



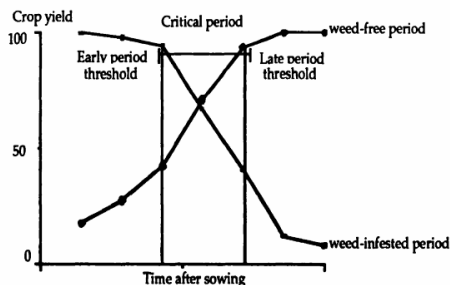
Integrated weed management in organic field pea and lentil

Academic and research supervisor:
Dr. Steven Shirtliffe

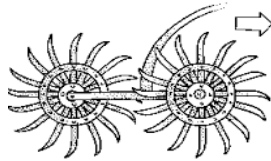
Presenter: Oleksandr Alba
MSc Candidate



Integrated weed management



Rotary hoe

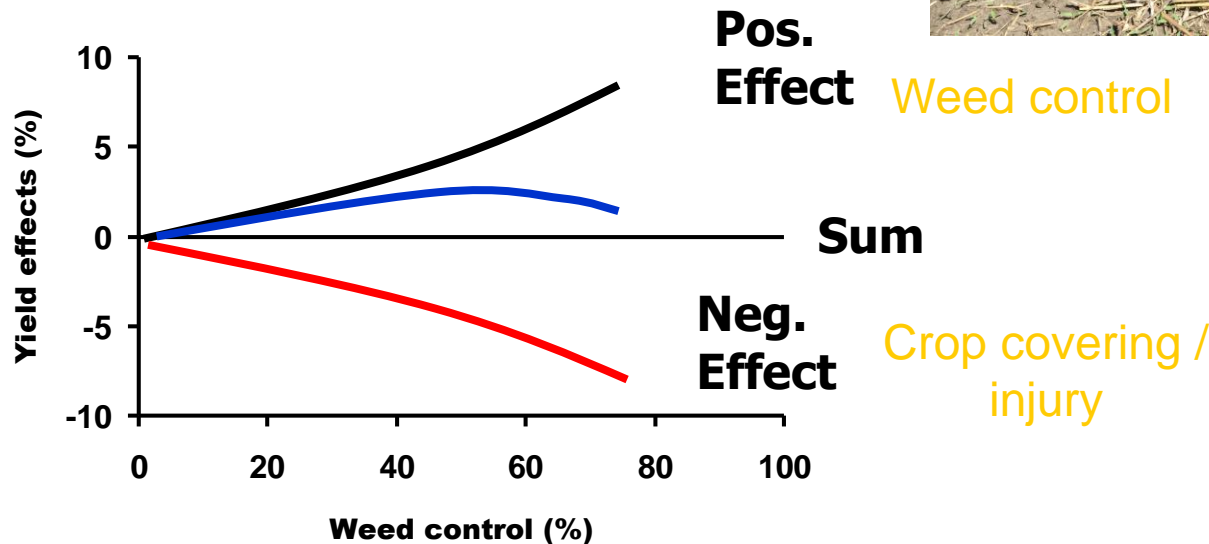


Organic farm, Quebec

Harrowing



Adjustable tine angle=
better weed burial



Bury your weeds

Inter-row cultivation



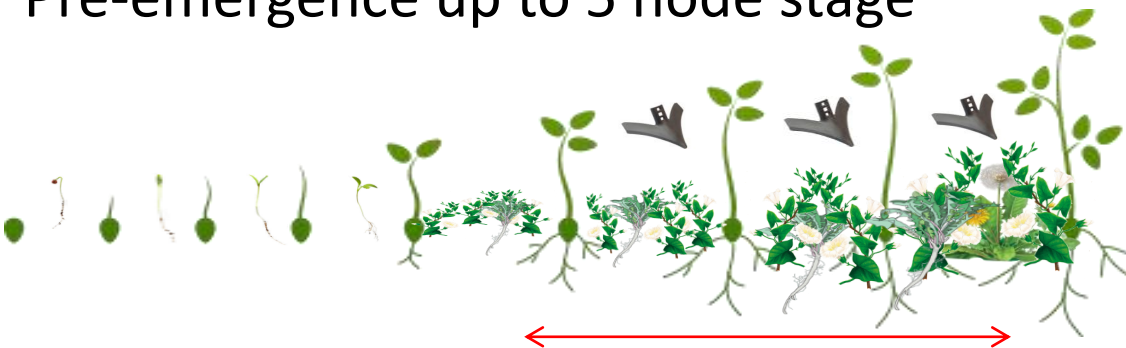
(Stanley et al, 2016; Mohler et al, 2016)



Pre-emergence up to cotyledon stage

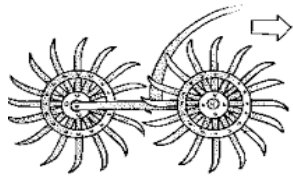


Pre-emergence up to 5 node stage



From 5 up to 10 nodes stage





Objective

- Determine the effect of mechanical weed control applied alone and in combination (Rotary hoeing, post-emergence harrowing and inter-row cultivation) and crop seeding rate on yield and weed suppression in organically grown field pea and lentil.

