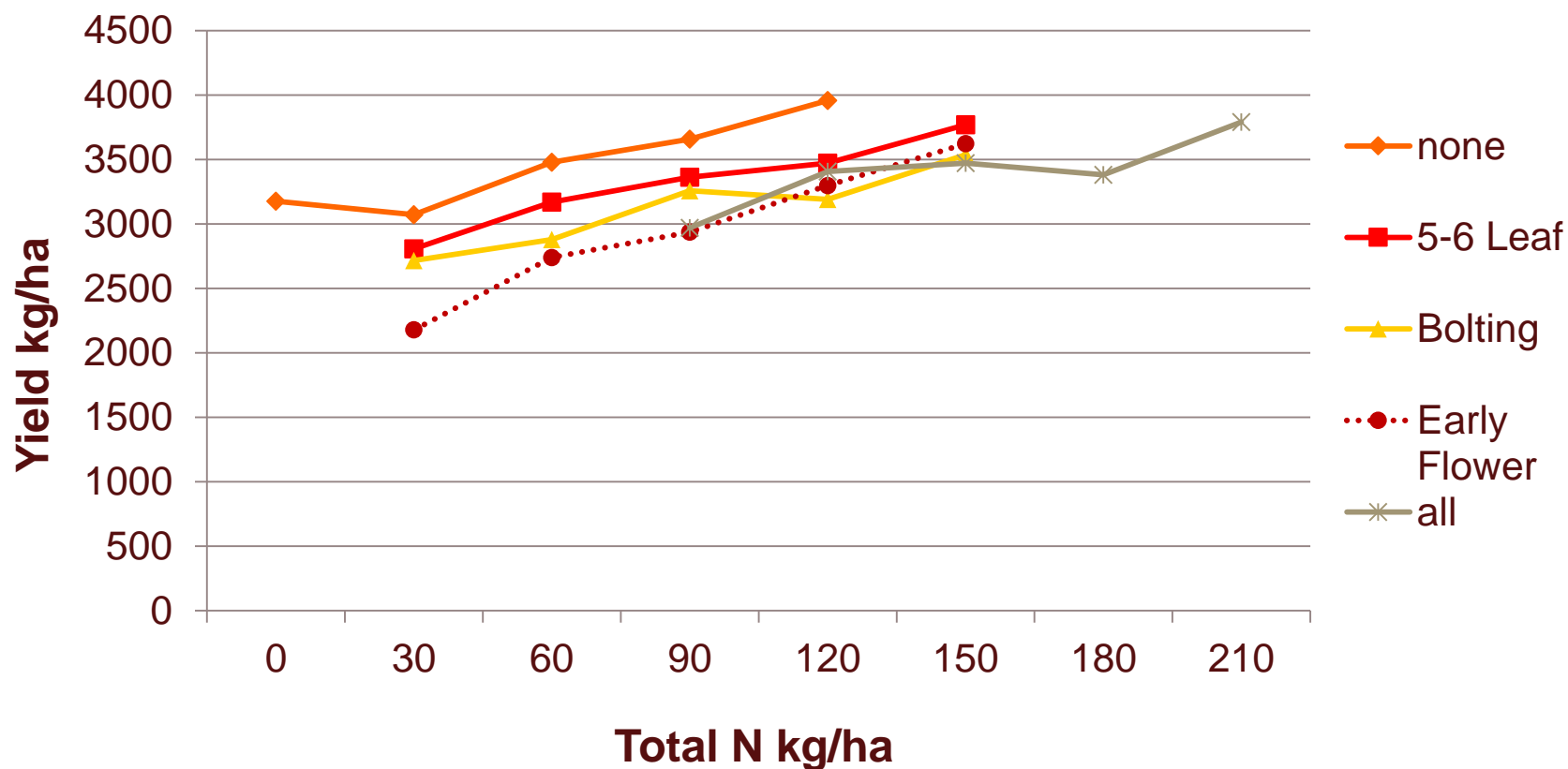
2015 and 2016 Fertigation Layout



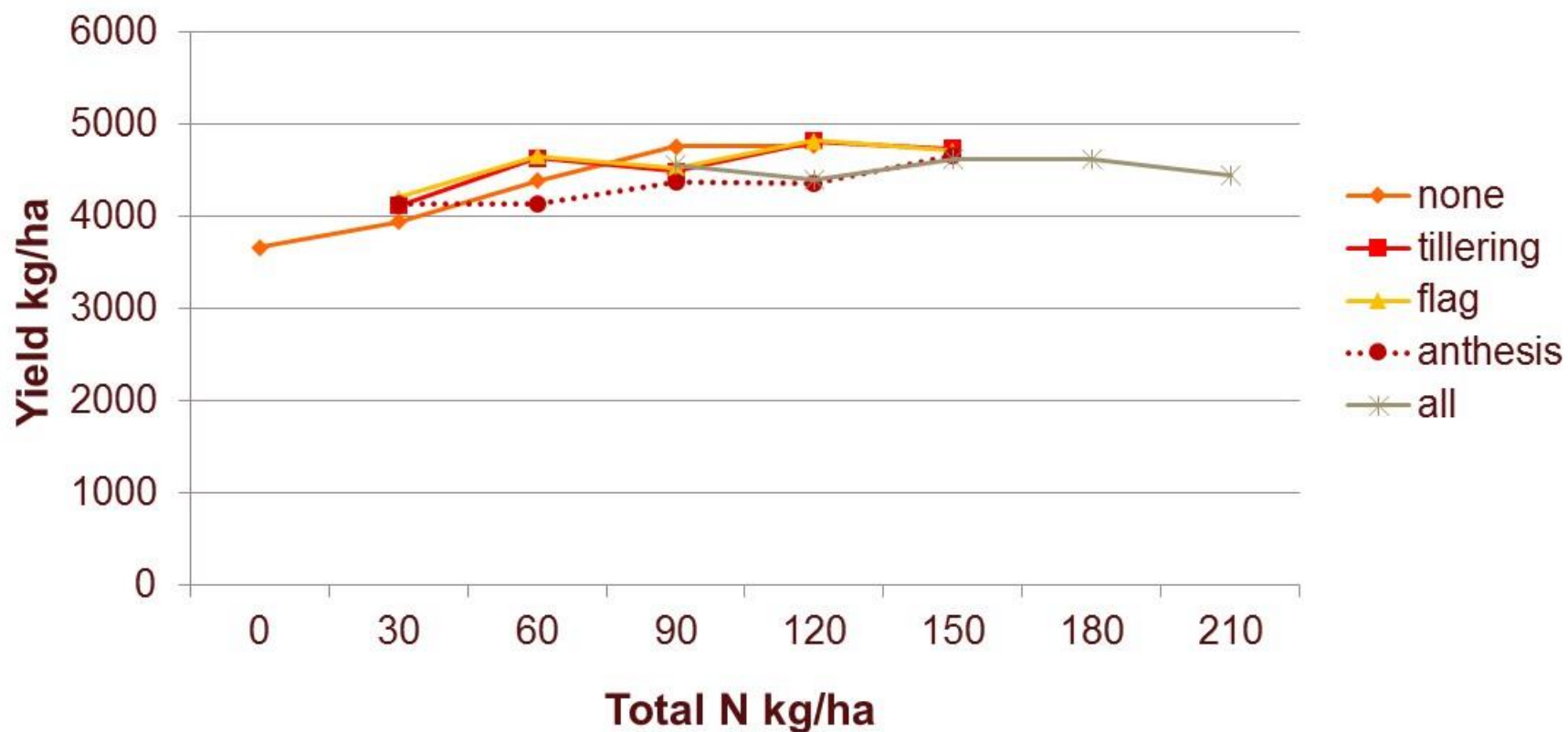
2013 Canola yield response to N



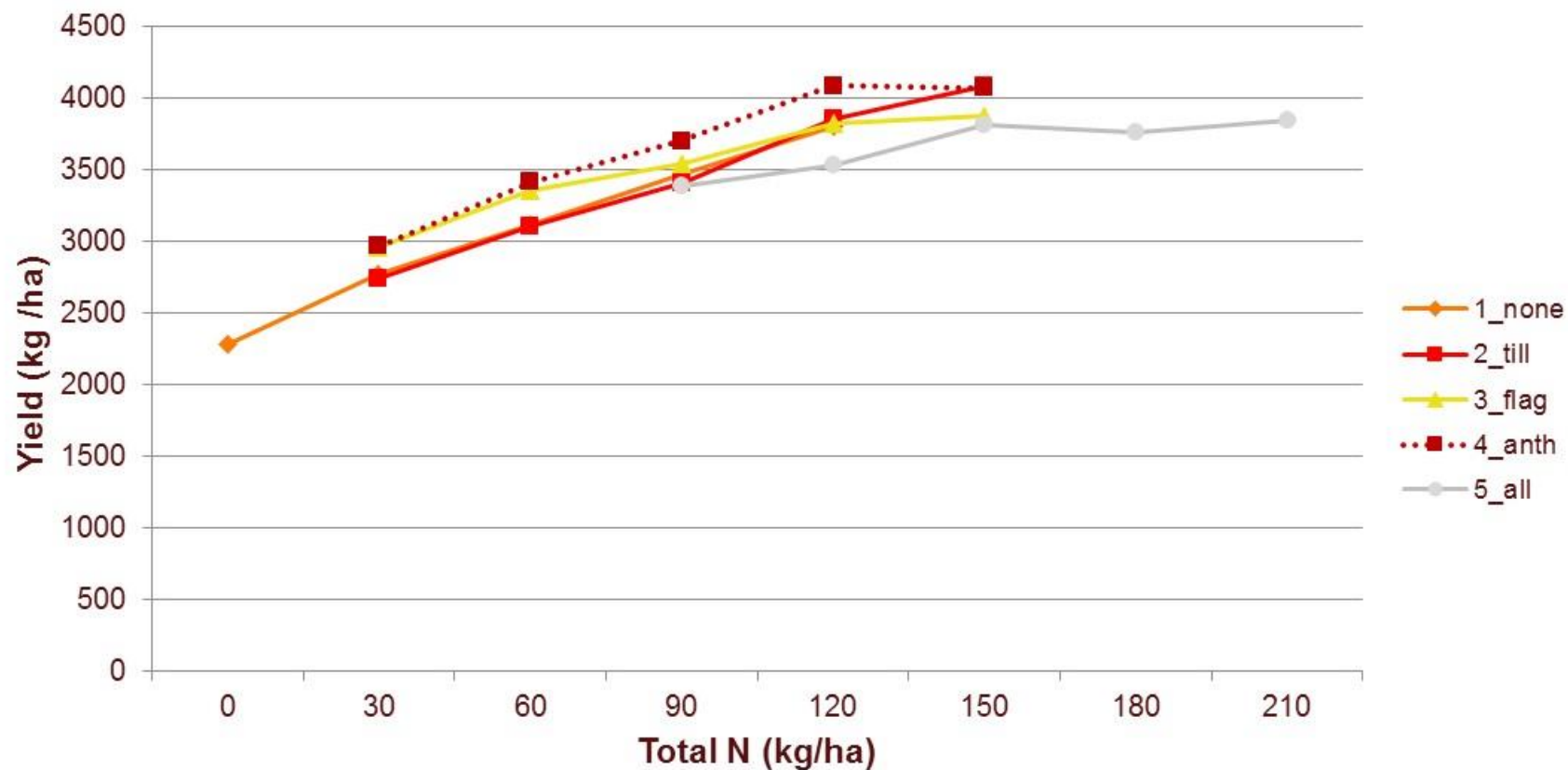
