

## IPM in relay cropping dry beans and winter wheat

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## In this session, you will ...

- Learn what relay cropping is
- Learn about how we might apply it in Nebraska  
– dry bean experiments
- Understand the potential benefits of this system for reducing pests (insect and weeds) and control costs

## Relay cropping dry beans & wheat

- Field management strategy where two crops are produced in the same field and overlap in time
- Common to seed a summer crop into an established winter crop



## Why relay cropping?

### 1. Reduced pesticide inputs and input costs (insects and weeds)

- Weed suppression in beans due to wheat cover
- Production of insect pest predators established in wheat

### 2. Reduced harvest loss in upright dry bean varieties

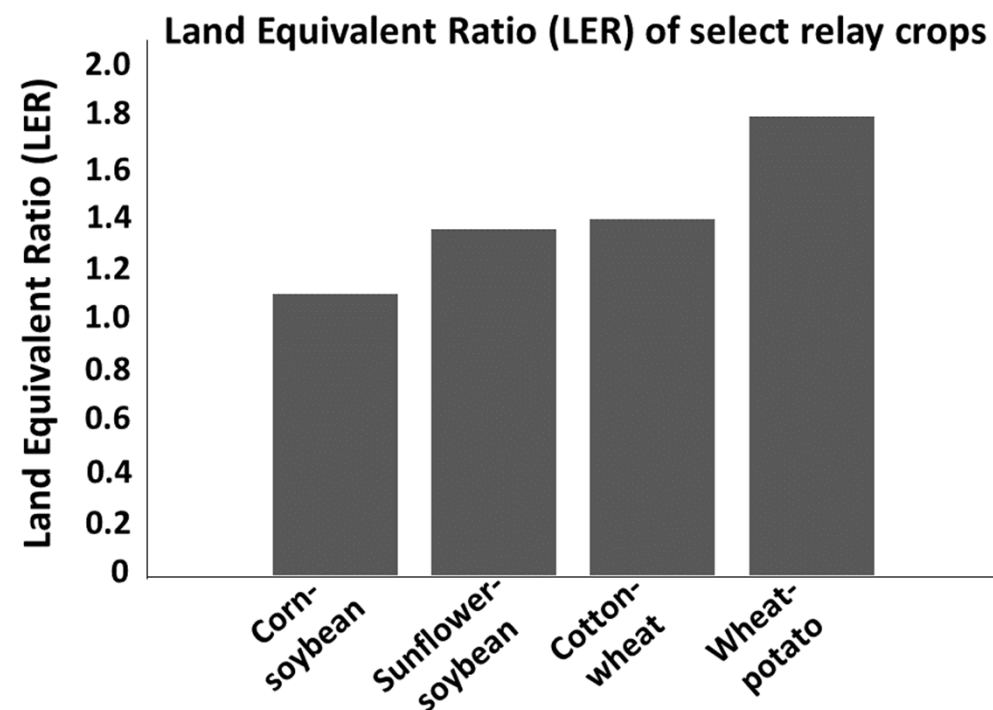
- Planting into standing wheat will promote taller beans

