To Spray or Nay?

Pre-Harvest Options for Straight-Combined Canola

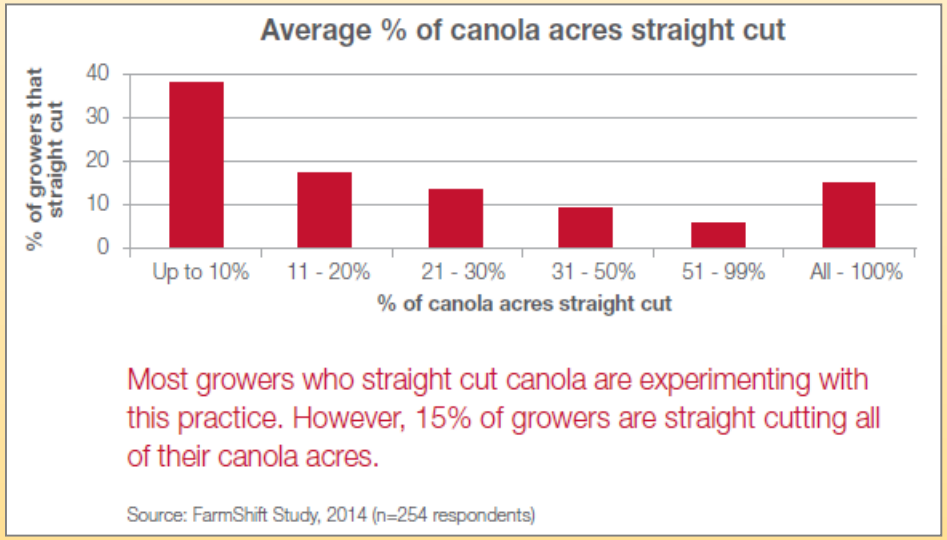
Chris Holzapfel, MSc, PAg

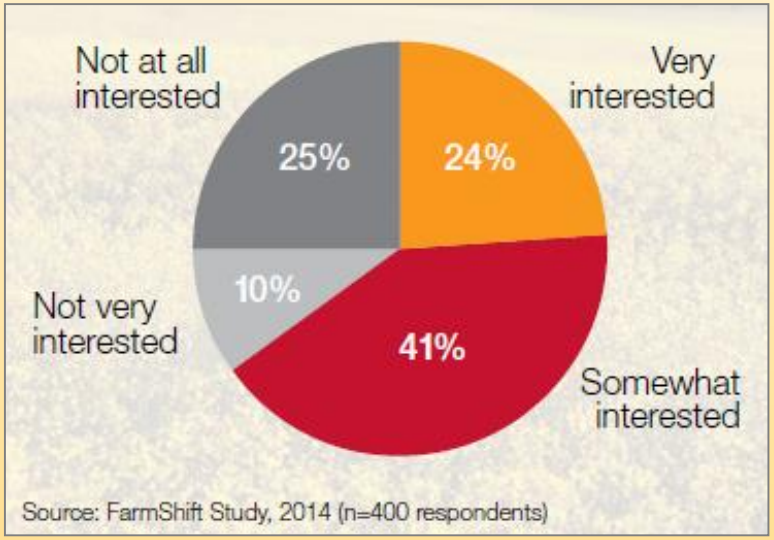
How much canola is straight-cut?

2009 Canola Council of Canada Survey

- 14.6% of growers straight-combine at least some canola
- 13.8% would like to start this practice or increase straight-combined acres

2014 FarmShift Survey (BASF)

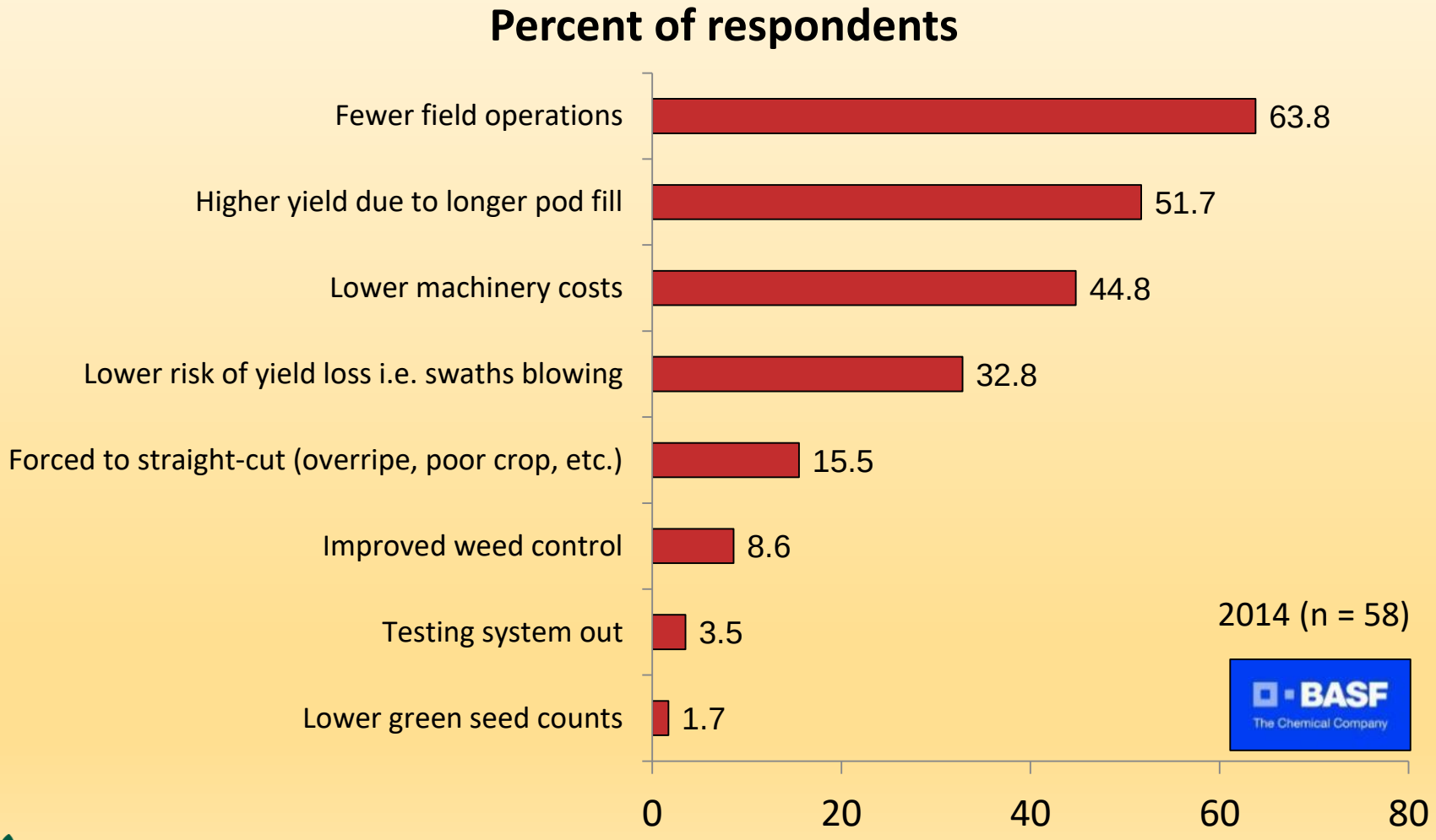




2018 Stratus Market Research (BASF)

- Estimated nearly 40% of Canadian canola acres straight cut at harvest
- Prediction of 50% for 2020? (https://agro.basf.ca/basf_solutions/seedsandsystems/invigor_pod_shatter_west.html)

Reasons for straight-combining from canola growers who were doing so in 2014 (Farmshift-BASF)



