IFSI

Growing Together™

Breeding Better Sweet Corn

Innovations to Meet Farmer and Consumer Demands

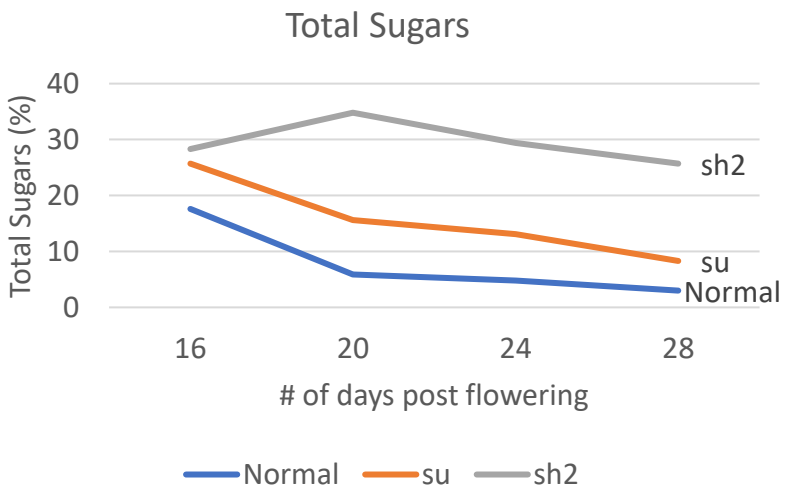
November, 2025

Contents

IFSI

- Established in 1937
- Sweet Corn got its start in 1961
  - 1000# of Illini Xtra-Sweet were produced that first year
- Added first full-time sweet corn breeder in 1980s
- Revolutionary Xtra Tenders released in 2000
- Expanded vegetable portfolio:
  - Beets – 2020
  - Carrots – 2021
- ~80 full-time staff

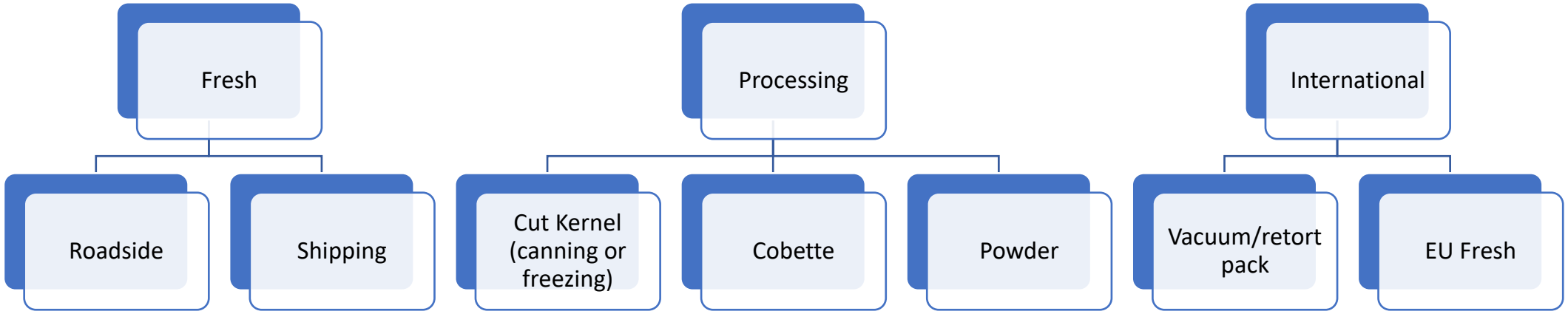
Sweet Corn types – Why sh2?