2014 Canola yield response to N



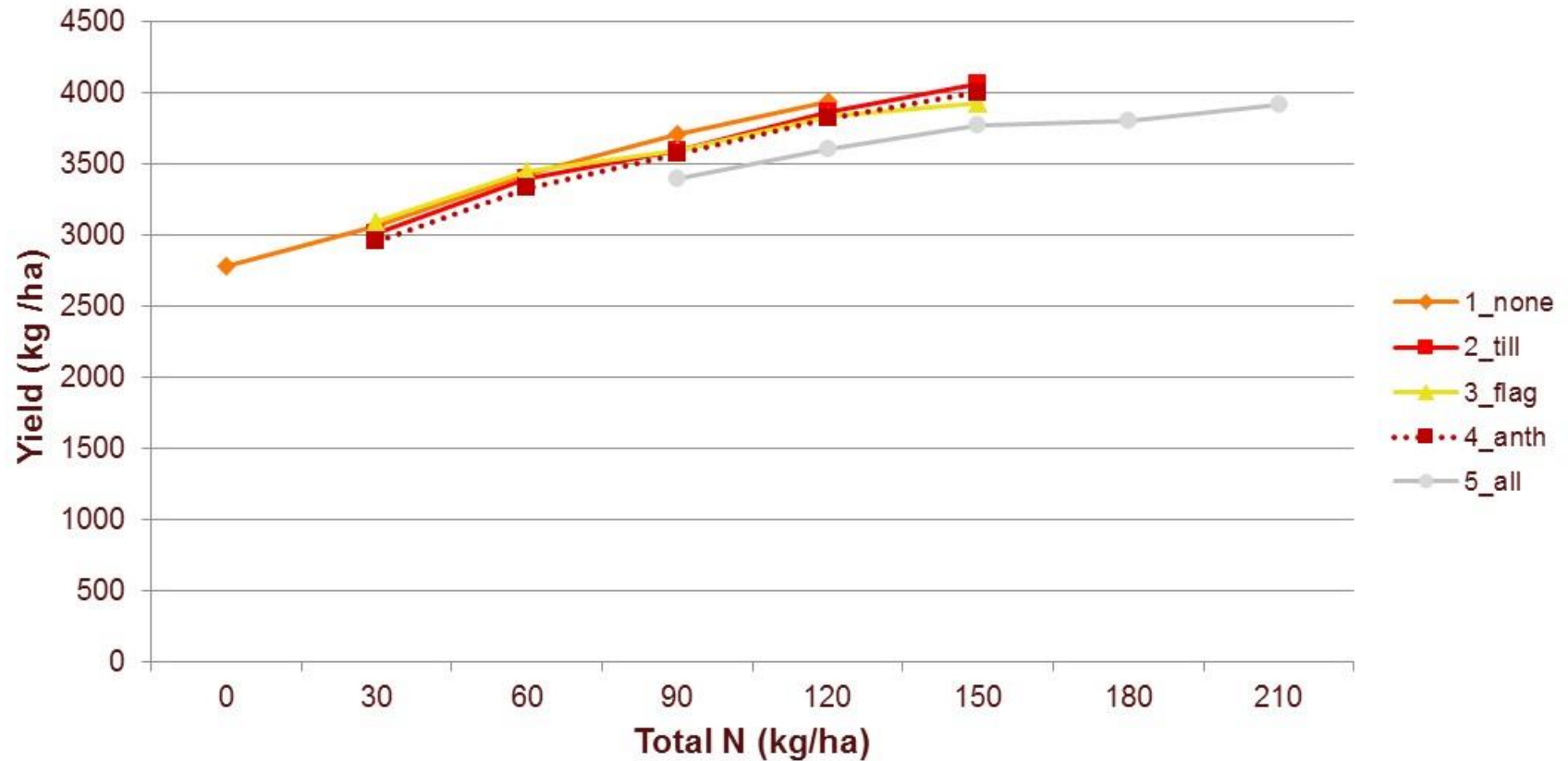
2015 Canola yield response to N



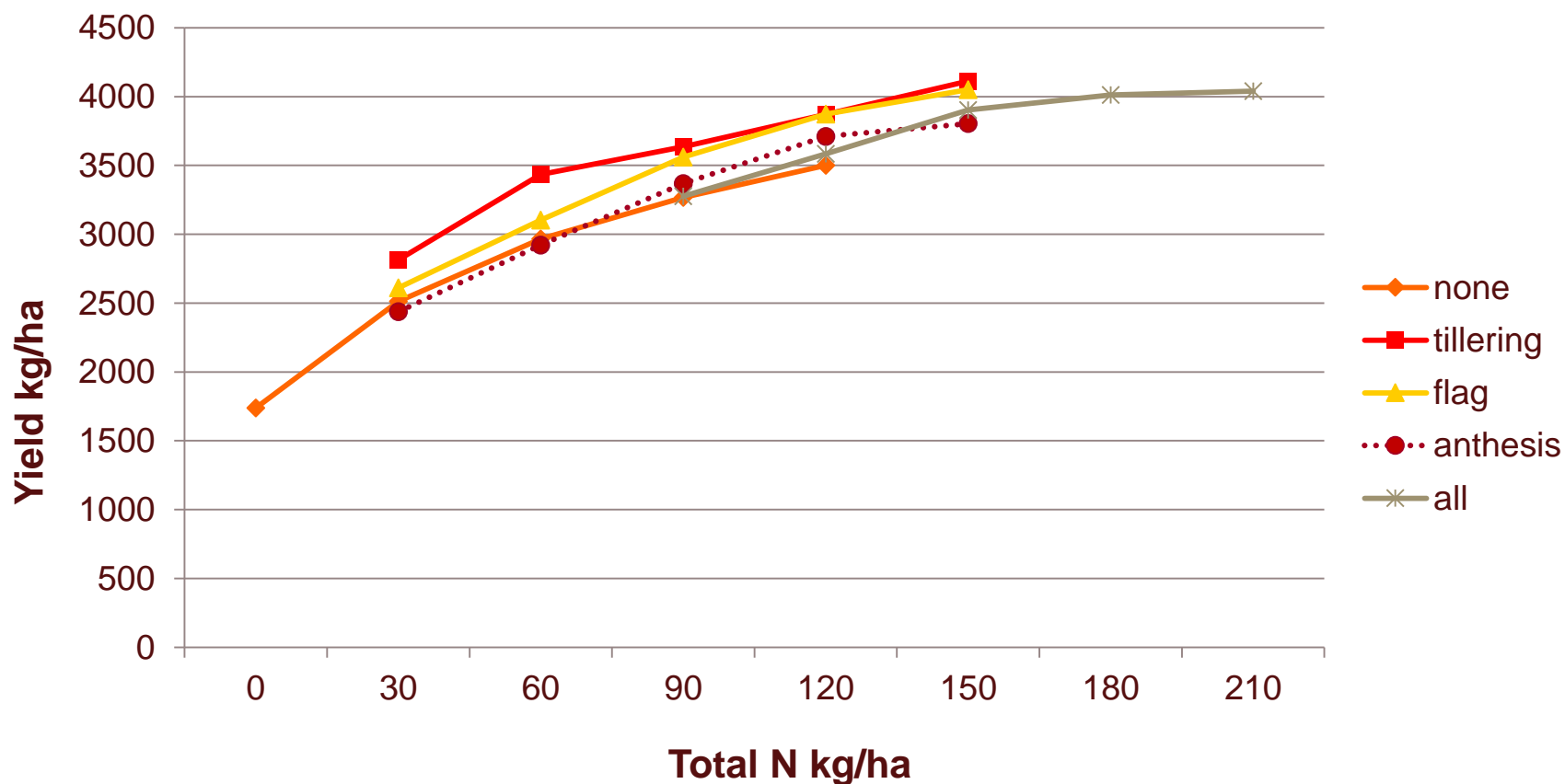
