



<http://files.croplife.com/croplife/wp-content/uploads/2016/04/Soybean-Plant-closeup.jpg>

# Managing Roundup Ready 2 Xtend ® Soybean (*Glycine max*) Using Dicamba

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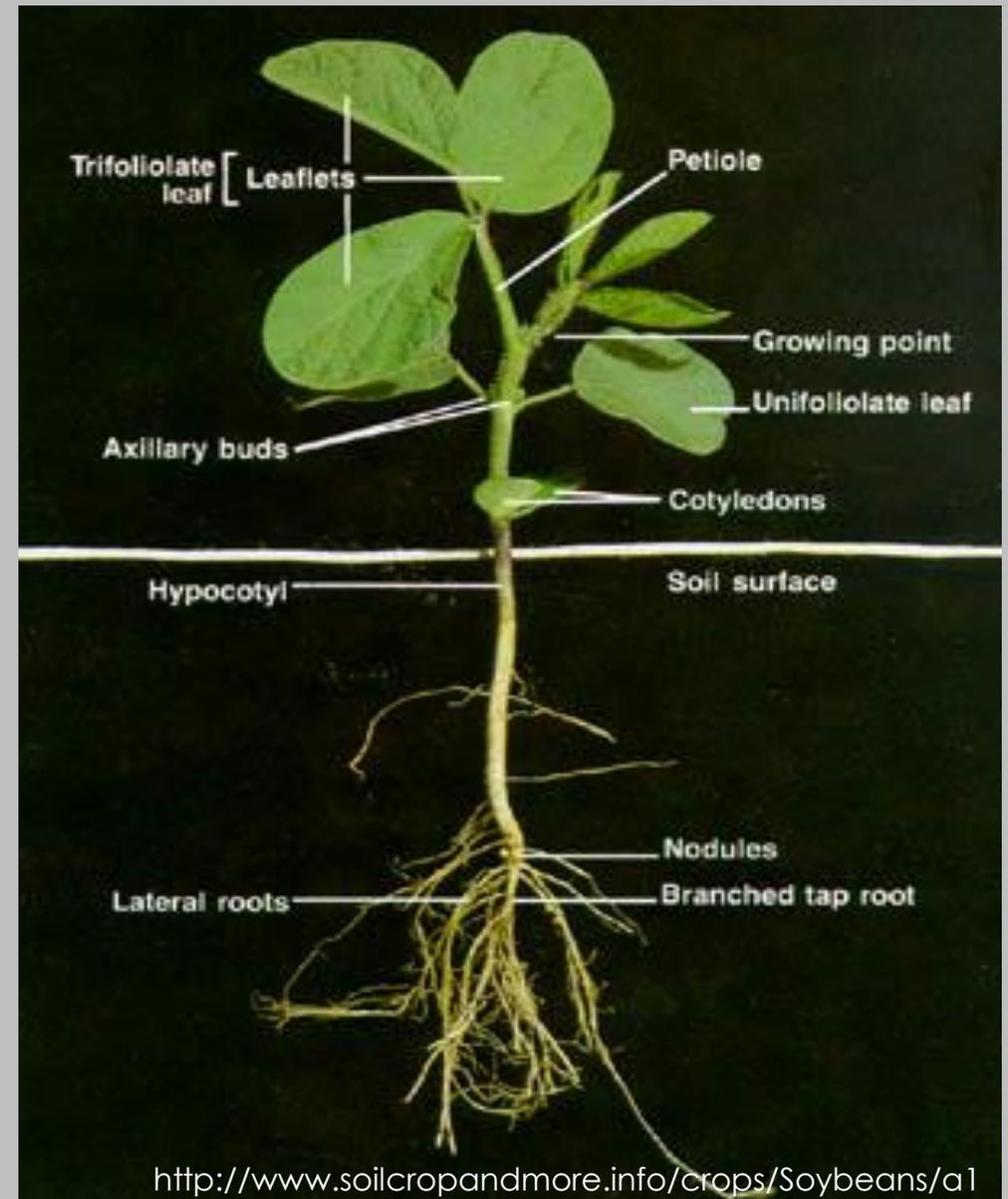
# Why?

- ❖ Possibility of a new pulse entering western Canadian rotations
- ❖ Expand knowledge in a crop I am not familiar with
- ❖ Chance to run a trial out at Kernen Crop Research Farm