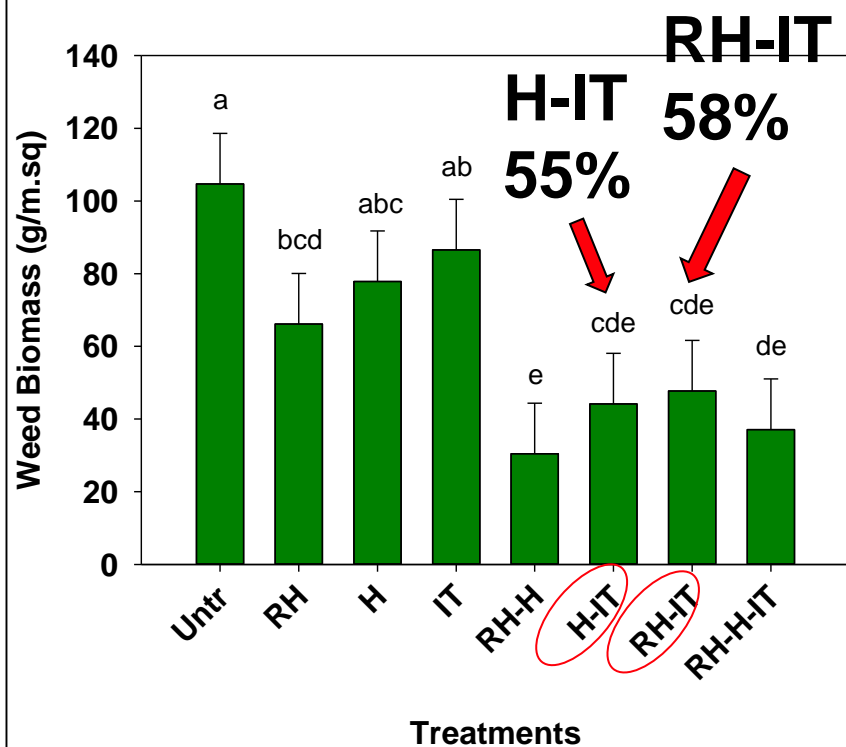
Project Description

Experimental design	Mixed model factorial desing (4 replications)
Location	Kernen Research Farm and Goodale
Year	2016 and 2017
Size of plot	2.25*6 m
Factors	<p>Mechanical weed control applied as single treatment, paired and triple treatment combination (Rotary hoe, harrow, inter-row cultivation)</p> <p>Seeding rate Conventional (L) and Optimal Organic (H). Field pea: (L) – 90 plants/m.sq, (H)-135 plants/m.sq. Lentil: (L) – 130 plants/m.sq, (H)-260 plants/m.sq.</p>