2016 Canola yield response to N



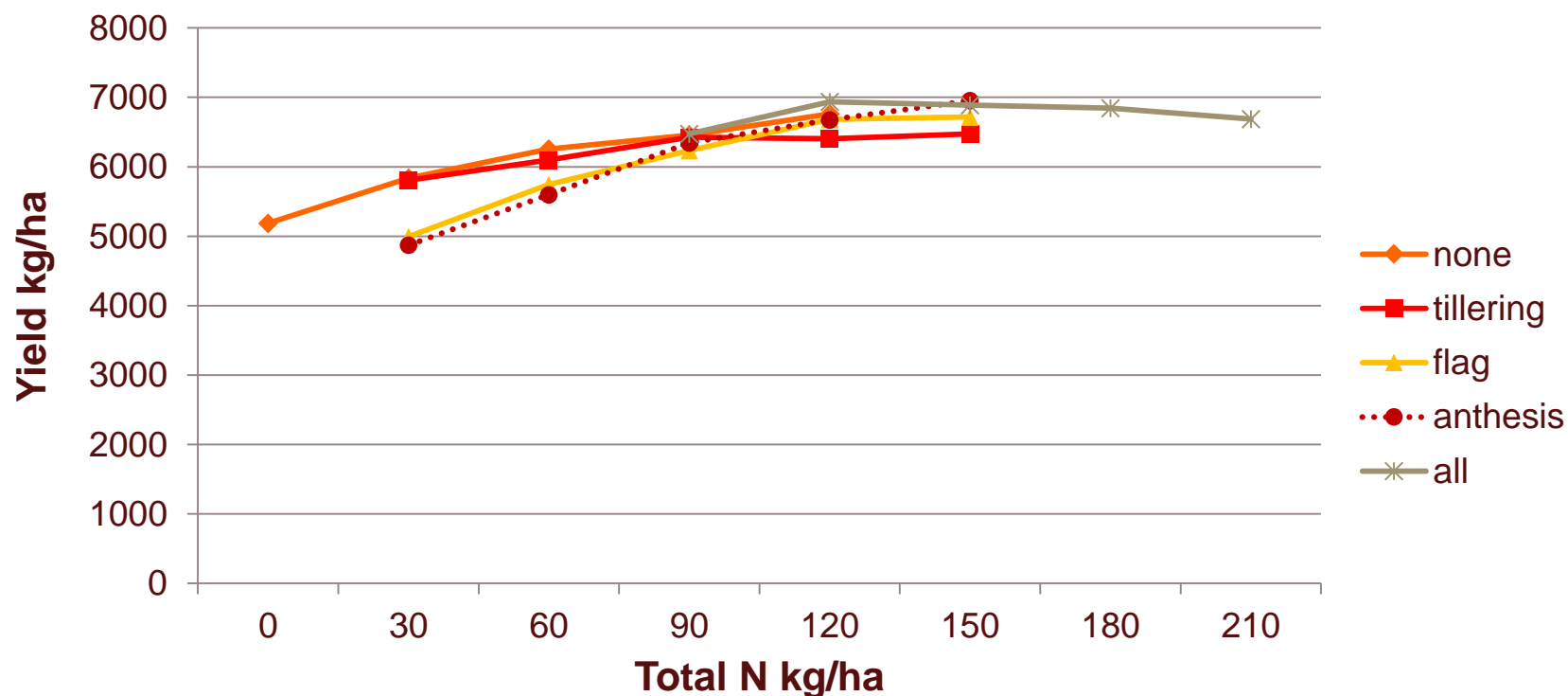
2013-2016 Canola yield response to N



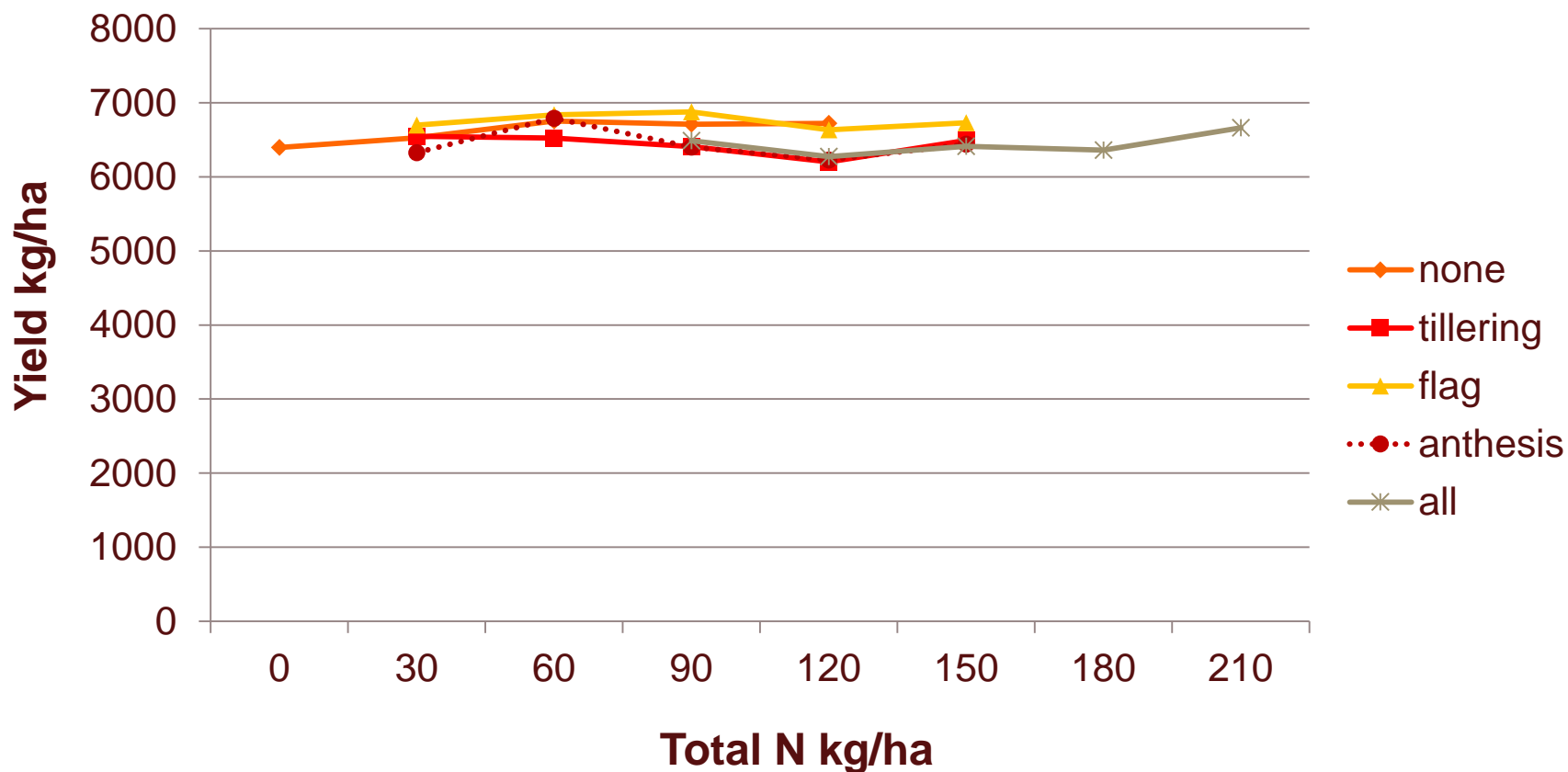
2013 Wheat yield response to N