### 3. Increased production and profit per acre

- 2 crops, 1 growing season

### 4. Increased crop resiliency/sustainability

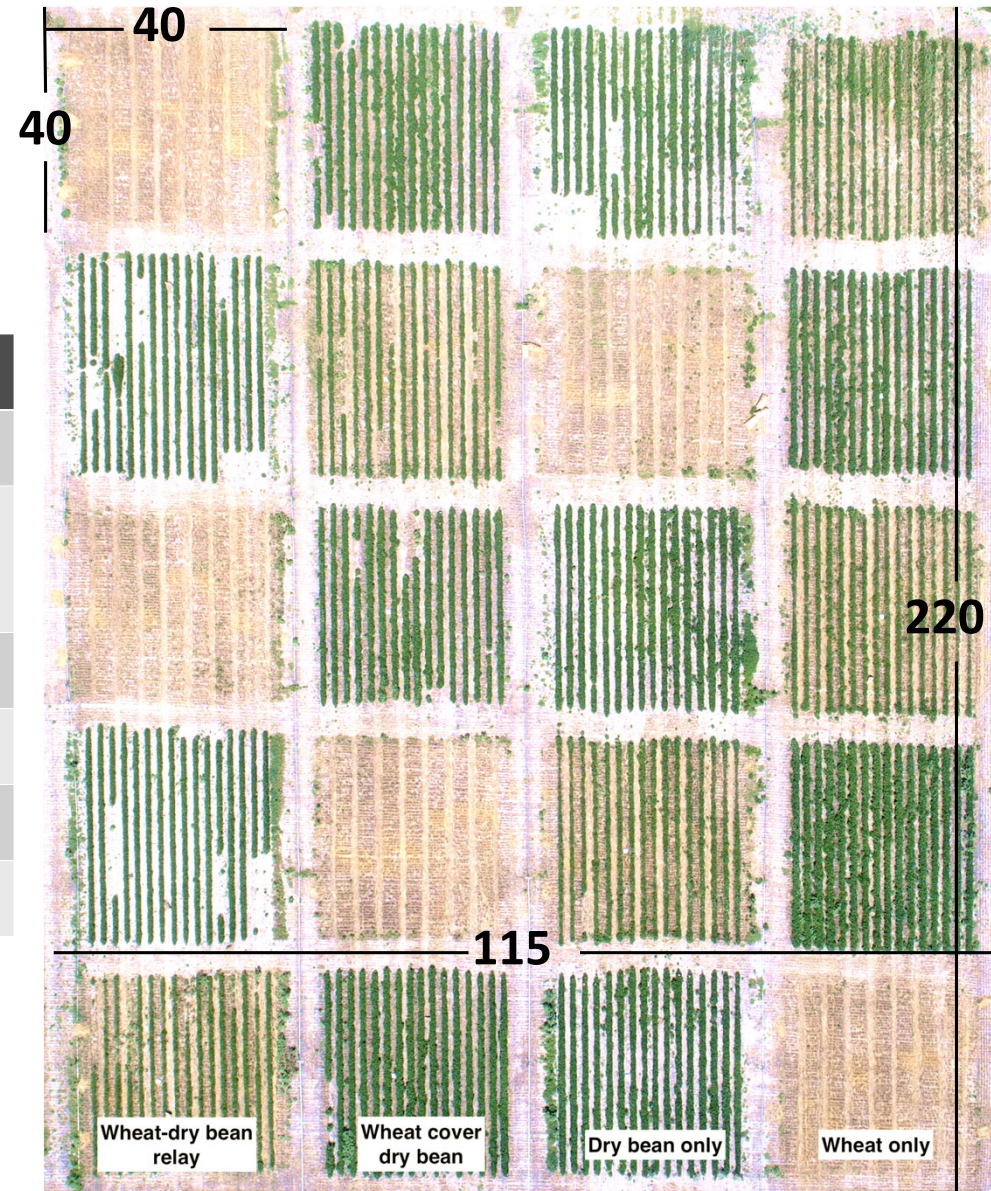
Similar approaches have shown improved crop production efficiency in other regions





# Methods

Activity	Date
Winter wheat planting	September 2019
Wheat removed in dry bean only	May 6
Wheat cover removed	May 26
Dry bean planting	June 2
Wheat harvest	June 14
Dry bean harvest	August 28

