

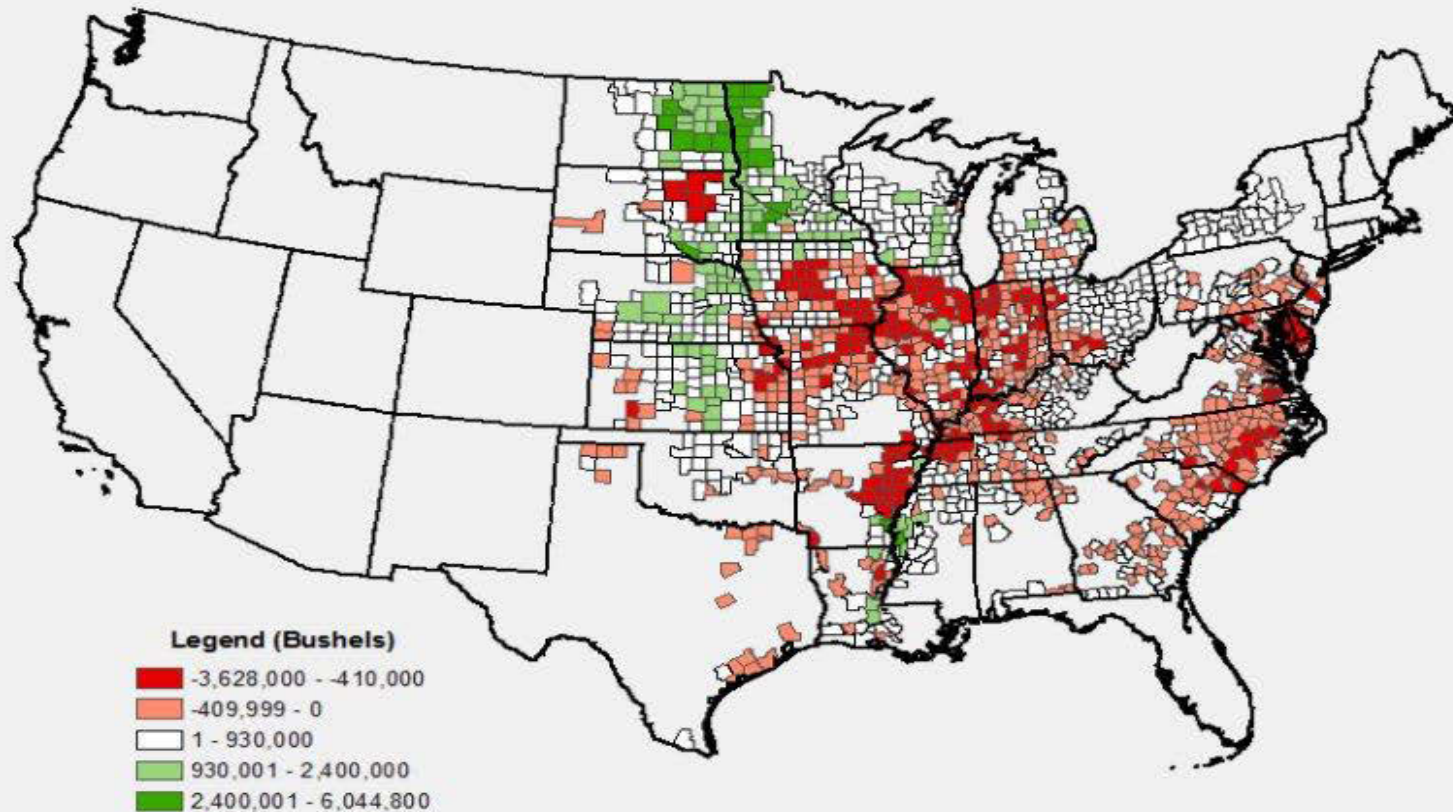


Soybean Production in Saskatchewan???

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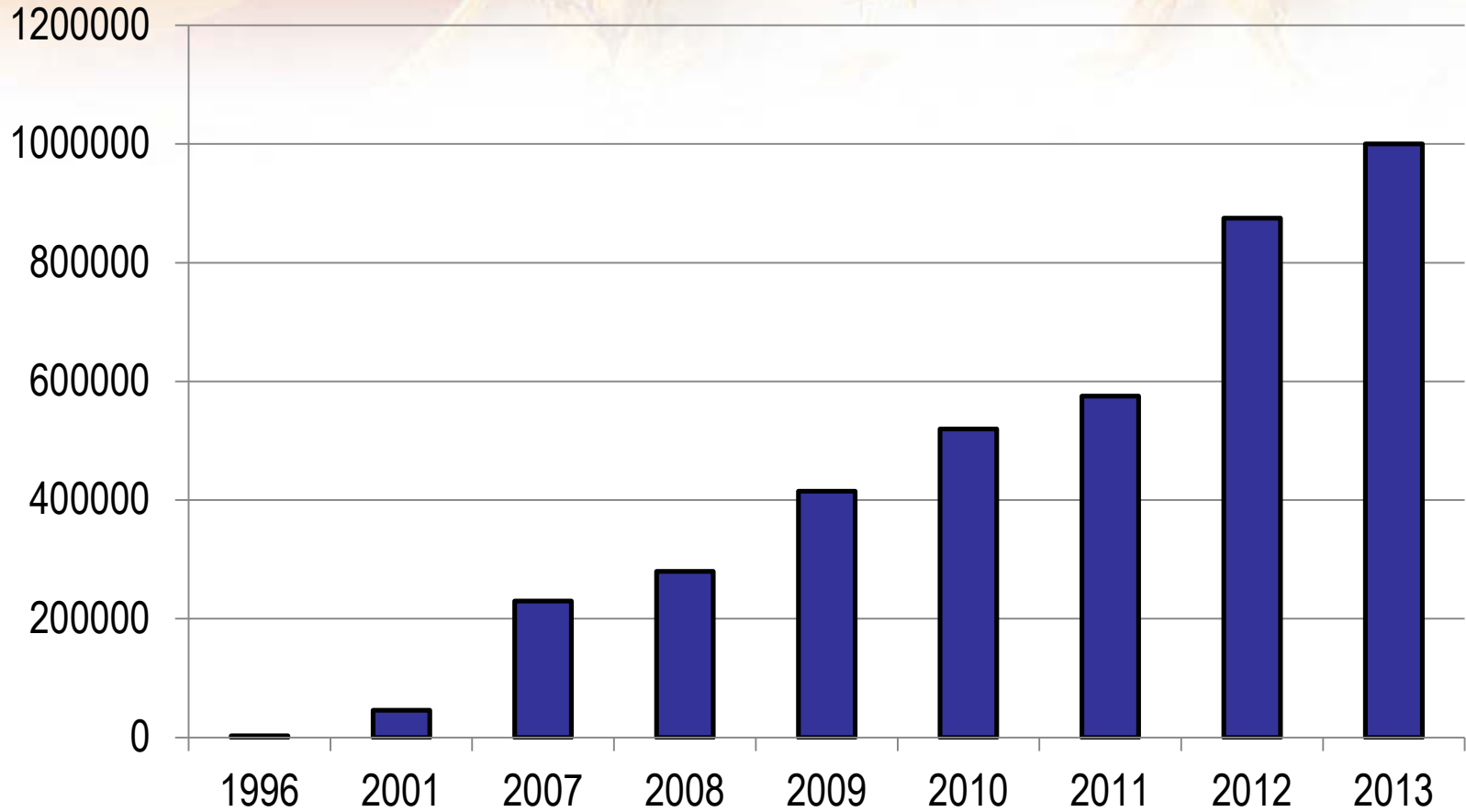
Soybeans Production Shifting

Change in Soybean Production: 2004-2010

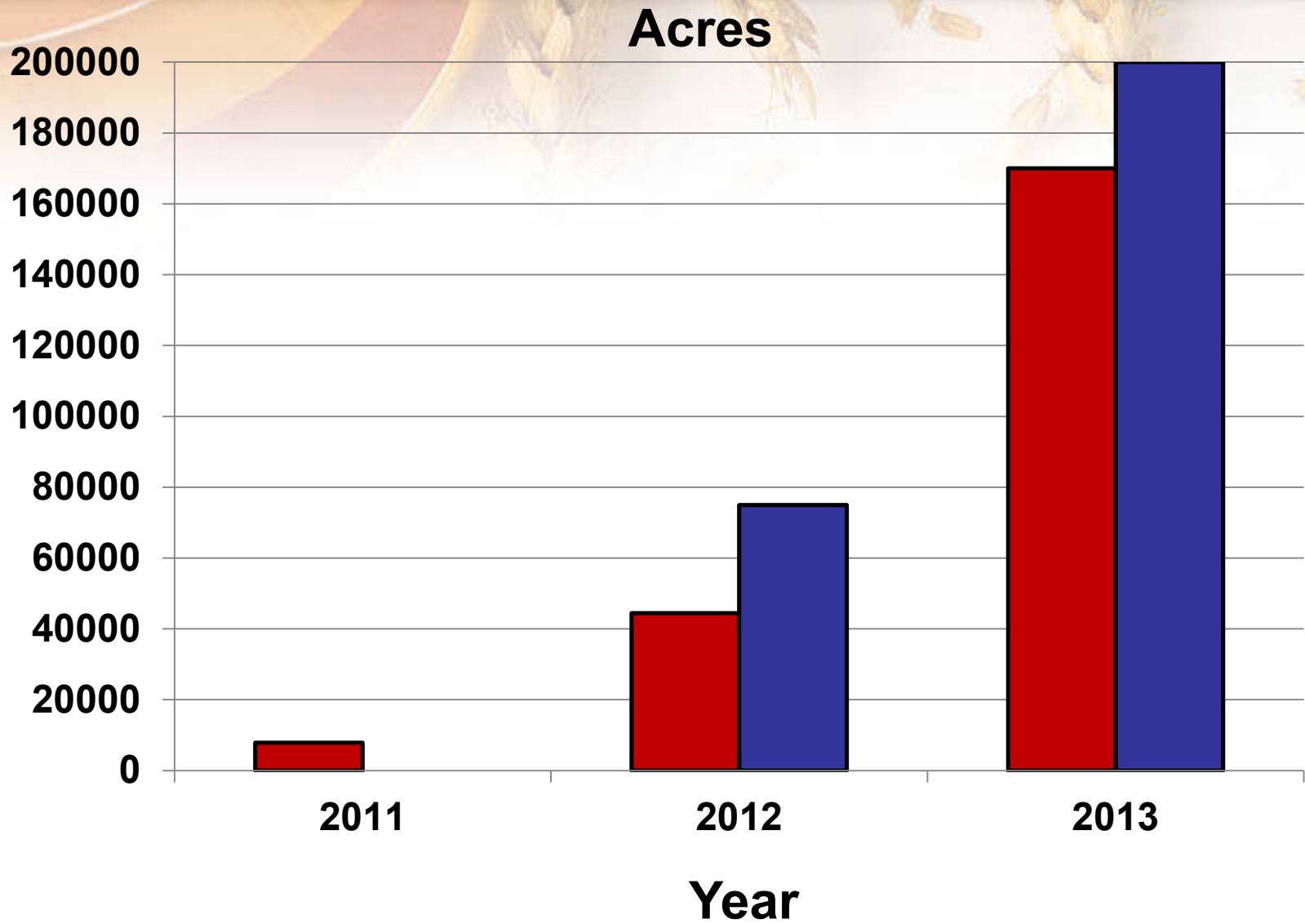


Manitoba Soybean Acreage

Acres



Saskatchewan Soybean Acreage

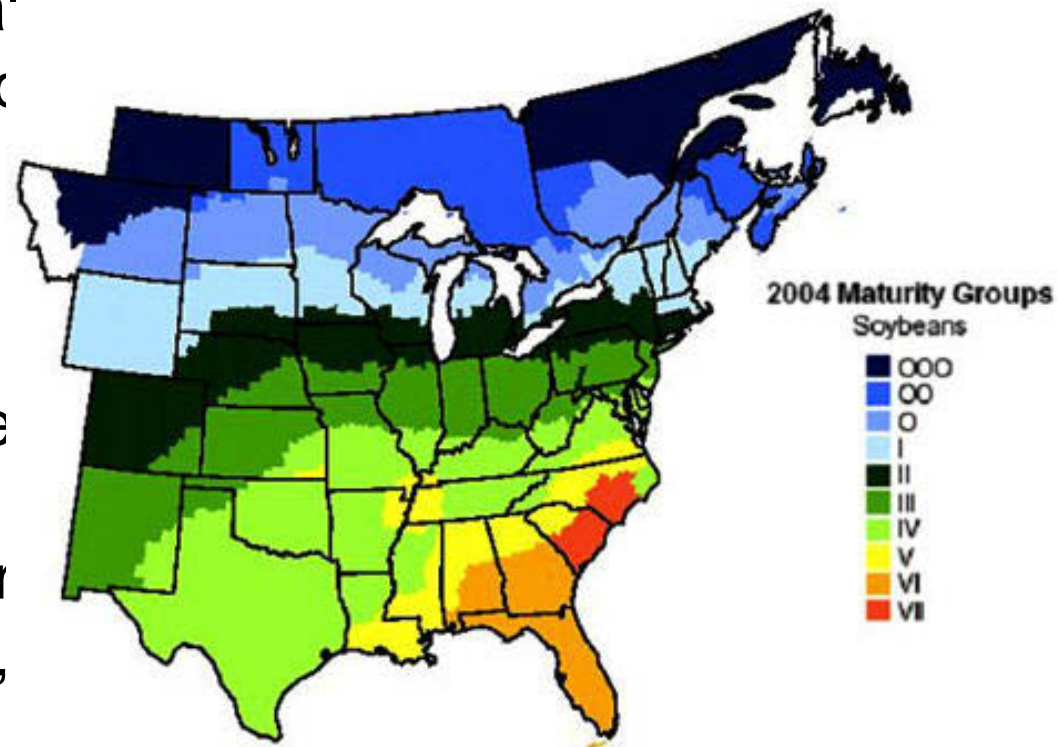


Plant Maturity: Photosensitivity

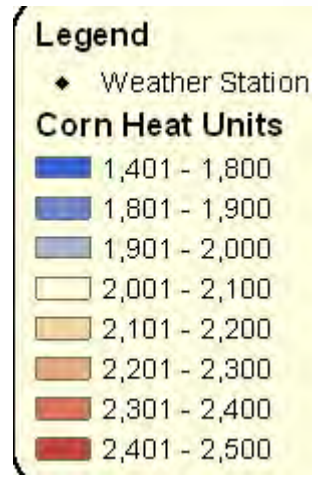
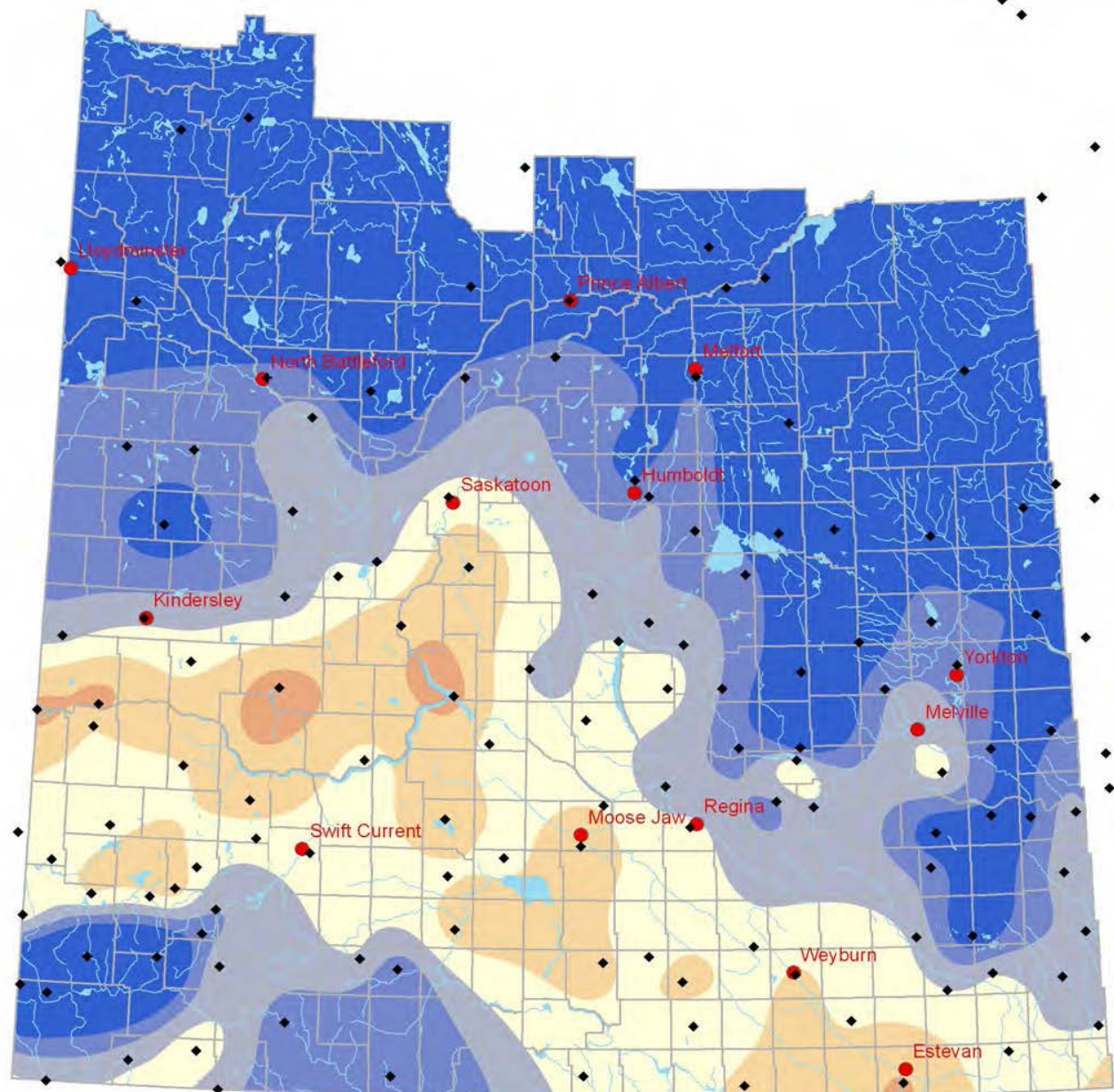


- Soybeans are **photosensitive**
 - Begin to produce flowers when a critical dark period is reached (day length)
- Day length varies with latitude
- In the U.S. soybeans are divided into types or groups according to their maturity/photosensitivity, divided into 13 groups
 - MG 000 to MG X

- In Canada soybean maturity ranked on Corn Heat Units



Saskatchewan Corn Heat Units



Soybean Pre-2012



Variety	Site Years	Yield as % of RR Rosco	Corn Heat Units*	Height (cm)	Lodge Rating	Seed Weight (g/1000)	Hilum Colour
Apollo RR	9	110	2375	75	VG	139	BR
NSC Warren RR	6	110	2375	79	VG	136	BR
LS 0036RR	6	106	2425	71	VG	129	BR
RR Rosco	9	100	2450	76	G	148	IY
Isis RR	4	92	2400	79	VG	136	BR
NSC Argyle RR	4	90	2450	73	G	140	BR
LS 0028RR	4	89	2400	62	VG	114	BR

Soybean Post 2012



Varieties appear 10% or > Higher Yielding than most Pre-2012 Entries

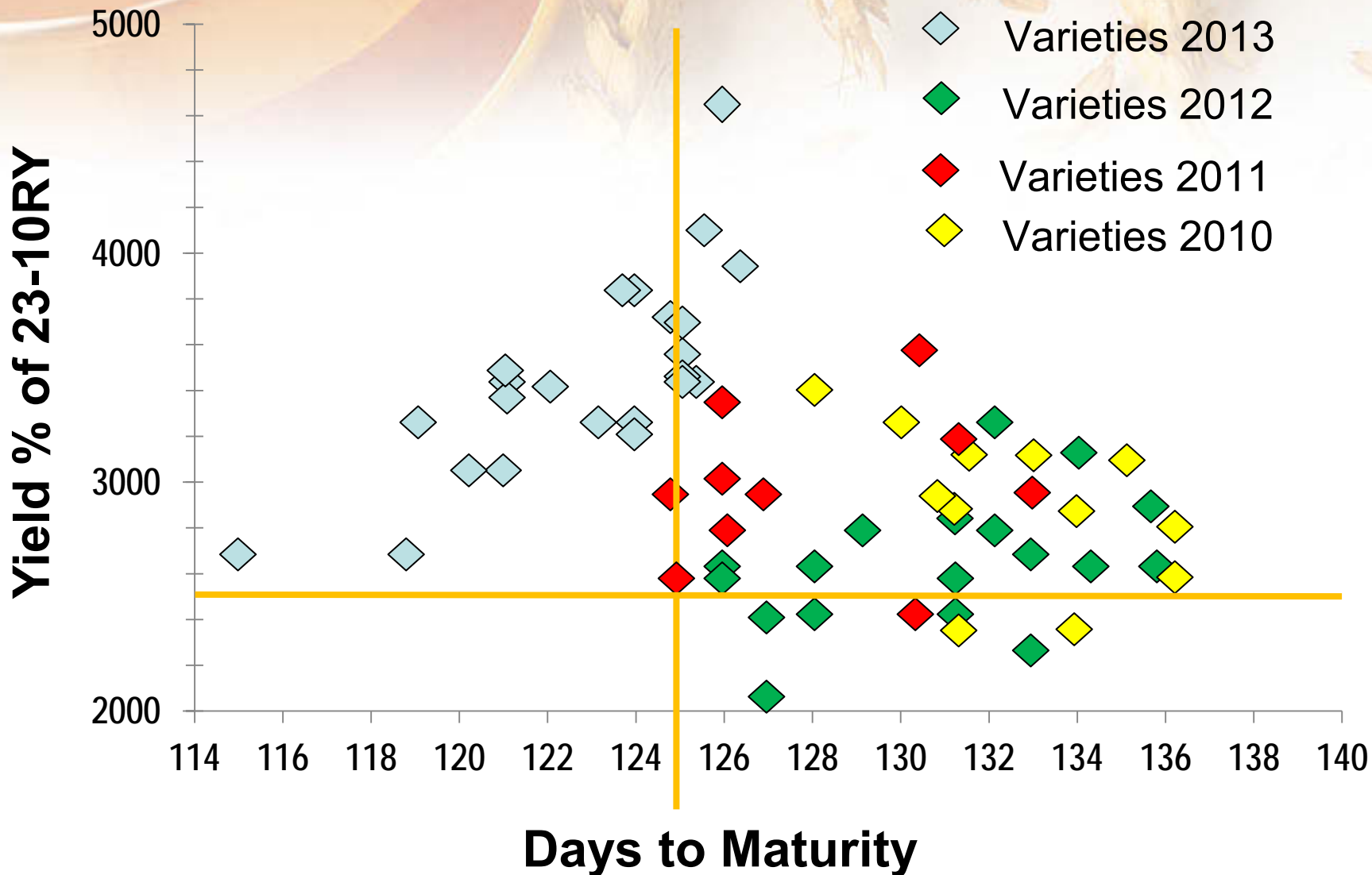
Sampsa RR	RR2	5	118	2425	127	73	VG	178	IB
TH 32004R2Y	RR2	5	114	2425	126	76	VG	175	BL
24-10RY	RR2	4	114	2425	129	75	VG	180	IB
004R21	RR2	4	114	2425	130	78	VG	181	BL
NSC Reston RR2Y	RR2	4	109	2325	124	85	VG	166	BR
900Y61	RR1	6	105	2425	127	75	VG	195	BR
900Y71	RR1	5	101	2450	128	74	VG	188	IY
23-10RY	RR2	6	100	2325	122	73	VG	194	IY
Pekko R2	RR2	5	99	2325	121	77	VG	173	BL

Soybean Post 2012

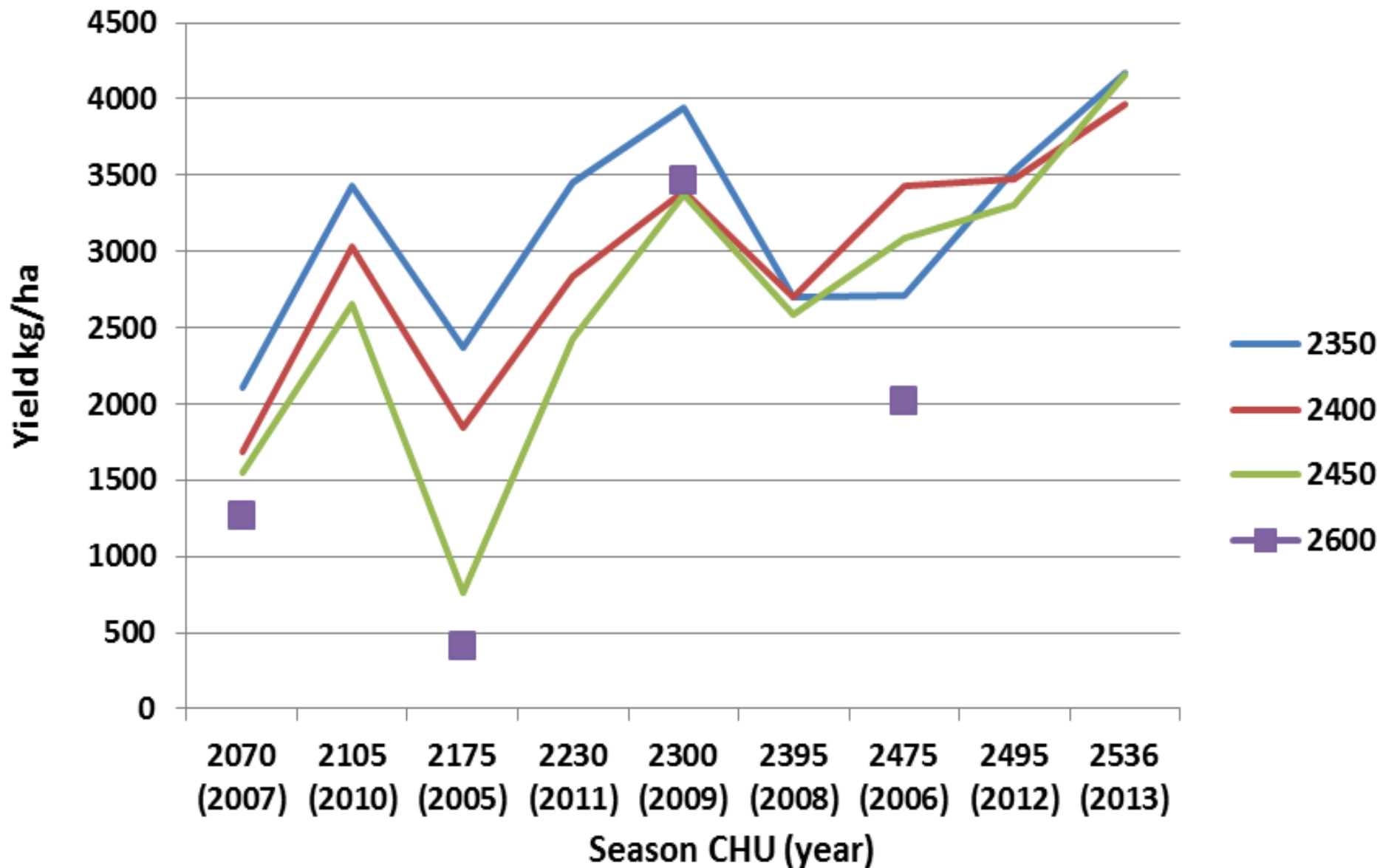


		Yield as % of 23-10RY		Days to Maturity	
Variety	Corn Heat Units*	ICDC Irrigated	SMA Dry Land	ICDC Irrigated	SMA Dry Land
Sampsa RR	2425	118	102	127	124
TH 32004R2Y	2425	114	112	126	123
NSC Reston RR2Y	2325	109	102	124	123
900Y61	2425	105	100	127	124
900Y71	2450	101	104	128	124
23-10RY	2325	100	100	122	121
Pekko R2	2325	99	100	121	122

Varieties 2012-13: Yield vs Maturity



Yield vs Variety CHU Rating



Soybean Establishment



- Treat seed gently, avoid multiple handling especially if seed moisture is low (< 13%)
- Requires good seedbed moisture, seed needs to absorb 50%+ its seed weight to initiate germination
- Seed will swell at 5° C but embryo will not grow until soil temperature is 9° C
- Seeding Date – when soil temperature at depth of seeding = 10° C
- Afternoon planting

Soybean Establishment



Soybeans planted in warm soil (21°) and kept at that temp
For 17 days.

Soybean Establishment



Soybeans planted in warm soil (21°) for 8 hours, then kept at 7° for 4 days

Soybean Establishment



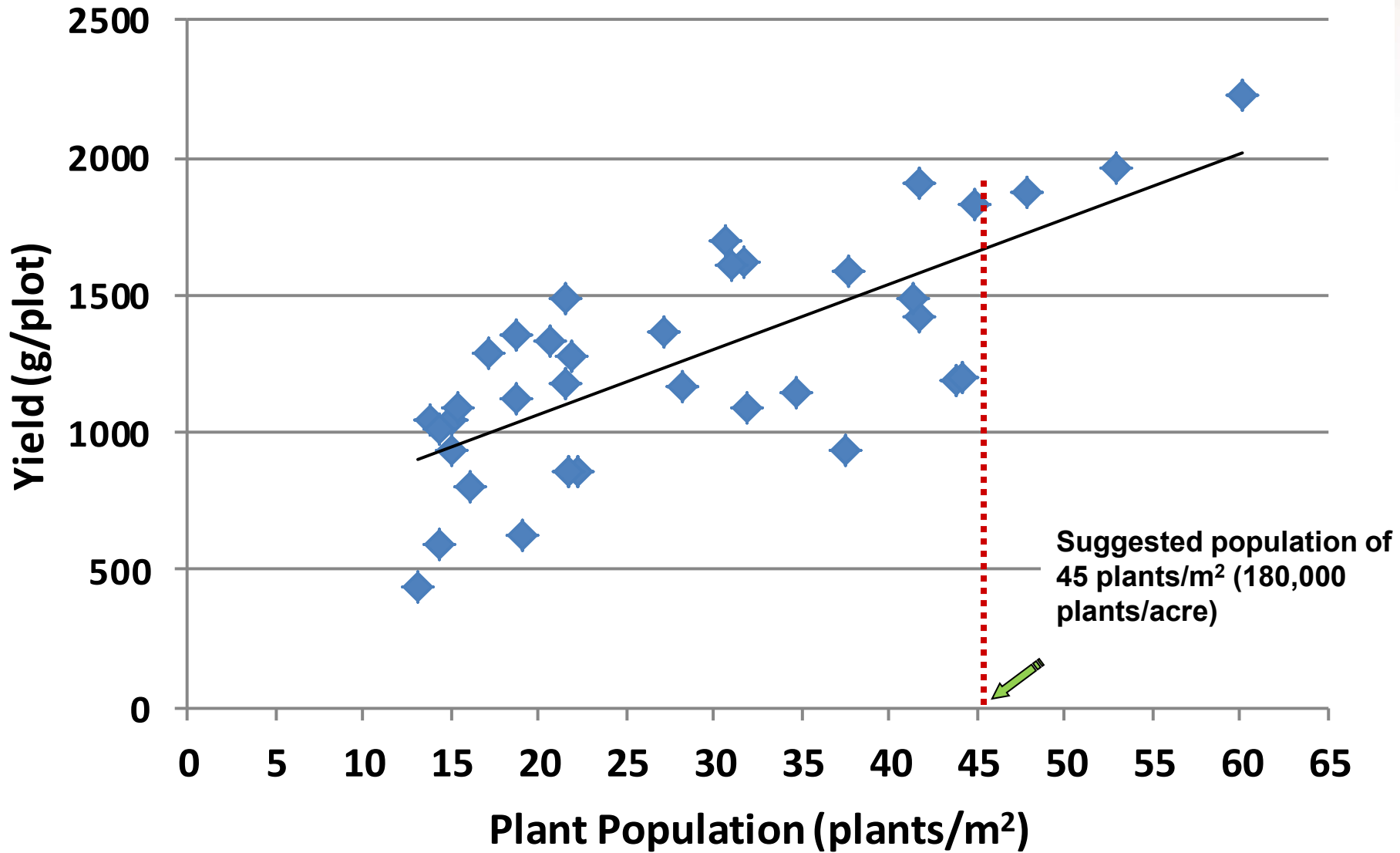
Soybeans planted in cool soil (7°C) and kept at 7°C for 20 hours then warmed up to 21°C for 17 days (“cold shock”)

Soybean Establishment



- Use a seed treatment, will assist in cold soils and protect from seed rot/seedling loss (research indicates an economic benefit in northern growing regions)
- Seeding depth = $\frac{3}{4}$ " to 1.5" (sensitive to deep seeding)
- Roll if stones present or uneven ground
 - Roll prior to emergence
 - If delays in rolling occur (compaction concerns, weather) wait and roll at the 1st or 2nd trifoliate stage

Soybean Yield vs Plant Population



Soybean Establishment



- Seeding rate (irrigated production)
 - \approx 180,000 plants/ac solid seeded (9-12')
 - \approx 160,000 plants/ac row cropped (22")
 - Varieties differ in seed weight (2200 – 3000 seed/lbs), calibrate seeder accordingly
 - Plants adjust to lower planting density by increasing branching and the number of pods on branches and main stem
 - < elastic in yield than canola
 - > maturity

Soybean Establishment

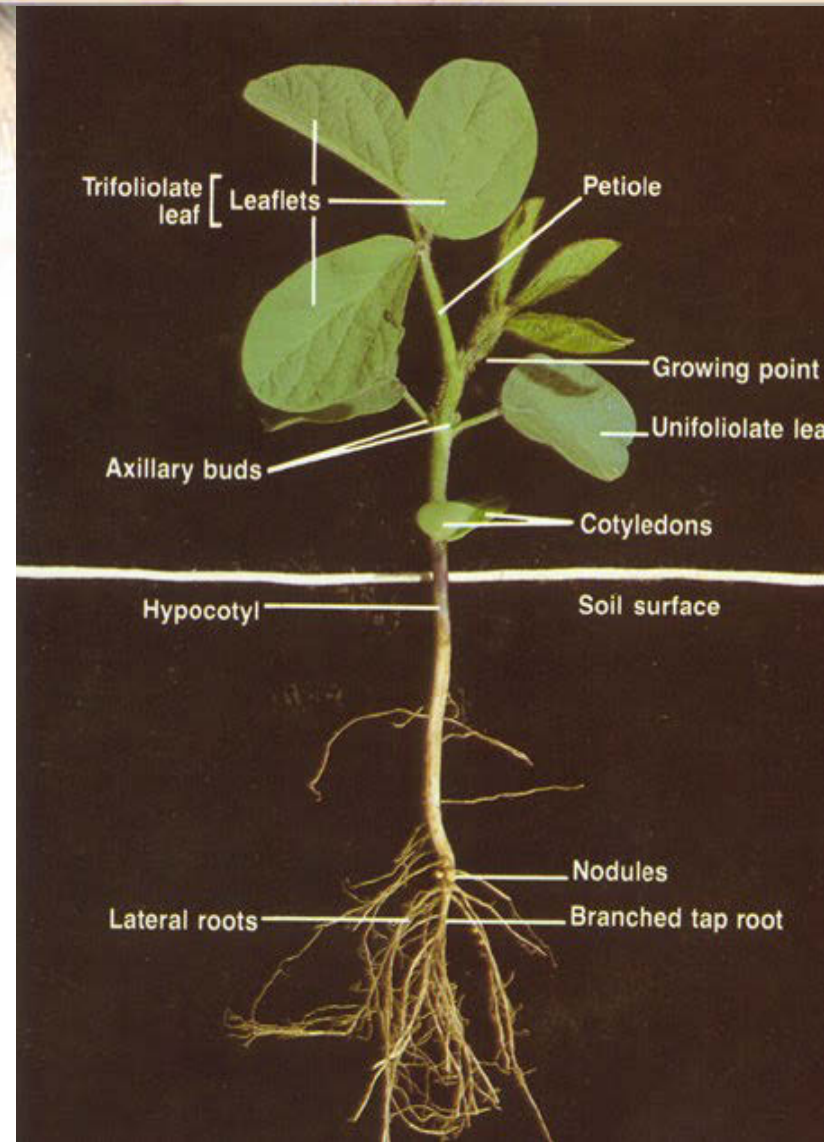


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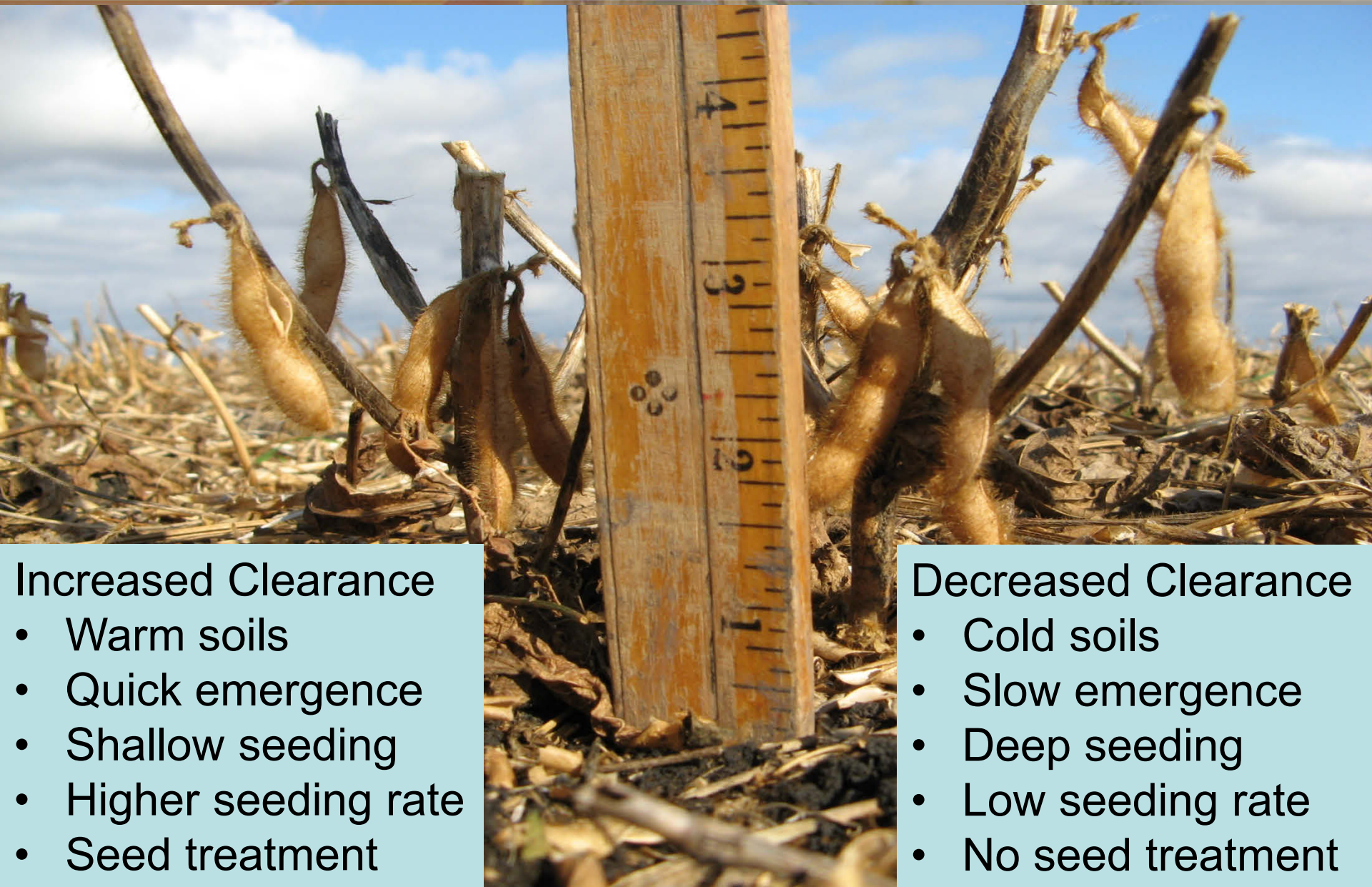
Soybean Establishment



- Spring Frost
 - Soybean growing point emerges above ground so susceptible to frost
 - Axillary buds develop at cotyledons and each leaf axil, so recovery possible
 - If frost extends below cotyledons plant death occurs
- Fall Frost
 - If mature then no loss in yield or quality
 - If before maturity then yield loss, green seeds, lower quality and variable moisture



Pod Clearance



Increased Clearance

- Warm soils
- Quick emergence
- Shallow seeding
- Higher seeding rate
- Seed treatment

Decreased Clearance

- Cold soils
- Slow emergence
- Deep seeding
- Low seeding rate
- No seed treatment

Fertility



- Inoculation Critical
 - No native bacteria present
 - Maximum rate (or $>$) of a seed applied peat or liquid soybean inoculant
 - If capable use in conjunction with full rate (or $>$) of granular soybean inoculant



Fertility



- Phosphorus
 - Sensitive to seed placed fertilizer (salt effect), position P away from seed if possible, limit to 10-15 lbs. P_2O_5 /ac if good soil moisture
 - Side band applications
 - Fall or spring broadcast
 - Additional P applied to proceeding crop
 - Very effective soil P scavenger
- K, S and micro's unlikely required (yet?)

Pest Control



- Weeds – soybean is a poor competitor in early growth
 - RR Varieties (95% MB acreage)
 - