

# **Factors to Consider for Straight-Combining Canola Successfully**

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Soil & Crop Management Seminar  
February 1, 2012  
Melville Communiplex, Melville, SK

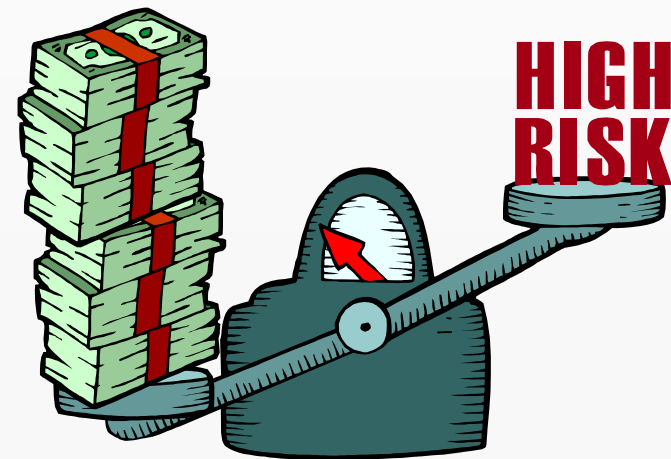
# WHAT ARE GROWERS DOING?

## 2009 CCC Agronomy Survey says...

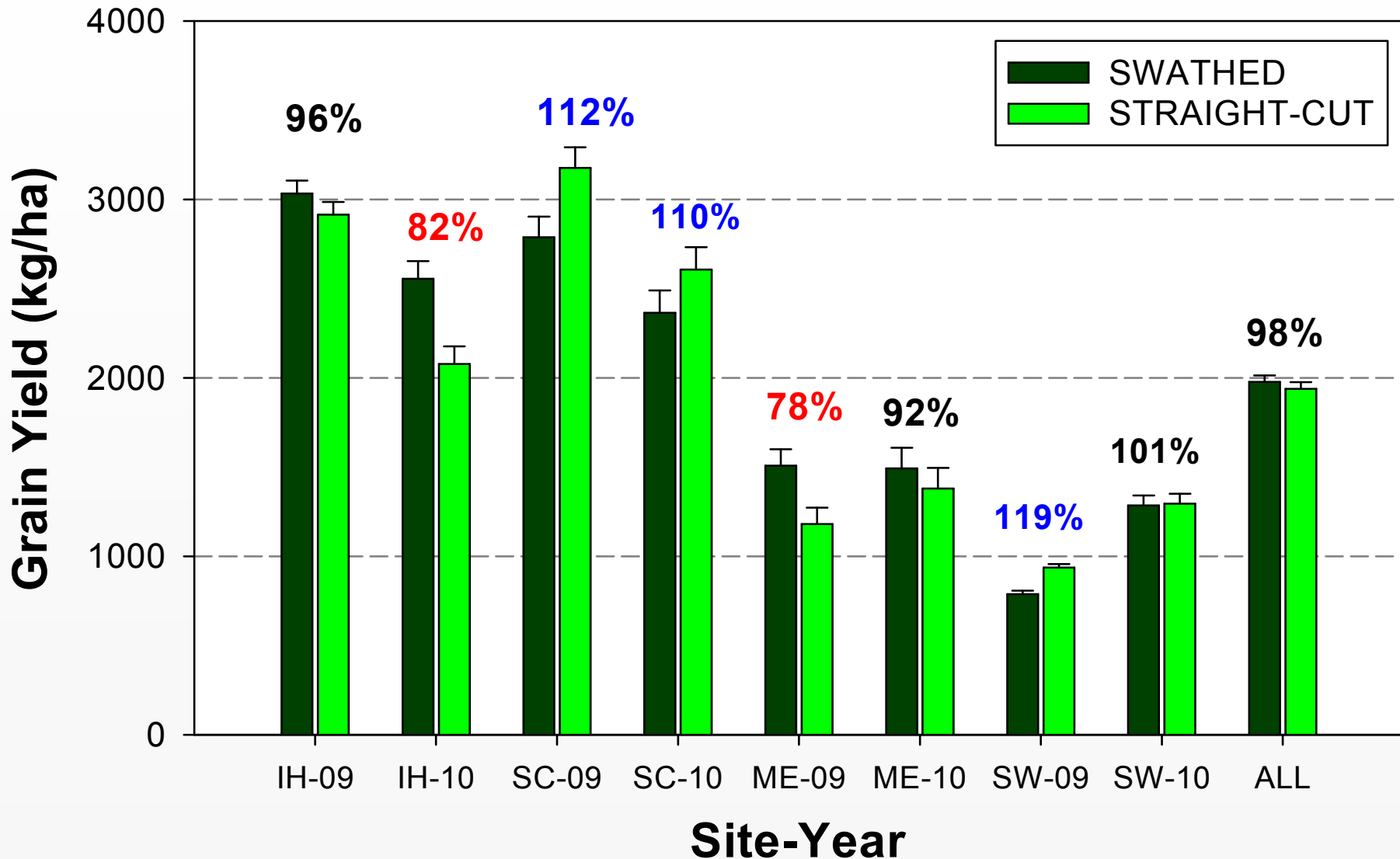
- 14.6% straight-combine
- 13.8% want to increase straight-combined acres

## Why aren't more straight-combining?

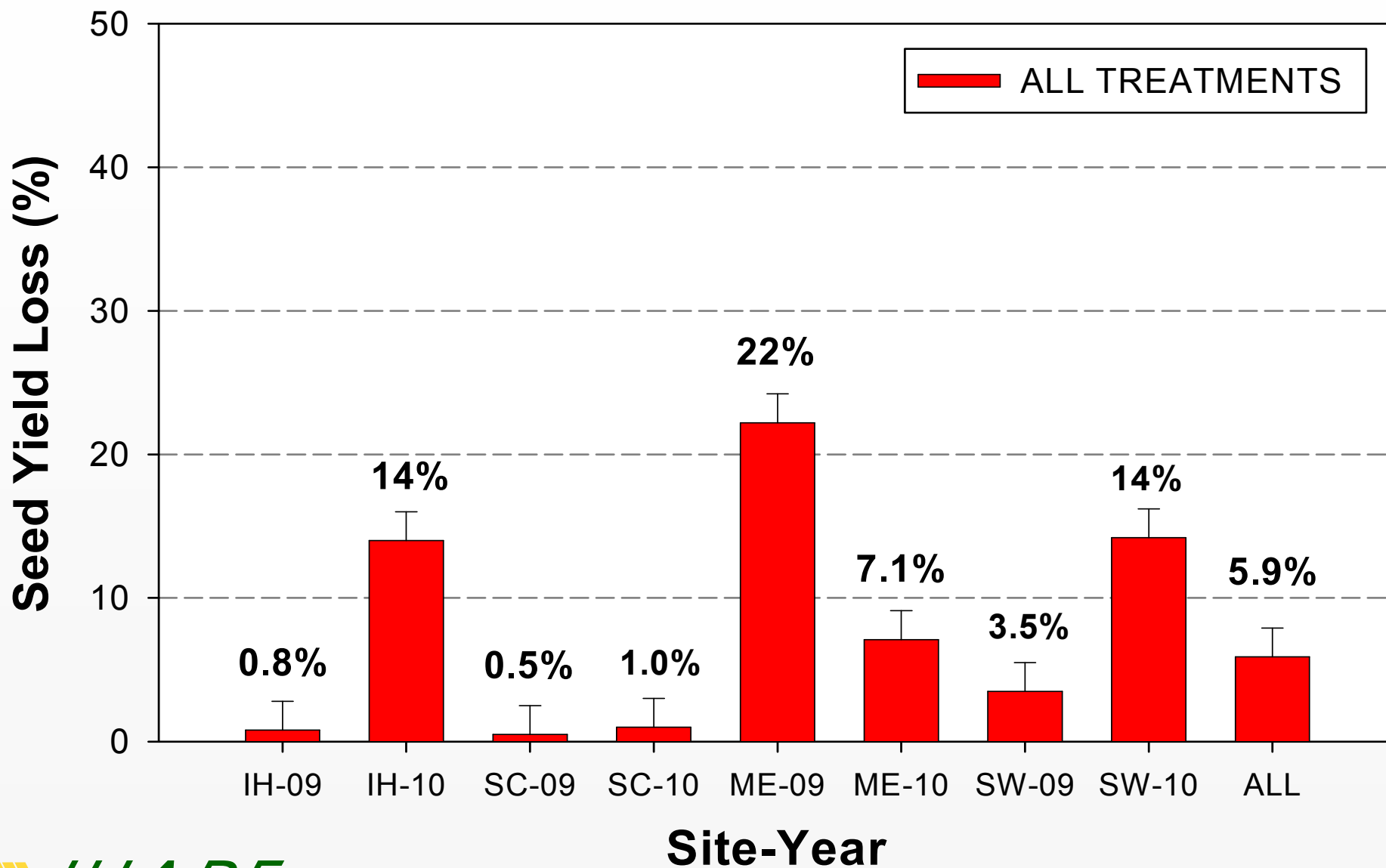
- RISK!!!
- Conflicting reports from researchers & growers with no clear answer as to which practice is better



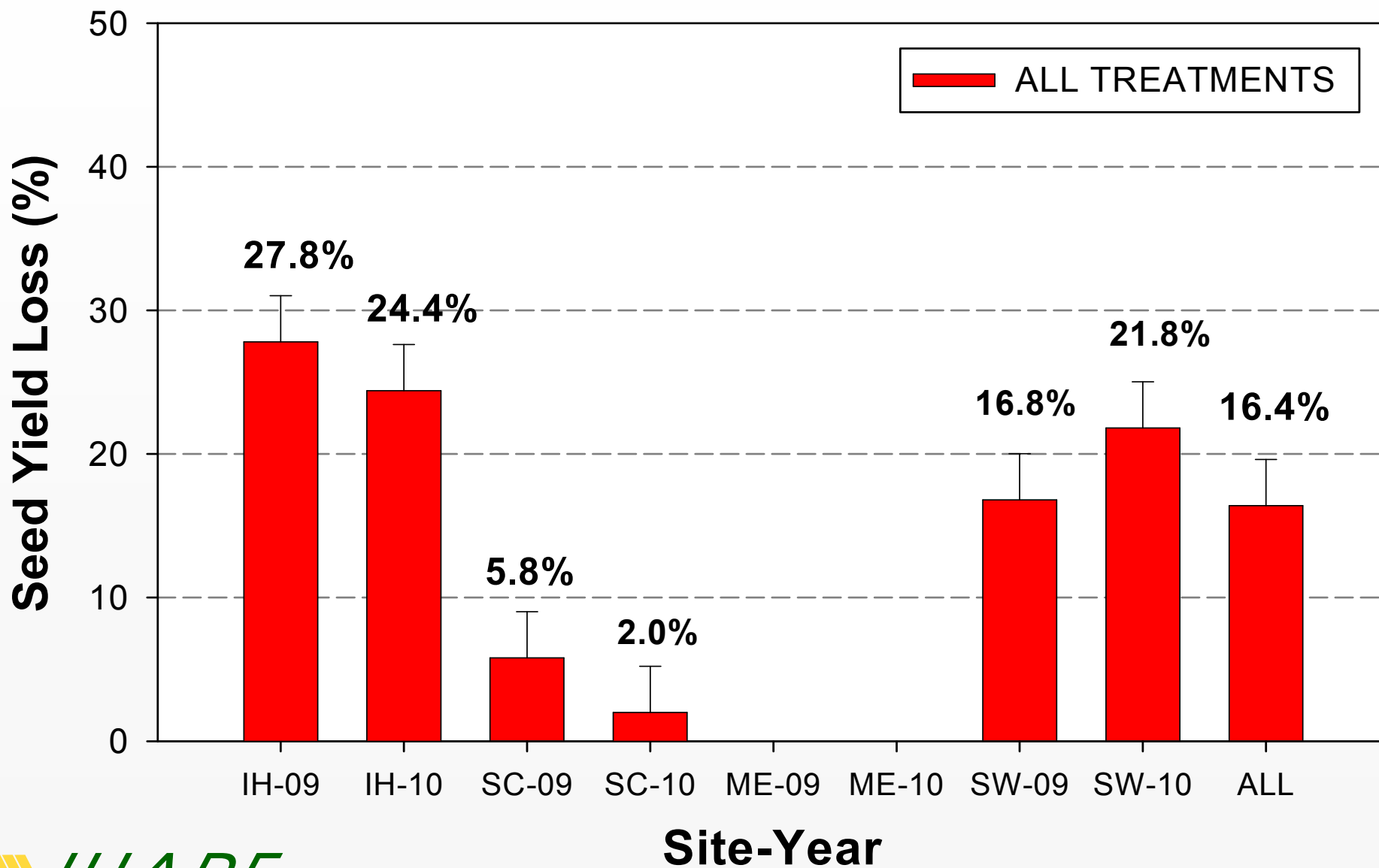
# STRAIGHT-COMBINED VERSUS SWATHED (SMALL PLOT TRIALS)



# OBSERVED SEED LOSS (TIME OF HARVEST)



# OBSERVED SEED LOSS (2-3 WEEKS PAST HARVEST)



# INDIAN HEAD 2009



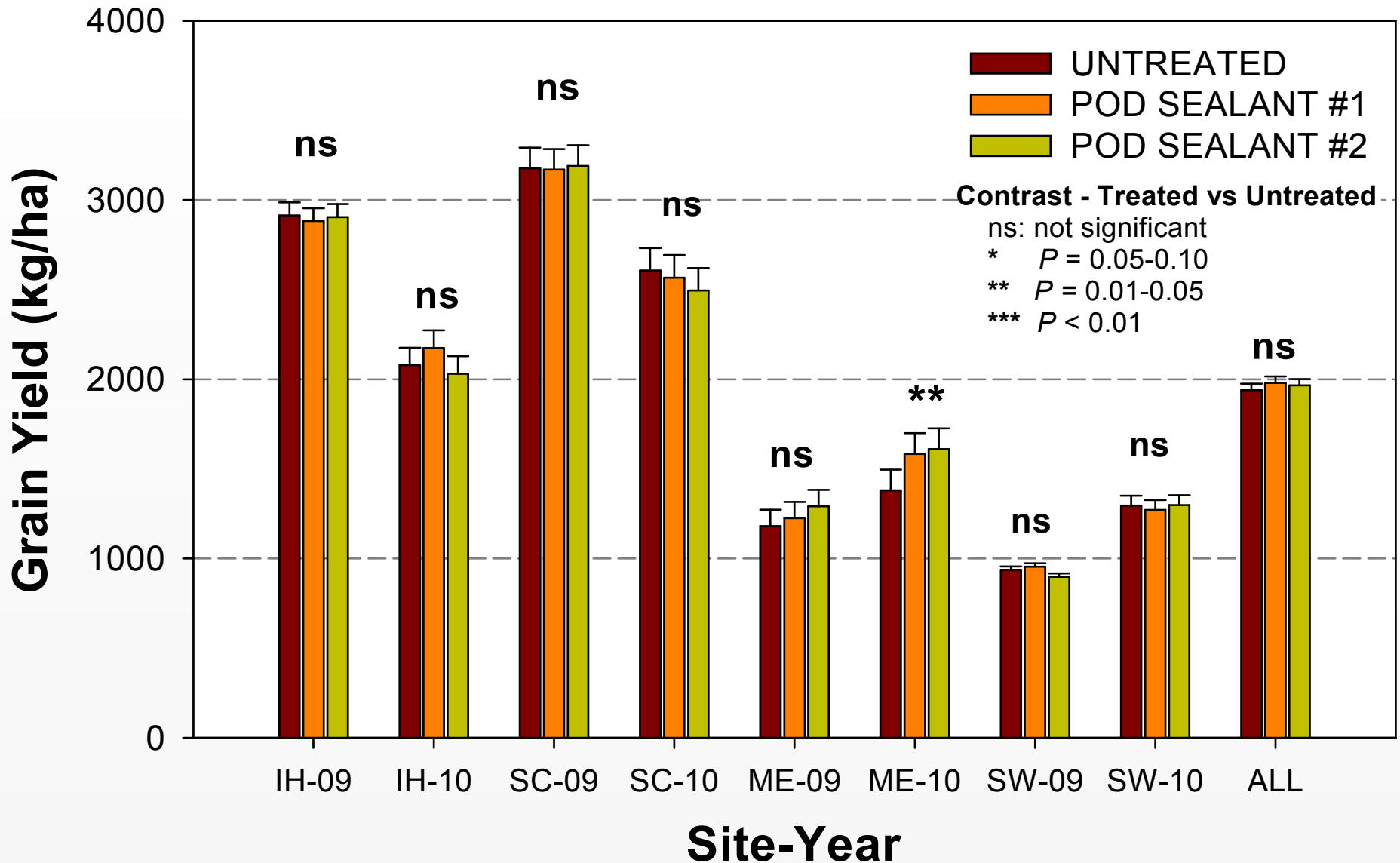
# What About Pod Sealants?

- **Available in W. Canada since 2008**
  1. Pod Ceal DC (formerly Brett Young)
  2. Pod-Stik (United Agri-Products)
  3. Desikote Max (Engage Agro)
- **Designed to reduce pod shattering & make shatter-prone crops better suited for straight-combining**



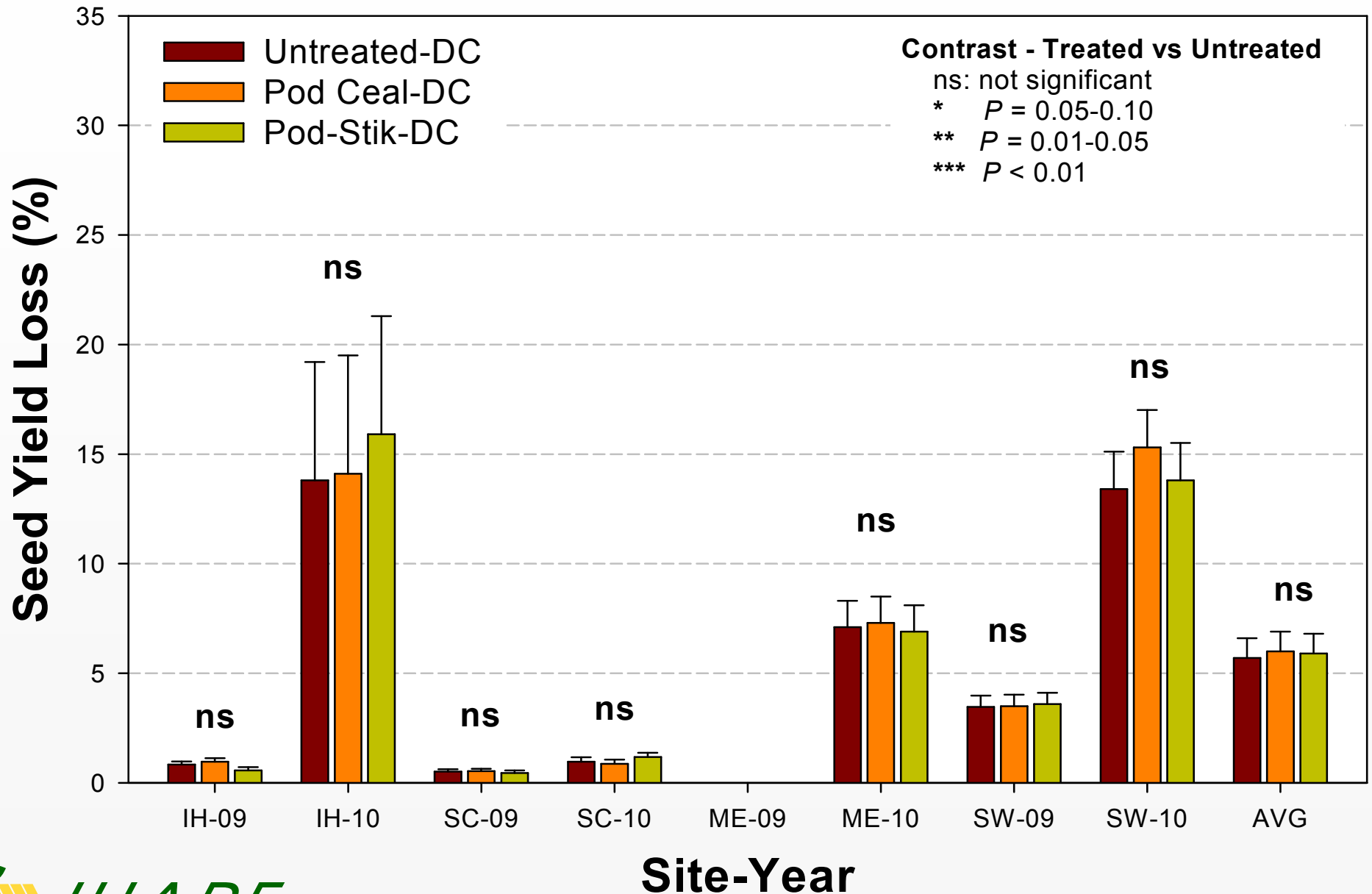
# POD SEALANT EFFECTS ON YIELD

## (ALL TREATMENTS STRAIGHT-COMBINED)

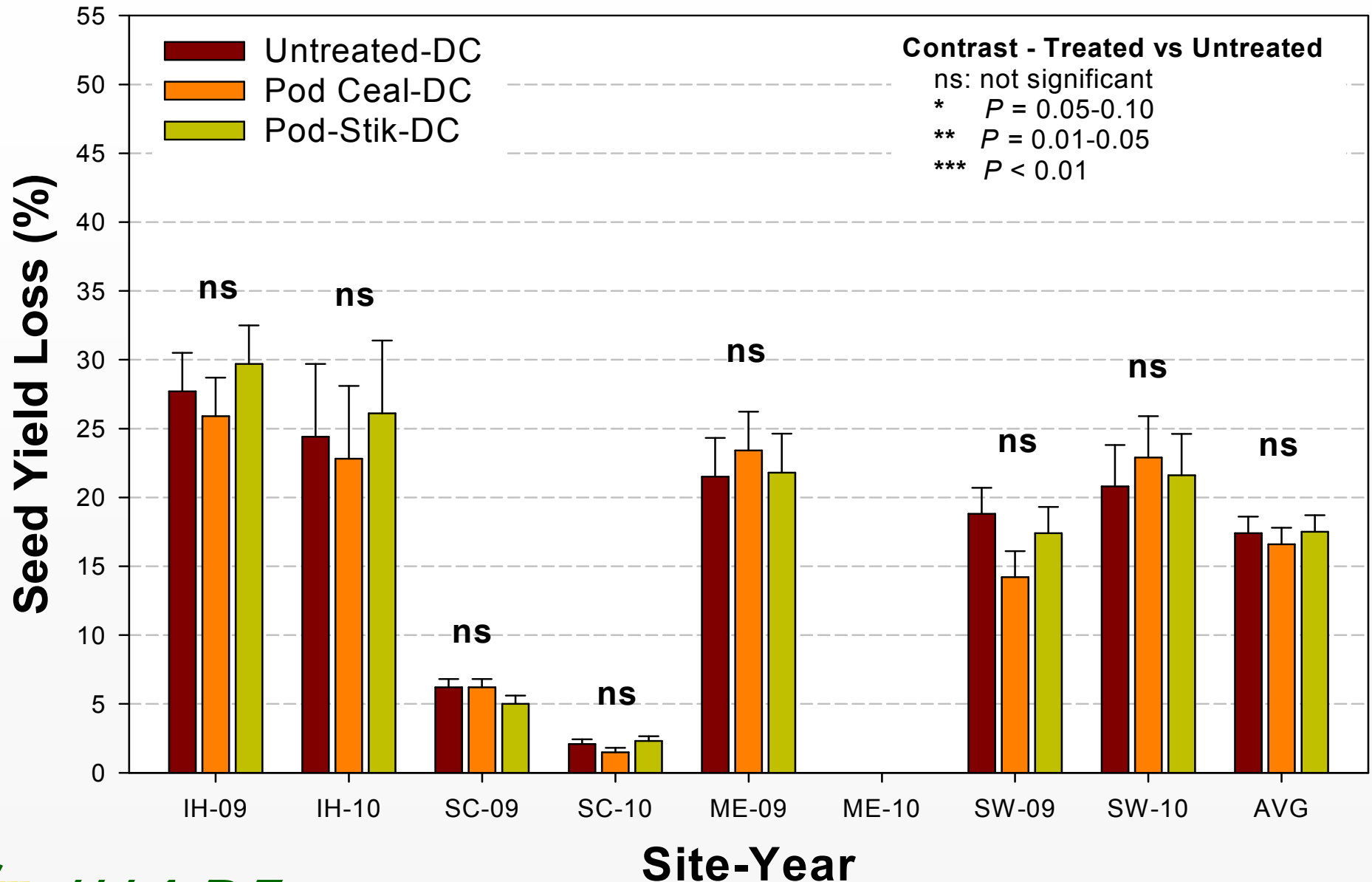




# POD SEALANTS EFFECTS ON SEED LOSS (TIME OF HARVEST)



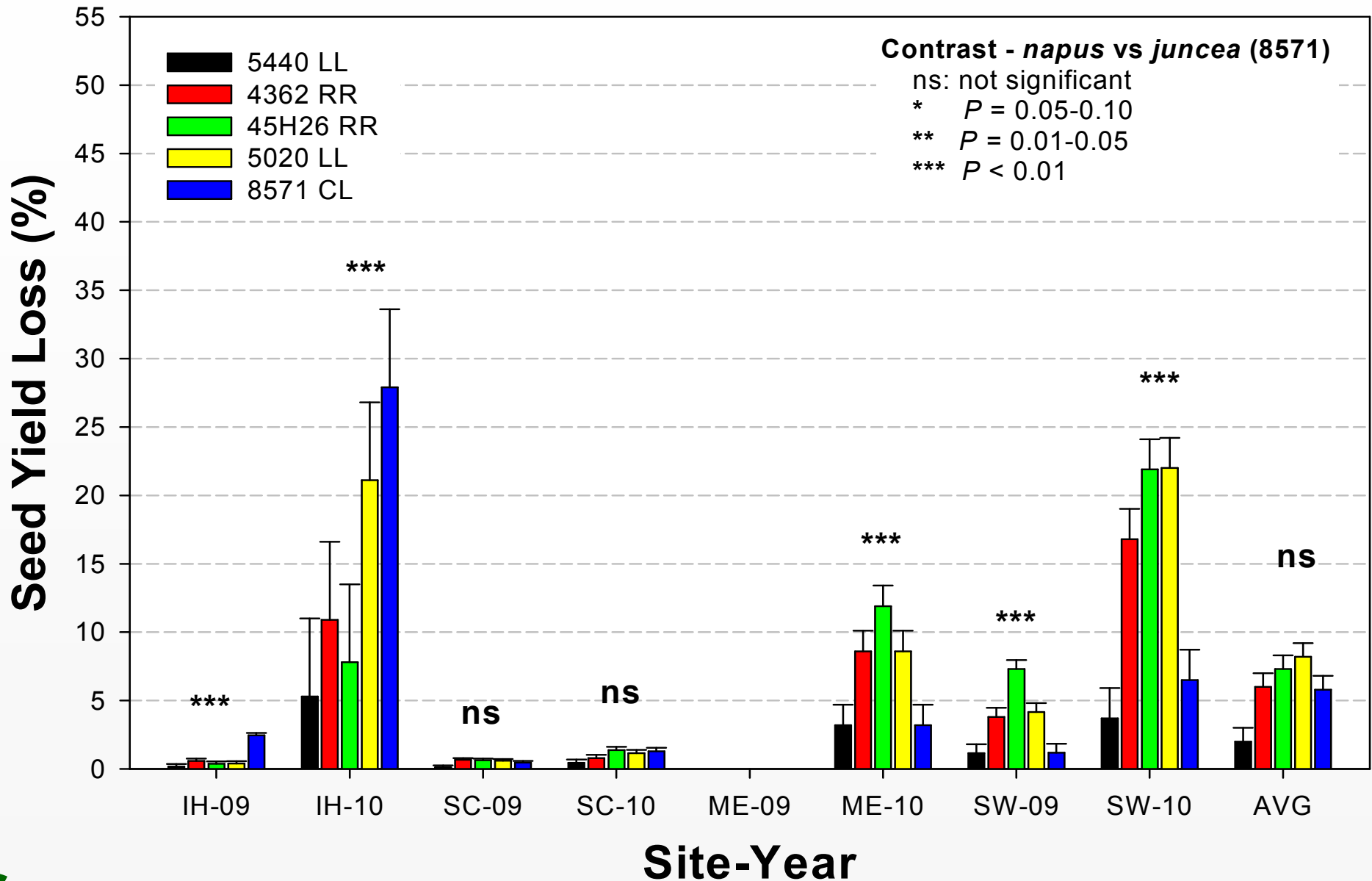
# POD SEALANTS EFFECTS ON SEED LOSS (2-3 WEEKS PAST HARVEST)



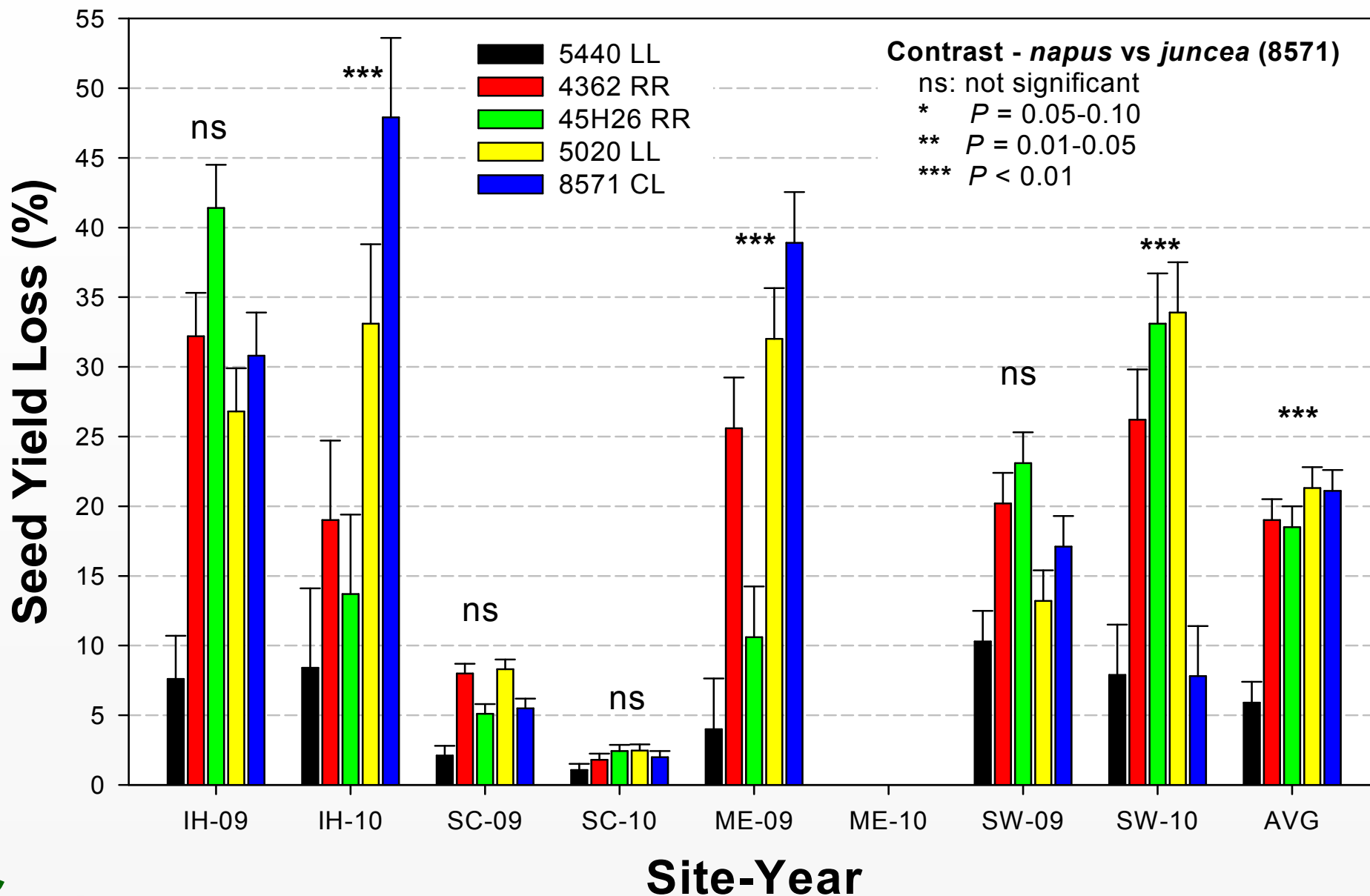
# Is Cultivar Important?

- Polish types & canola quality *juncea* recognized as more resistant to shattering & better suited for straight-combining than Argentine canola
- Early field trials showed large differences in yield loss amongst Argentine canola varieties straight-combined 1 month after maturity (Wang et al. 2007. Plant Breed. 126:588-595)
- 5 cultivars including a canola quality *juncea* type were evaluated in previous study & varietal differences being further explored in current research

# CULTIVAR EFFECTS ON SEED LOSS (TIME OF HARVEST)

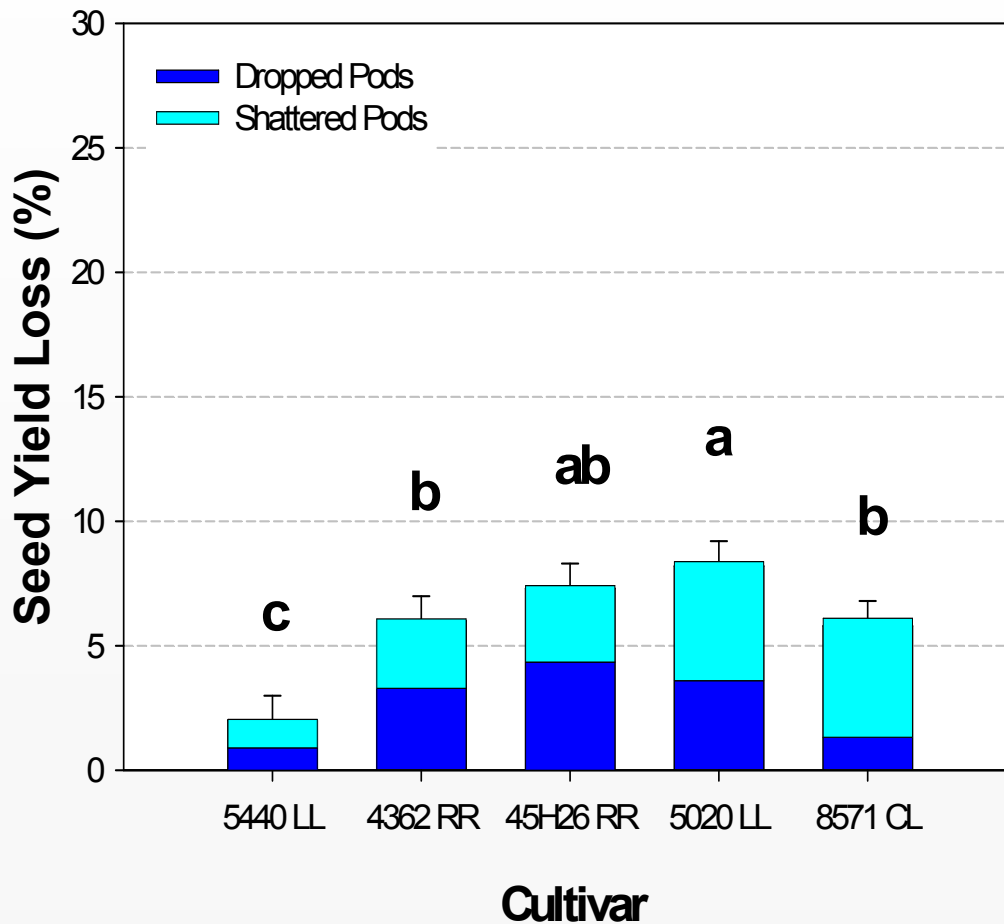


# CULTIVAR EFFECTS ON SEED LOSS (2-3 WEEKS PAST HARVEST)

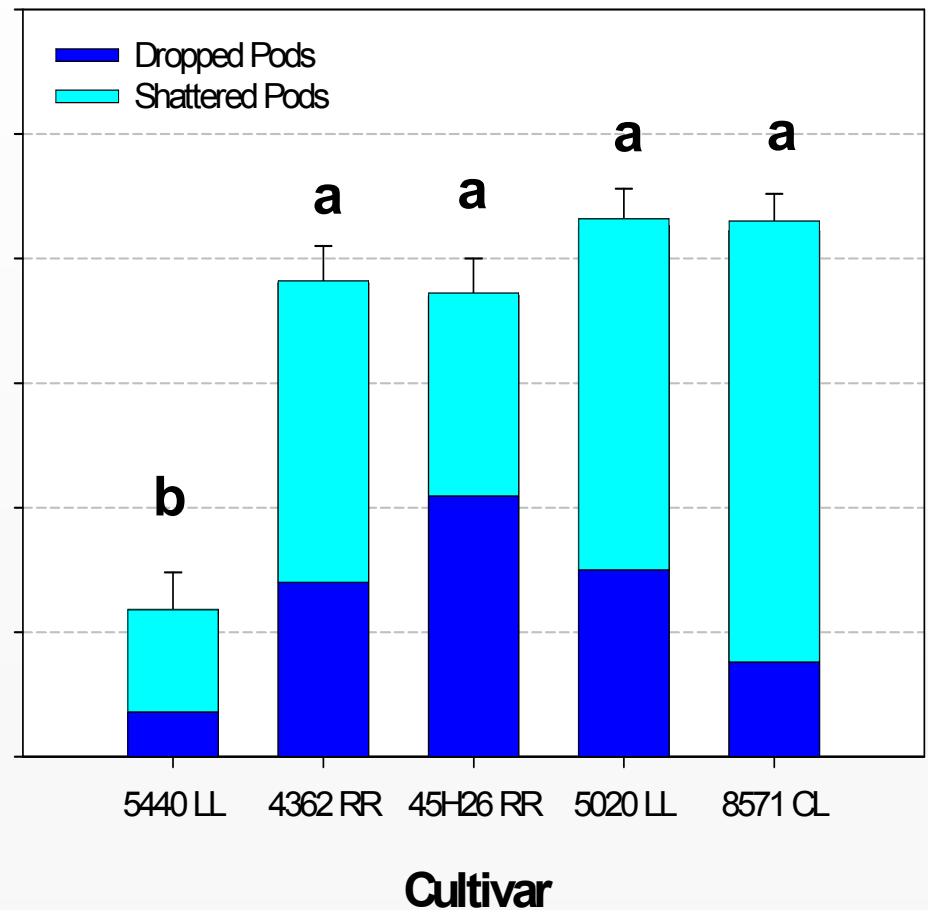


# CULTIVAR EFFECTS ON SEED LOSS (AVERAGED ACROSS SITE-YEARS)

All Site-Years Combined (EARLY)



All Site-Years Combined (LATE)



# FIELD-SCALE CANOLA HARVEST TRIAL INDIAN HEAD 2010-2011

- Field-Scale trial initiated at Indian Head (2010-11) to build upon results of small plot trials
- InVigor 5020 chosen for its moderate susceptibility to shattering
- Evaluated the effects of pod sealant applied with and without pre-harvest glyphosate on yields of swathed and straight-combined canola