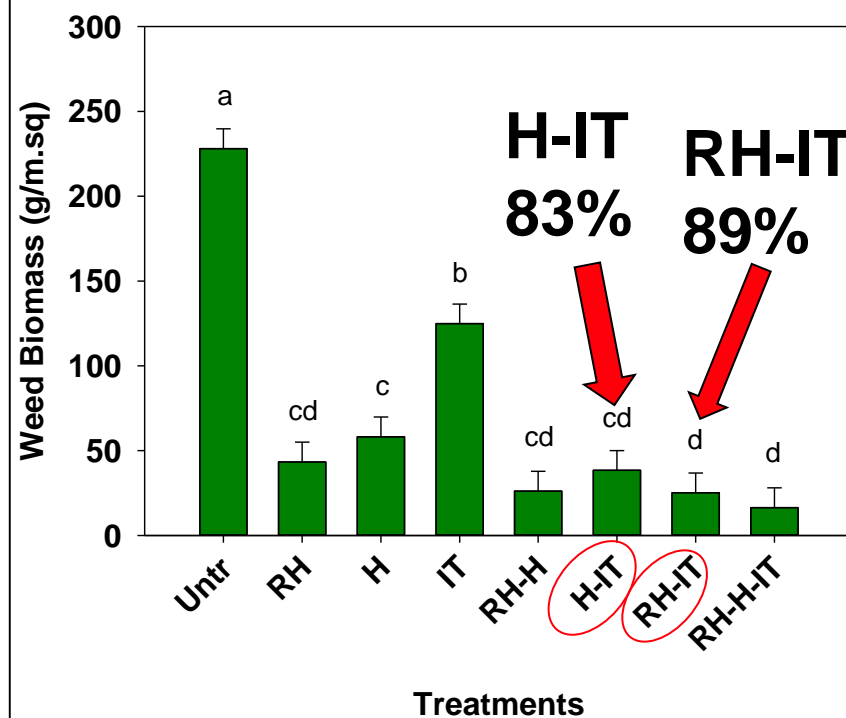
Results

Weed Biomass in Field Pea

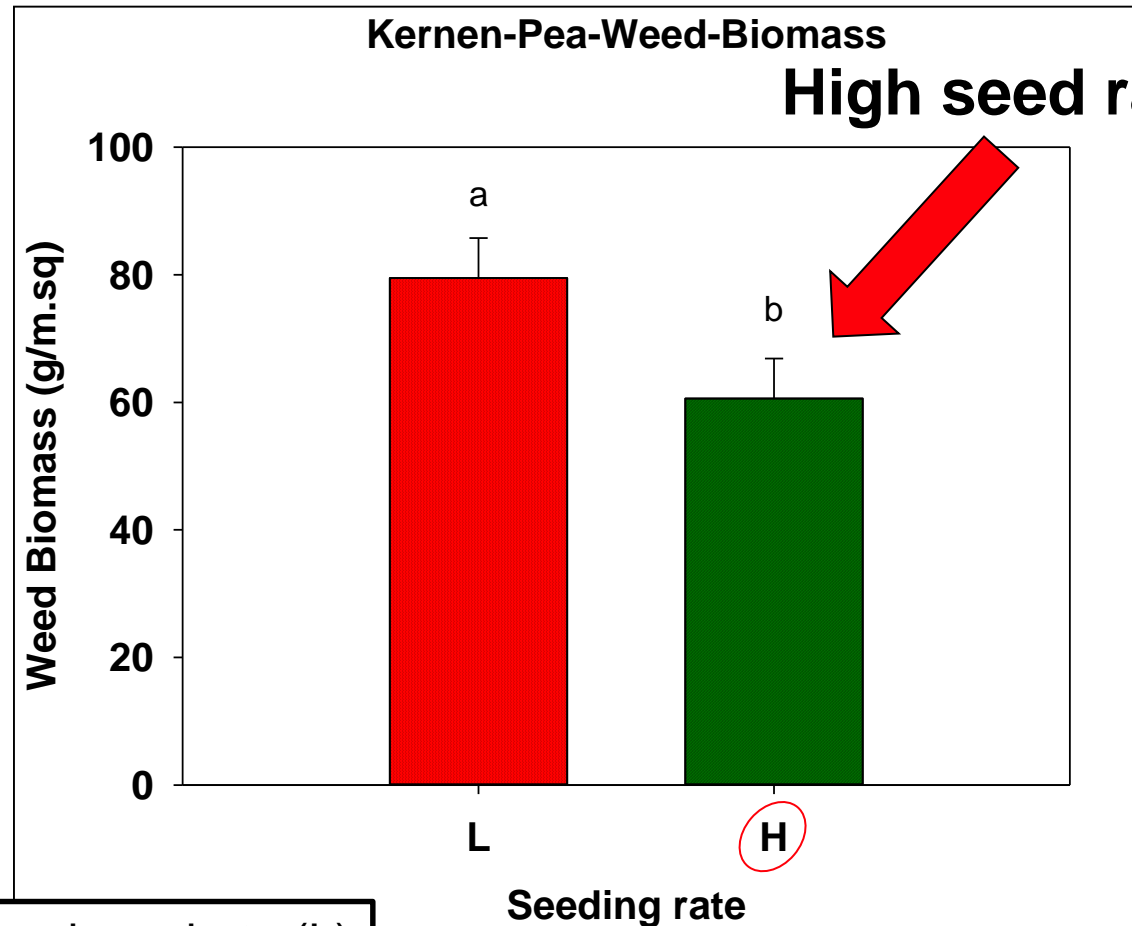
Goodale-Pea-Weed-Biomass



Kernen-Pea-Weed-Biomass



Weed biomass in Field pea cont.