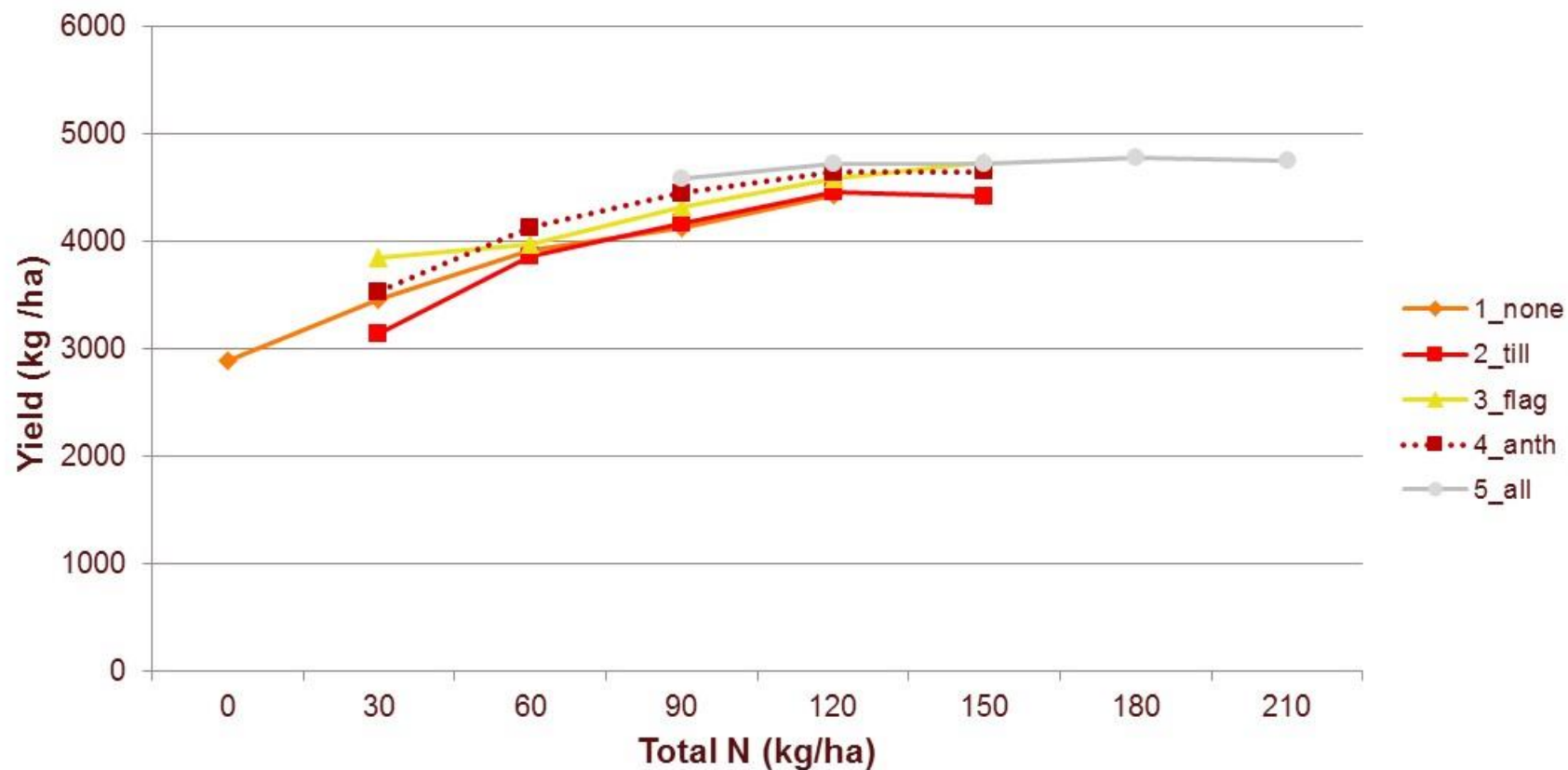
2014 Wheat yield response to N



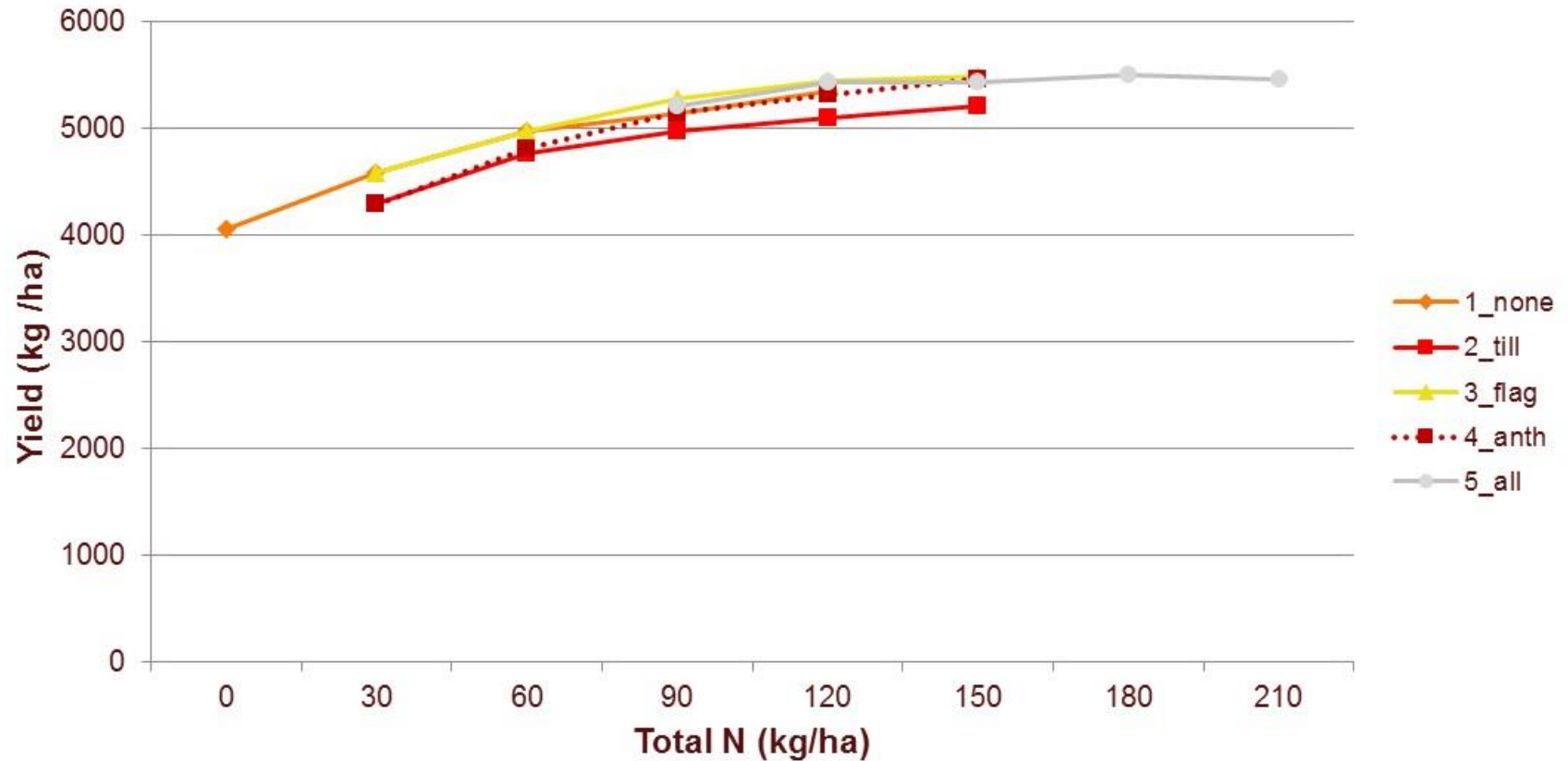
2015 Wheat yield response to N