# FIELD-SCALE CANOLA HARVEST TRIAL TREATMENTS

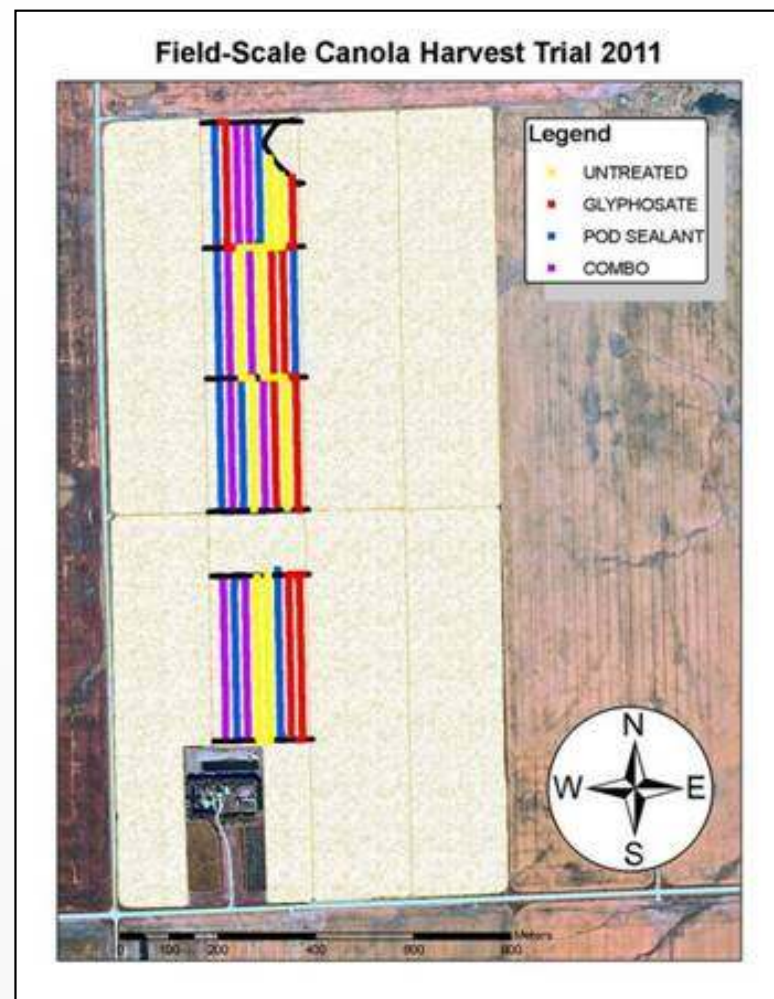
## Harvest Methods

- 1) Swathed
- 2) Straight-Combined

## Foliar Treatments\*

- 1) Untreated
- 2) Pod Sealant
- 3) Glyphosate
- 4) Pod Sealant + Glyphosate

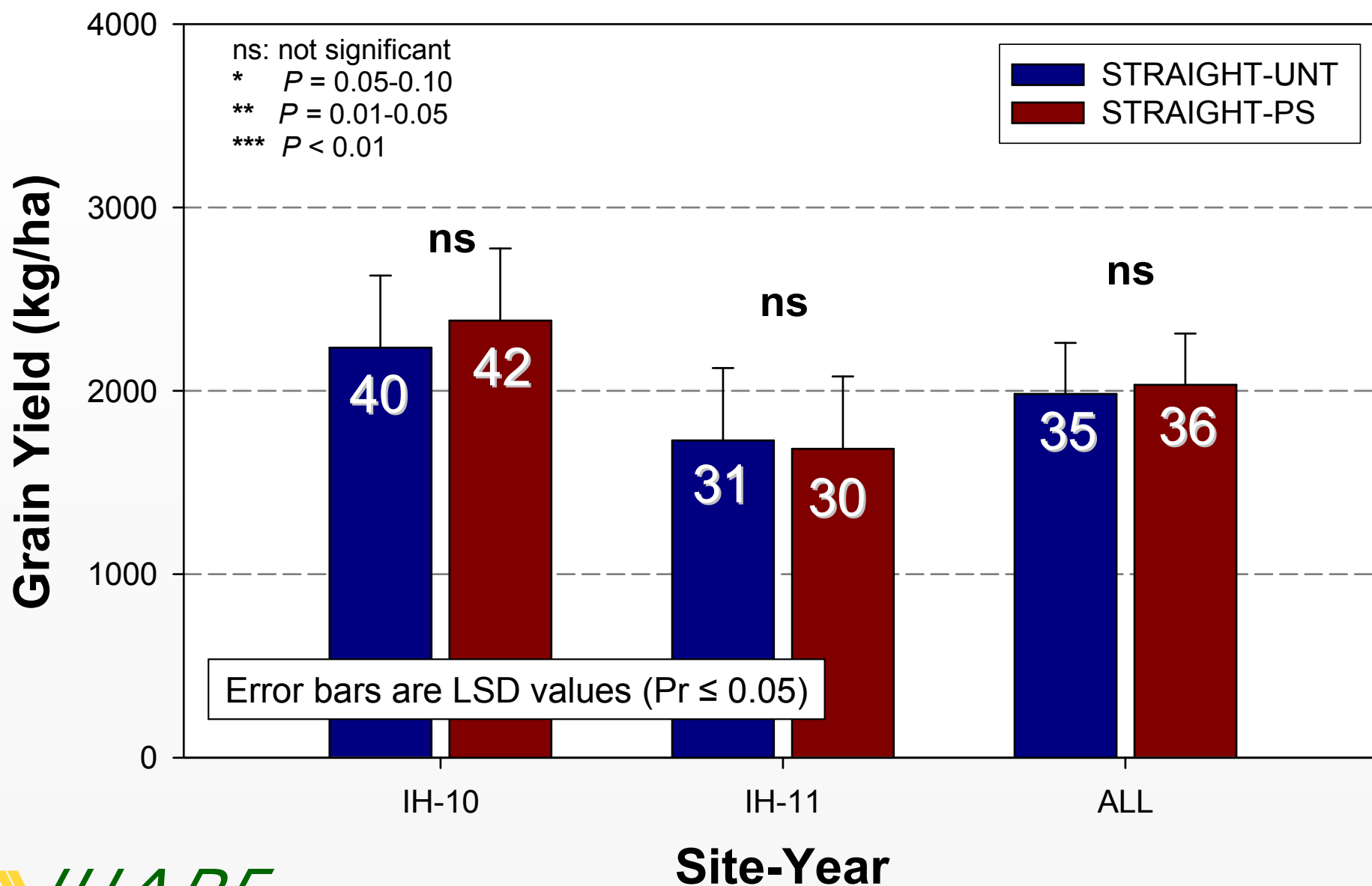
\*applied at 30-40% pod colour change



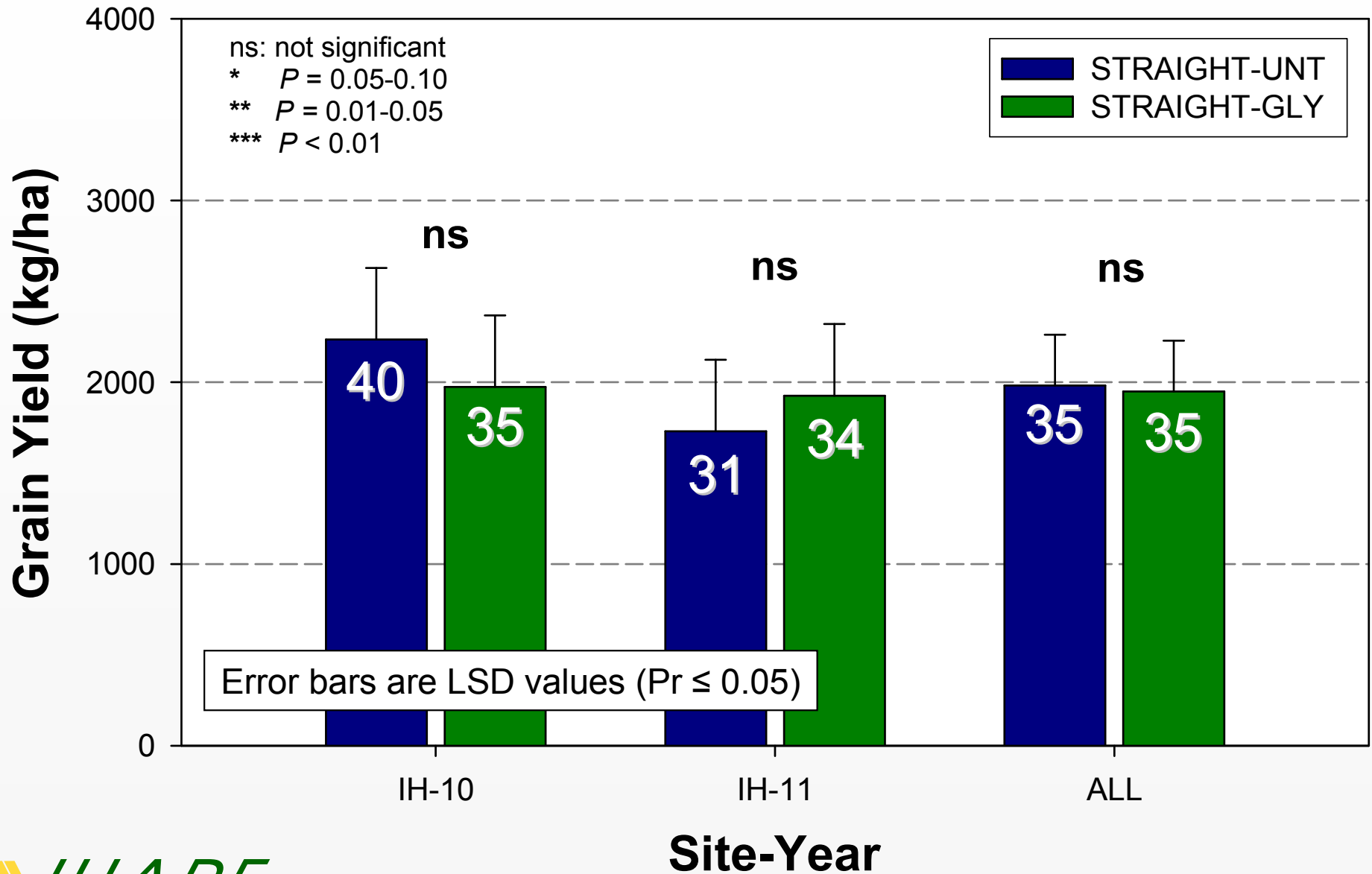


# FIELD-SCALE CANOLA HARVEST TRIAL

## UNTREATED VS SEALANT (STRAIGHT-COMBINED)

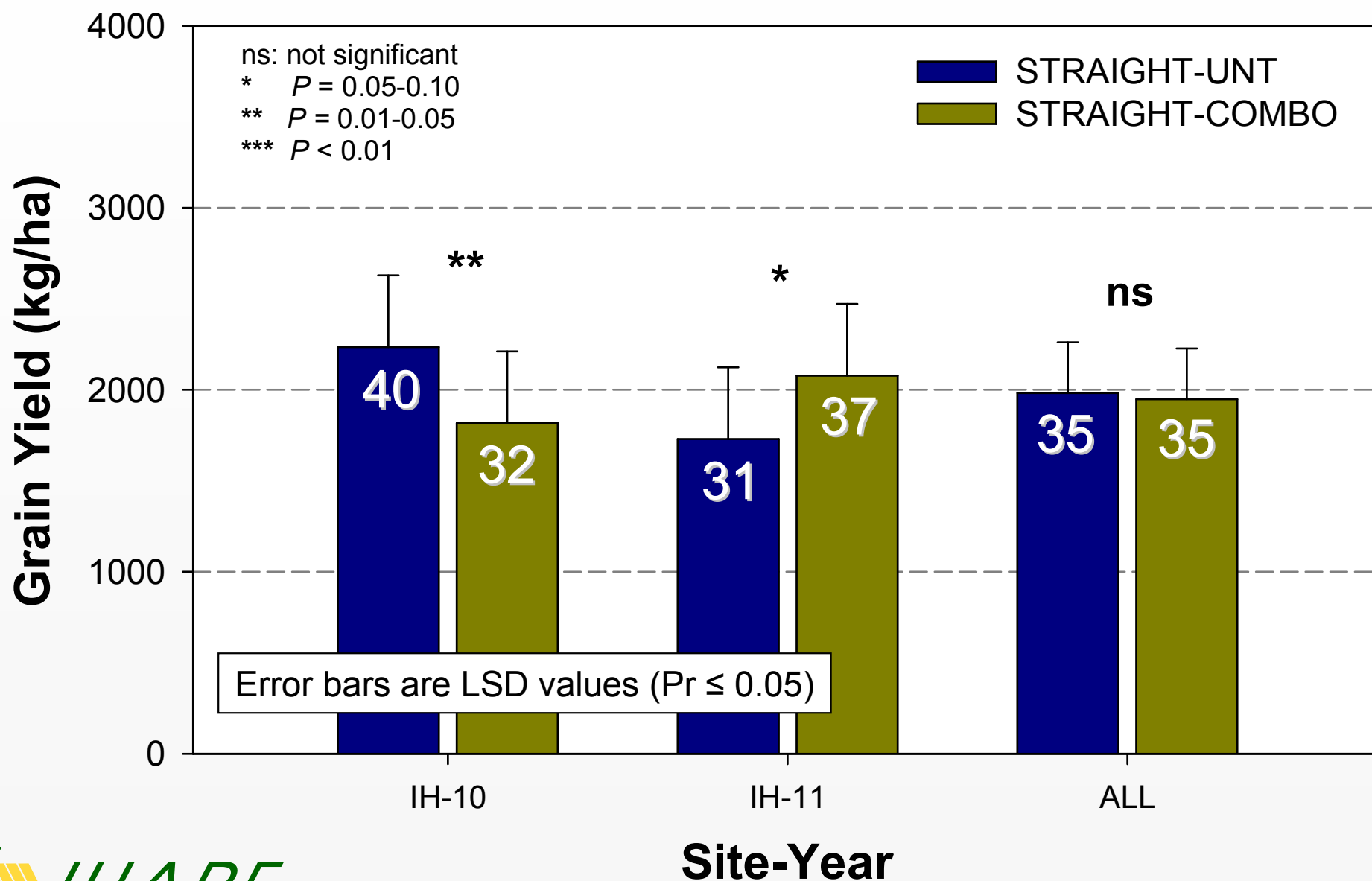


# FIELD-SCALE CANOLA HARVEST TRIAL UNTREATED VS GLYPHOSATE (STRAIGHT-COMBINED)



# FIELD-SCALE CANOLA HARVEST TRIAL

## UNTREATED VS COMBO (STRAIGHT-COMBINED)

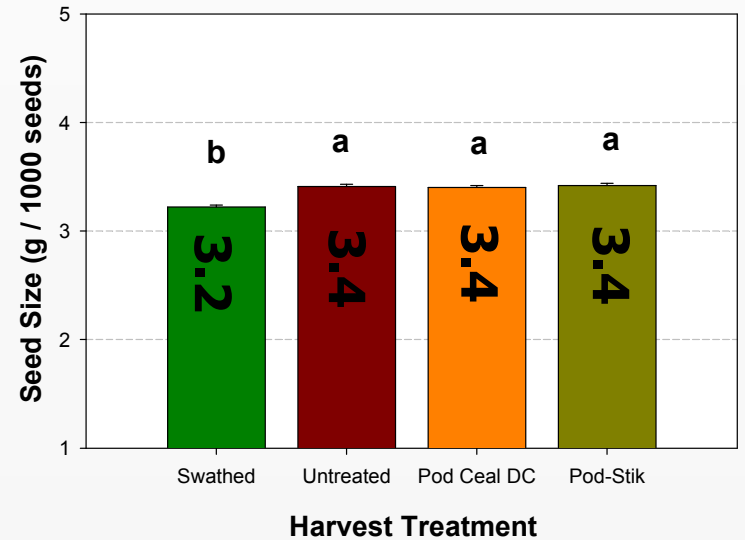
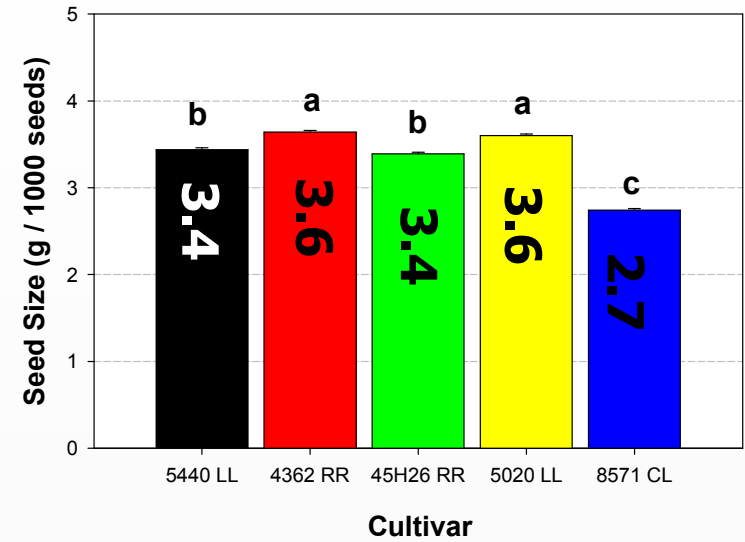
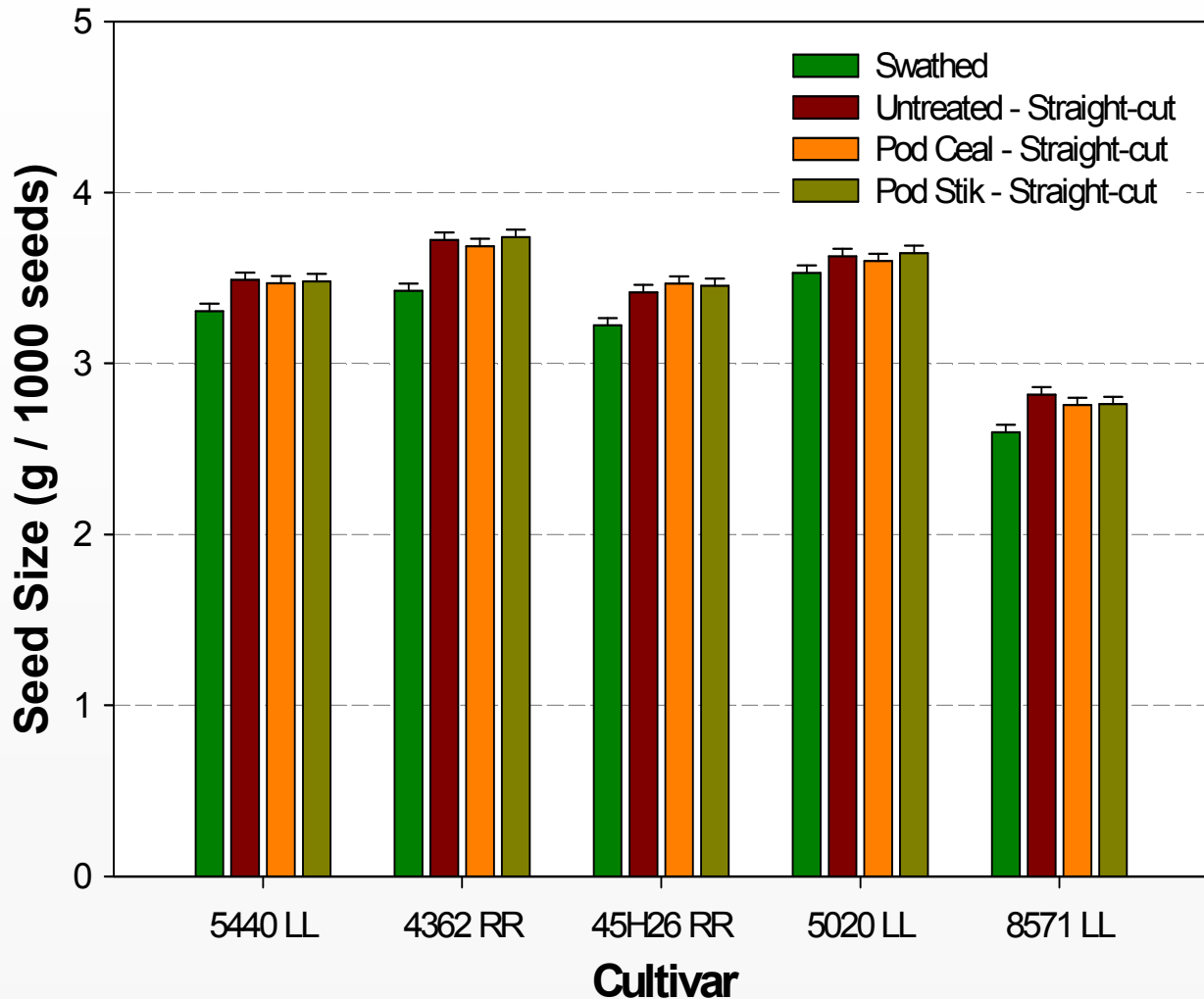


# GLYPHOSATE EFFECTS ON DTM

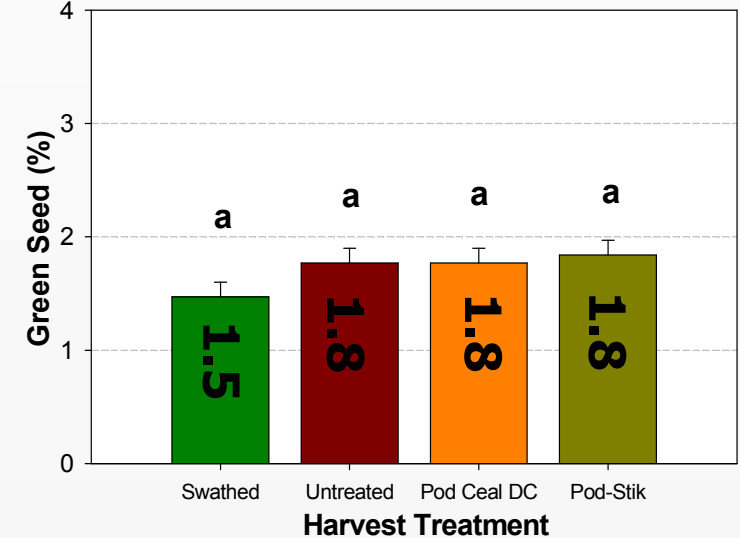
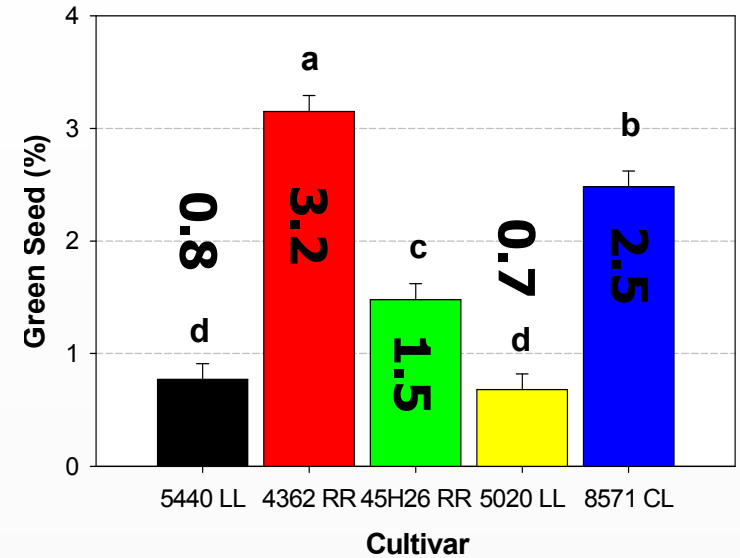
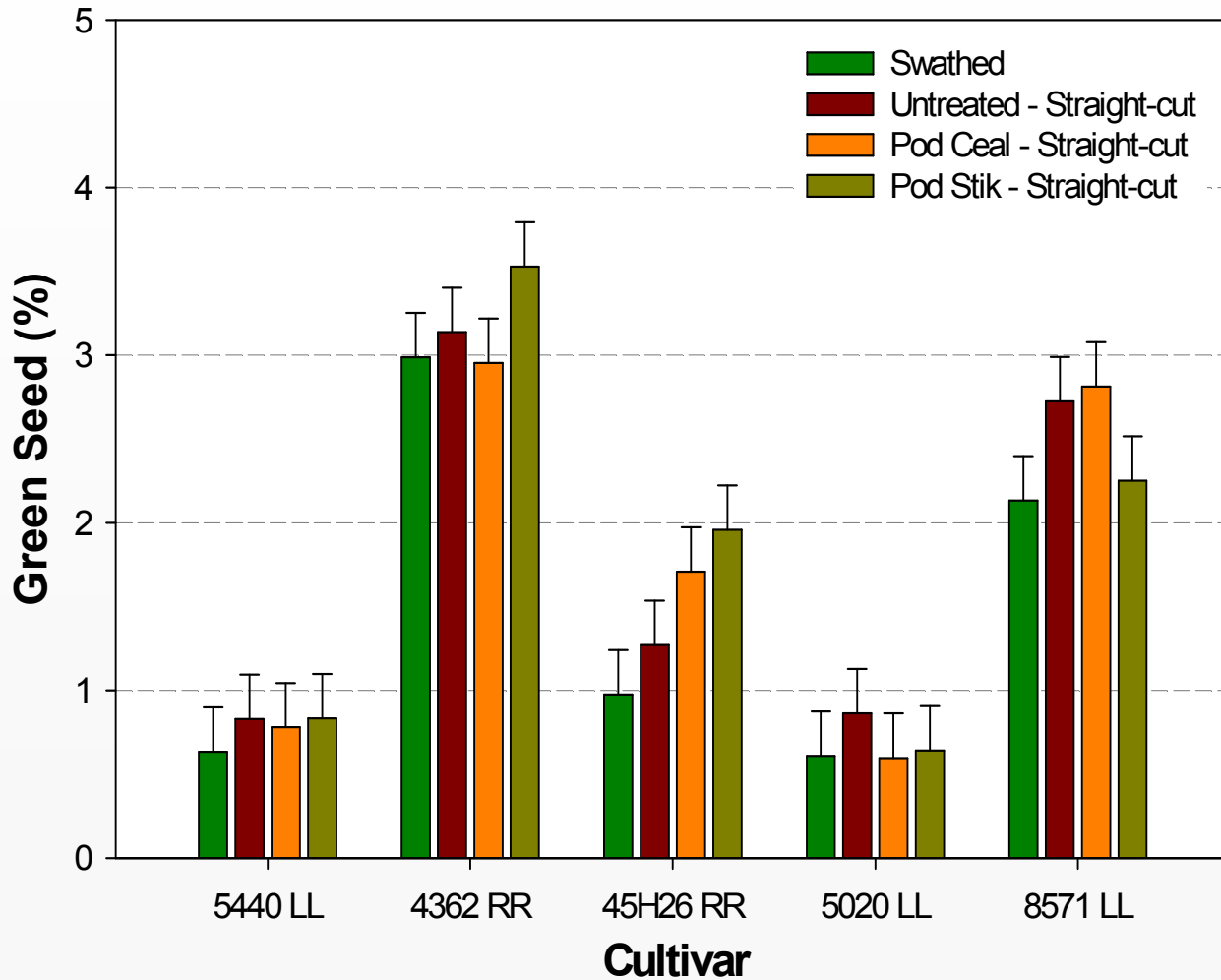


- Impact on grain yield not consistent, but pre-harvest glyphosate helps to even out maturity and can potentially accelerate harvest in addition to provided weed control benefits for the next season

# CULTIVAR & HARVEST METHOD EFFECTS ON SEED SIZE



# CULTIVAR & HARVEST METHOD EFFECTS ON GREEN SEED CONTENT

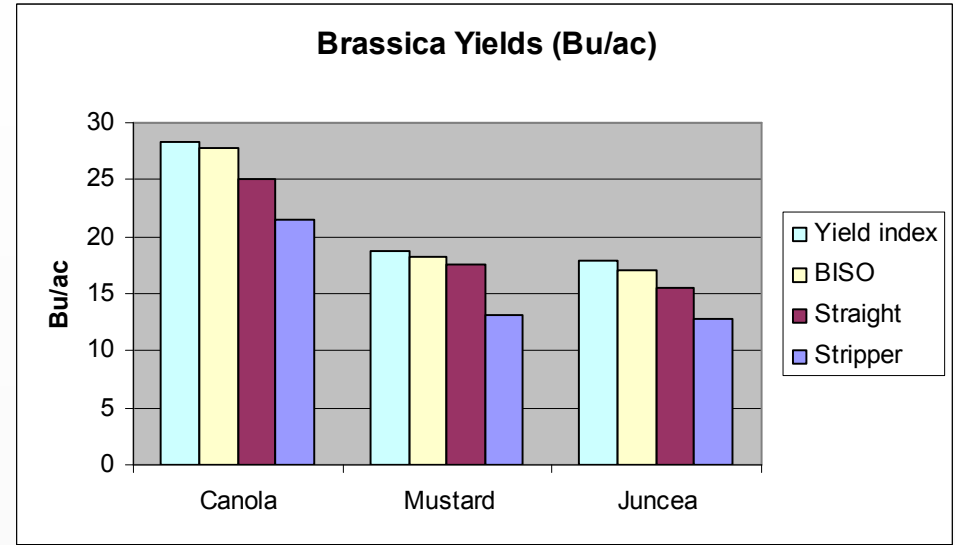
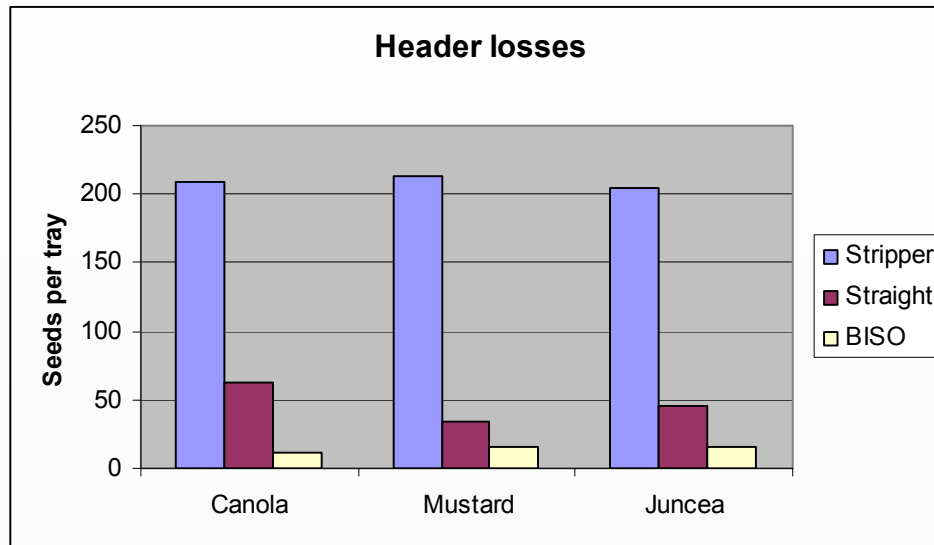


# Equipment Considerations

- Project completed at Swift Current (Wheatland Conservation Area Inc.) from 2005-2007) to evaluate header losses & seed yields from canola straight-combined using various header types
- The header types that were evaluated included a rigid header, draper header, stripper header & BISO extension



# Wheatland Canola Harvest Study (Swift Current 2006)

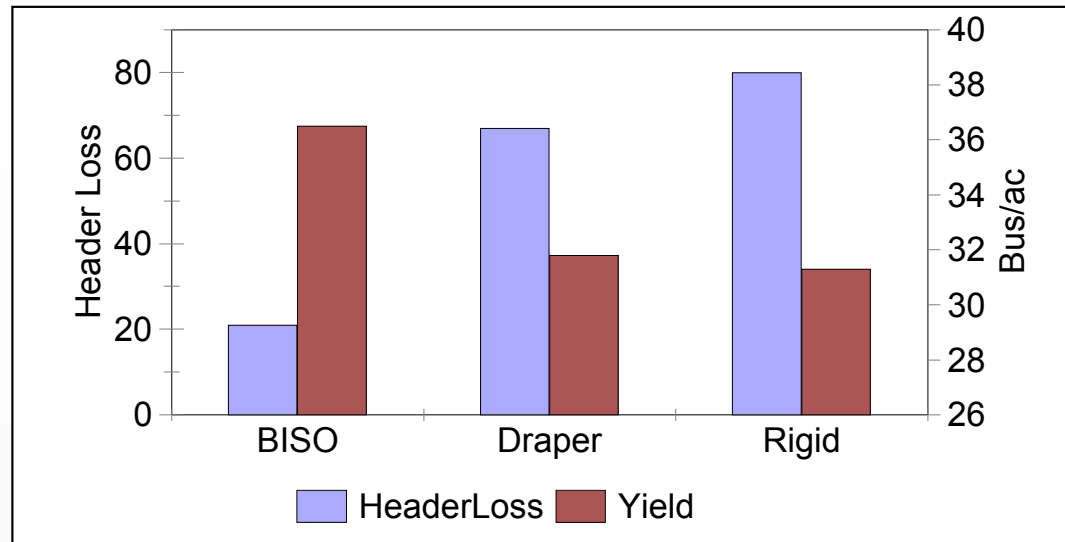


## 2005 Study Conclusions

- Stripper header was not a viable option for canola with high header losses & significant yield reduction
- BISO extension resulted in lowest header losses and a 2.6 bus/ac (9.4%) increase in seed yield over rigid header



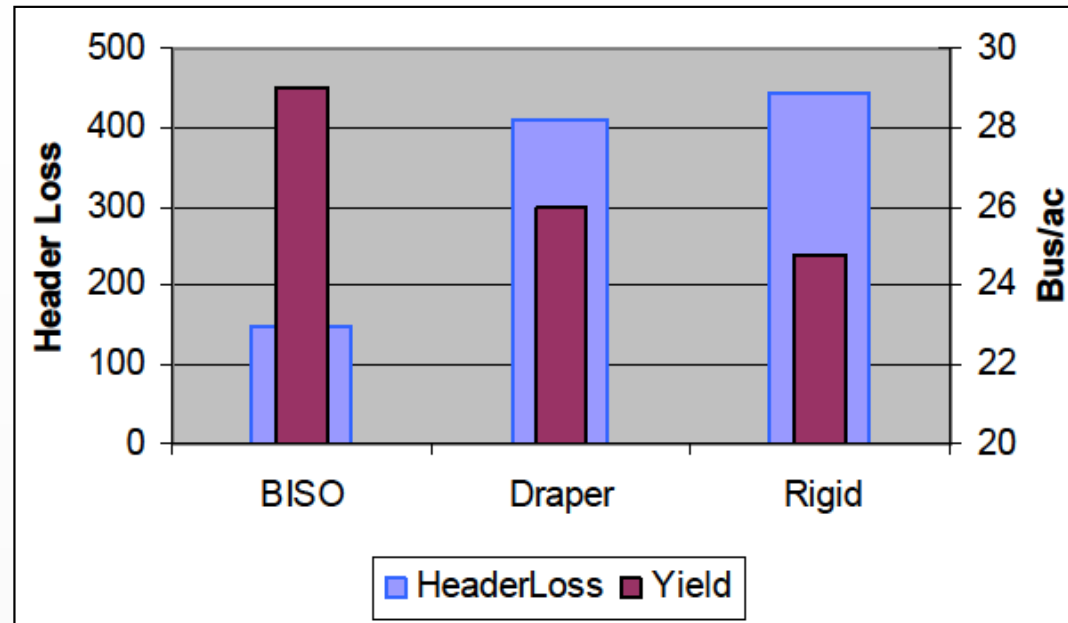
# Wheatland Canola Harvest Study (Swift Current 2006)



## 2006 Study Conclusions

- Stripper header treatment was replaced with draper header and study focused solely on Argentine canola
- BISO extension resulted in lowest header losses and 5.2 bus/ac (16%) yield increase over rigid header with similar results between rigid and draper headers

# Wheatland Canola Harvest Study (Swift Current 2007)



## 2007 Study Conclusions

- BISO extension resulted in lowest header losses and 4.2 bus/ac (17%) yield increase over rigid header
- Similar to 2006, slight advantage to draper header over rigid type but not statistically significant

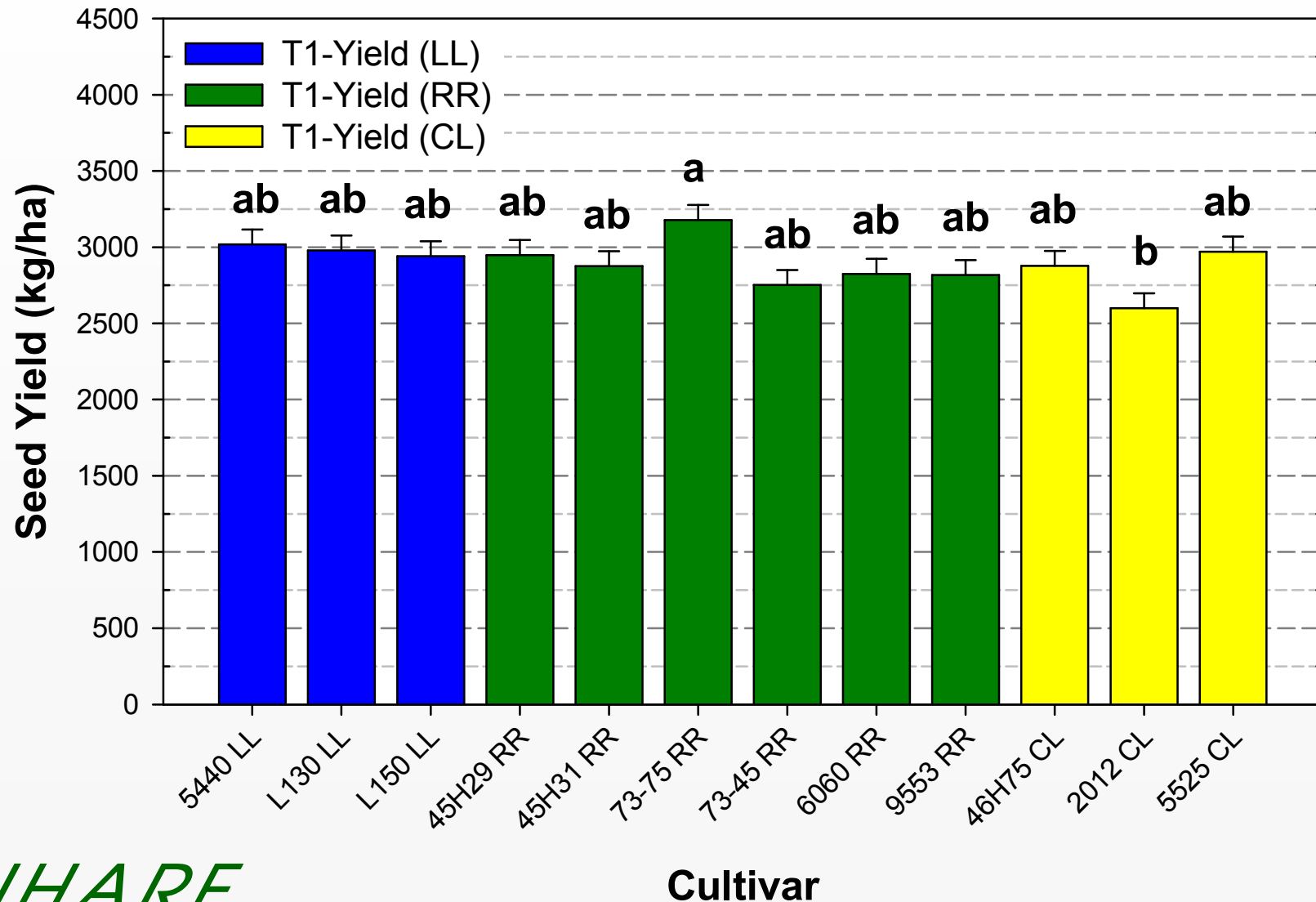
# Current Research

- Trials initiated in 2011 at Indian Head, Scott & Swift Current to further investigate importance of cultivar selection for straight combining
- Evaluating potential yield loss and measuring pod drop/shatter in 12 modern cultivars from various breeding programs / herbicide systems

<b>InVigor 5540</b>	<b>Pionner HiBred 45H29</b>	<b>Dekalb 73-45</b>	<b>Pioneer HiBred 46H75</b>
<b>InVigor L130</b>	<b>Pionner HiBred 45H31</b>	<b>Brett Young 6060</b>	<b>Nexera 2012 CL</b>
<b>InVigor L150</b>	<b>Dekalb 73-75</b>	<b>Proven 9553</b>	<b>Brett Young 5525</b>

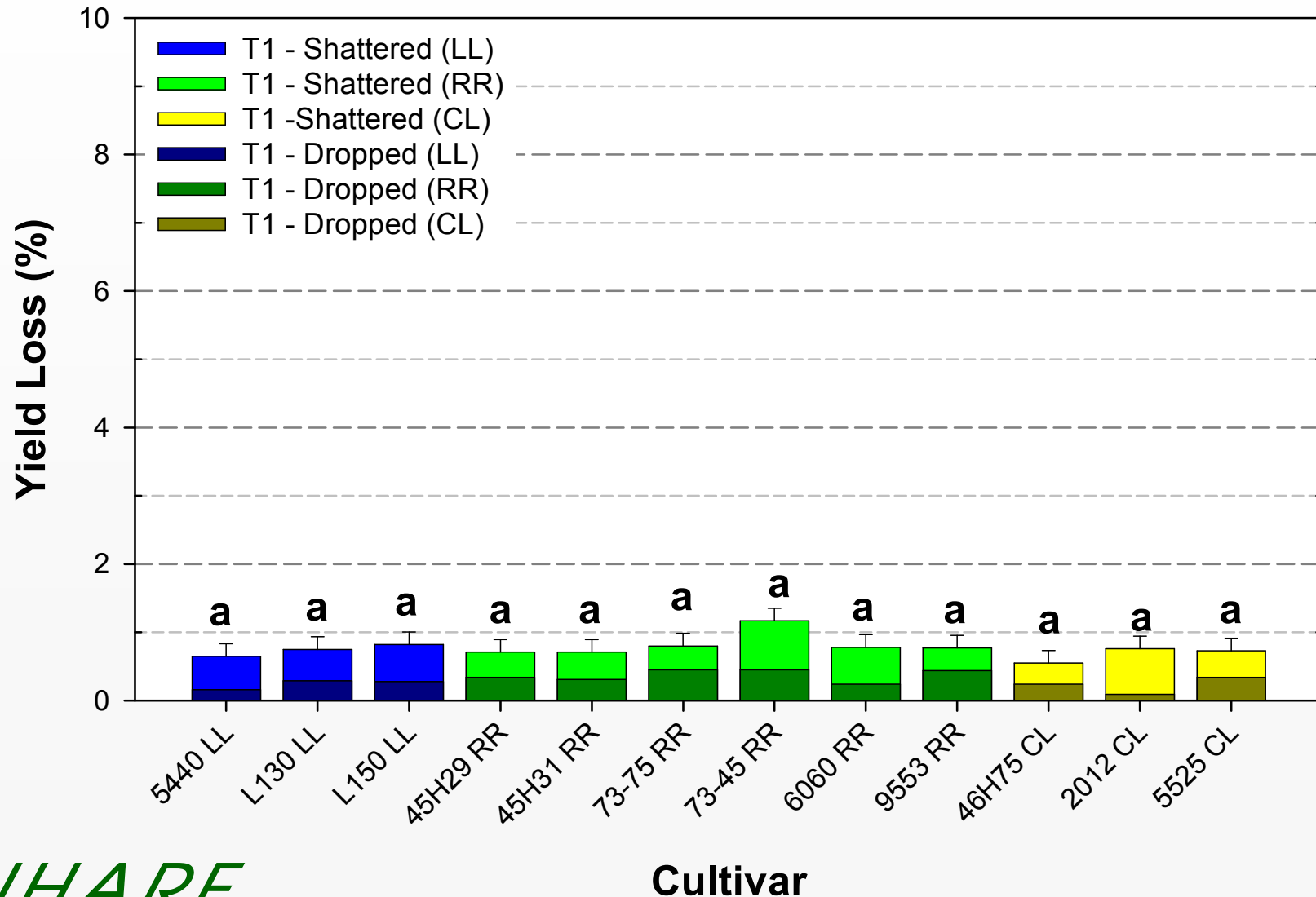
# Straight-Combined Seed Yield (early-optimal timing)

All Locations (2011)



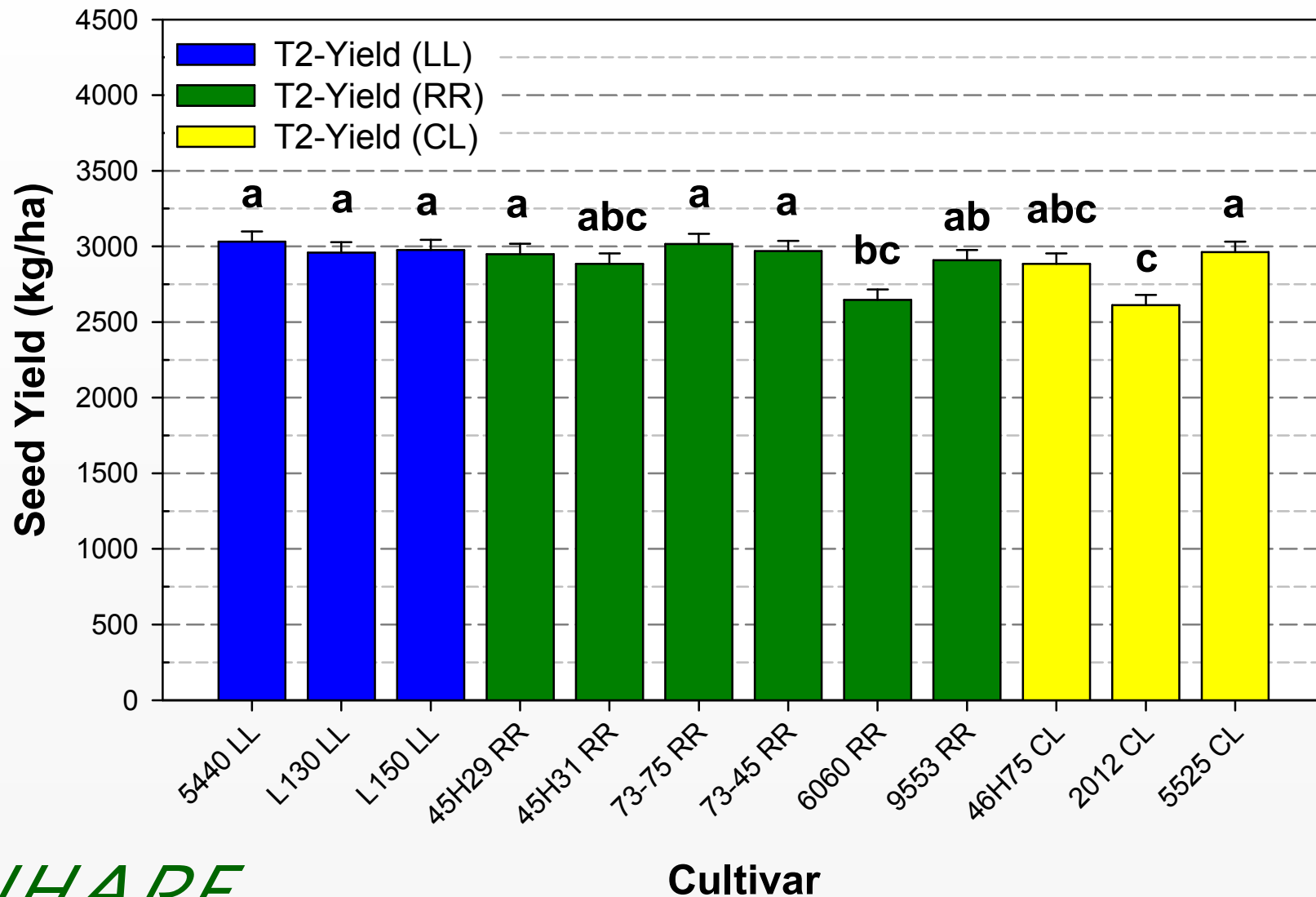
# Observed Seed Loss in Percent (early-optimal timing)

All Locations (2011)



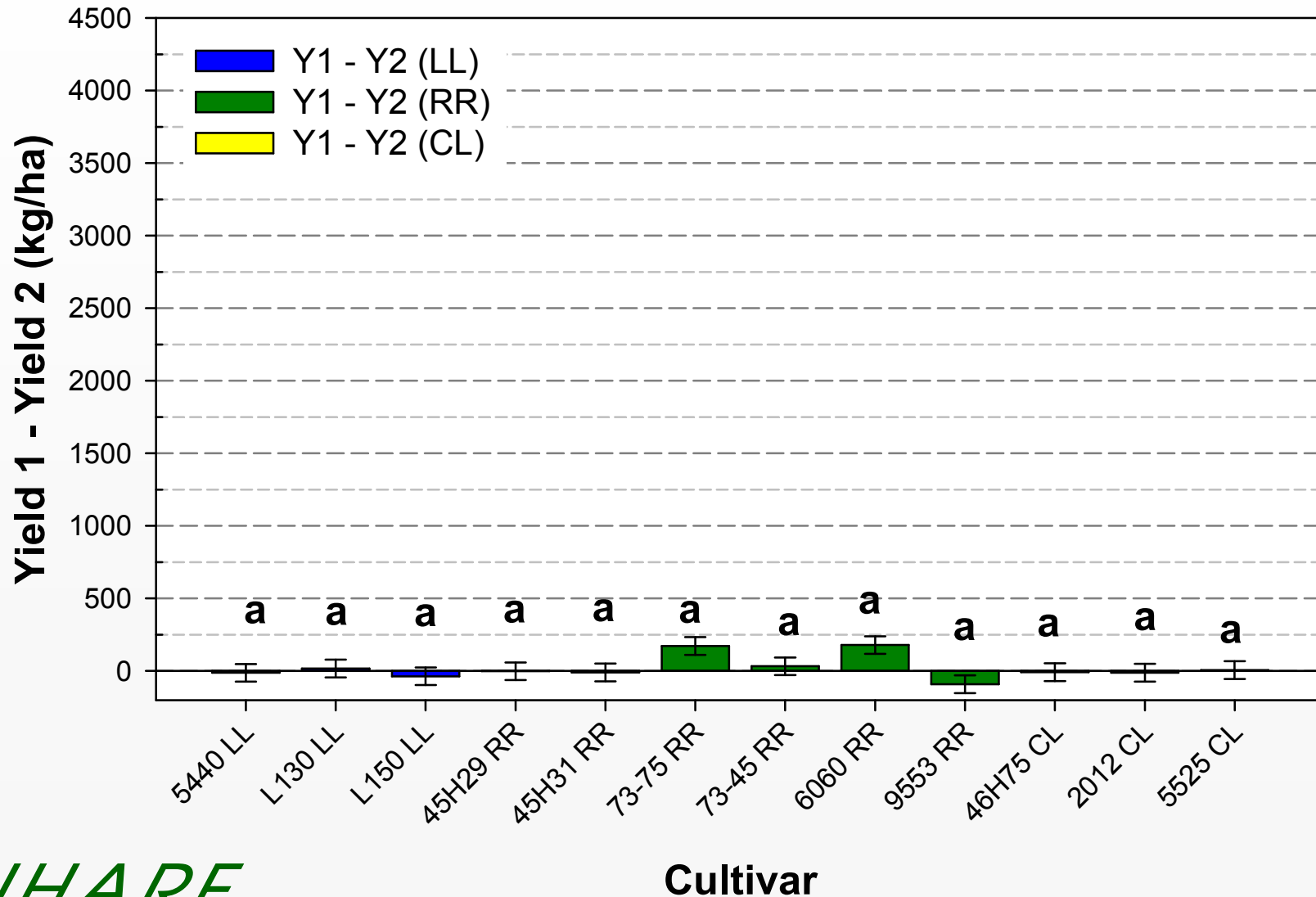
# Straight-Combined Seed Yield (2-4 weeks past optimal timing)

All Locations (2011)



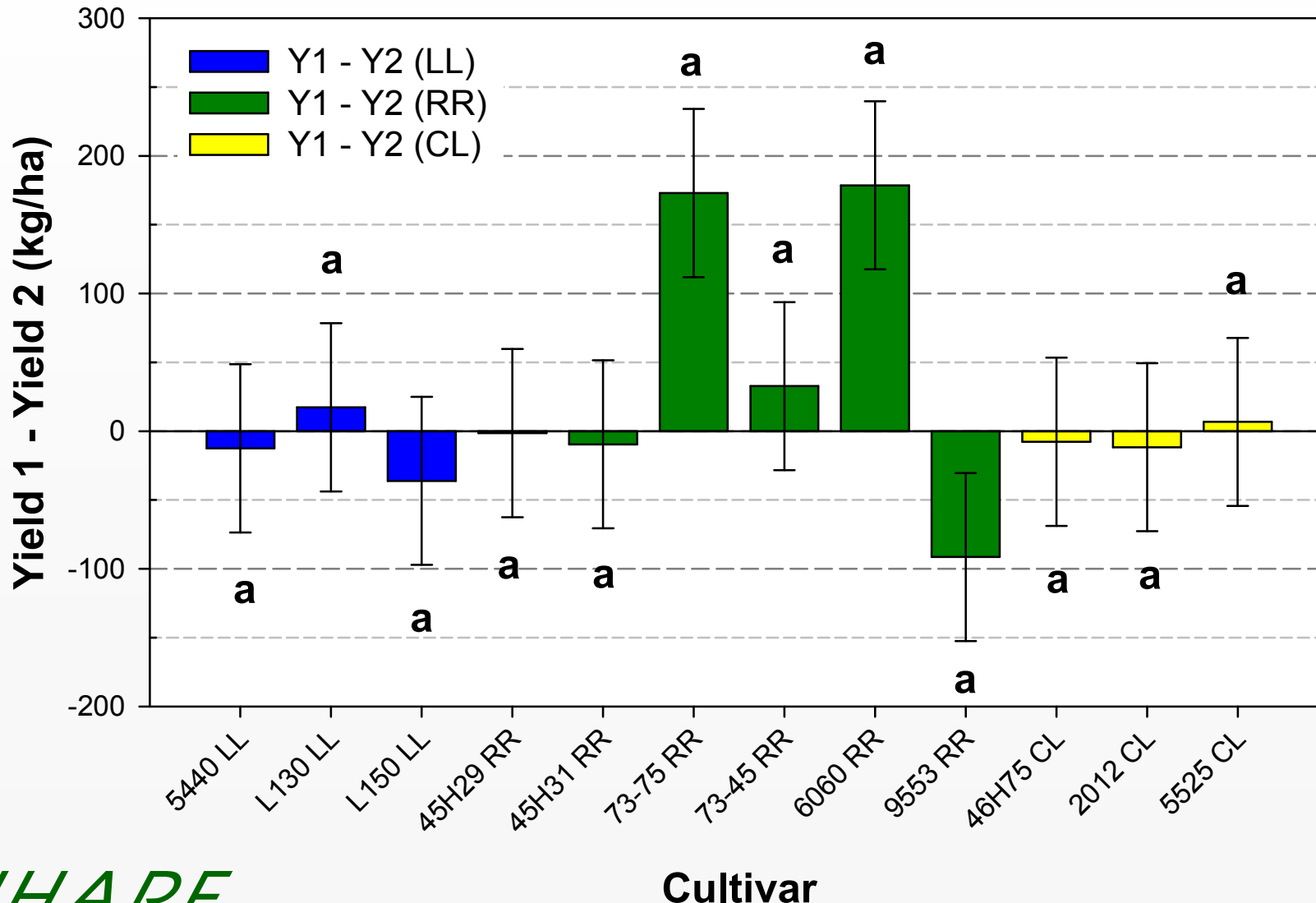
# Straight-Combined Seed Yield (T1 - T2)

All Locations (2011)



# Straight-Combined Seed Yield (T1 - T2)

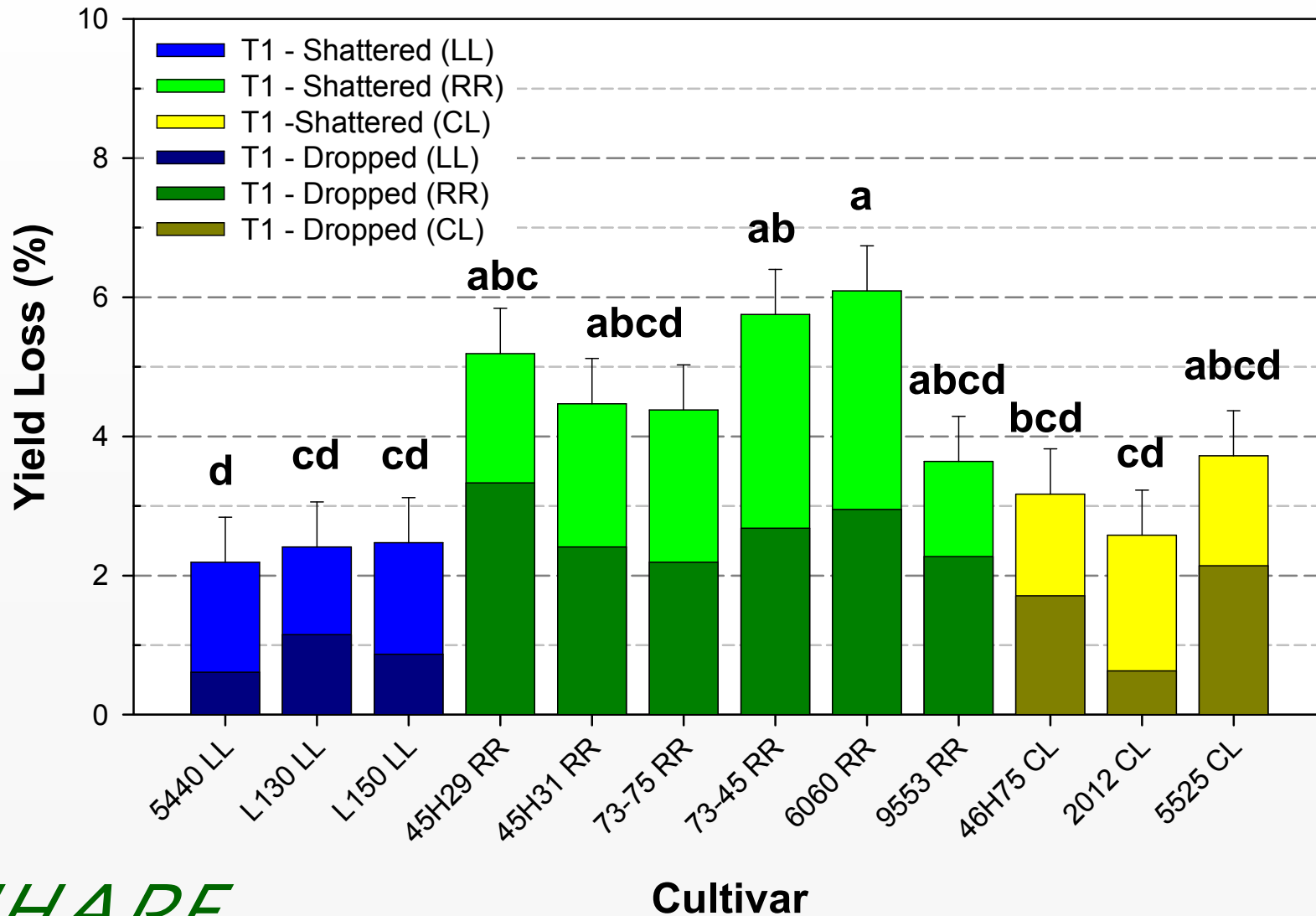
All Locations (2011)





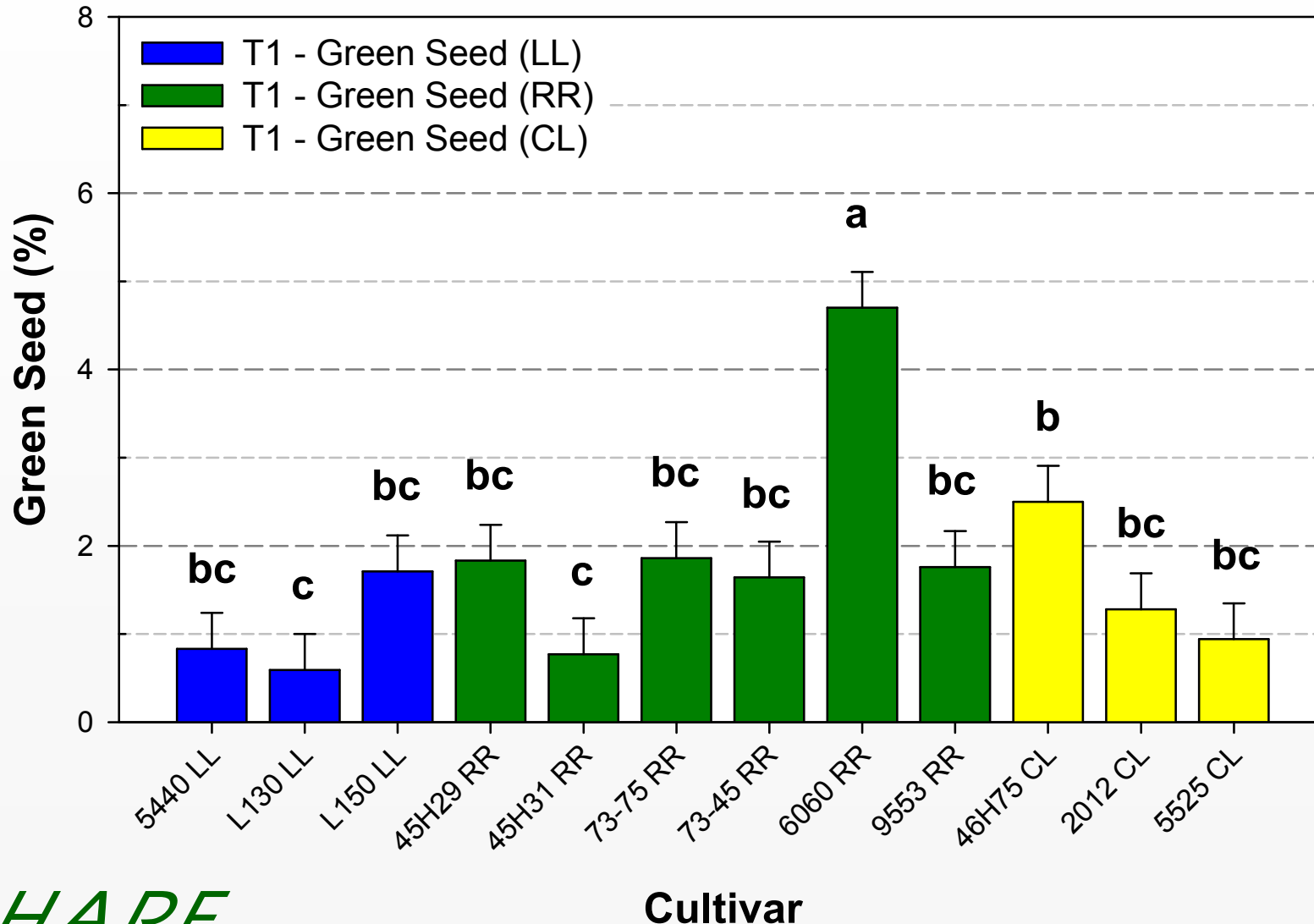
# Observed Seed Loss in Percent (2-4 weeks past optimal timing)

All Locations (2011)



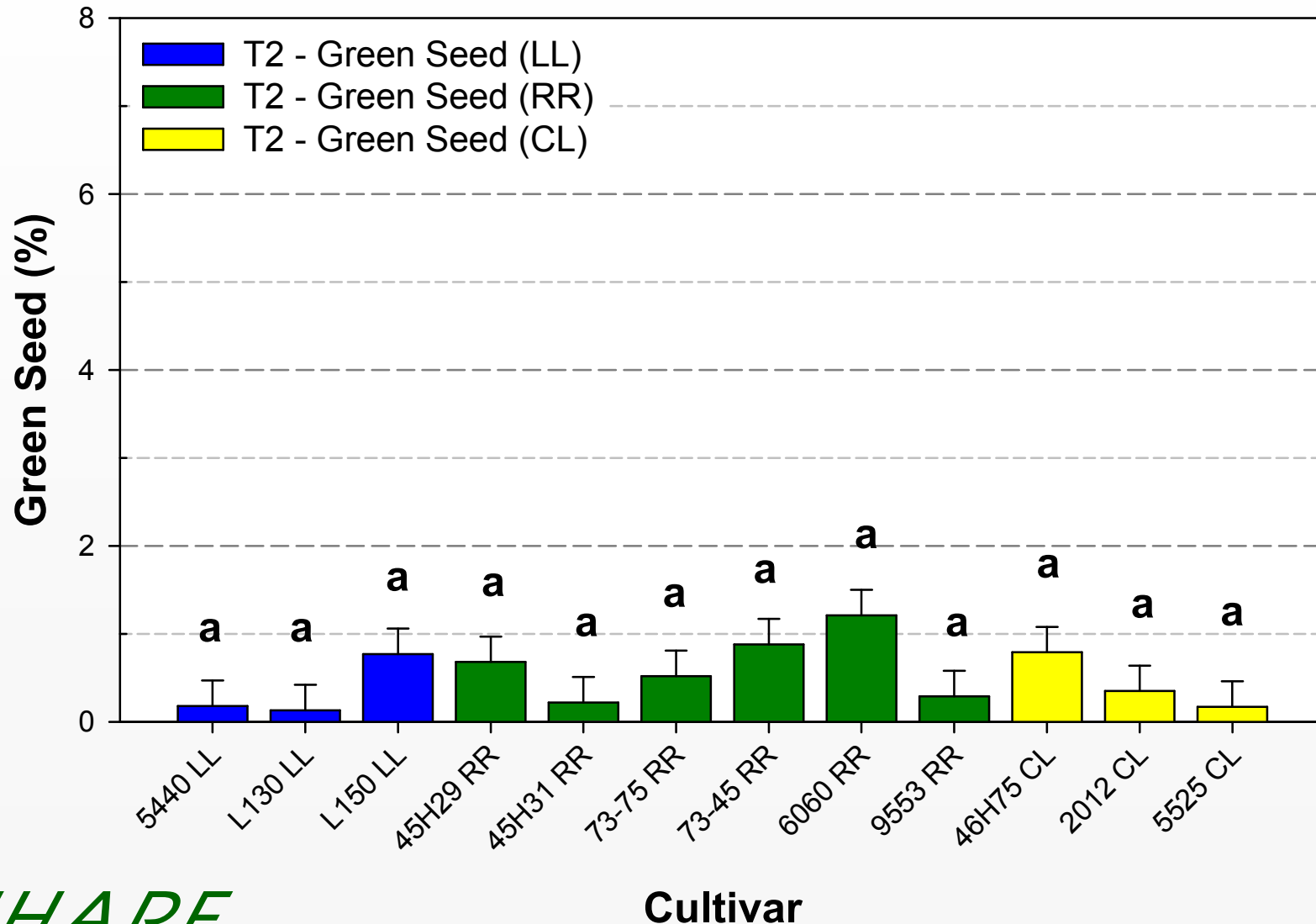
# Percent Green Seed (early-optimal timing)

All Locations (2011)



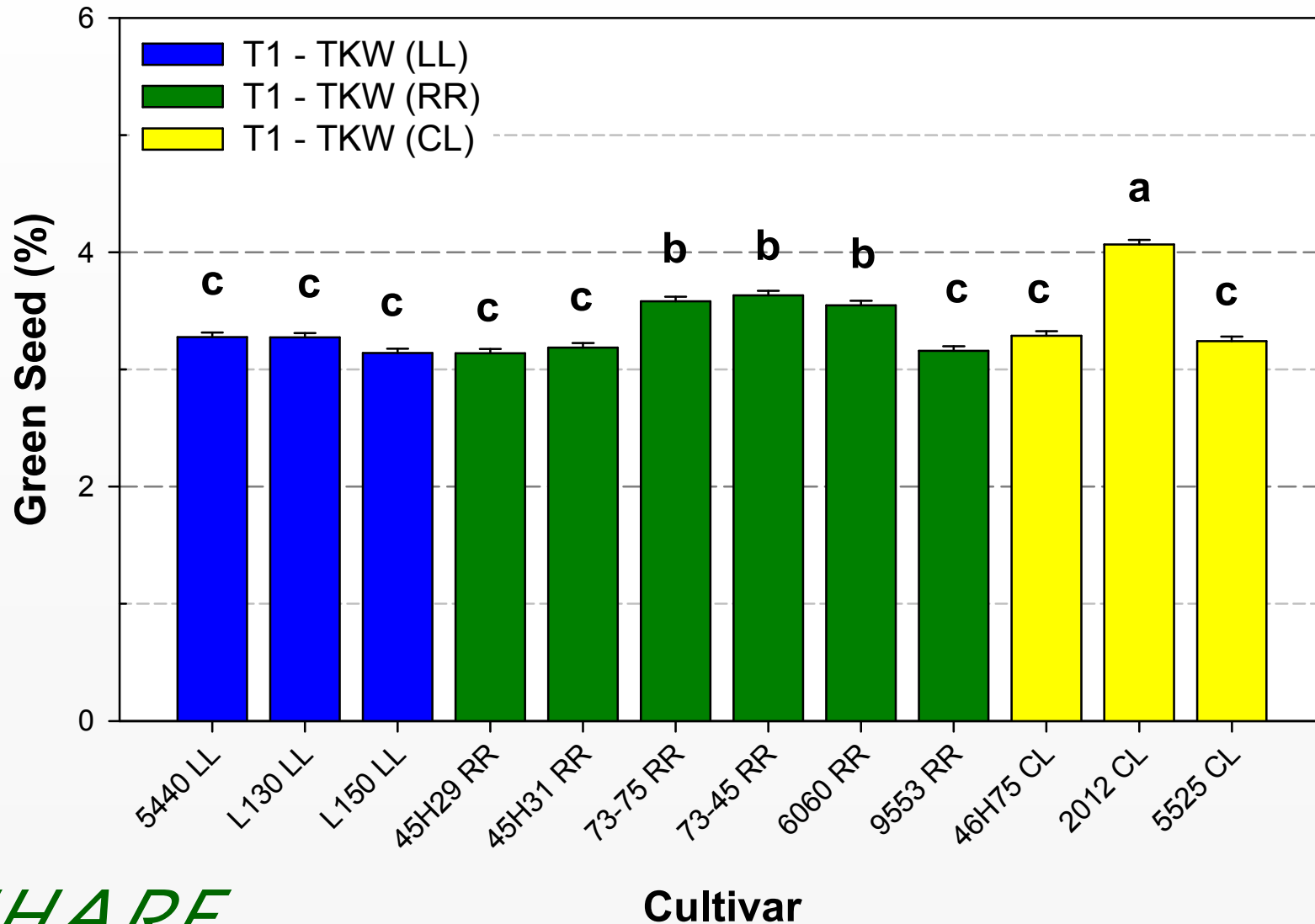
# Percent Green Seed (2-4 weeks past optimal timing)

All Locations (2011)



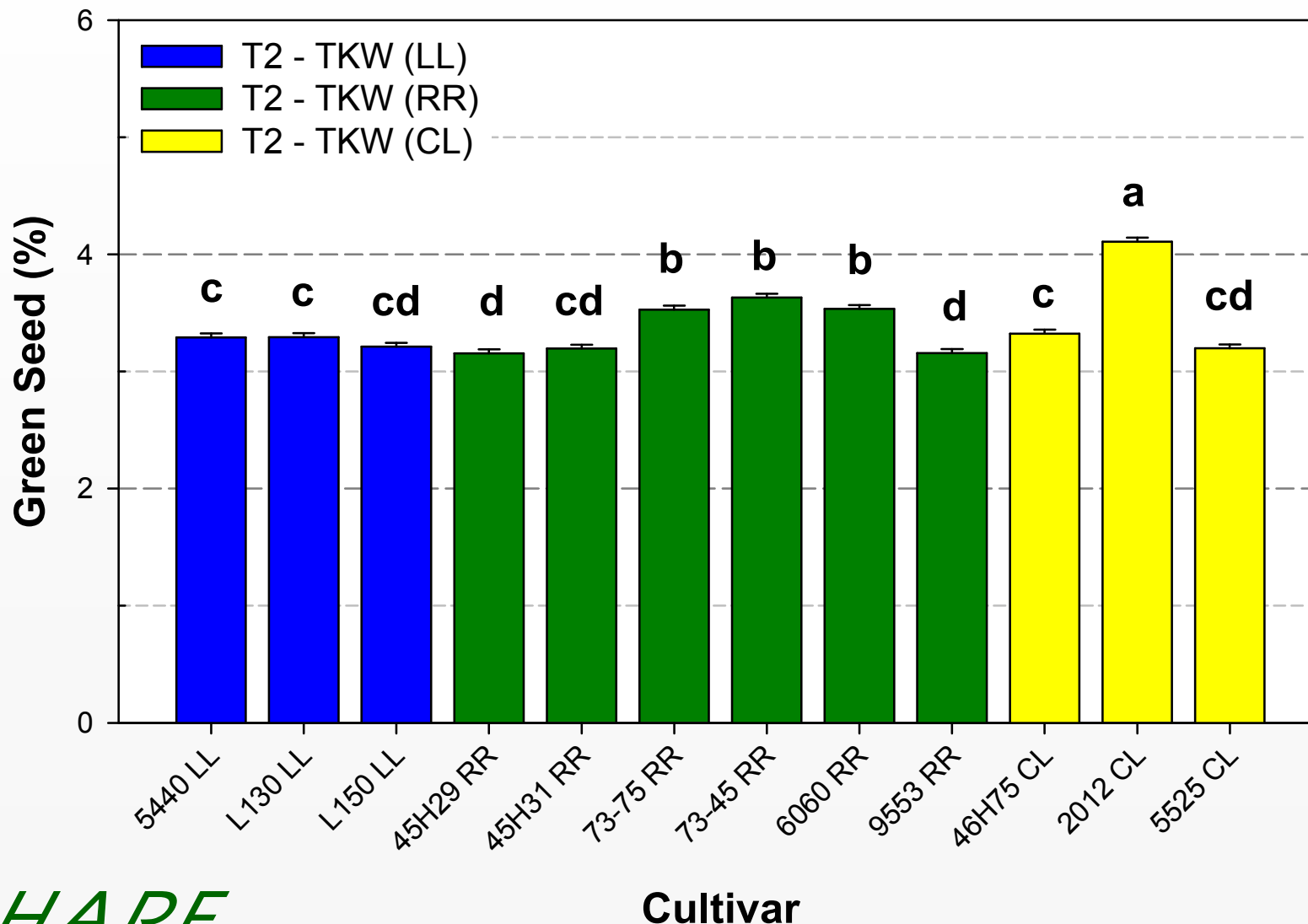
# Seed Size (early-optimal timing)

All Locations (2011)



# Seed Size (2-4 weeks past optimal timing)

All Locations (2011)



# Take-Home Messages

- **Growers should not be afraid to try straight-combining canola but must understand the risks**
  - Harvesting at optimal stage critical relative to swathed canola
  - Limit straight-cut acres to what is manageable & swath the rest
  - Header extensions may be worthwhile investment for growers who are serious about straight-combining canola
- **Variety matters!**
  - Significant differences in shatter-resistance demonstrated amongst *napus* varieties
  - More information on relative shattering resistance of varieties would be useful to growers planning to straight-combine
- **Pod sealants and/or desiccants**
  - Pod sealants unlikely to be cost effective over time but a yield benefit was observed 13% of the time (leave a check-strip!!)
  - Pre-harvest glyphosate is not a necessity but can accelerate harvest and provide weed control benefits into the next season

# ACKNOWLEDGMENTS



Saskatchewan  
Ministry of  
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AGRICULTURAL DEMONSTRATION OF TECHNOLOGIES & PRACTICES



# Thank You!



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