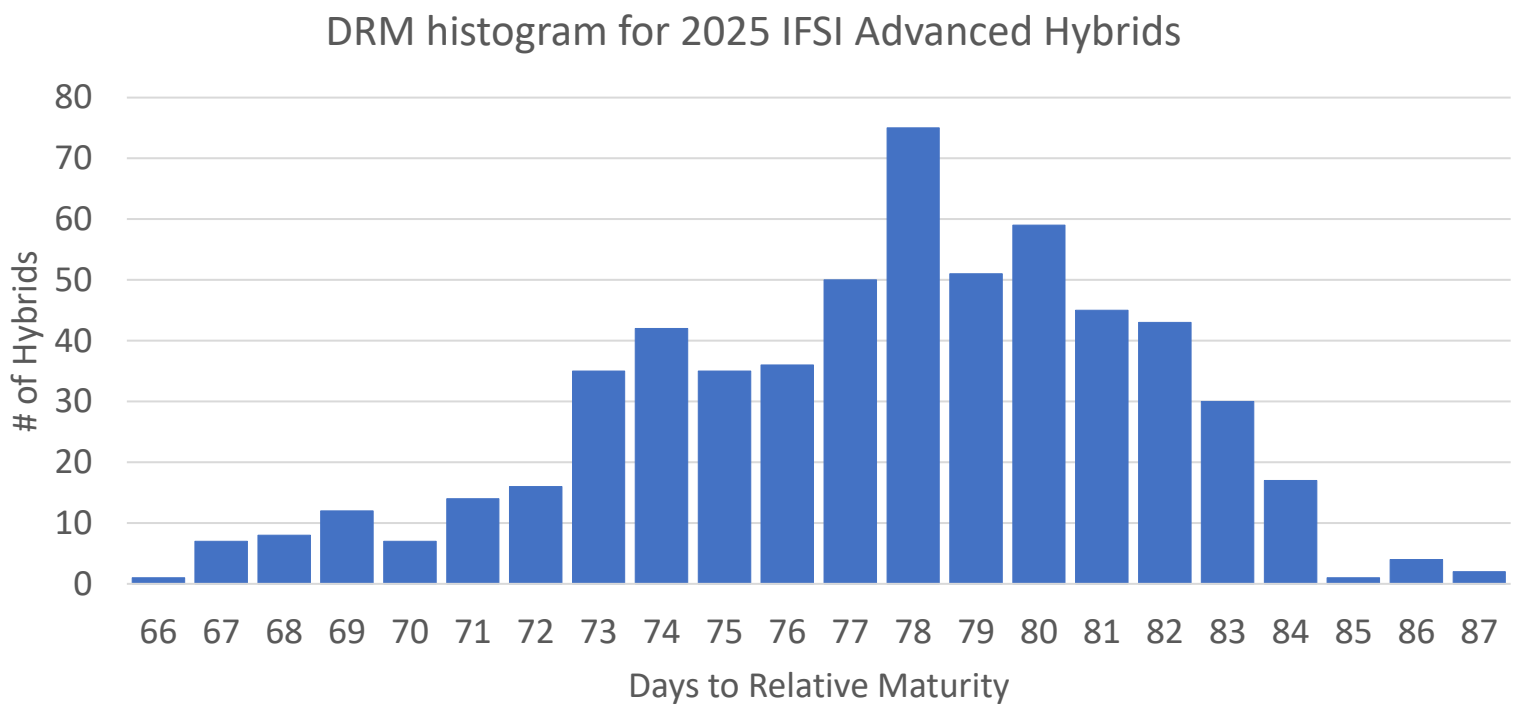
Type	Sweetness	Shelf-Life	Isolation Group	Use
Sugary (normal sweet)	Lowest, WSP	Poor	Sugary	Still used for processing
Sugary Enhanced ("SE")	Higher than Sugary, WSP, shelf-life slightly improved	Improved from sugary, but limited	Sugary	Fresh market, tender pericarp
Synergistic or Quad Sweet	Similar to SE, sweet	Improved from sugary, but limited	Sugary	Fresh market
Shrunken2 (sh2)	3x sucrose of sugary	Best shelf-life both pre and post harvest	sh2	Fresh and Processing