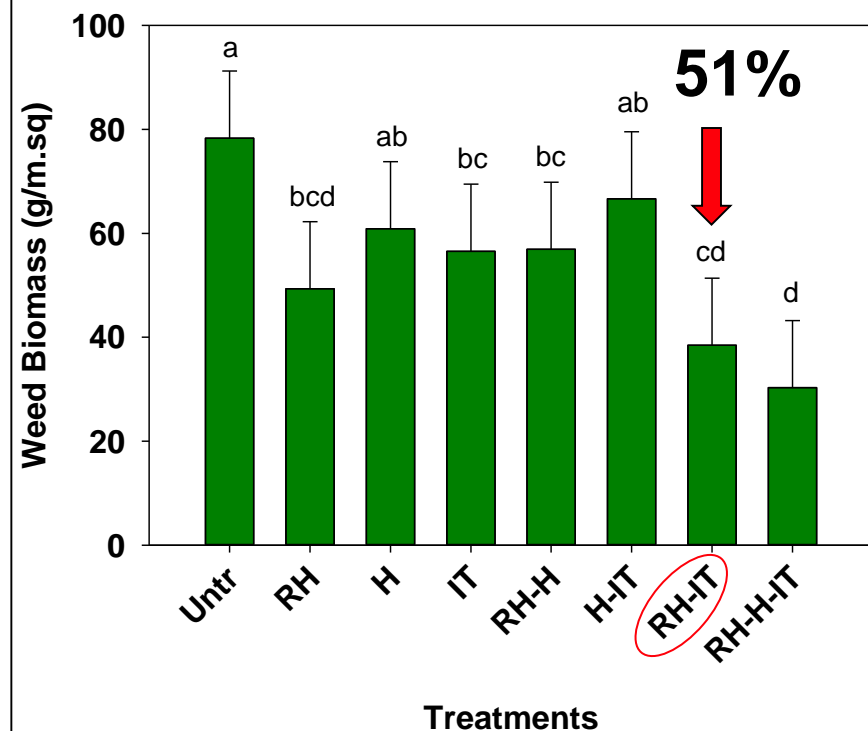


Conventional seedrate (L)

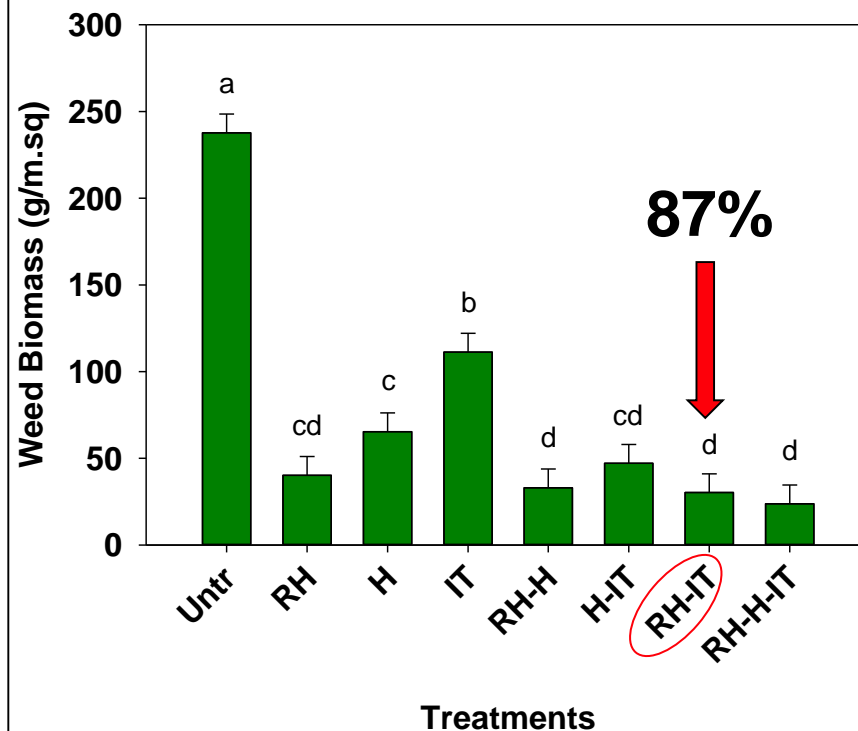
Organic seedrate (H)