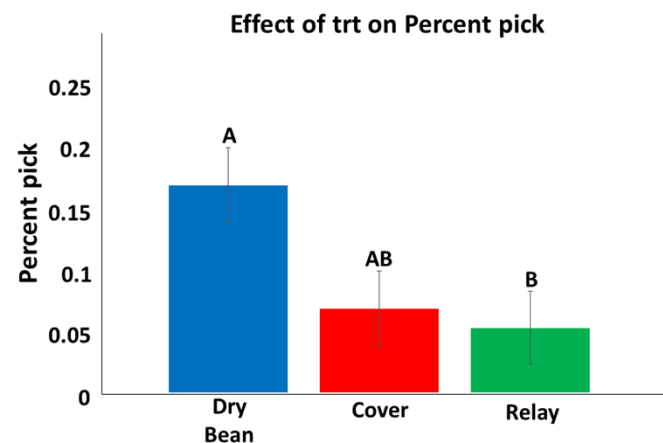
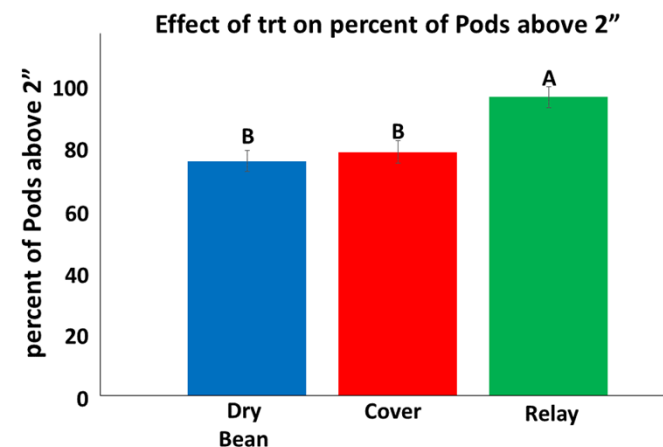


# Crop Production Clinics

## Did it work for us (entomology plots)?

Sort of ...

- Improved pod height
- Western bean cutworm injury was low at this location; however, we did significantly reduce WBC injury
- Still counting insect samples



# Crop Production Clinics

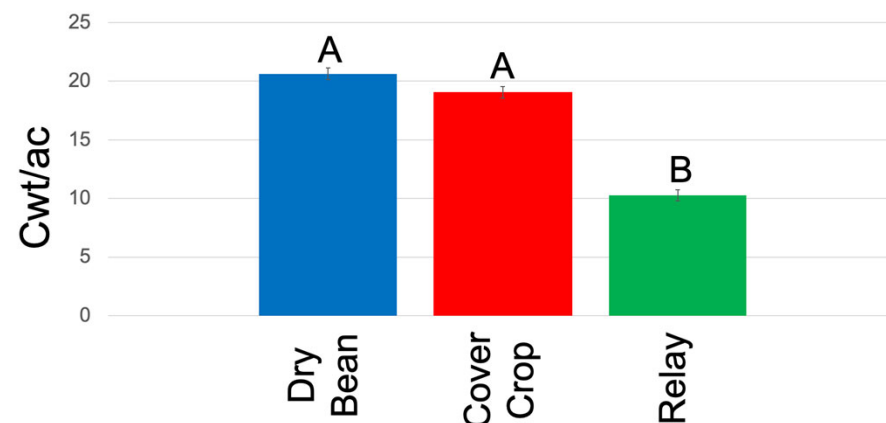


## Did it work for us (entomology plots)?

Sort of ...

- Improved pod height
- Western bean cutworm injury was low at this location; however, we did significantly reduce WBC injury
- Still counting insect samples
- Work to be done to optimize cropping design