Sweet Corn Markets

Numerous and diverse



Wide range of maturities and kernel colors



Traits of Importance

- Plant Characteristics
  - Yield (cases/acre, tons/acre, % recovery, ears/acre)
  - Plant Health
  - Disease
  - Lodging
  - Seedling Vigor
- Husk Package
  - Husk Color
  - Husk Protection
  - Husk Length
  - Flag Leaves
- Shank Length
- Snap Rating – harvest ease
- Ear Appearance and characteristics
  - Ear Shape
  - Straightness of Rowing
  - Tip Fill
  - Ear Length
  - Kernel Row Count
  - Ear Diameter
- Kernel Characteristics
  - Kernel Depth
  - Kernel Appearance
  - Kernel Color Rating
- Eating Quality
  - Tenderness
  - Sweetness (also flavor)
- Flowering time (Days to silk, GDDs to silk)
- Environmental Stability
- Shelf Life (harvest window and post-harvest)
- Producibility

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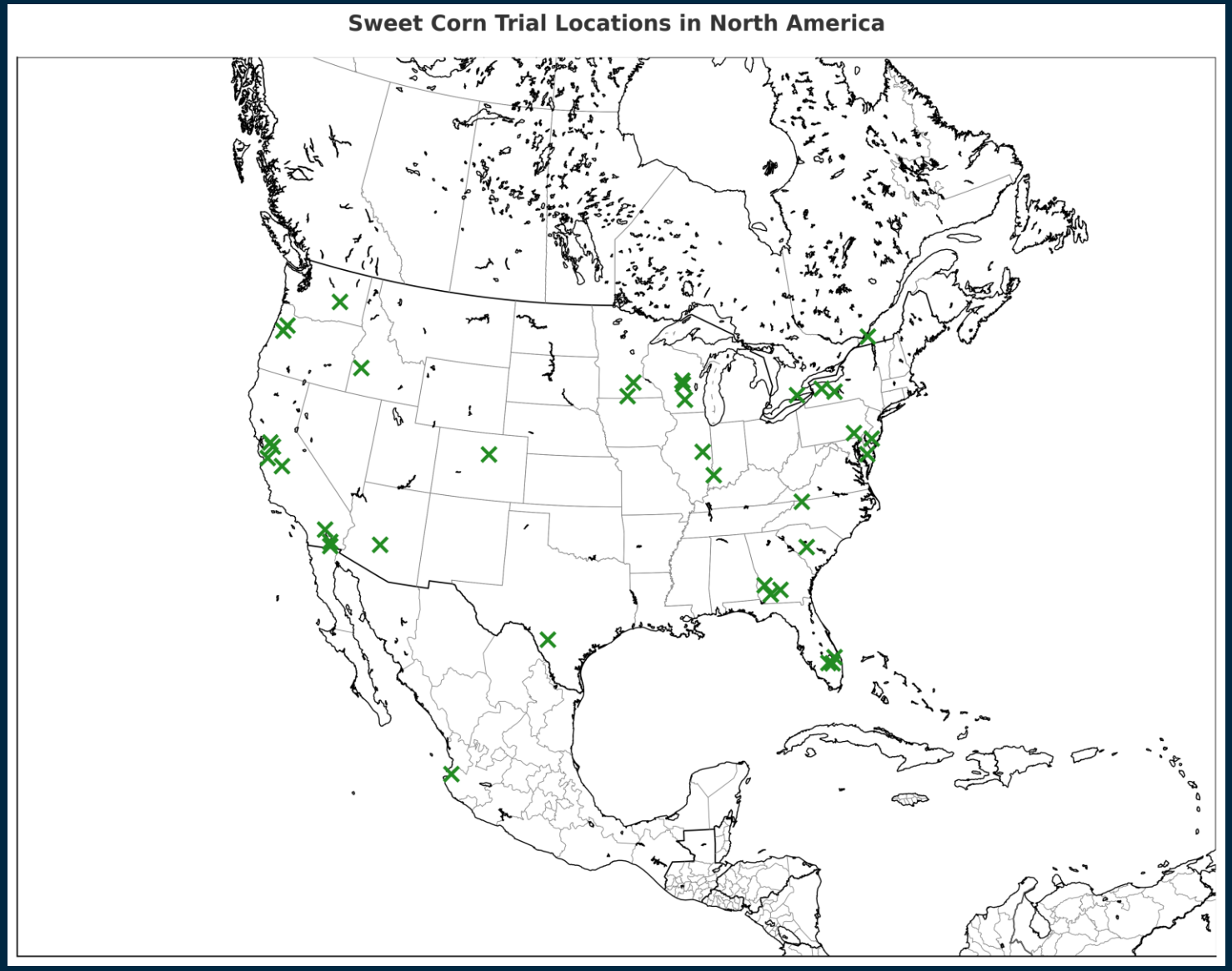
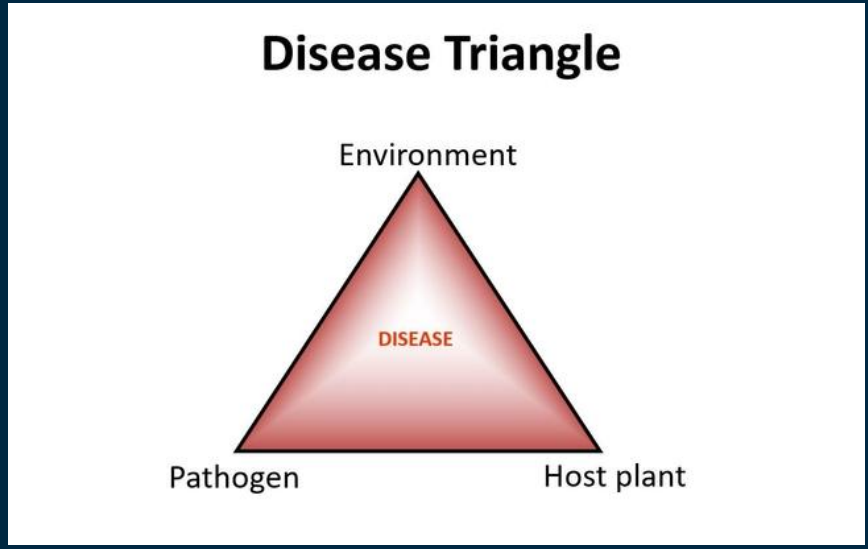
Environmental Stability

- Wide trialing network in diverse environments
- Evaluate performance across years
- 4-5 years before commercialization



Diseases



Big 3

- Common Rust – Puccinia sorghi
- NCLB – Exserohilum turcicum
- MDMV/SCMV –maize dwarf mosaic virus, sugar cane mosaic virus

Others

- Southern Leaf Blight – Bipolaris maydis
- Bacterial Leaf Streak – Xanthomonas vasicola pv. vaculorum
- Goss's Wilt – Clavibacter michiganensis subspecies nebraskensis
- Stewart's Wilt – Pantoea stewartia
- Tar Spot? – Phyllacora maydis

Common Rust

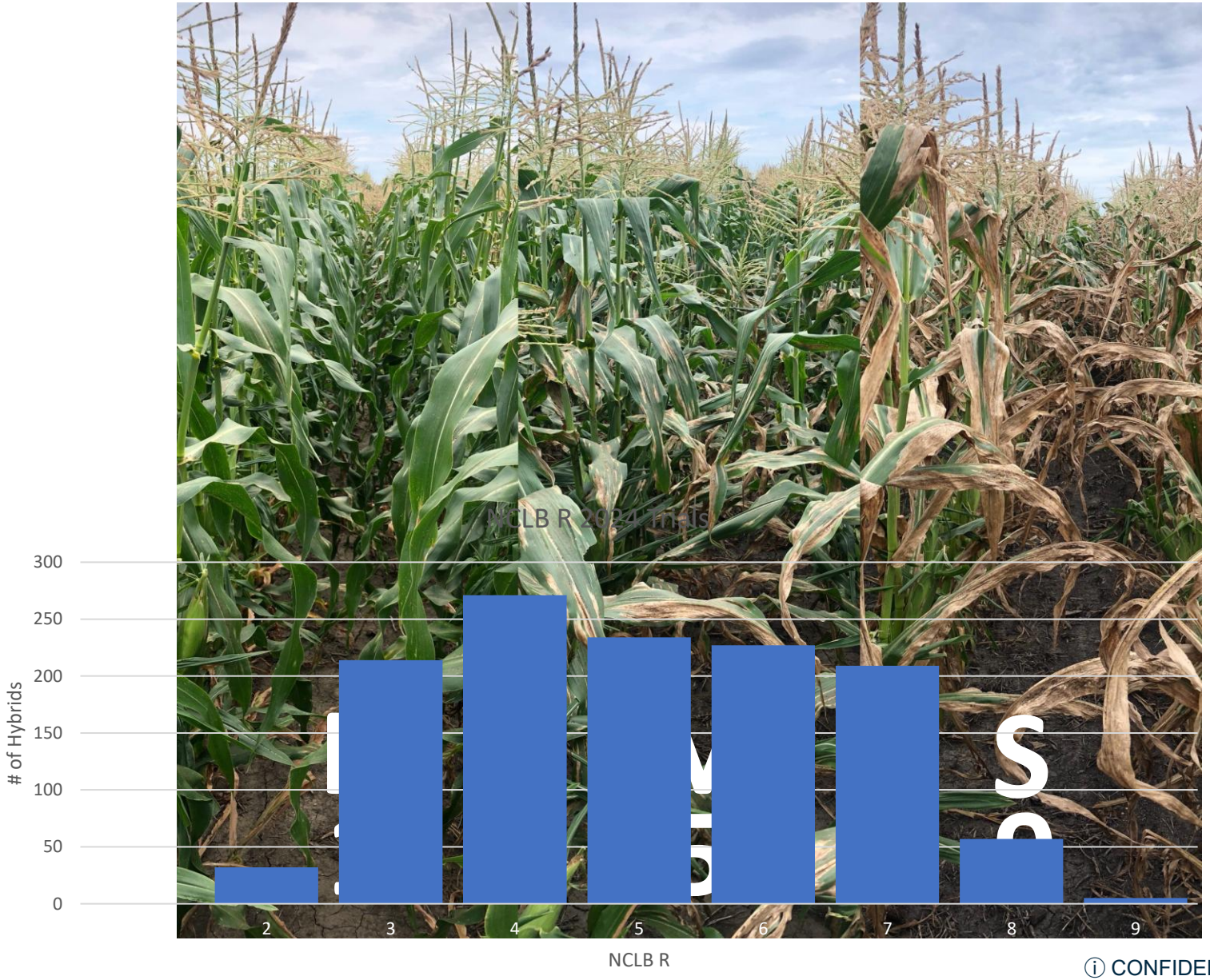
- Utilization of Rp Genes for resistance
- Complete resistance
- Easy to work with – mono or oligogenic
- Higher risk for race specific virulence (Rp1D)
- RpG, RpGI, RpGDJ, RpGFJ, RpG5JC are completely resistant to current races in the U.S. and Canada
- IFSI's "XR" varieties would have one or more of these resistance genes
- i.e. Superb MXR, Bolt XR, Venture MXR

Northern Corn Leaf Blight (NCLB)

- Promoted by cool (65-81° F) humid weather with heavy dews.
- Disease in the lower canopy (bottom 20-25%) at the time of harvest has limited impact on yield
- Early season plantings are at low risk
- Fungicide options

Northern Corn Leaf Blight (NCLB)

- Disease reactions assigned from inoculated trials across years
- Inoculated trials ensure uniform disease pressure at high levels
- Data from multiple years used to place hybrids into categories: Resistant (R), Moderately Resistant (MR), Moderate (M), Moderately Susceptible (MS), Susceptible (S)



Northern Corn Leaf Blight (NCLB)

- Stamina MXR (78 DRM) rated MR for NCLB
- Odyssey XR (80 DRM) – new for 2025 rated “R” for NCLB
- https://ifsi.com/news-and-insights/diseases-of-sweet-corn-northern-corn-leaf-blight-nclb/

Lodging

- Impact depends on timing of event
- At flowering can disrupt silk emergence, pollination success
- At or near harvest, can create harvest difficulties and ultimately harvest loss
- “Insurance trait” – not always needed, but can be very valuable
- Trait of emphasis for IFSI – see table below

Lodging ratings for IFSI hybrid releases 2011-2026

	R	MR	M	MS	S
2011-2015	7%	11%	14%	36%	32%
2016-2020	17%	9%	22%	26%	26%
2021-2026	17%	31%	31%	19%	2%

Shelf Life

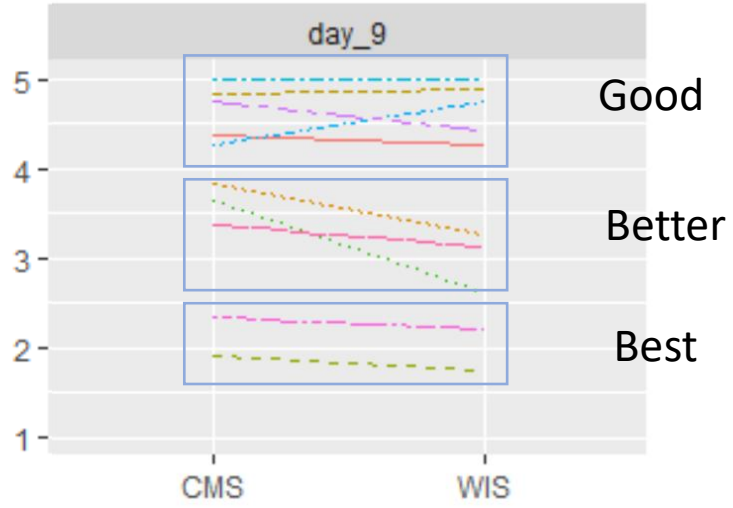
Harvest Window

- IFSI varieties like Bolt XR, Kickoff XR, Superb MXR, Signature XR, Expedition XR, and Icon XR have industry leading harvest windows
- “Optimum” harvest 500 GDDs post flowering

# of GDDs post Flowering	% acceptable	% acceptable
376-400		
401-425	0%	
426-450	56%	0%
451-475	80%	33%
476-500	100%	100%
501-525	100%	100%
526-550	100%	100%
551-575	100%	100%
576-600	100%	50%
601-625	100%	33%
626-650	60%	0%
651-675	38%	0%
676-700	0%	
701-725	0%	

Post Harvest

- Quality super sweets when cooled and kept in cold storage can have a shelf life >14 days, some data indicates ~21 days.
- IFSI identified hybrids that can retain quality more than 3 days longer than others at ambient storage
- One variety in this study had little to no dimpling at 9 days without cold storage



Future Developments?

- Continued maturity expansion – Earlier & Later
- Focus on grower insurance traits
  - Lodging – particularly early maturities
  - Disease
  - Environmental Stability
- Harvest Ease for both hand and machine
- Shelf Life
- Eating Quality

Understanding DRMs – "Days to relative maturity"

- GDDs can be a tool to predict corn development – better than calendar days!
- IFSI compares GDDs to silking for varieties across locations and sets DRMs to those comparisons
- On average 1 DRM= ~16 GDDs (50F base) (~9 GDDs with 10C base)
- Early season = lower GDDs/day
- Typically 110 GDDs required for emergence (~61 GDDs with 10C base)
- Seed vigor and Other weather extremes can create variability

Varieties of note for Quebec

Bolt XR

- 67 DRM First Early
- Excellent seedling vigor
- Quality and harvest window in an early are unparalleled
- Good husk protection and attractive dark green husk package

Kickoff XR

- 69 DRM First Early
- Larger ear, good eating quality
- Good husk protection and attractive dark green husk package
- Better option for rain gap than Bolt because of ear size and plant strength

Varieties of note for Quebec

Venture MXR

- 73 DRM
- Superior seedling vigor
- Versatile for roadside or early shipping
- Wide environmental adaptability

Agave MXR

- 74 DRM
- Strongest lodging resistance in mid-season material
- Excellent husk length
- Versatile for roadside or shipping

Varieties of note for Quebec

Superb MXR

- 74 DRM
- Has proven to be widely adaptable
- Suited for machine or hand harvest
- Excellent seed quality that translates to yield
- Can be used throughout the season

Stamina MXR

- 78 DRM
- Very good NCLB resistance
- Larger plant to tolerate late season stresses
- Strong tip fill and performance in late plantings with higher heat

Varieties of note for Quebec

Tempo XR

- 76 DRM
- Larger ear with good quality
- Strong plant
- Provides similar ear and quality characteristics to mid-season material with later maturity

Conquest MXR

- 78 DRM
- More durable pericarp for tolerating machine harvest and packing processes
- Beautiful kernel contrast and appearance
- Pleasant crunch on the bite with excellent flavor

Varieties of note for Quebec

Signature XR (IFSI Reserve™)

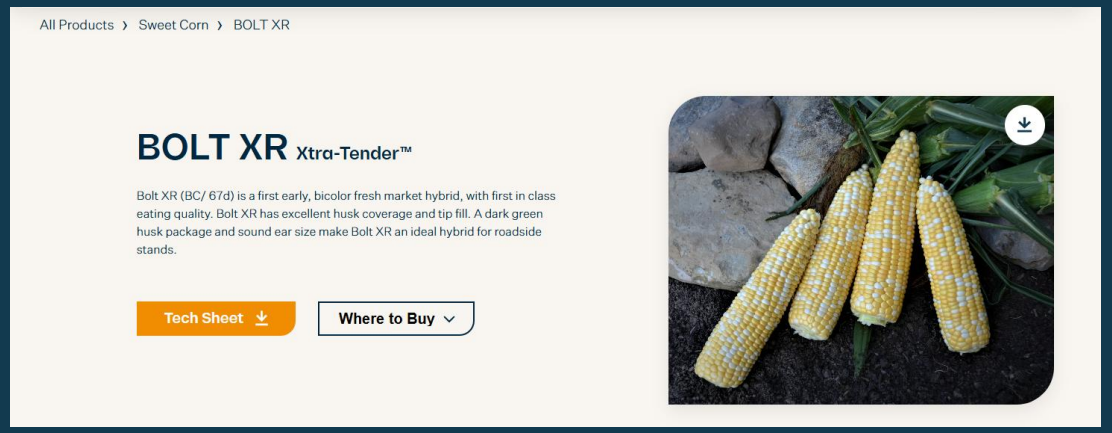
- 72 DRM
- IFSI Reserve eating quality – very tender, excellent sweetness and flavor
- Large ear, suited for high quality fresh markets
- Excellent husk length, ear length, and tip fill throughout the season

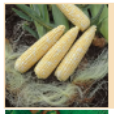
Virtue XR (TenderCrisp™)

- 78 DRM
- New launch for 2027. Limited quantities for 2026
- Unique pop and crispy bite
- Extended post-harvest shelf life
- Beautiful refined ear
- TenderCrisp™

More resources at ifsi.com

- Variety descriptions
- Suggested planting programs
- Related varieties



	NAME	COLOR	DRM ⓘ	TENDERNESS	SWEETNESS	RUST	NCLB	MDM
	2171	BC	71	5	3		MS	
	274A	BC	71	3	1			
	AGAVE MXR	BC	74	4	4	RpGDJ	MS	R
	ANTHEM XR	BC	73	3	2	RpG	MS	
	AWESOME XR	BC	74	4	3	RpG	MS	
	BOLT XR	BC	67	3	3	RpG	M	
	FANTASTIC XR	BC	73	4	3	RpG	MS	
	HERO XR	BC	71	4	2	RpGDJ	MS	
	KICKOFF XR	BC	69	4	3	RpG		

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Thank You