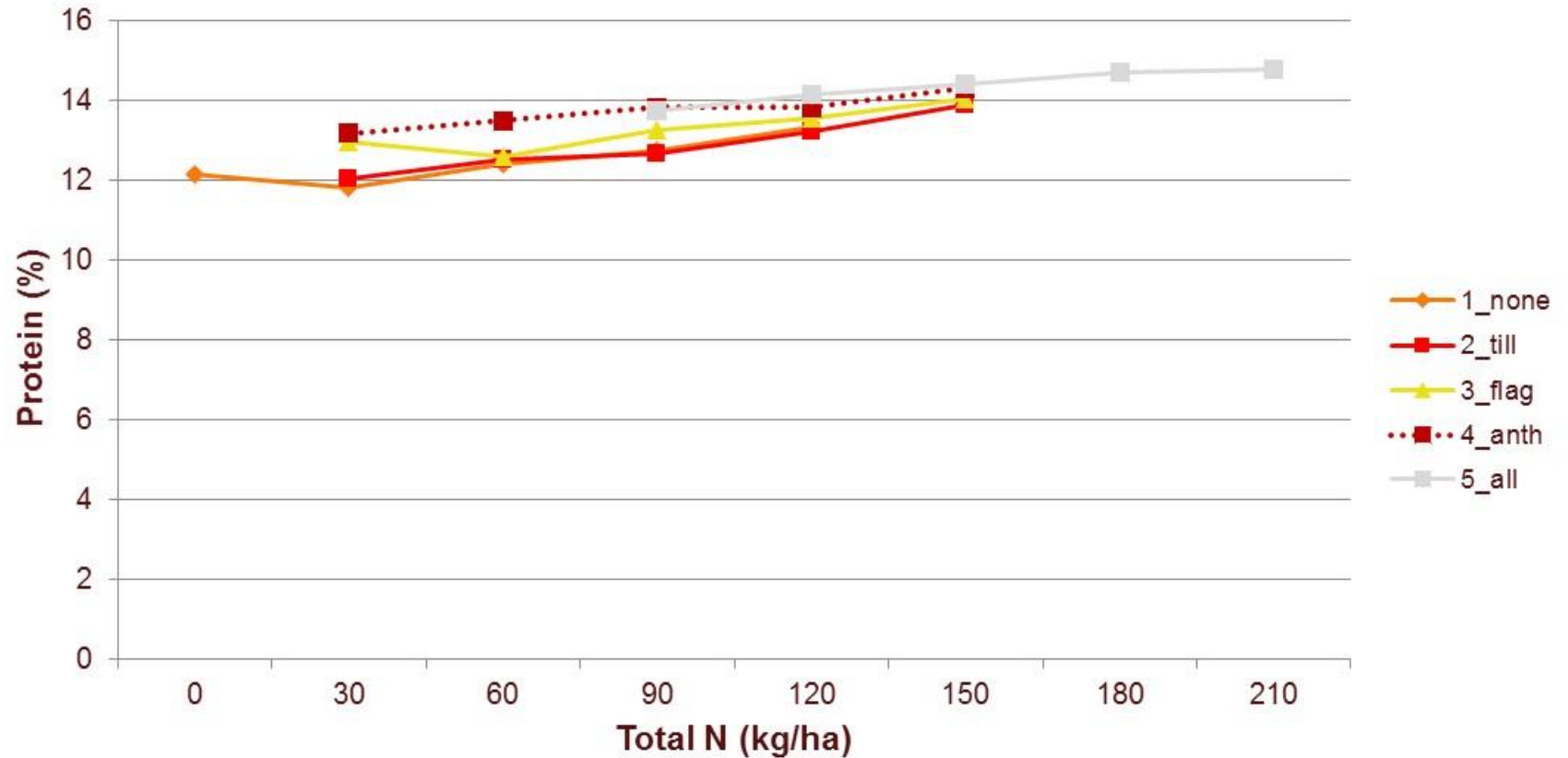
2016 Wheat yield response to N



2013-2016 Wheat yield response to N



2013-2016 Wheat protein response to N



Conclusions/thoughts/questions

Canola less flexible than wheat to fertigation

- We did not see an agronomic reason to fertigate rather than apply all N at seeding
- Treatments applied with 12 mm irrigation

Protein increase is the primary reason to fertigate wheat, but you need protein premiums

Conclusions/thoughts/questions

Do we understand denitrification?

Why didn't we see evidence of denitrification in 2013 and 2014?

How much room for improvement in NUE is there over existing systems?

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