## Dry Bean Yield

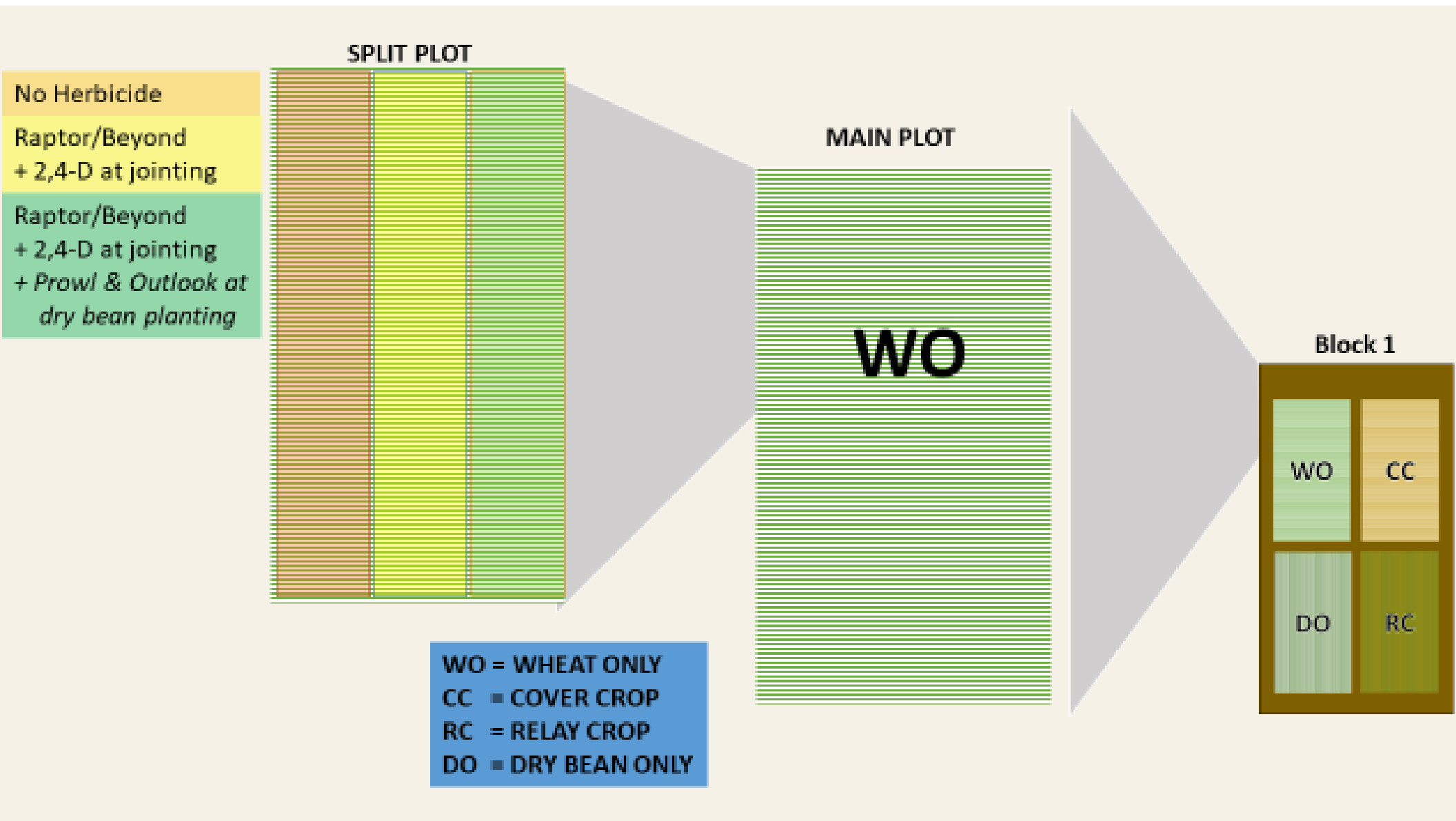


The wheat yield in the relay only added ~ \$62/acre to our price, so we didn't make up for this loss in yield in 2020.