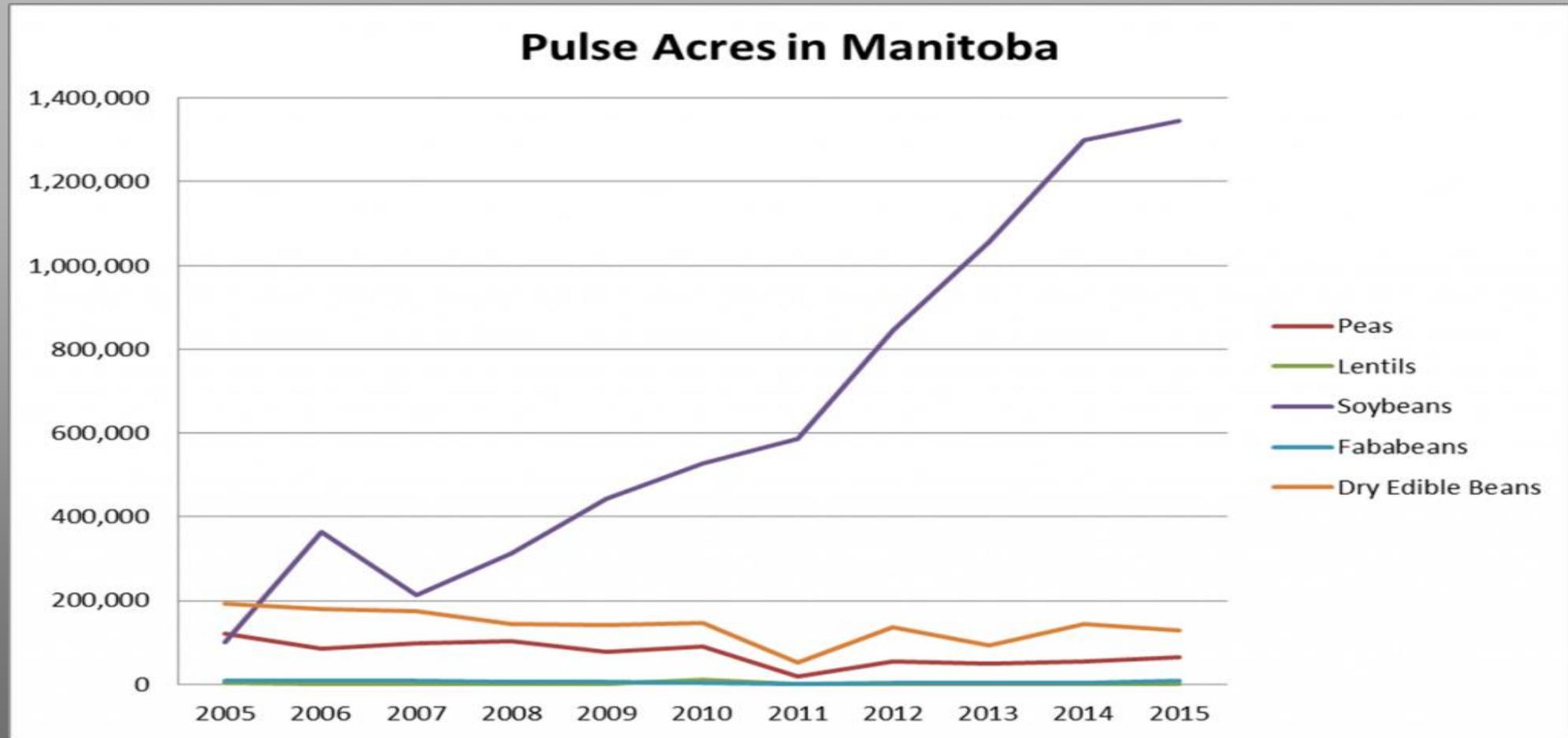


# Agronomy of Soybean (*Glycine max*)

- ❖ Broadleaf
- ❖ Legume
- ❖ Family: Fabaceae
- ❖ Indeterminate
- ❖ Sown as a summer annual
- ❖ Warm season, short day



# Soybean Production in Western Canada

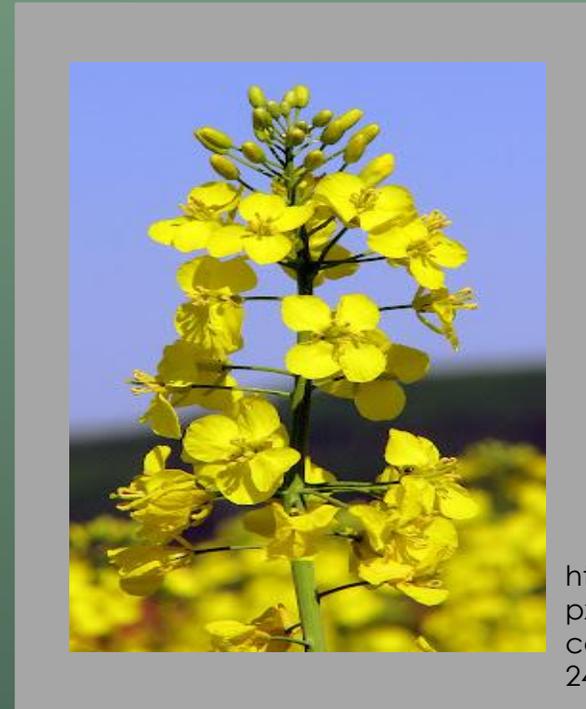


# Problem Weeds of Western Canada

- ❖ Kochia, Cleavers, Wild Mustard, Redroot Pigweed, Stinkweed
- ❖ Issue due to increase glyphosate application creating resistant weeds