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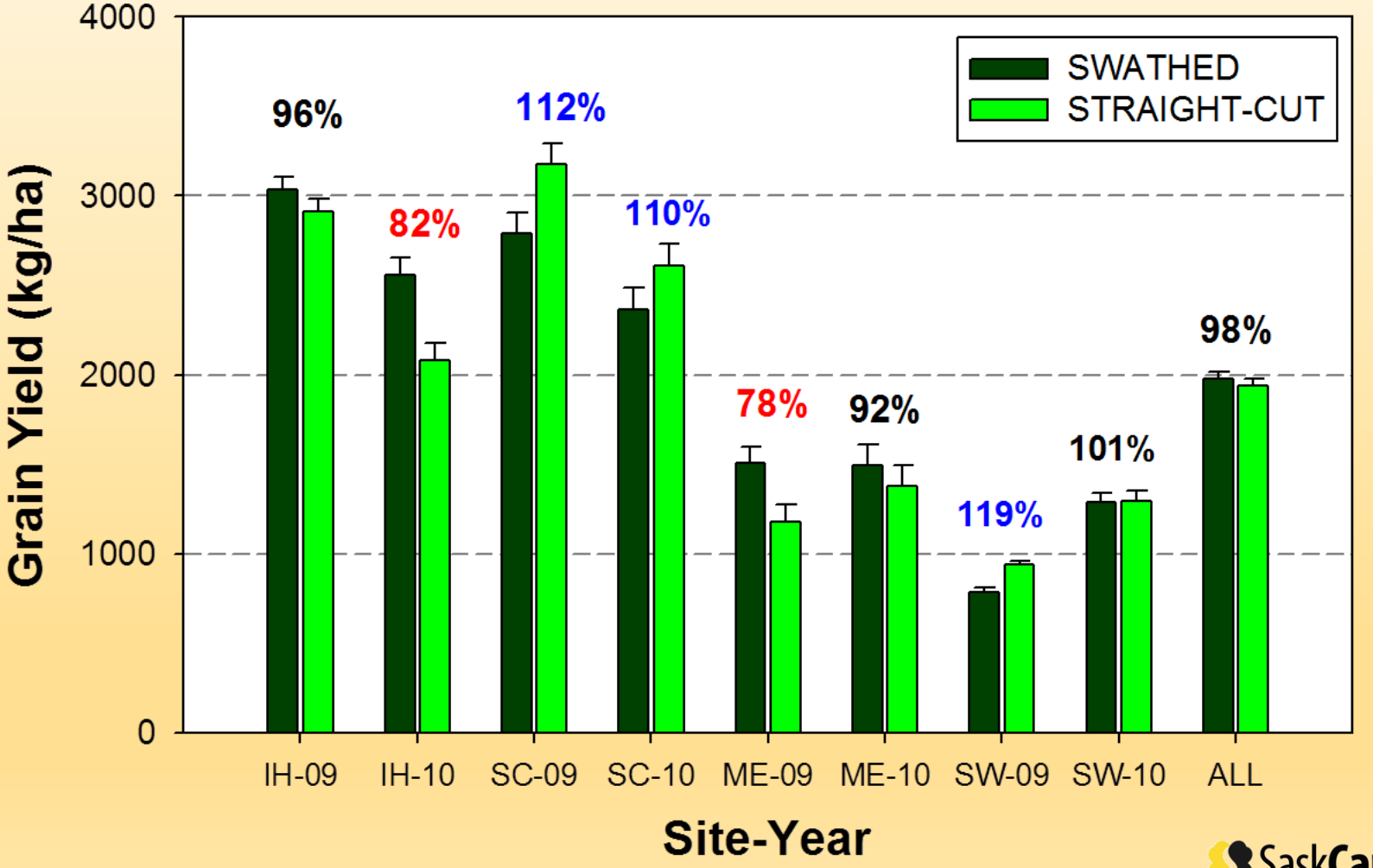
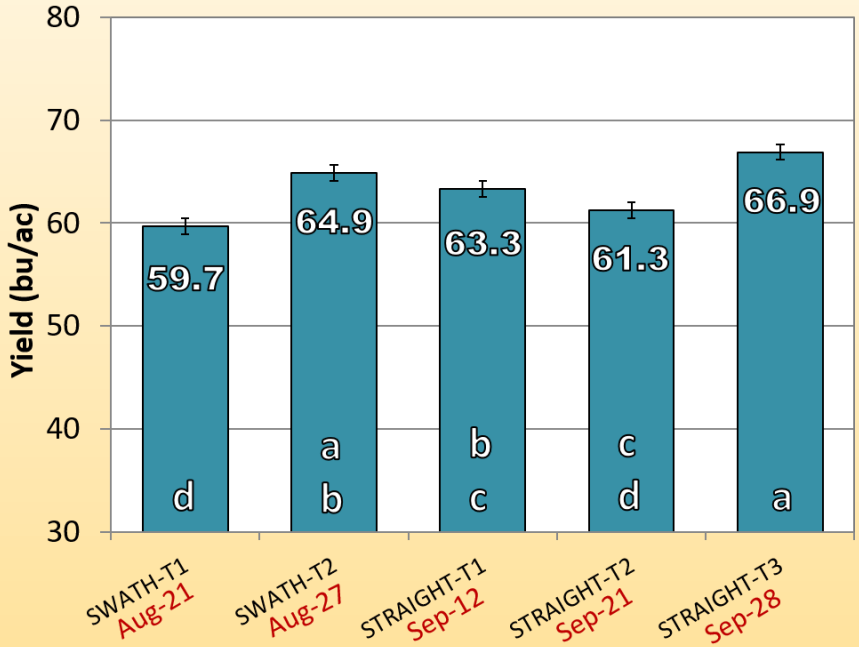
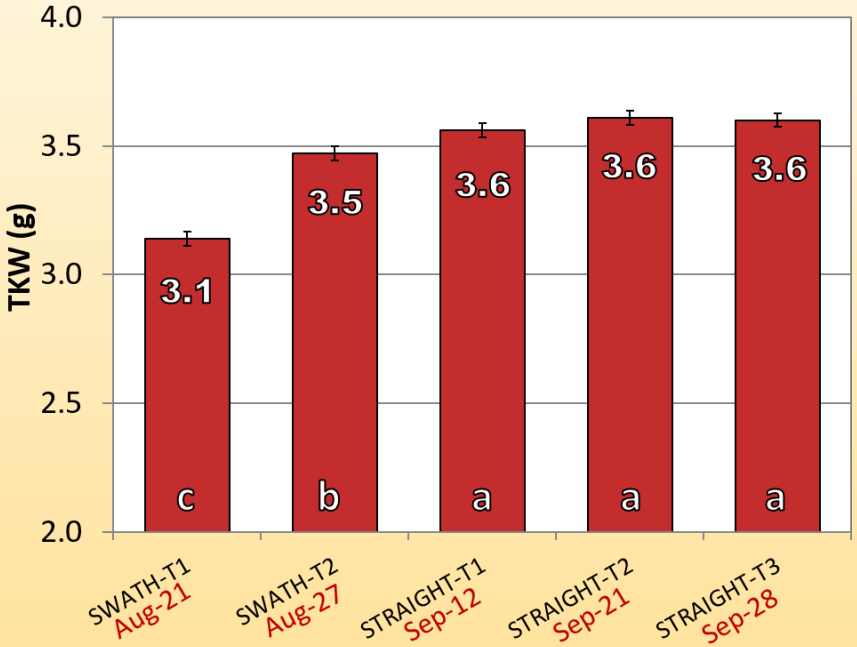
How do yields between swathed & straight-cut canola compare in plots?
(PRIOR TO MODERN POD-SHATTER RESISTANCE)



Early Swathing = Smaller Seeds = Lower Yields (Indian Head 2013 – variety 5440)





- Postponing swathing from Aug 21 (<30% SCC) to Aug 27 (~50% SCC) increased yield by 8%, largely attributed to 10% increase in seed size
- Swathing canola at a more optimal growth stage (60-70% SCC) should not impact either seed size or yield

LL Canola Pre-Harvest Options Demo

(ADOPT – Indian Head 2016)

Treatments:

1. **Untreated**
2. **0.67 l/ac Roundup Transorb HC**
   ~60-65% SCC, applied Aug. 29 (242)
3. **59 ml/ac Heat LQ + 0.2 l/ac Merge**
   ~ 70-75% SCC, applied Sep. 2 (246)
4. **0.67 l/ac Roundup + 59 ml/ac Heat LQ + 0.2 l/ac Merge**
   ~ 70-75% SCC, applied Sep. 2 (246)
5. **0.70 l/ac Reglone + 0.1% Agrol 90**
   ~ 90-95% SCC, applied Sep. 8 (254)

- All treatments applied in 20 U.S. gal/ac solution volume
- Variety – L140P; Location – Indian Head, SK

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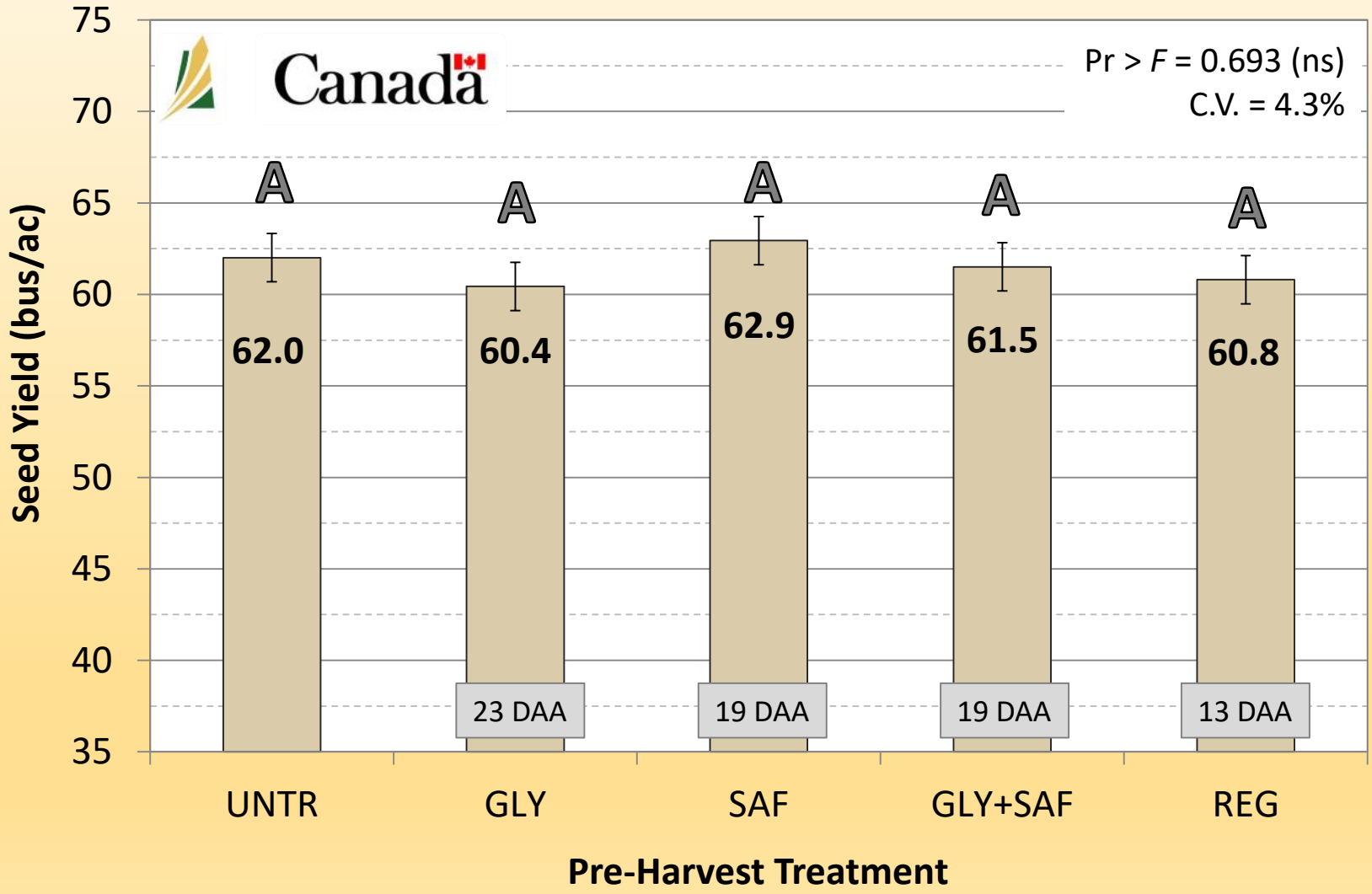
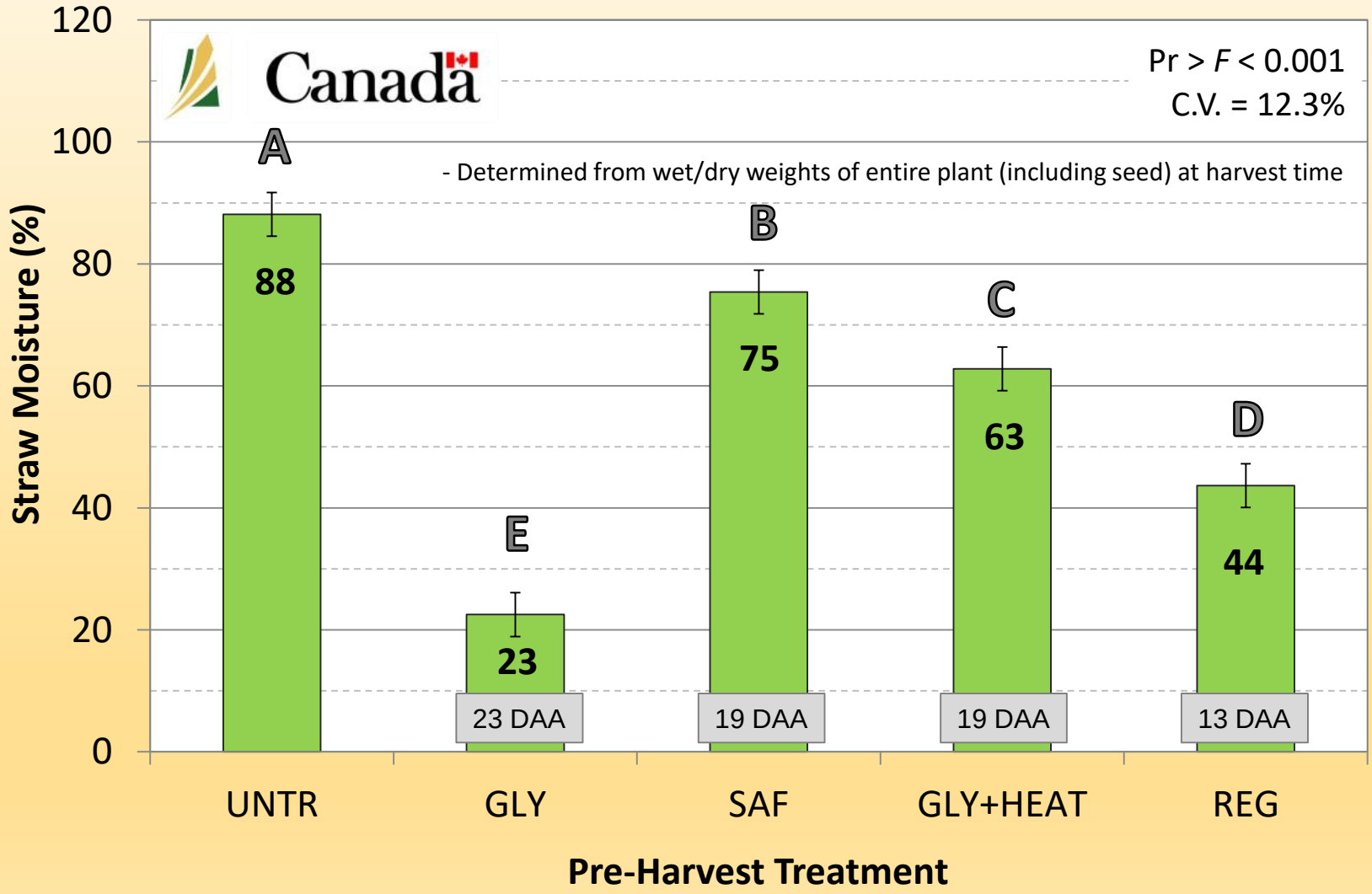
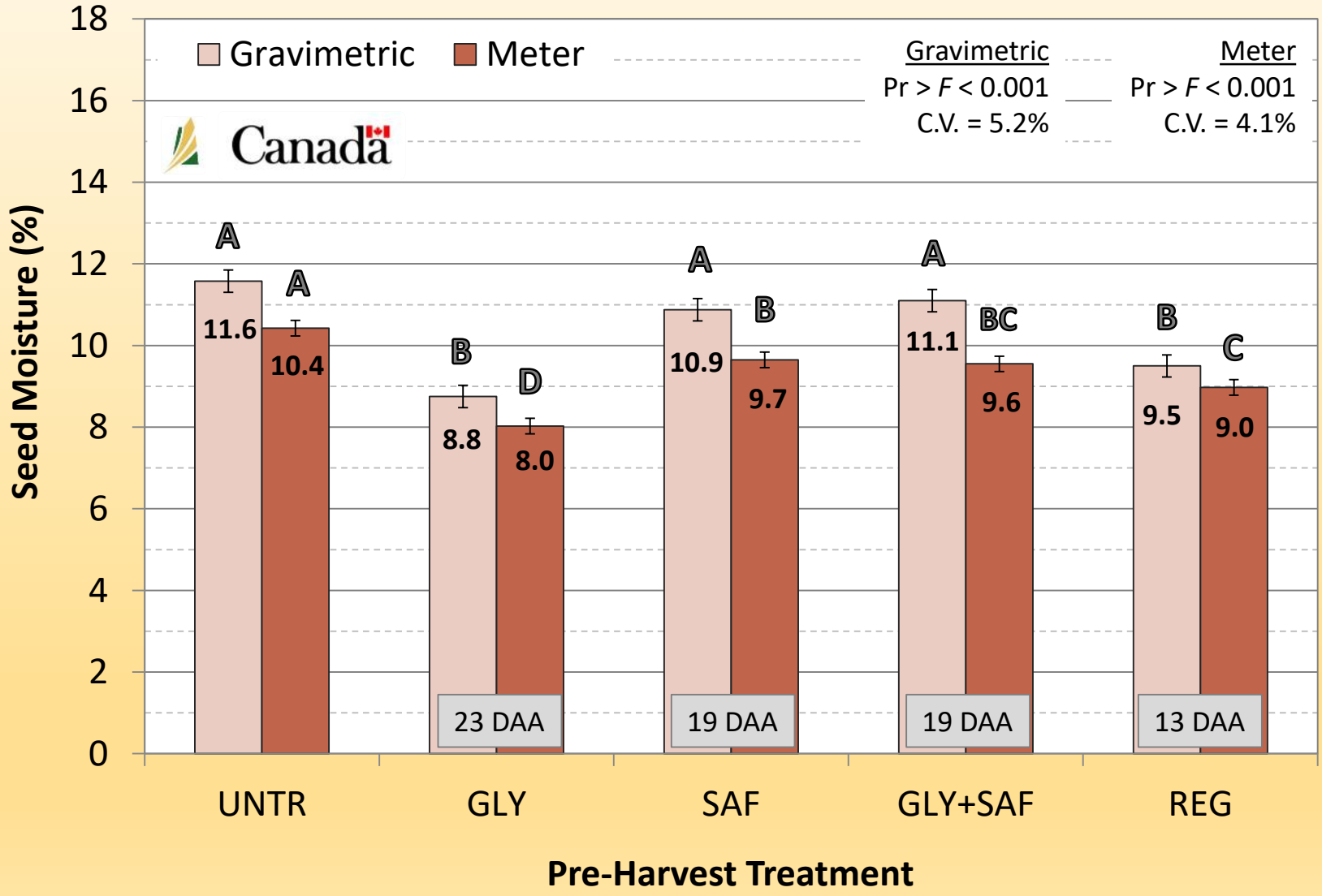
Effects on Canola Seed Yield (IH-16)



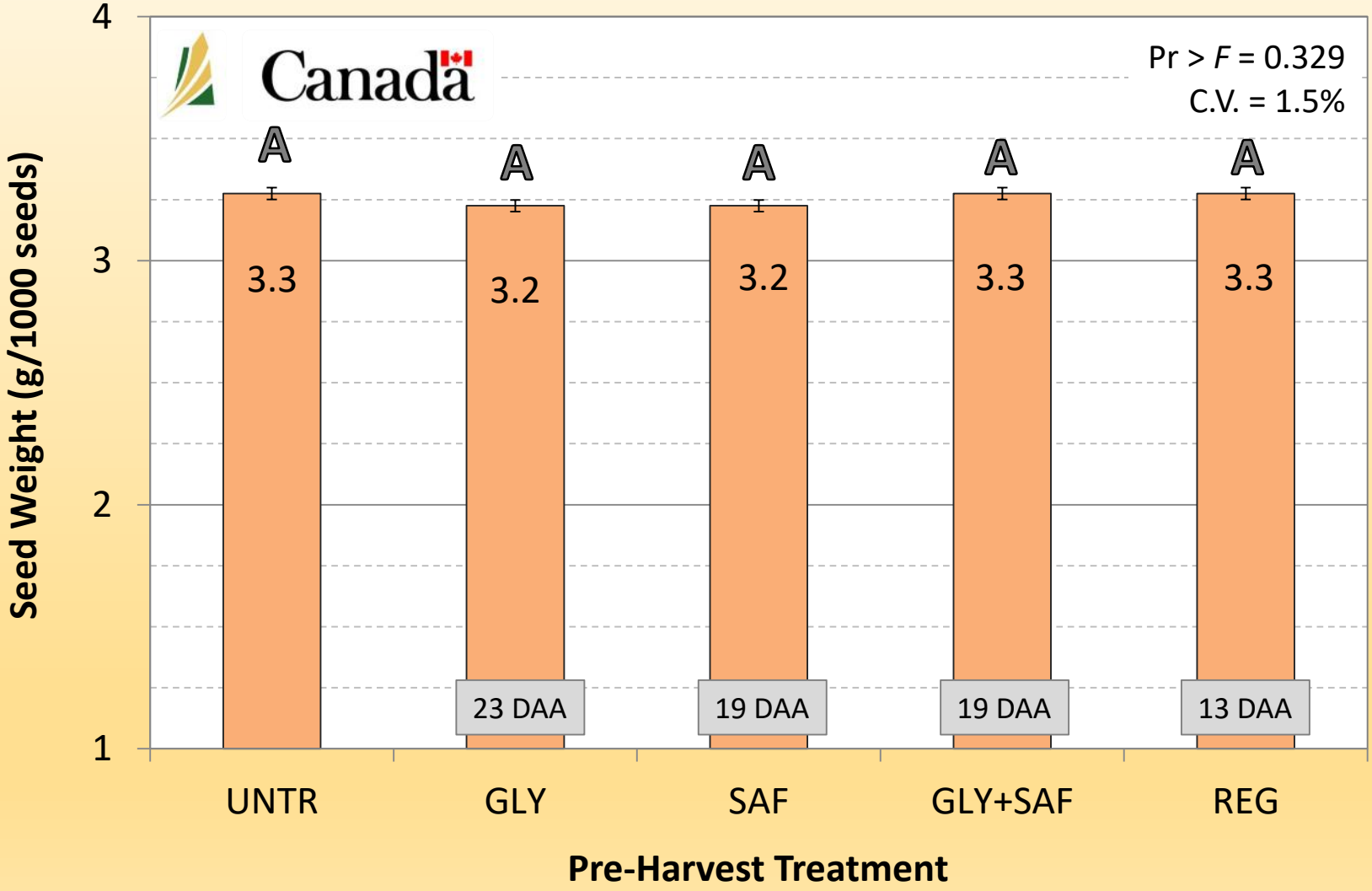
Effects on Whole Plant Moisture (IH-16)



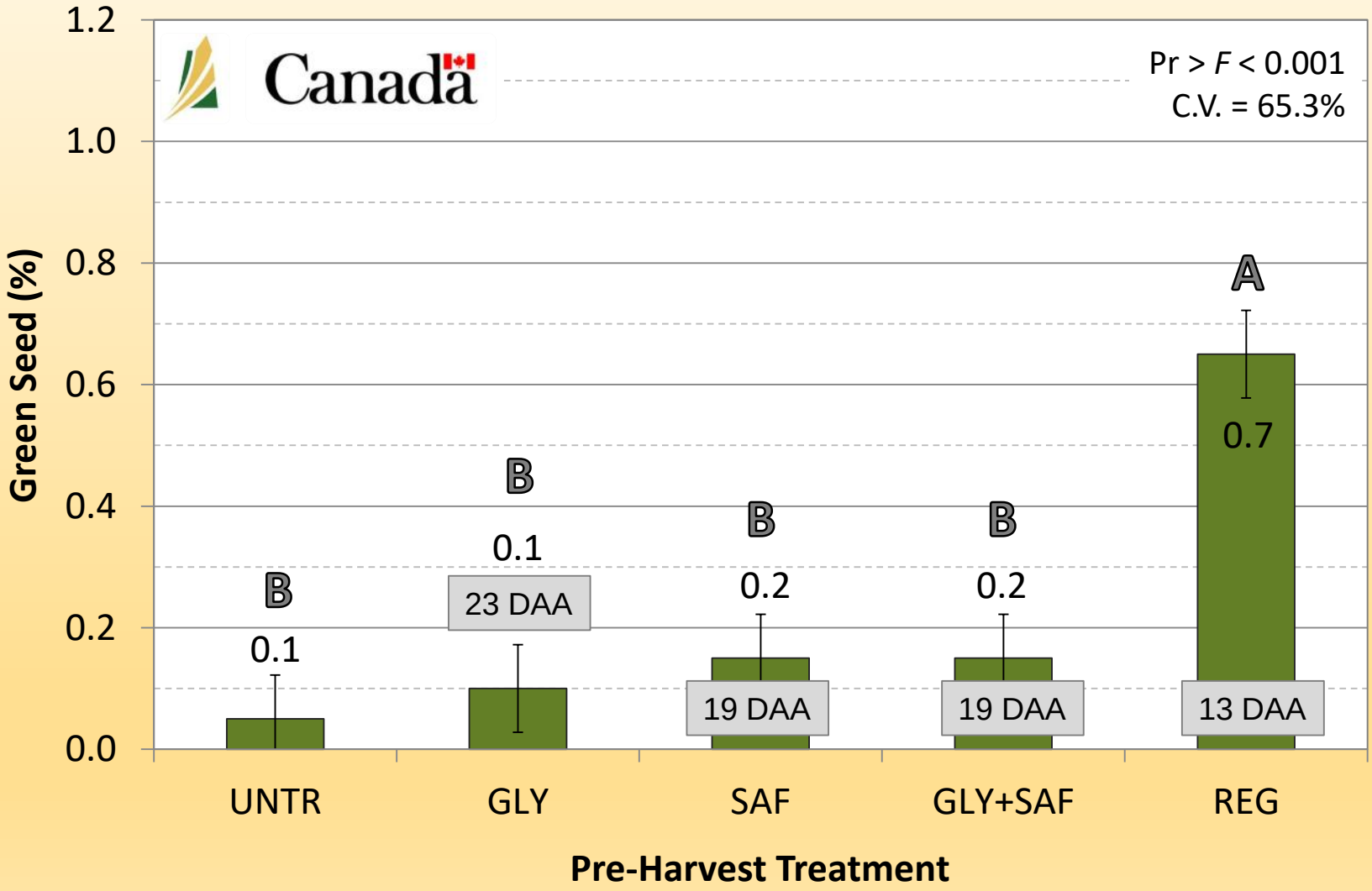
Effects on Seed Moisture (IH-16)



Effects on Seed Weight (IH-16)



Effects on Green Seed (IH-18)



Pre-Harvest Options for Straight-Combined Canola (SCDC-MCGA)

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Evaluation of Pre-Harvest Options for Straight-Combined Canola

Locations: Indian Head, Melita, Melfort, & Scott (2017-2019)

Treatment Descriptions	
1) LL – untreated	6) RR – untreated
2) LL – glyphosate (890 g ai/ha) [Z]	7) RR – gluf. ammonium (408 g ai/ha) [YX]
3) LL – saflufenacil (50 g ai/ha) [Z]	8) RR – saflufenacil (50 g ai/ha) [Z]
4) LL – glyphosate (890 g ai/ha) + saflufenacil (50 g ai/ha) [Z]	9) RR - glyphosate (890 g ai/ha) + saflufenacil (50 g ai/ha) [Z]
5) LL – diquat (40 g ai/ha) [Y]	10) RR – diquat (40 g ai/ha) [Y]

LL – glufosinate ammonium tolerant; RR – glyphosate tolerant

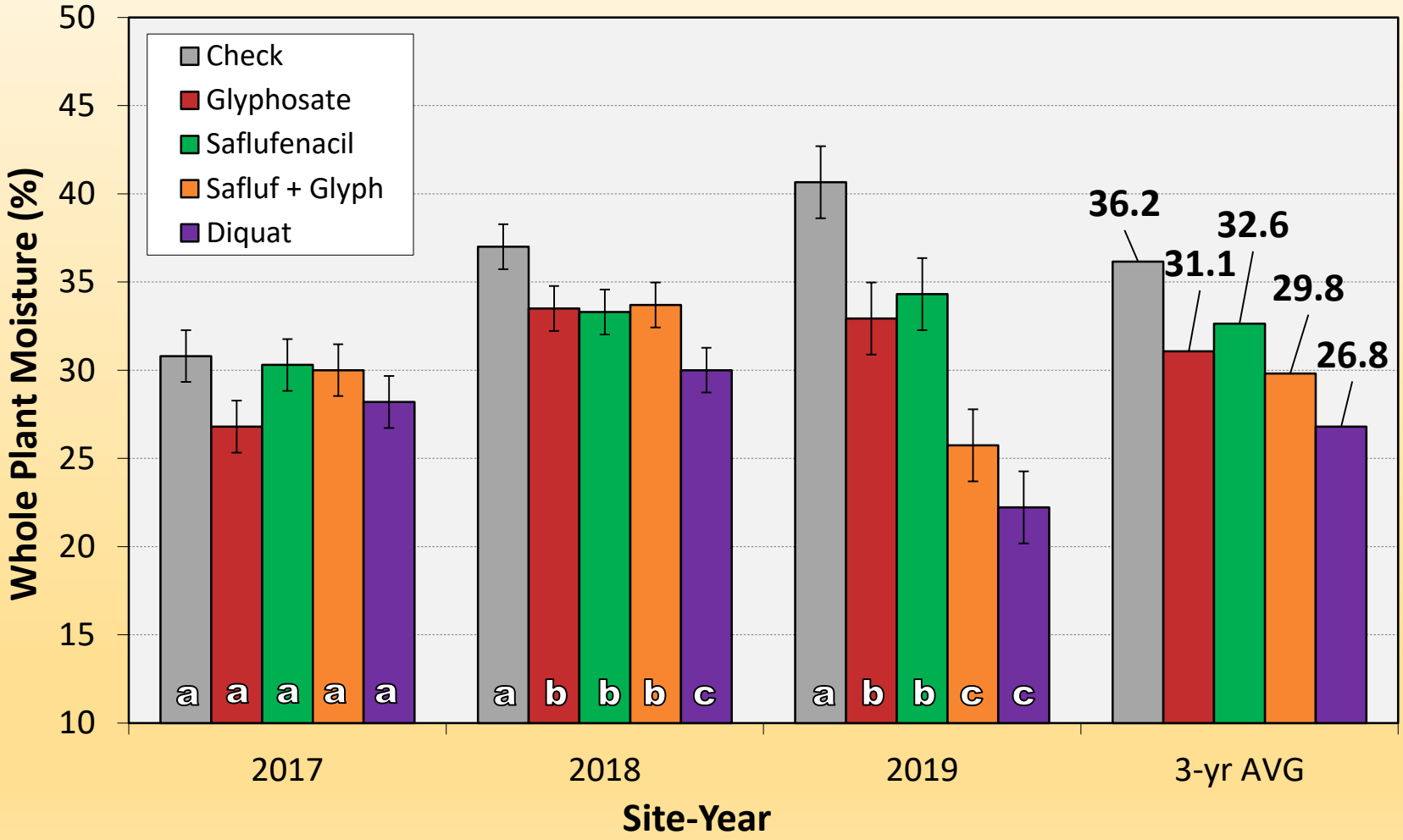
[Z] applied at 60-75% seed colour change; [Y] applied at 90% seed colour change

[X] not a registered option for pre-harvest applications on canola

Data Collected: Visual stem dry-down ratings, whole plant and seed moisture at harvest, seed size, percent green seed, yield

NOTE: Data for this project is still being summarized, certain results in this presentation are still considered preliminary

Pre-Harvest Application Effects on Plant Moisture at Indian Head (Liberty Link®)



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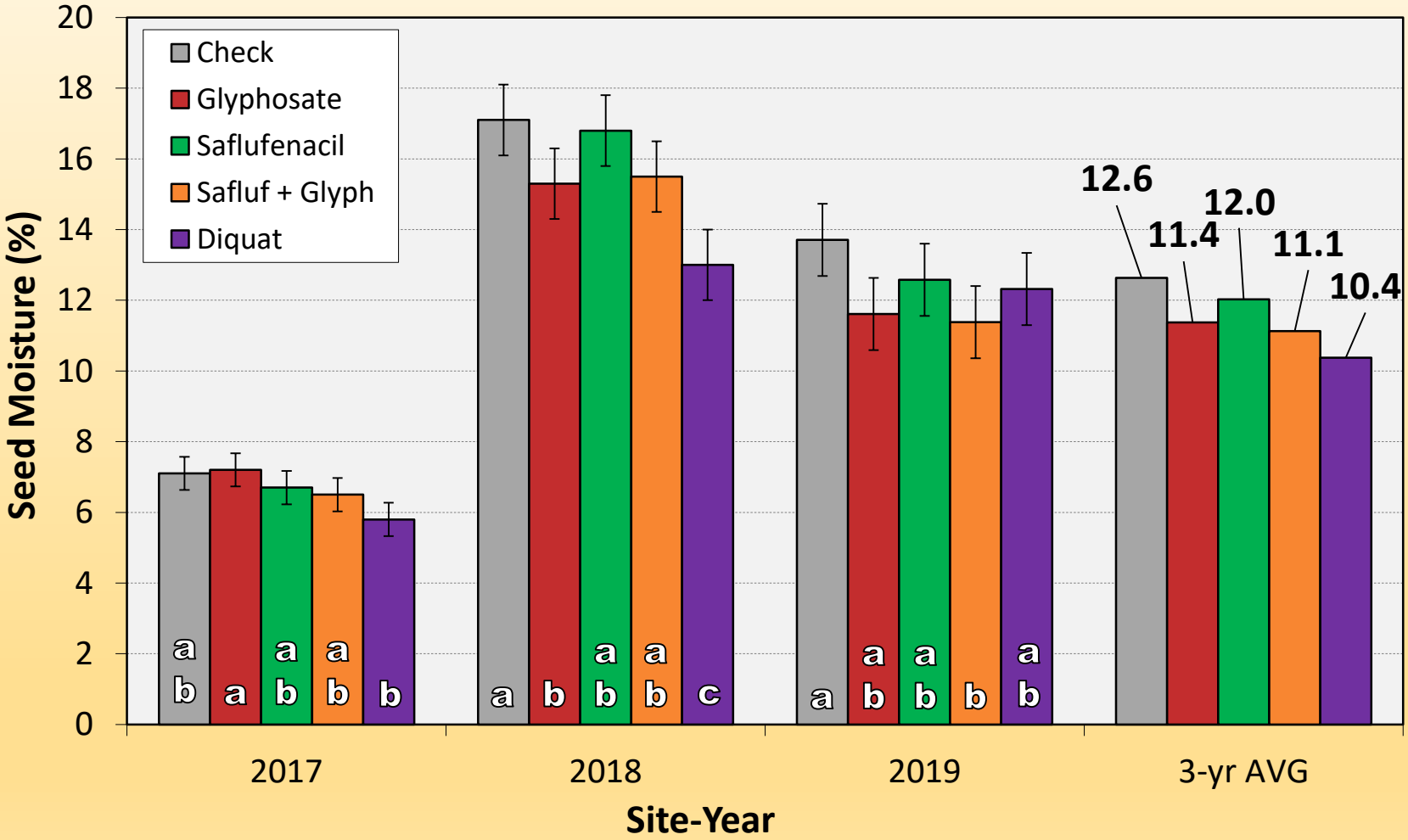

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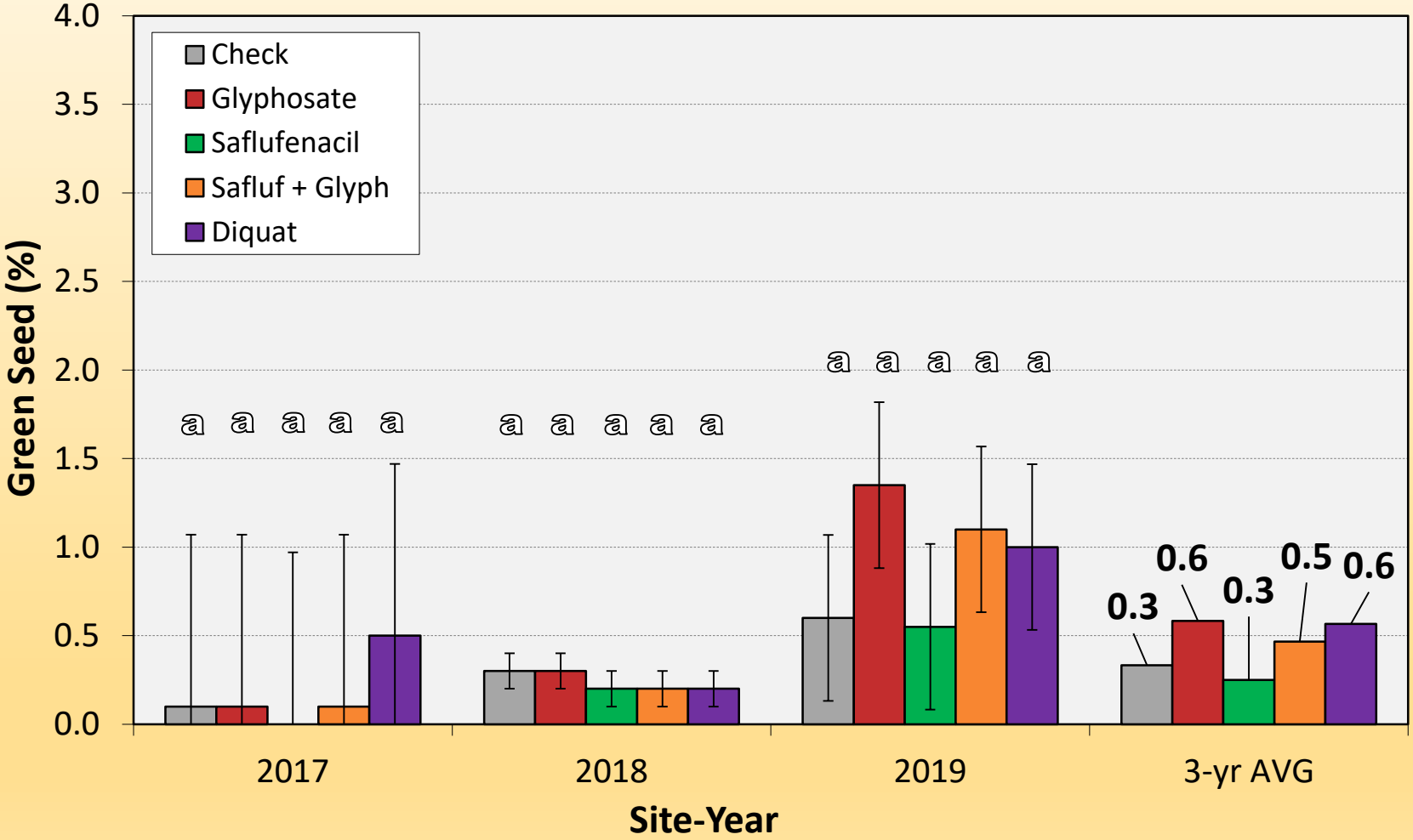
Pre-Harvest Application Effects on Green Seed at Indian Head (Liberty Link®)



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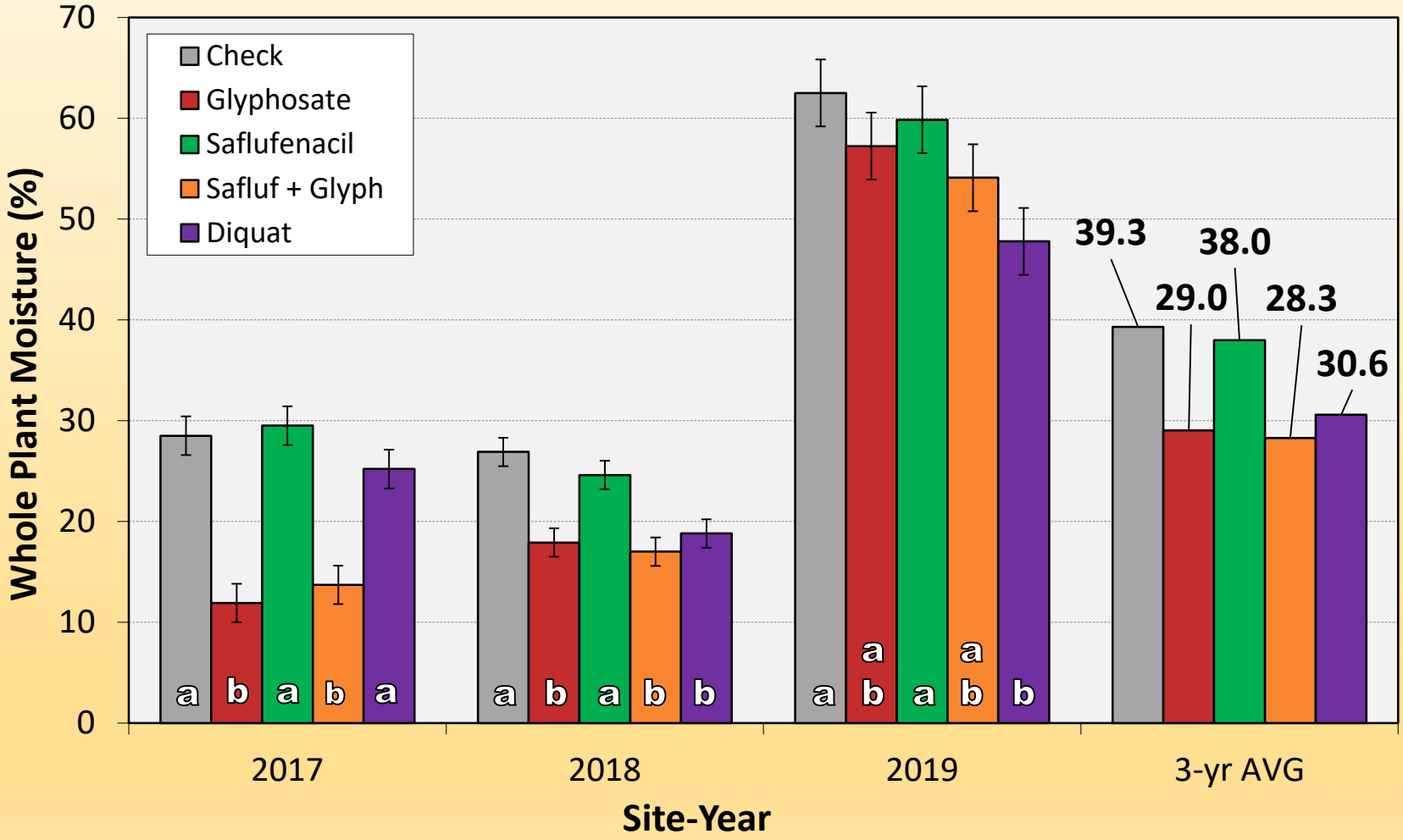
Pre-Harvest Application Effects on Plant Moisture at Scott (Liberty Link®)



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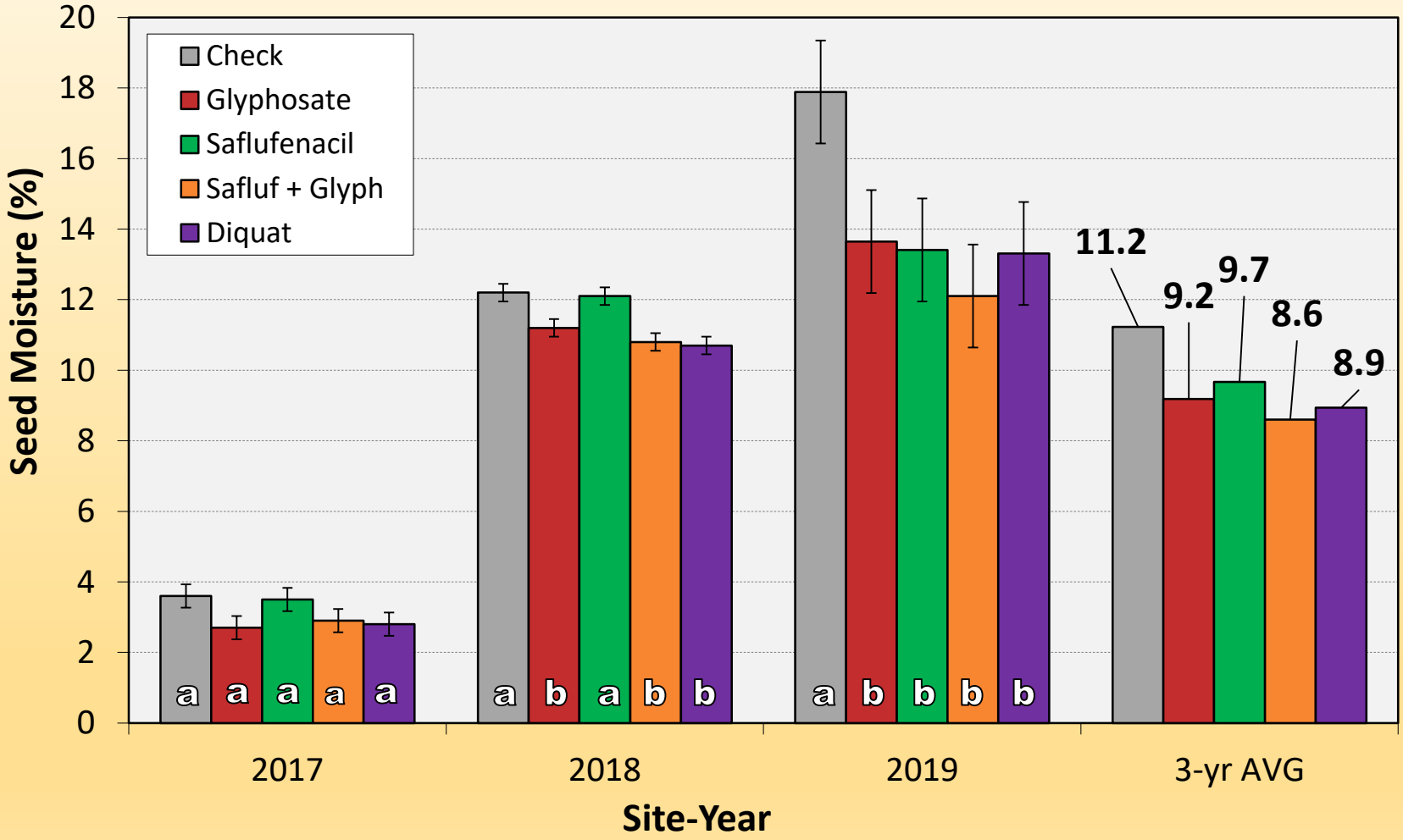
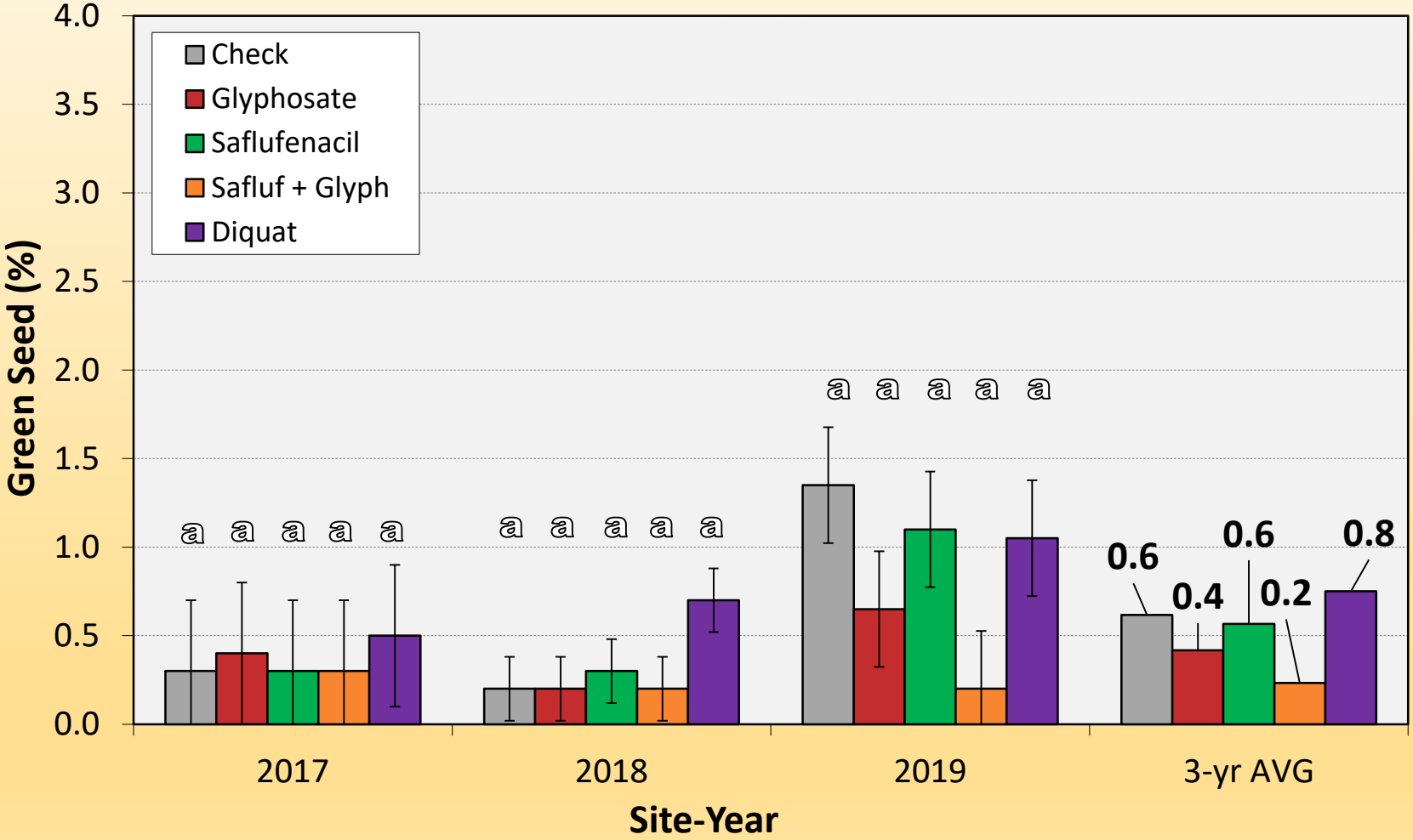


Pre-Harvest Application Effects on Green Seed at Scott (Liberty Link®)



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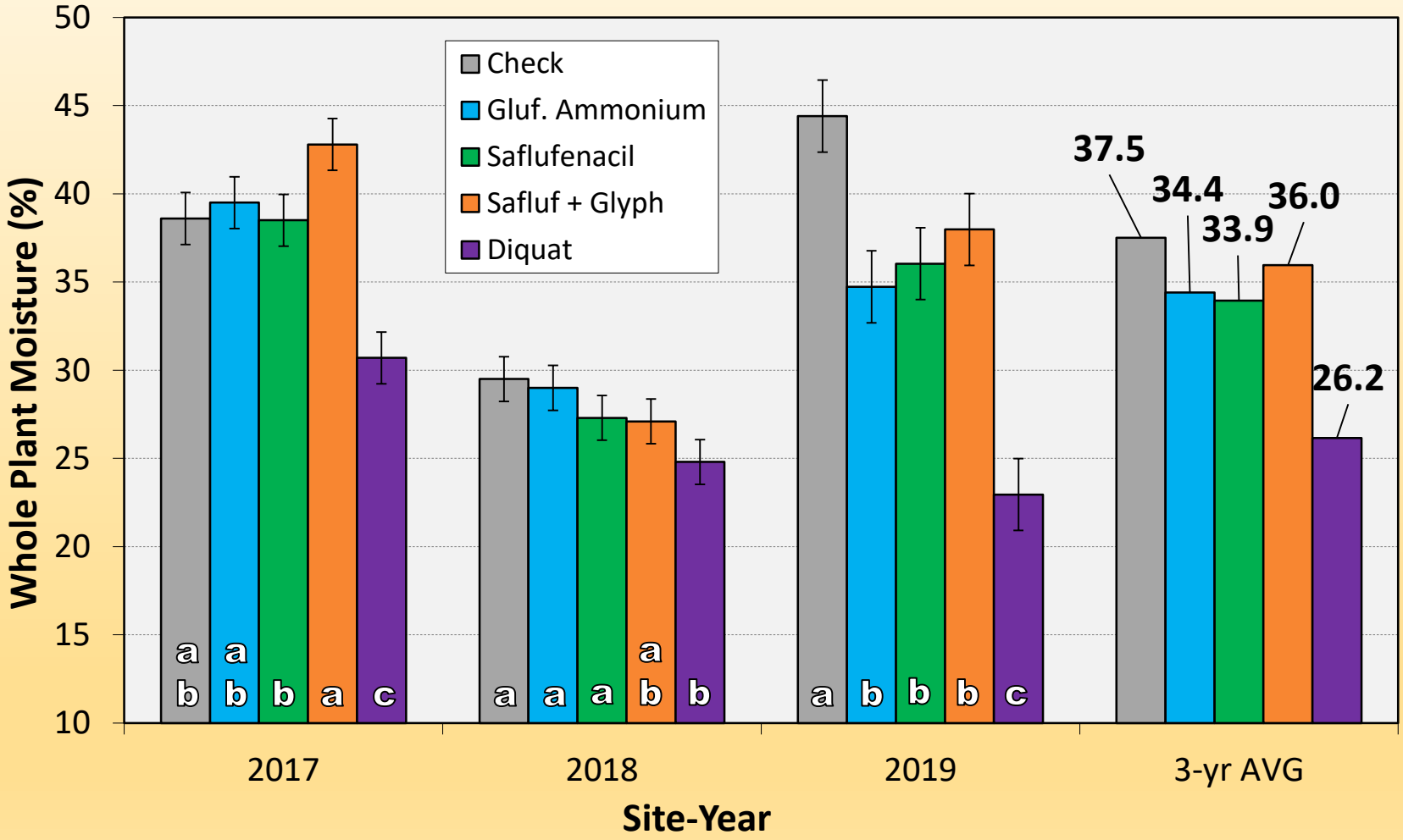
Pre-Harvest Application Effects on Plant Moisture at Indian Head (Roundup Ready®)



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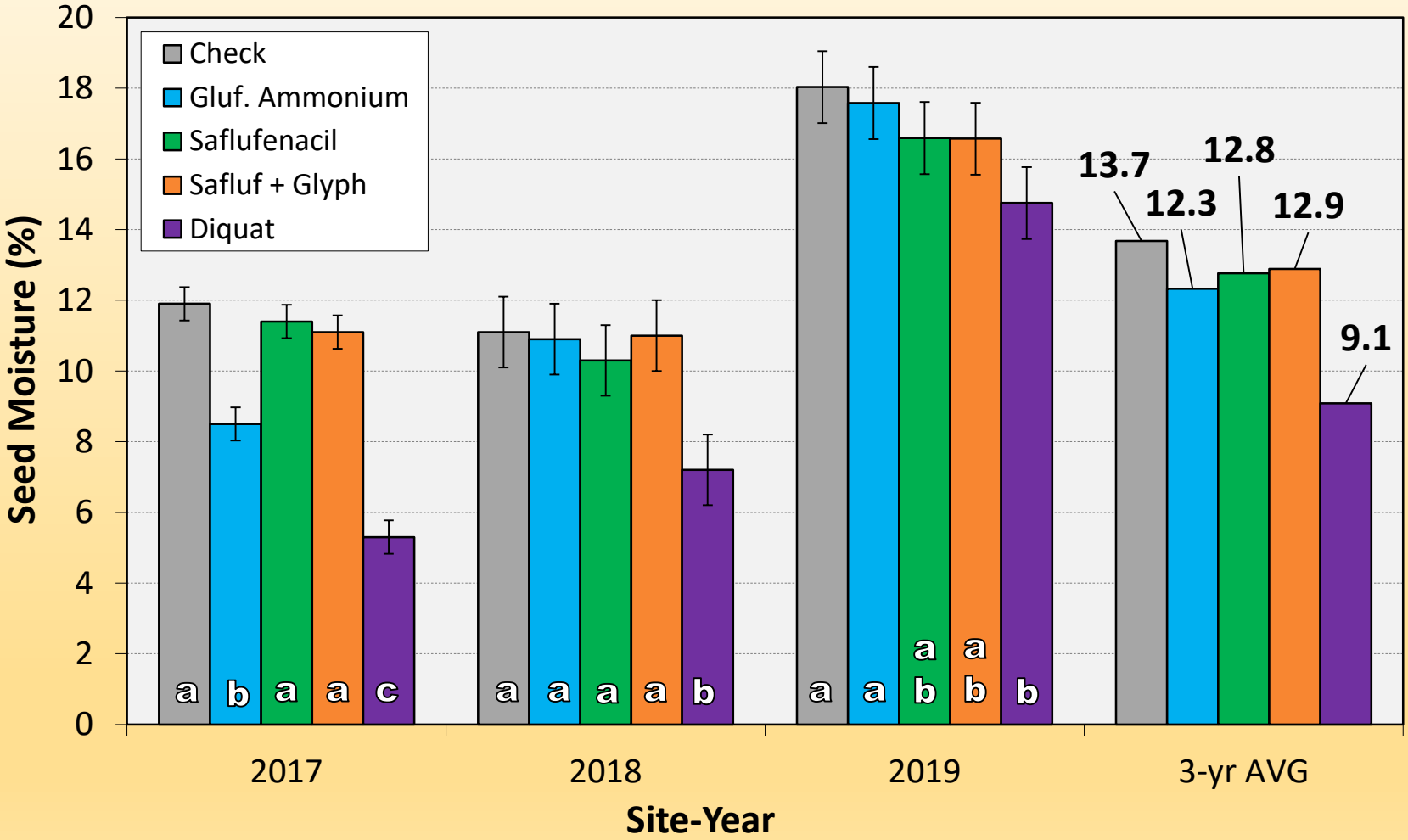

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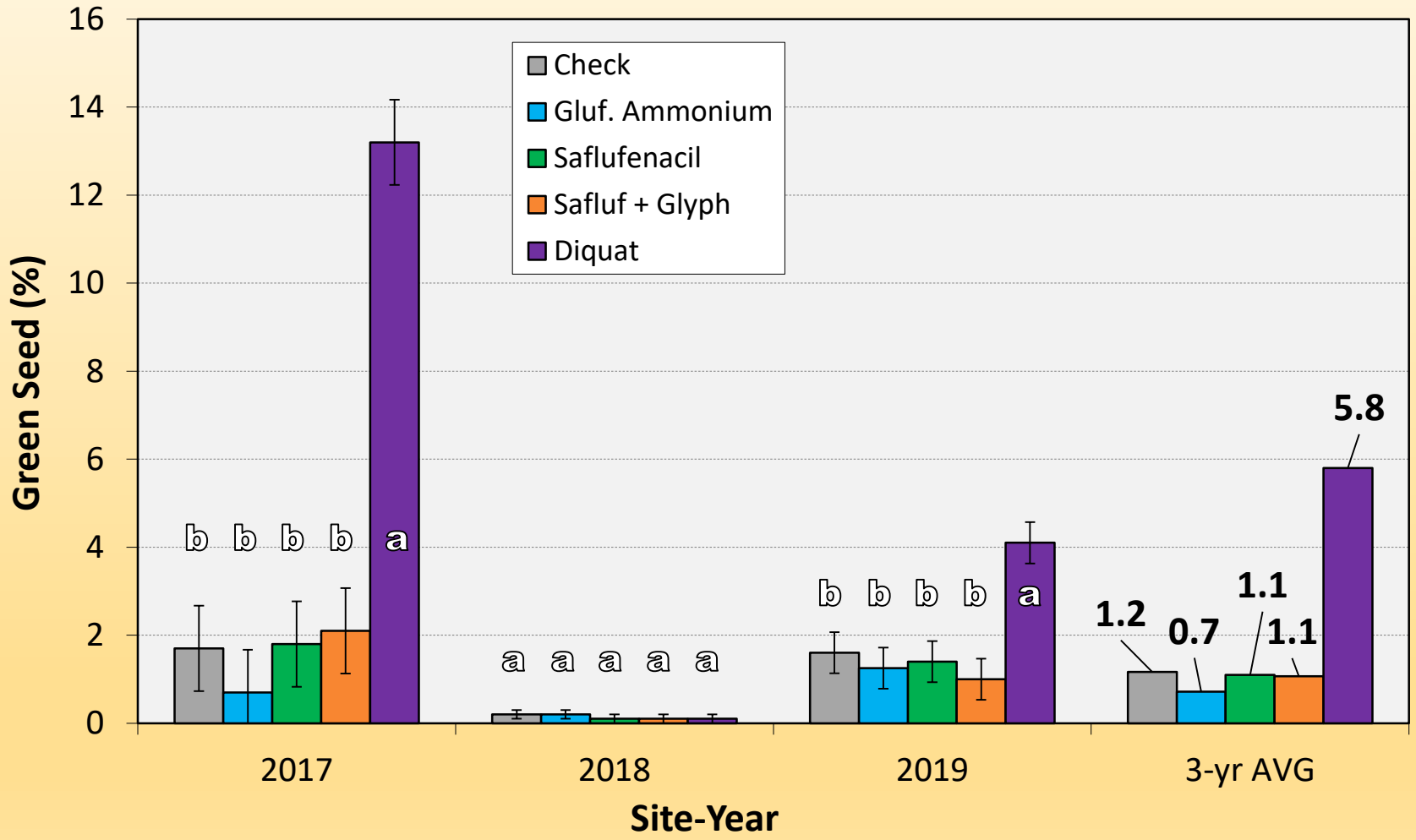

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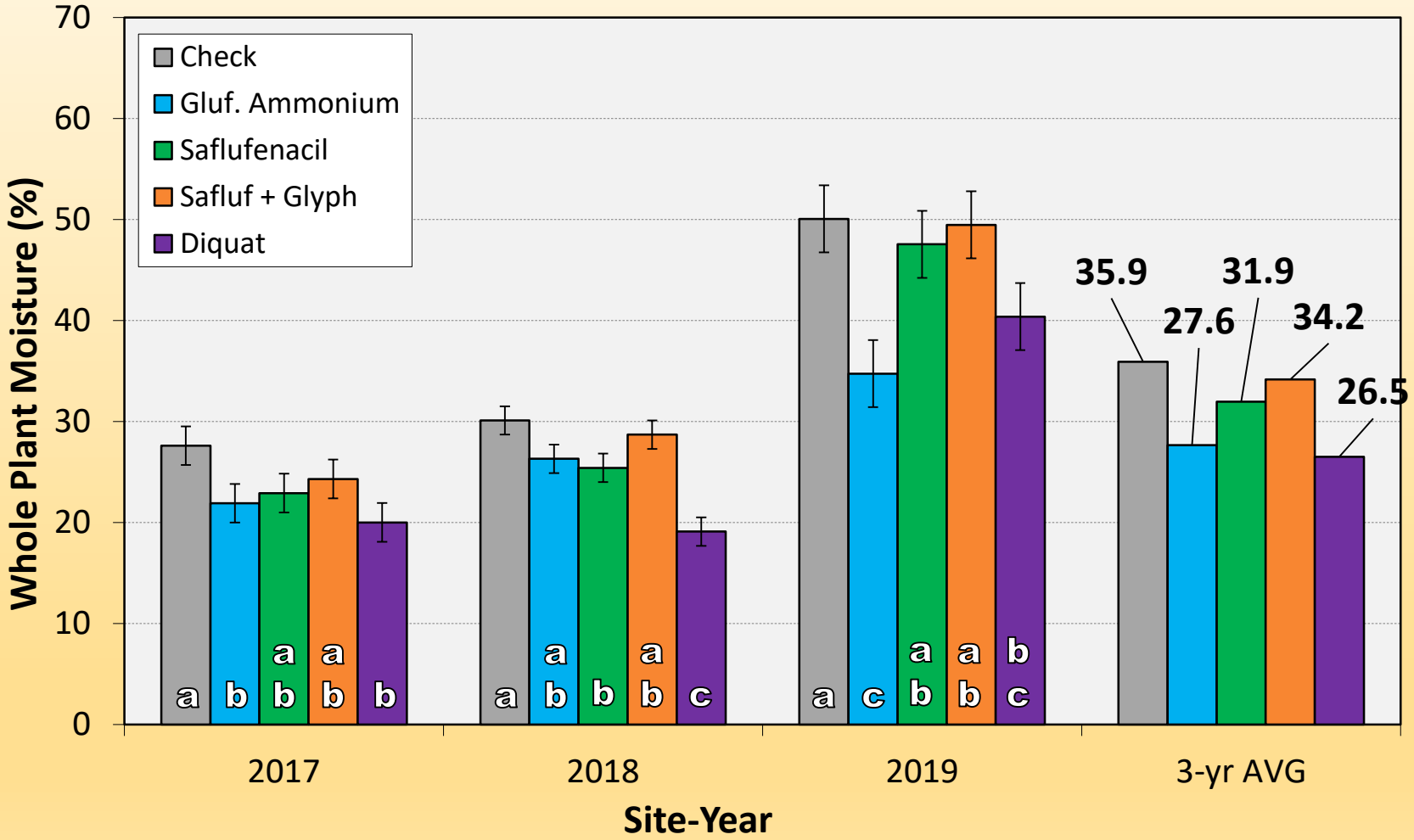

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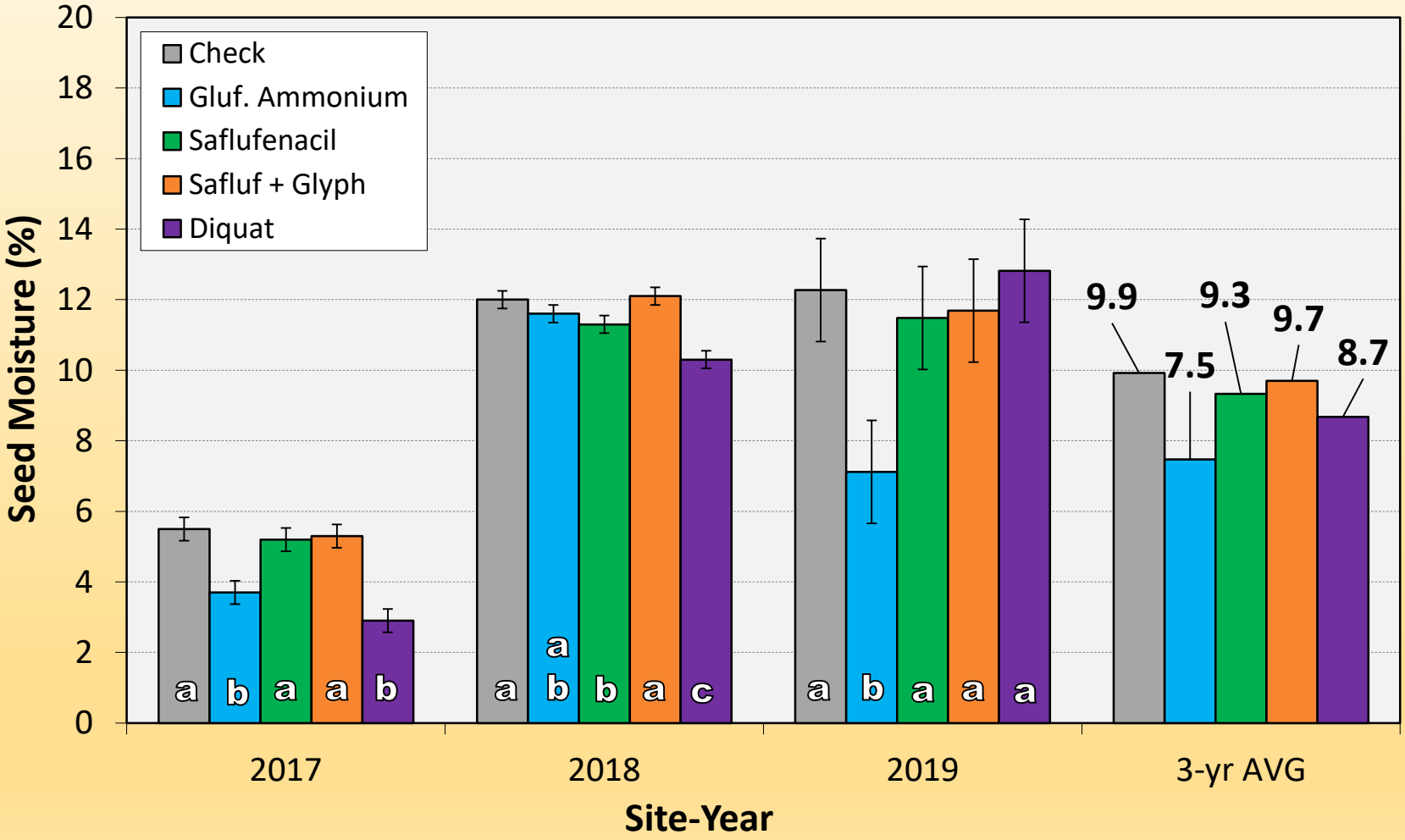

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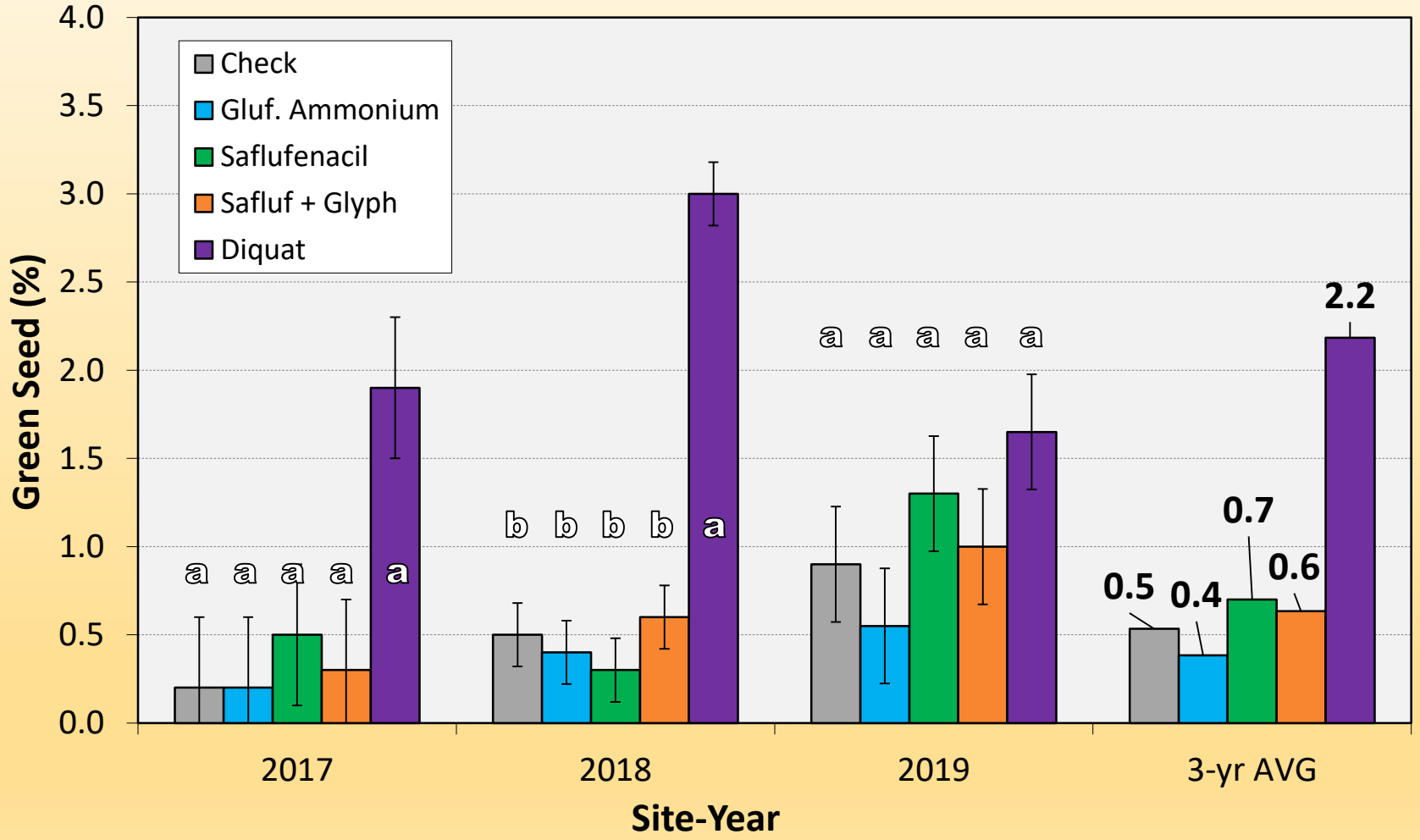

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Results Summary for Plant & Seed Dry-down

Comparison	Whole Plant Moisture		Seed Moisture	
	$p \leq 0.05$	$p \leq 0.10$	$p \leq 0.05$	$p \leq 0.10$
	---------- (# of responses sites / # of total sites) ----------			
Untreated vs Treated **(LL & RR)**	7/12 (58%)	8/12 (67%)	8/12 (67%)	9/12 (75%)

[Z] Not a registered application

[Y] Excludes treatments where glyphosate was tank-mixed with saflufenacil, mostly to avoid confounding results for LL canola

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Untreated vs Glyphosate **(LL only)**	7/12 (58%)	8/12 (67%)	5/12 (42%)	6/12 (50%)

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Untreated vs Glufosinate Ammonium [Z] **(RR only)**	3/11 (27%)	5/11 (45%)	4/11 (36%)	4/11 (36%)

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Untreated vs Saflufenacil [Y] **(LL & RR)**	4/12 (33%)	4/12 (33%)	1/12 (8%)	3/12 (25%)

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Untreated vs Saflufenacil [Y] **(LL & RR)**	4/12 (33%)	4/12 (33%)	1/12 (8%)	3/12 (25%)
Untreated vs Diquat **(LL & RR)**	9/12 (75%)	10/12 (83%)	8/12 (67%)	8/12 (67%)

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	Glyphosate		
Pros	• Excellent weed control • Potential for crop dry-down benefits with non-glyphosate tolerant canola • Unlikely to cause grading issues • Lower water volumes okay • Relatively low cost		
Cons	• Slow activity, must be applied relatively early to realize potential crop dry-down benefits • Potential for inconsistent crop dry-down & no such dry-down benefit w/glyphosate tolerant canola		

	Glyphosate	Glyphosate + Saflufenacil	
Pros	• Excellent weed control • Potential for crop dry-down benefits with non-glyphosate tolerant canola • Unlikely to cause grading issues • Lower water volumes okay • Relatively low cost	• Excellent weed control • Potential for crop dry-down benefits for all canola varieties • More rapid dry-down of certain broadleaf weeds compared to glyphosate alone • Unlikely to cause grading issues	
Cons	• Slow activity, must be applied relatively early to realize potential crop dry-down benefits • Potential for inconsistent crop dry-down & no such dry-down benefit w/glyphosate tolerant canola	• Somewhat inconsistent crop dry-down benefits, particularly with RR canola • Higher water volumes required for coverage • Relatively high cost	

	Glyphosate	Glyphosate + Saflufenacil	Diquat
Pros	• Excellent weed control • Potential for crop dry-down benefits with non-glyphosate tolerant canola • Unlikely to cause grading issues • Lower water volumes okay • Relatively low cost	• Excellent weed control • Potential for crop dry-down benefits for all canola varieties • More rapid dry-down of certain broadleaf weeds compared to glyphosate alone • Unlikely to cause grading issues	• Most rapid, consistent, & complete crop dry-down, effective for all canola varieties • Later application stage can provide added flexibility in deciding whether or not spray is likely to be beneficial
Cons	• Slow activity, must be applied relatively early to realize potential crop dry-down benefits • Potential for inconsistent crop dry-down & no such dry-down benefit w/glyphosate tolerant canola	• Somewhat inconsistent crop dry-down benefits, particularly with RR canola • Higher water volumes required for coverage • Relatively high cost	• Minimal weed control benefit • Potential quality issues (green seed) if applied too early • Higher water volumes required • Performance can vary with conditions during & following application

Are Pre-Harvest Applications for Straight-Combined Canola Necessary?

- The risks associated with not spraying are arguably much lower now that we have reliable genetic pod shatter tolerance
- Properly selected & applied products should not adversely affect yield or quality but can:
  - Address variation in maturity
  - Enable earlier harvest (in most but not all cases) & make harvest operations easier to time & plan for
  - Allow for an easier, faster harvest (potentially lower fuel use) by accelerating dry-down of MOG
  - Dry down green weeds, provide opportunity for perennial weed control
  - Potentially improve storability, especially in the absence of aeration (less high moisture dockage)

When are pre-harvest applications are most likely to be beneficial?

- Wet, cool weather going into GS 80-89 (ripening) can lead to delayed maturity & stems staying green for prolonged periods
- Low plant populations (i.e. <4-5 ft^2), delayed or variable fields take longer to dry down & make timing operations difficult
- Delayed seeding (conditions are generally less favorable for natural dry-down later in the fall)
- Green weeds (especially perennials)
- Varieties susceptible to pod drop/shatter due to higher risk associated w/harvest delays
- Large farm size
  - Straight-combining is slower than picking up swaths, pre-harvest applications don't guarantee earlier harvest but can make the overall logistics of planning harvest easier to manage & may facilitate higher travel speeds during combining

THANK YOU

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SAVE THE DATE!!!

IHARF Annual Field Day, Tuesday July 21