# Crop Production Clinics

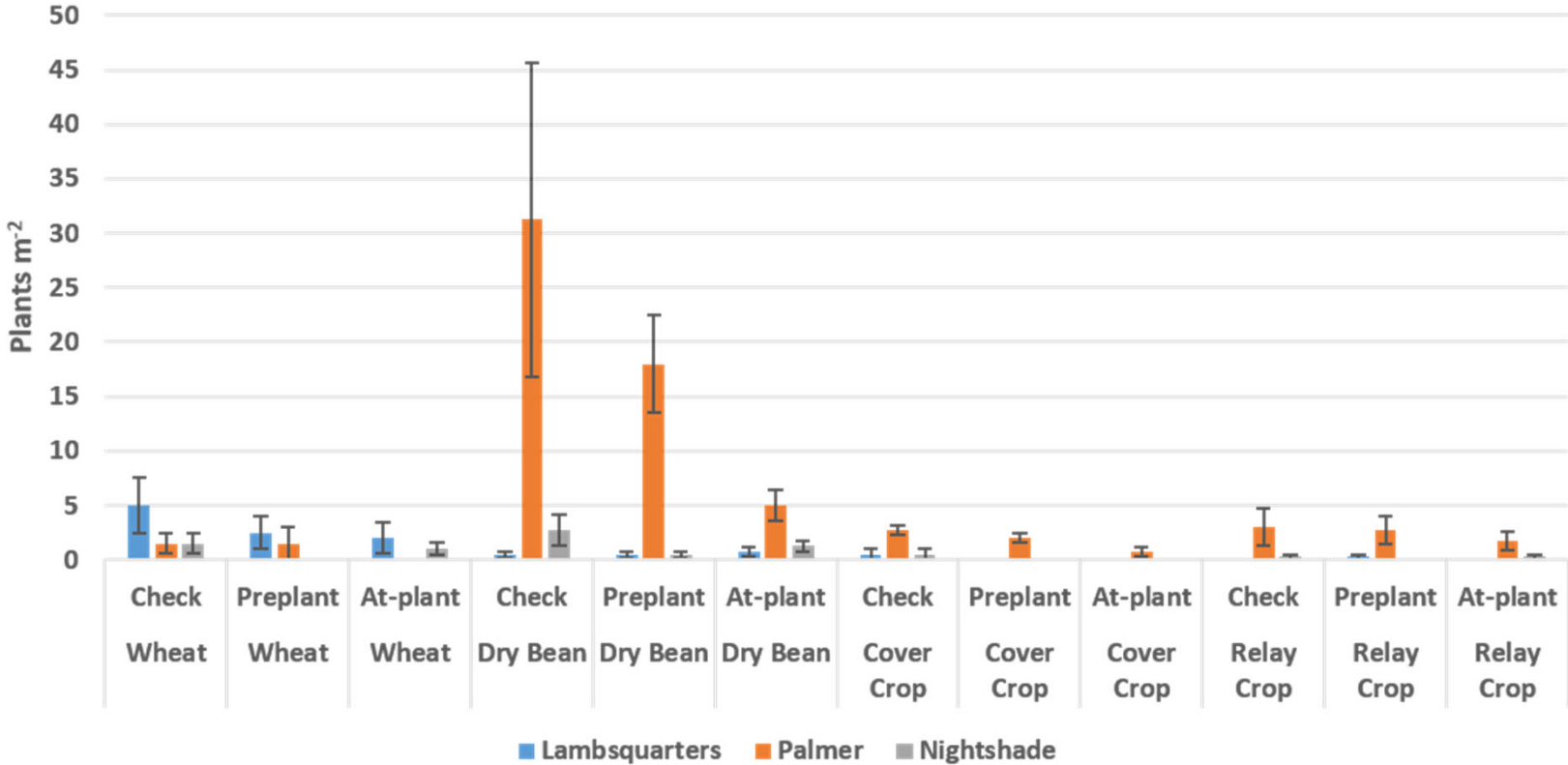


<b>Activity</b>	<b>Date</b>
<b>Winter wheat planting</b>	<b>October 2019</b>
<b>Wheat removal in dry bean only</b>	<b>Mid-April</b>
<b>Raptor + 2,4-D Application</b>	<b>May 1<sup>st</sup></b>
<b>Dry Bean Planting</b>	<b>May 28<sup>th</sup></b>
<b>Cover Crop Removal</b>	<b>May 28<sup>th</sup></b>
<b>Prowl + Outlook Application</b>	<b>May 28<sup>th</sup></b>
<b>Wheat Harvest</b>	<b>June 17<sup>th</sup></b>
<b>Dry Bean Harvest</b>	<b>September 7<sup>th</sup></b>



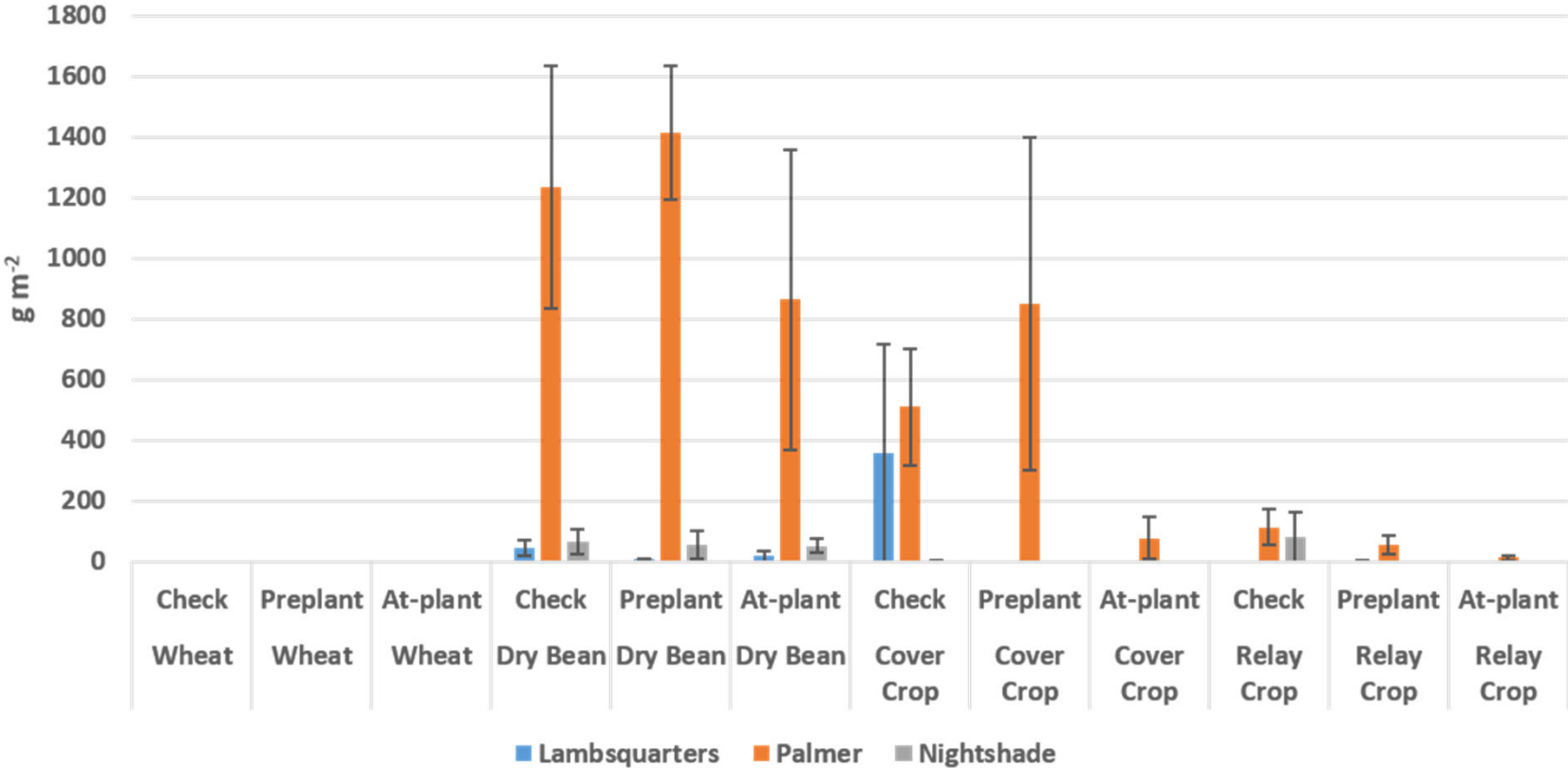
# Crop Production Clinics

### Weed Density at Harvest



# Crop Production Clinics

Weed Biomass at Harvest





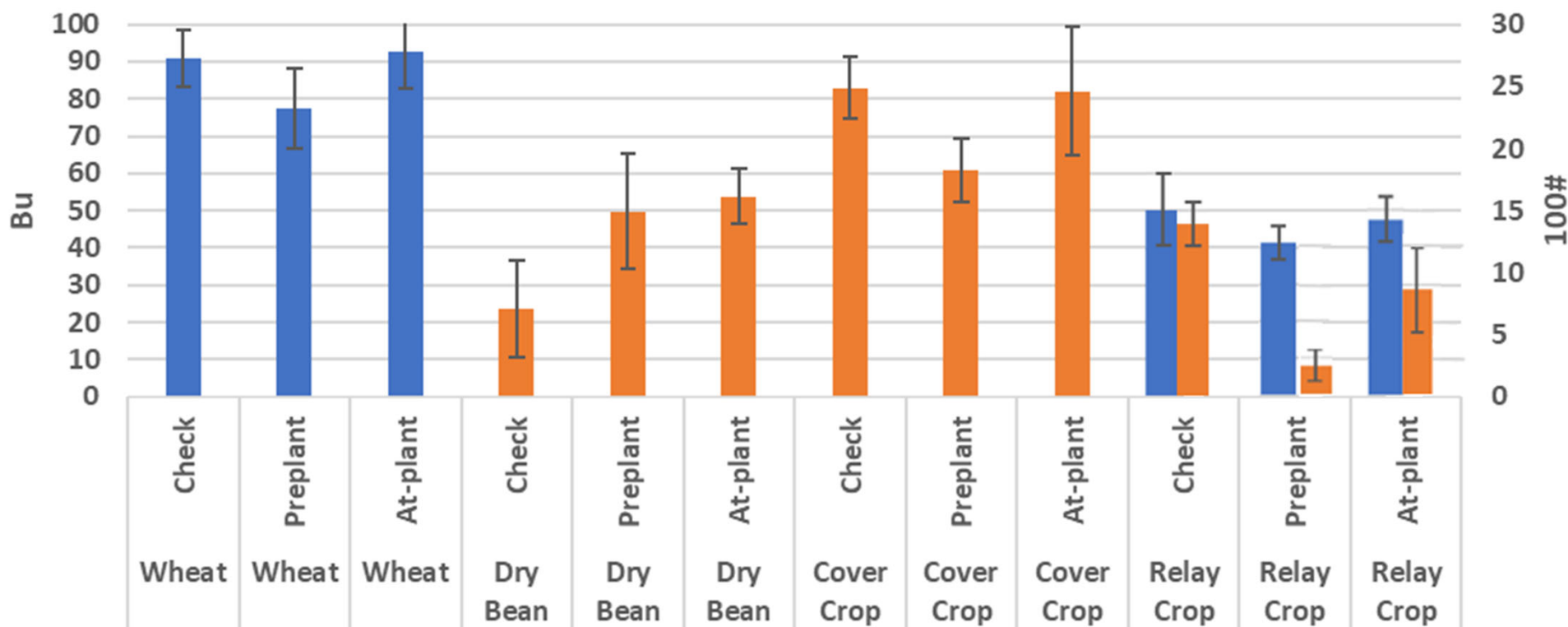
# Crop Production Clinics

**N** EXTENSION



# Crop Production Clinics

Crop Yield (acre<sup>-1</sup>)





## Take Home Points

- Benefits
  - 100% of pods consistently above 2 inches from soil
  - Significant reduction in western bean cutworm injury
  - Suppression of weeds
- Drawbacks
  - Reduced dry bean and wheat yield in the relay system