## RR Canola

- ❖ Ranked: 4<sup>th</sup>
- ❖ Large seed bank present in soil
- ❖ Resistant to glyphosate and need alternative control measures



[http://www.healthandwellness360.com/img.oxpx?id=/temp/image-cache/1.bp.blogspot.com-Brassica\\_napus\\_2-5249-400.jpg](http://www.healthandwellness360.com/img.oxpx?id=/temp/image-cache/1.bp.blogspot.com-Brassica_napus_2-5249-400.jpg)

# Roundup Ready 2 Xtend ® Soybean

- ❖ 2500 CHU
- ❖ Pubescent
- ❖ Small seed size
- ❖ Optimal in 7inch row spaces
- ❖ Helium Color: Green



<https://i.ytimg.com/vi/D5tKfQneRKA/maxresdefault.jpg>

# Dicamba

3,6-dichloro-2-methoxybenzoic acid

❖ Group 4 Herbicide

❖ Benzoic Acid Family

❖ Selective Herbicide

❖ Soil Activity



<http://agronwww.agron.iastate.edu/~weeds/Ag317/manage/herbicide/dicamba.html>

# Objective of Experiment

Determine the control and length of broadleaf weeds, in particular RR Canola, with different rates of spring applied Dicamba in Soybean.

In addition, Dicamba's residual affects on Pea.

# Materials and Methods Field Study

- ❖ **Location:** Kernen Crop Research Farm
- ❖ Randomized Complete Block Design
- ❖ **Soil Type:** Silty Clay Loam
- ❖ **Treatment:** Glyphosate 1800 g ae ha<sup>-1</sup>  
Dicamba 150 g ae ha<sup>-1</sup> to 2400 g ae ha<sup>-1</sup>
- ❖ **Weeds:** kochia, redroot pigweed, stinkweed, wild mustard, cleavers
- ❖ **Weed of Interest:** RR canola
- ❖ Rated following the “Canadian Weed Science Society Scale”



Seeding on May 27<sup>th</sup>

Spraying on June 20<sup>th</sup>



Ratings and weed seedling counts

Harvesting the trial on October 3<sup>rd</sup>



# Material and Methods

## Phytotron Study

- ❖ Soil Samples: 3 samples/plot  
15cm depth

- ❖ Peas seeded into  
soil samples

- ❖ Monitored for signs of  
injury for three weeks



# Dicamba's recommended rate on Roundup Ready 2 Xtend <sup>®</sup> Soybean

Low rate = 300 g ae ha<sup>-1</sup>

High rate = 600 g ae ha<sup>-1</sup>

# Results: Broadleaf Control



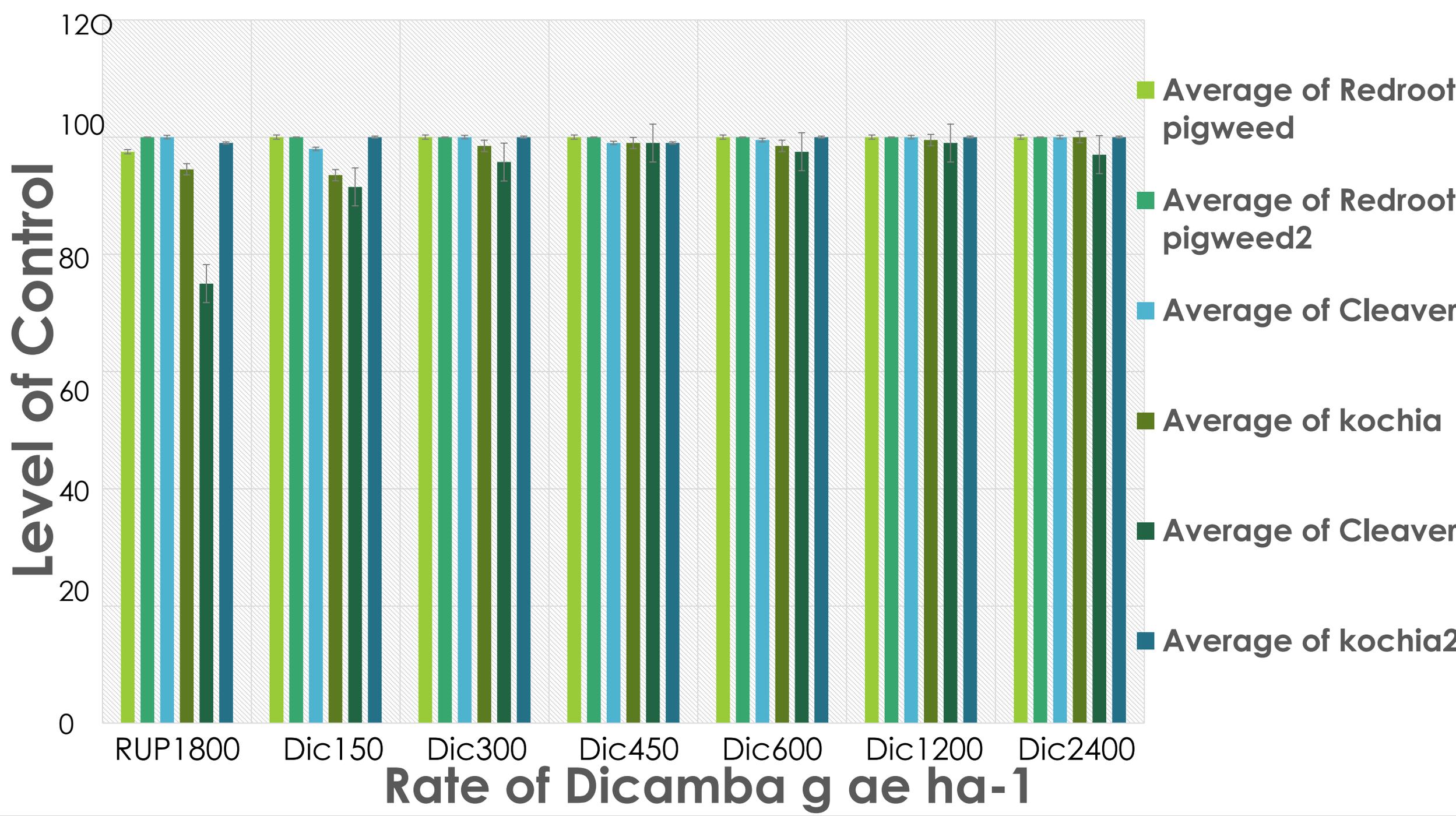
<https://madhuwellness.files.wordpress.com/2013/03/cleavers.jpg?w=240>