Weed Biomass in Lentil

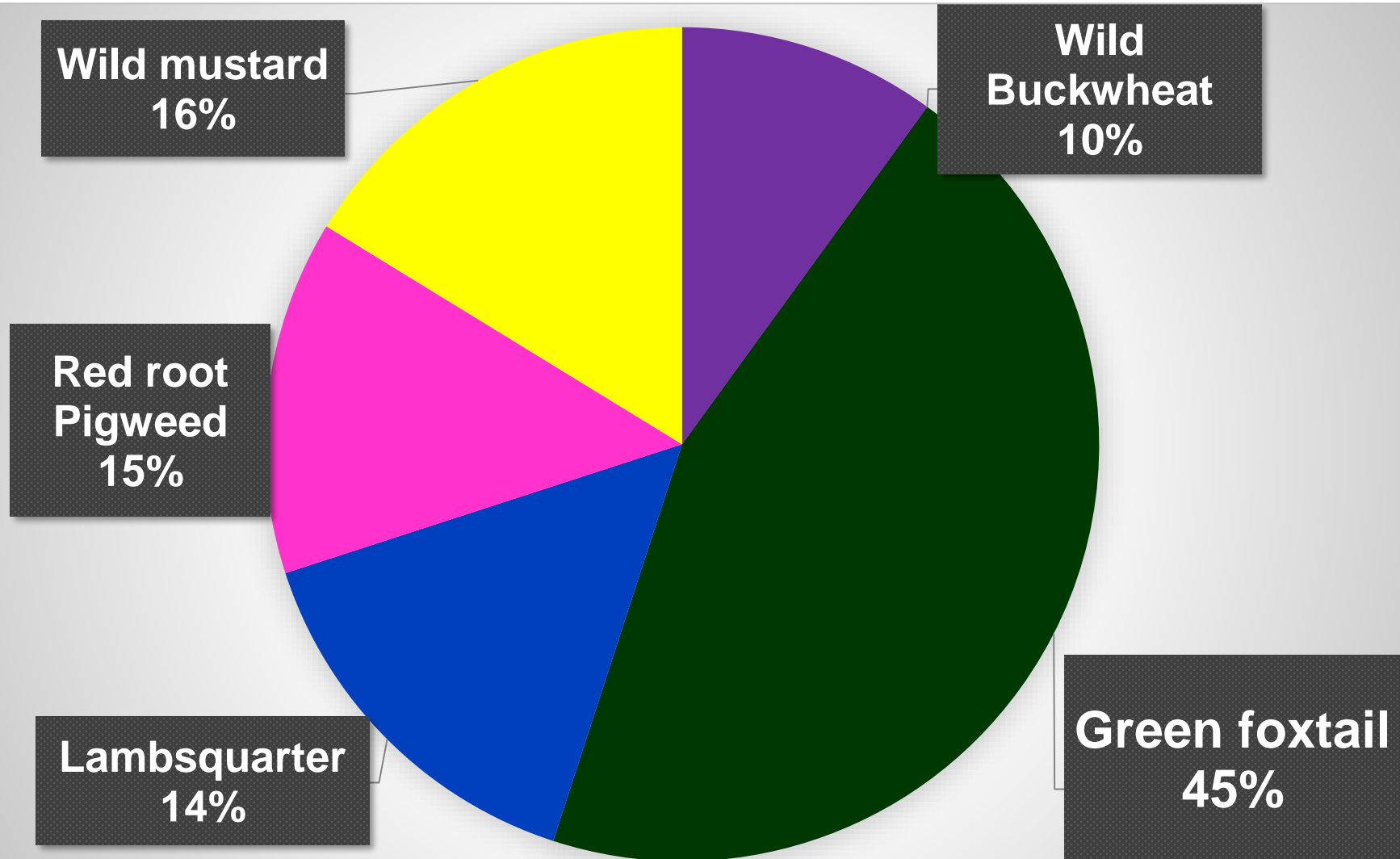
Goodale-Lentil-Weed-Biomass



Kernen-Lentil-Weed-Biomass



Weed composition



Control by species

Green foxtail



H-IT 76-94%

RH-IT 33-92%

Wild mustard



H-IT 95%

RH-IT 95%

Pigweed



H-IT 90-98%

RH-IT 71-91%

**Wild
Buckwheat**



H-IT 64-95%

RH-IT 64-95%

Lambsquarters



H-IT 83-98%

RH-IT 74-89%

Field pea yield

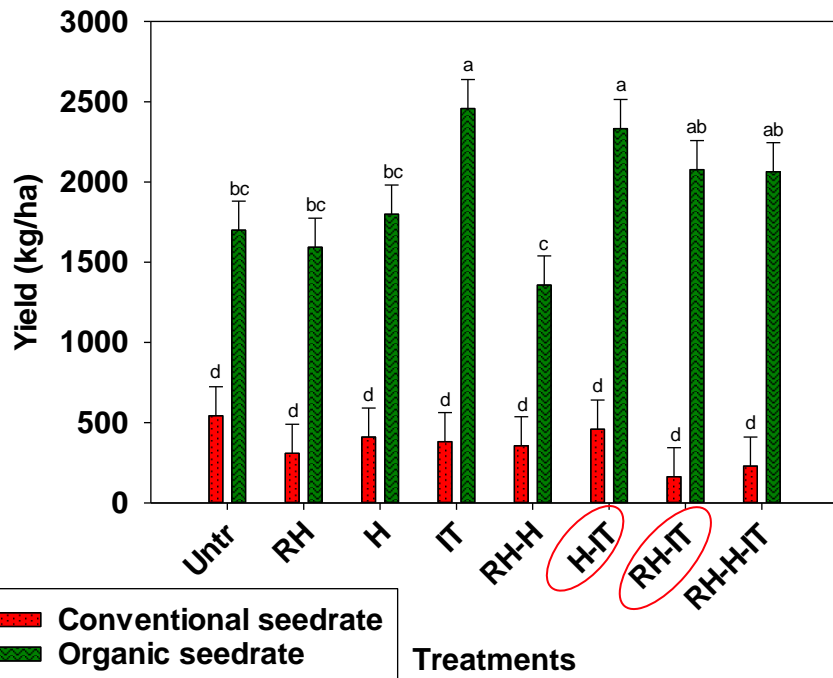
H-IT 77%

RH-IT 74%

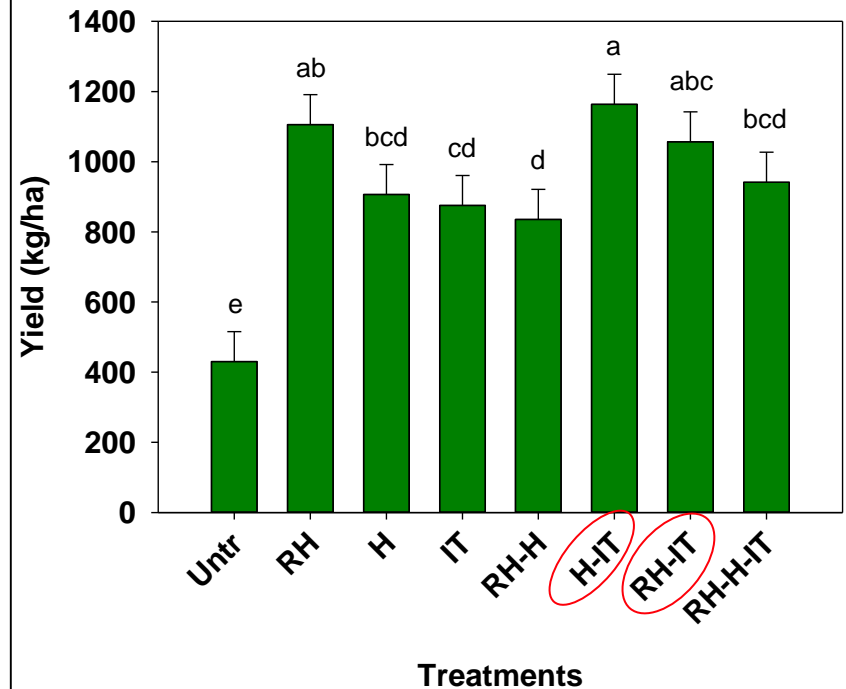
H-IT 63%

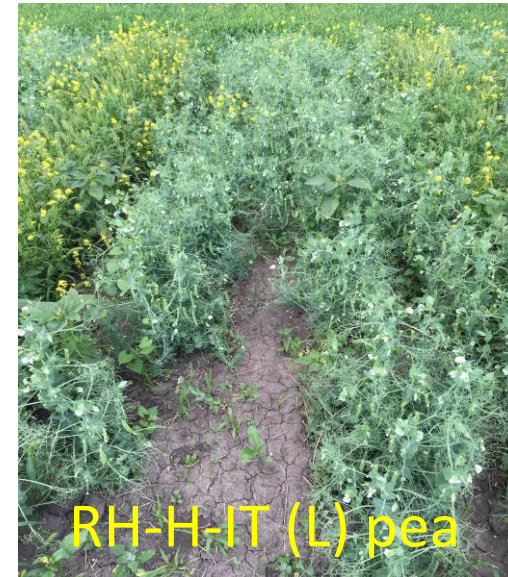
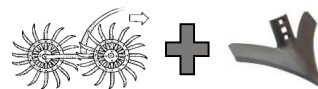
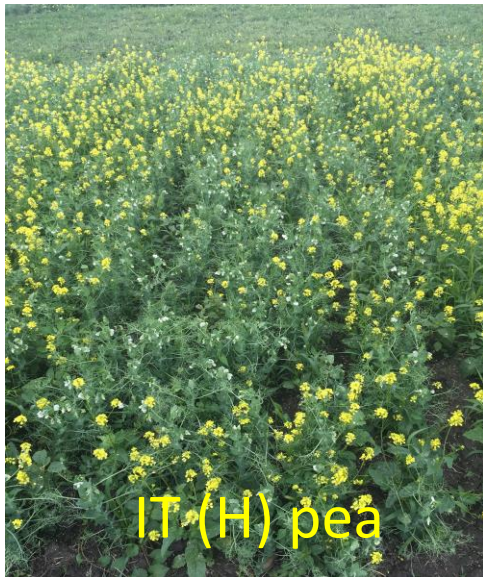
RH-IT 59%

Goodale-Pea-Yield



Kernen-Pea-Yield

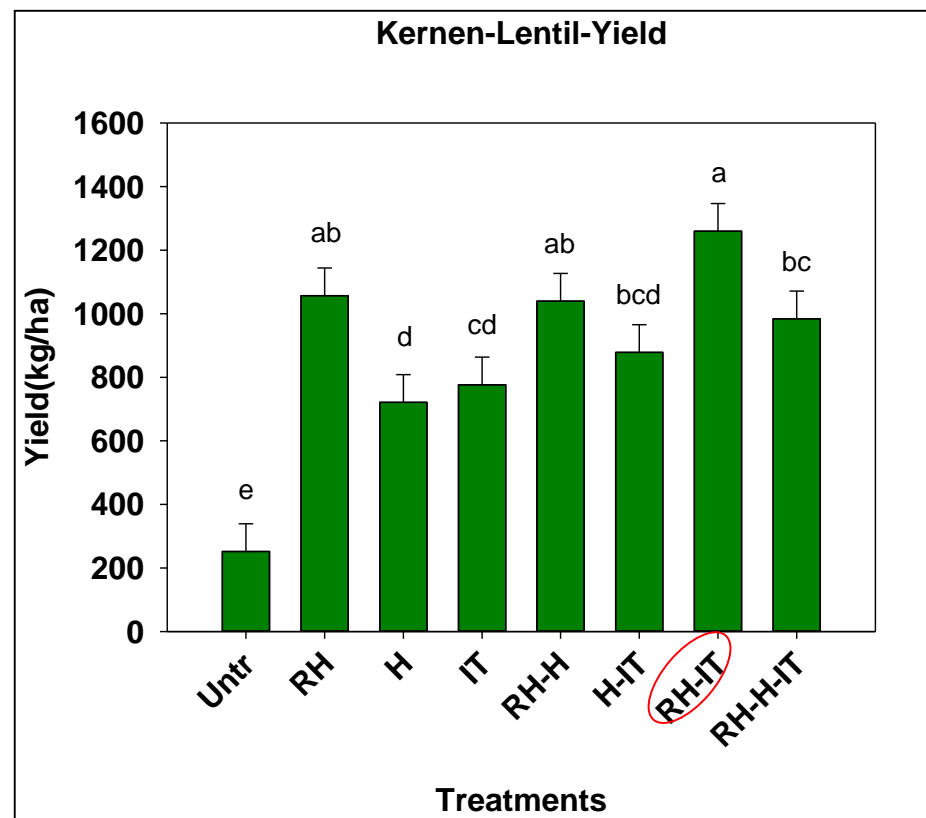
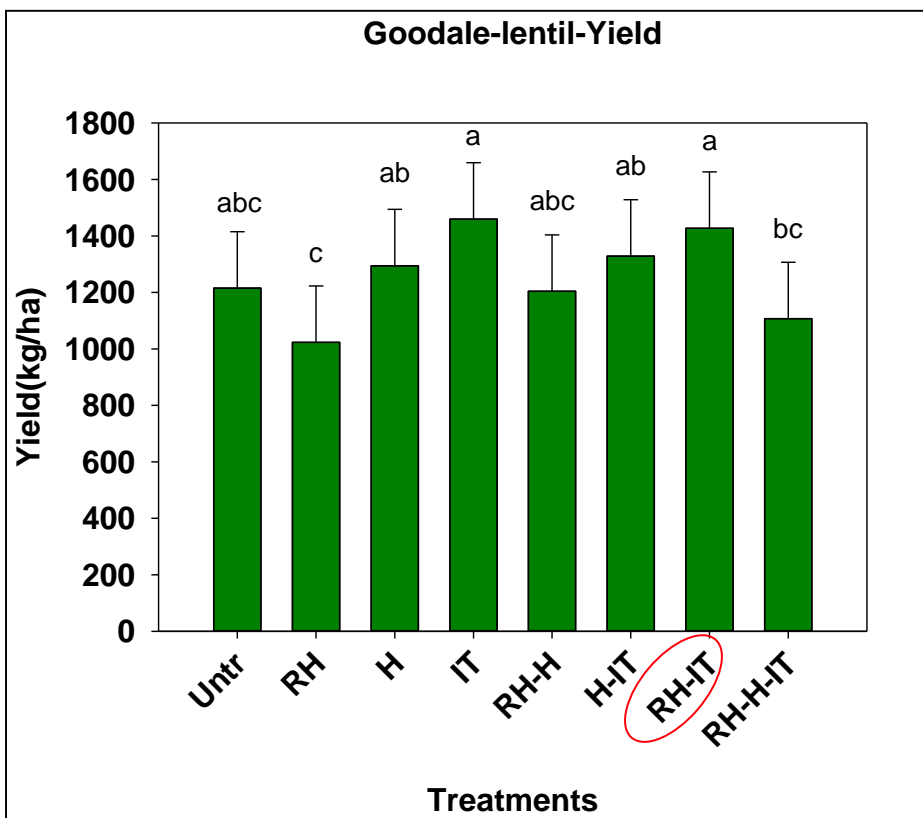




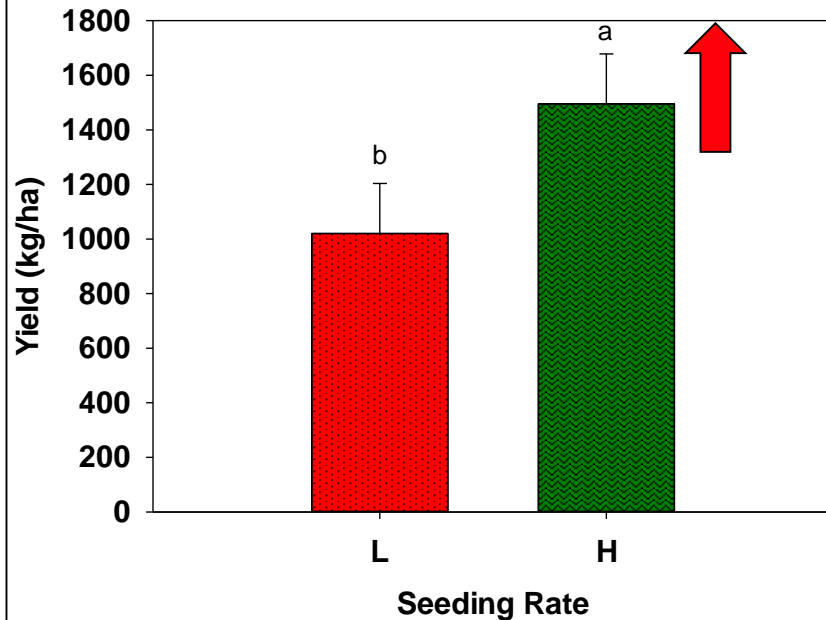
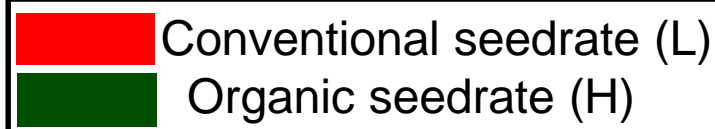
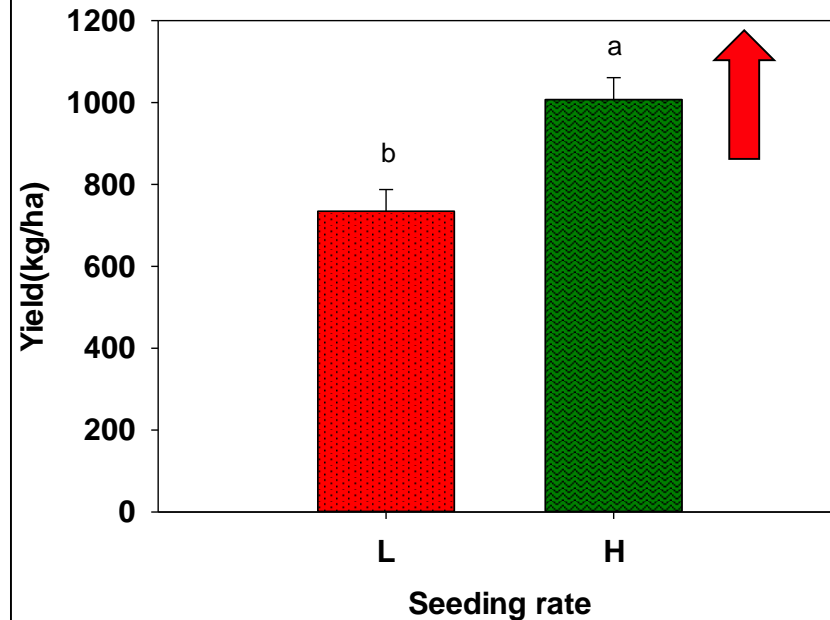
Lentil Yield

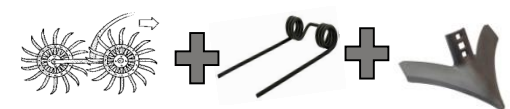
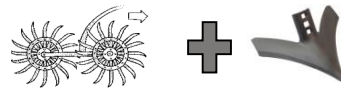
RH-IT 15%

RH-IT 80%



Lentil Yield cont.

Goodale-Lentil-Yield**32%****Kernen-Lentil-Yield****26%**



Conclusions

- Organic seeding rate can improve the efficiency of mechanical weed control tactics.
- Integrated weed management can result in significant weed suppression and higher yields compared to singular organic weed control tactics.
- More data from incoming years will help in making sound conclusions.

Acknowledgements



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