<http://eattheweeds.com/wp-content/uploads/2011/08/mustard2.jpg>

<http://www.canolawatch.org/wp-content/uploads/2012/05/Kochia-Sapsford-small1.jpg>

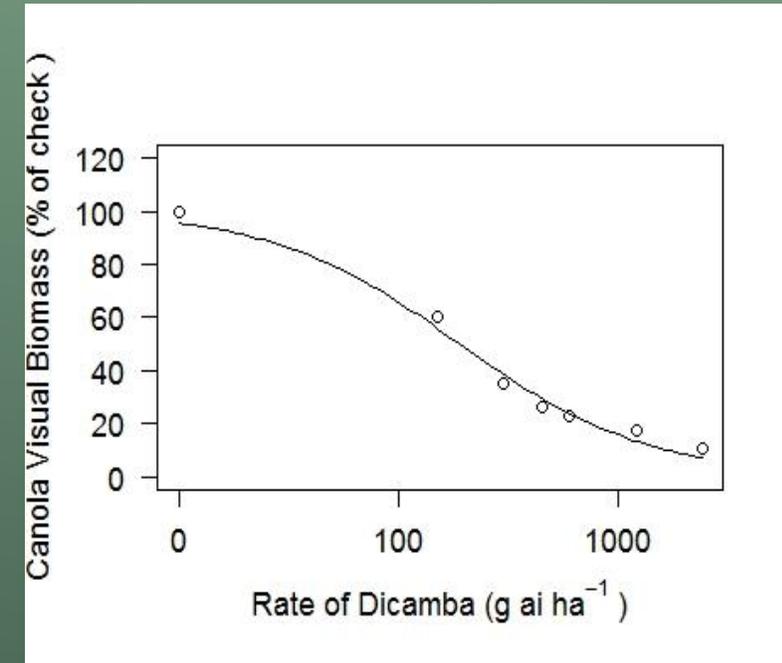
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<https://www.gov.mb.ca/agriculture/crops/weeds/images/fab15s00c.jpg>

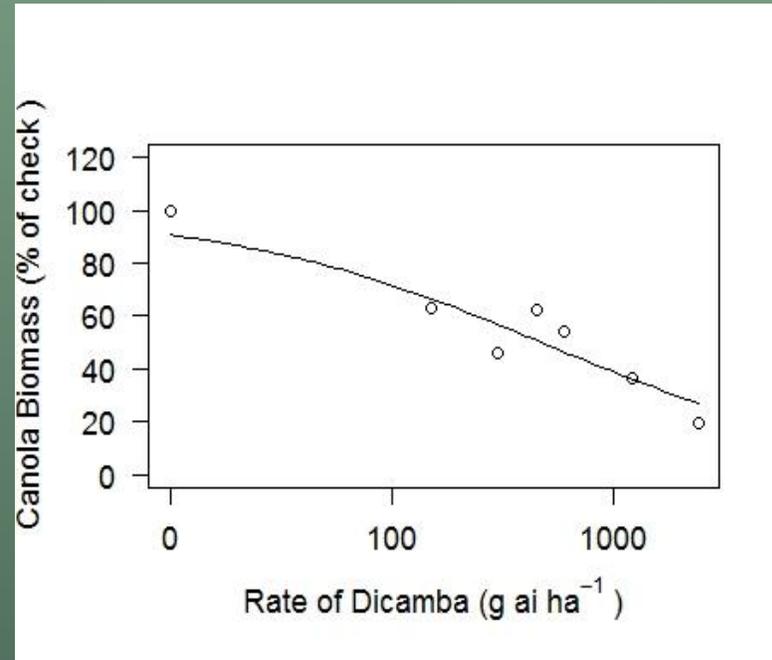


# Results: Canola Control

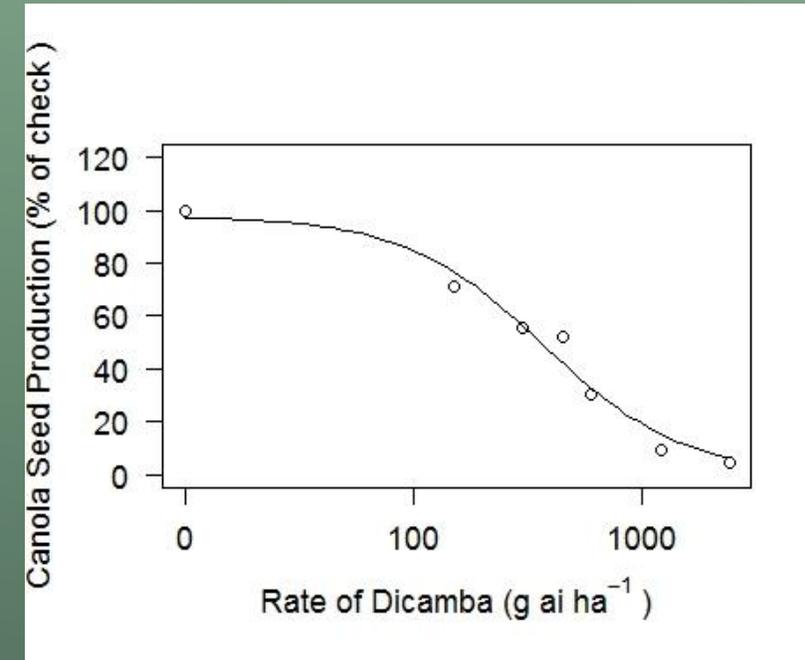
## Visual Control of Canola



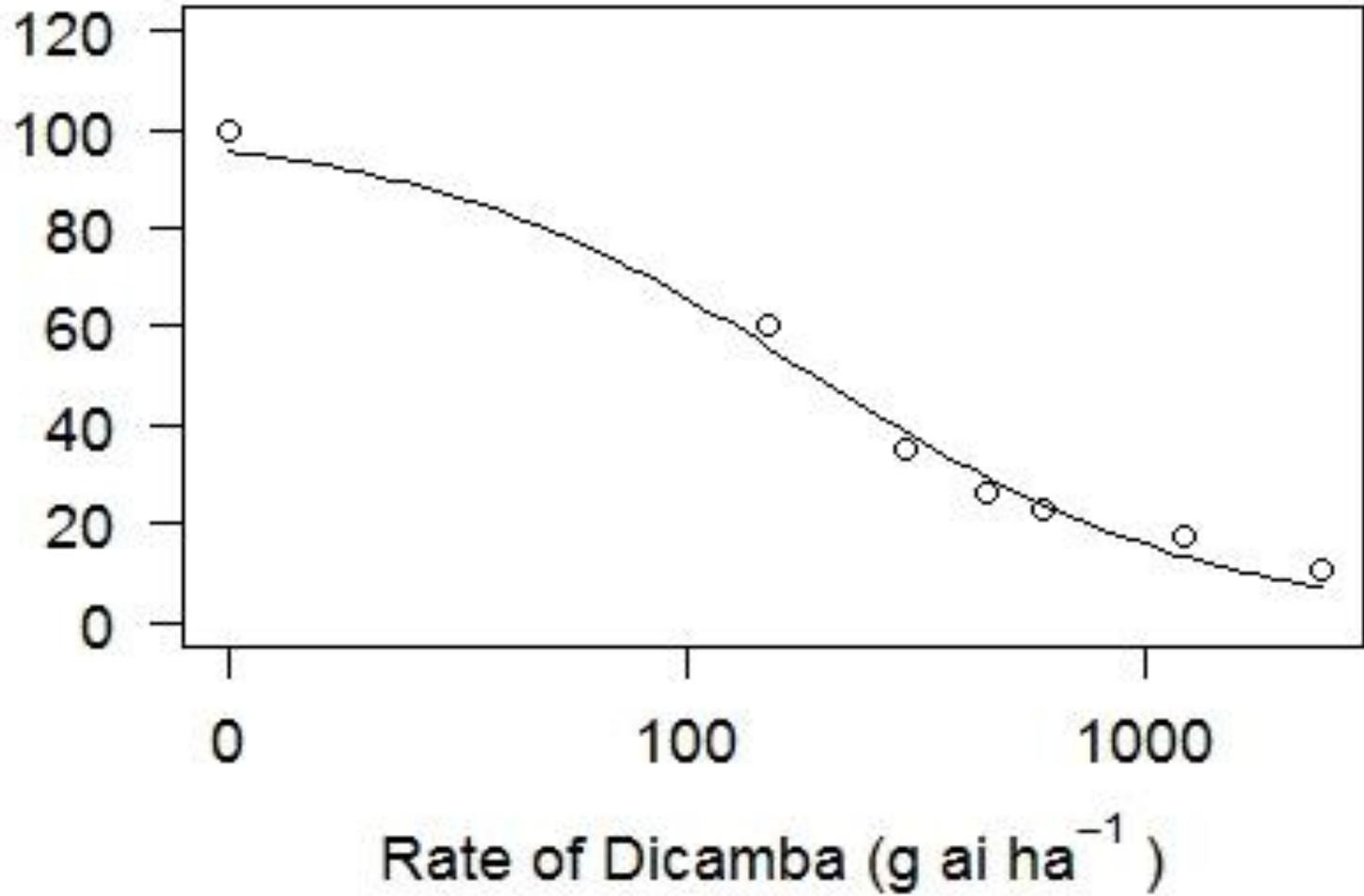
## Canola Biomass Control



## Canola Seed Production



Canola Visual Biomass (% of check )



## Visual Control Ratings of Canola

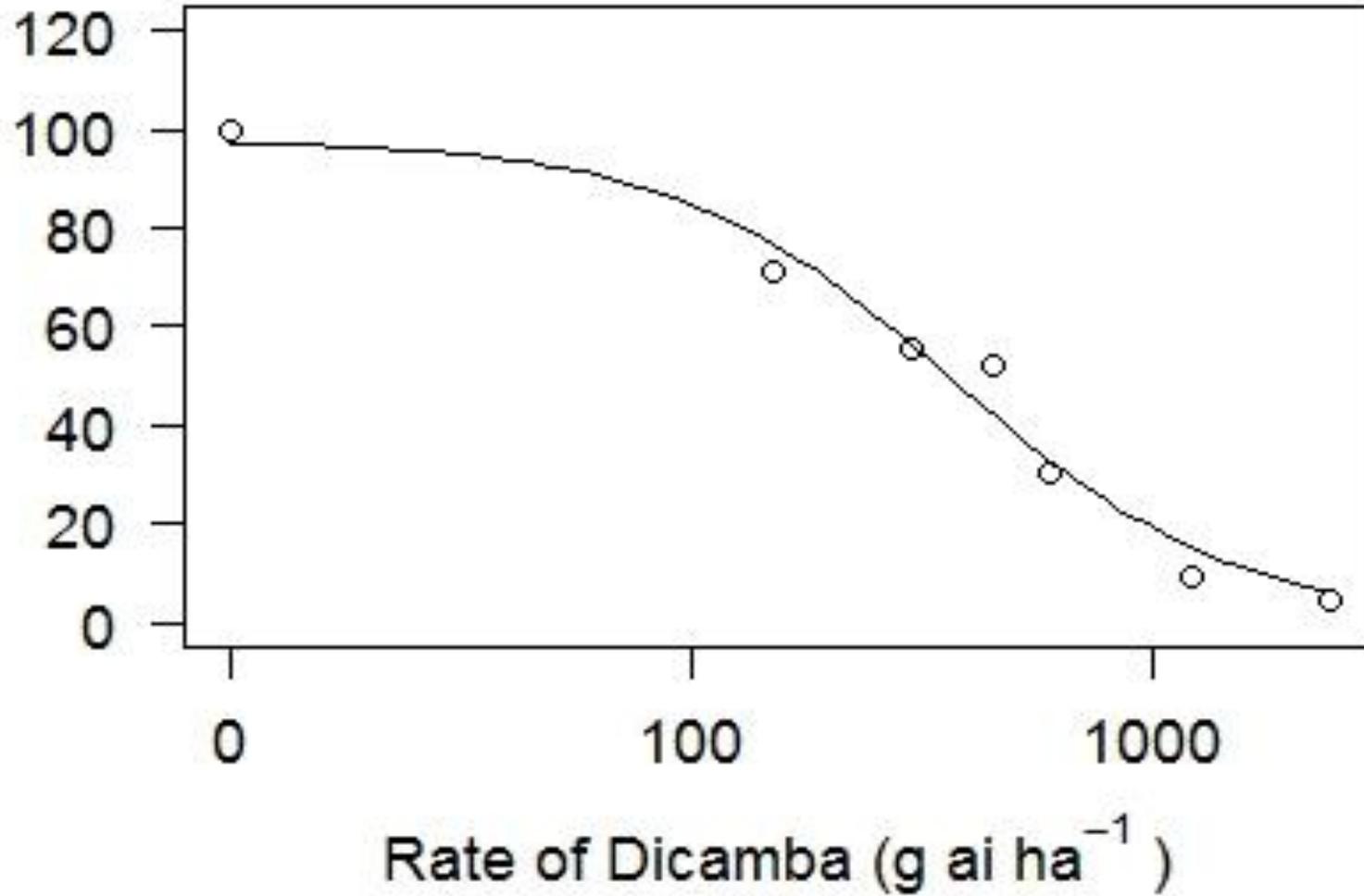
**ED90:**  
**1642.1 g/ae/ha**

# Canola Seed Production

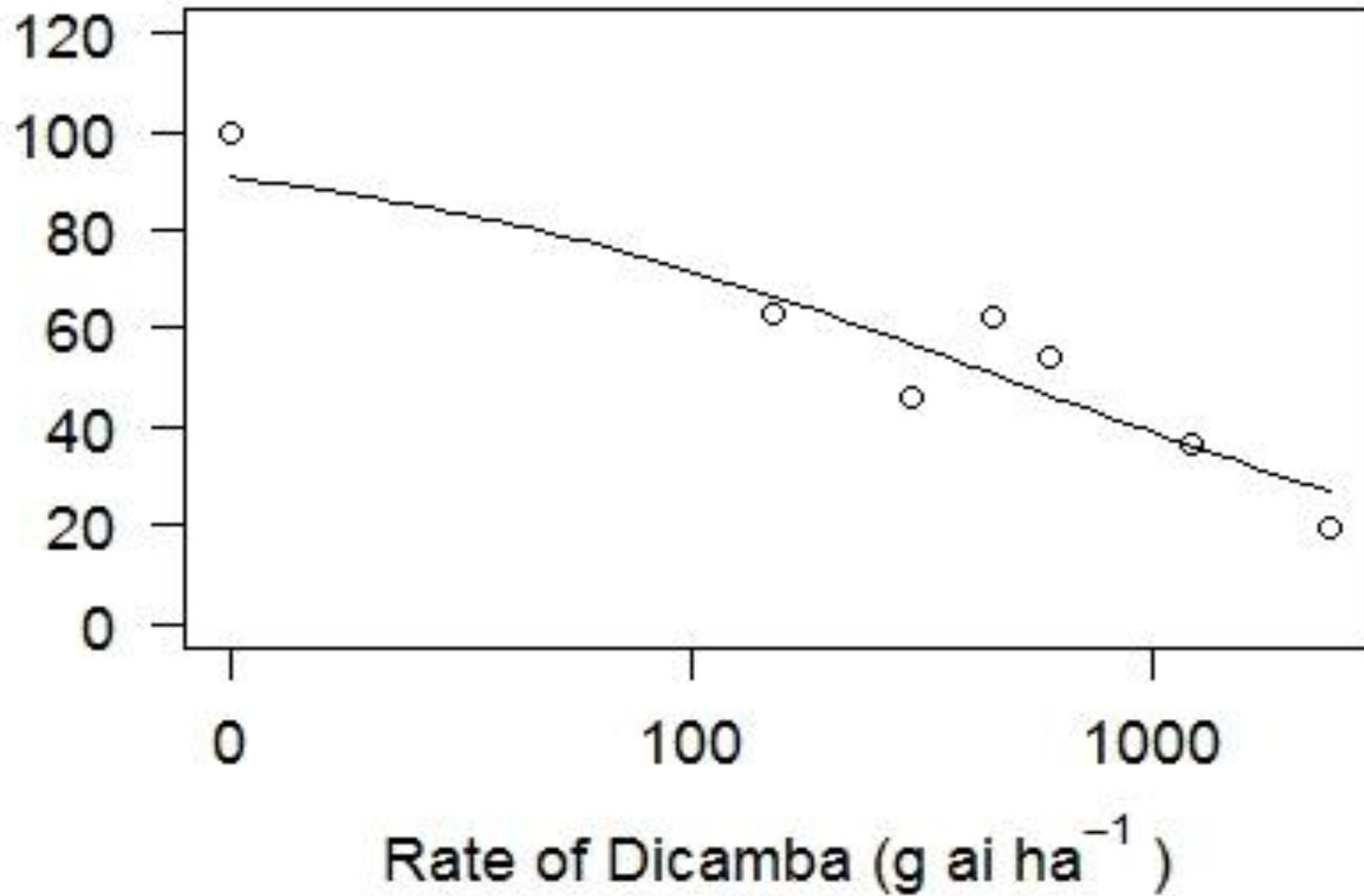
**ED90:**

**1714.5g/ae/ha**

Canola Seed Production (% of check)



Canola Biomass (% of check)

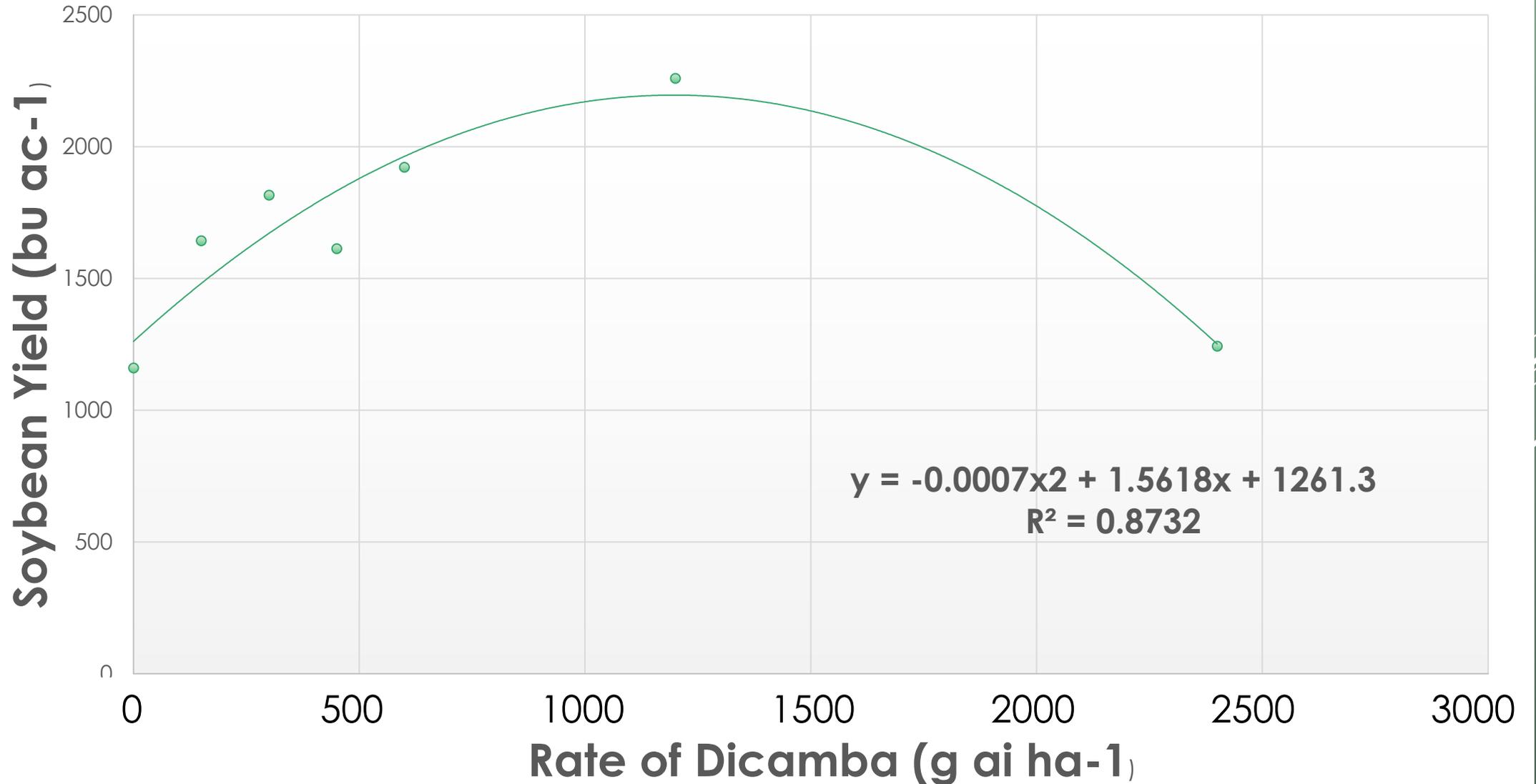


**Canola  
Biomass  
Control**

**ED70:  
1942.3g/ae/ha**

# Results: Soybean Injury

## Average Soybean Yield





# Results: Phytotron Study

- ❖ There was no visual injury or symptoms to the pea
- ❖ No statistical differences in pea fresh weight throughout trials nor reps
- ❖ Weed regrowth only in soils samples taken on October 17<sup>th</sup>

|                     | 25-Nov | 28-Nov | 30-Nov |
|---------------------|--------|--------|--------|
| # Canola Volunteers | 17     | 28     | 5      |
| # Redroot Pigweed   | 3      | 1      | 2      |
| # Stinkweed         | 0      | 2      | 1      |
| # Wild Mustard      | 0      | 1      | 2      |

# Conclusion

- ❖ Most broadleaf weeds were controlled throughout the growing season
- ❖ Exception being RR canola
- ❖ Dicamba would need to be applied at 3X the recommended rate to gain sufficient control of RR Canola
- ❖ Increasing rates of Dicamba increased soybean injury and decreased soybean yield overall
- ❖ There was no evident injury to the pea from residual Dicamba in the soil, though we cannot say confidently that there was no soil activity due to weed seedlings emerging in certain soil sample dates

# References

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# Questions?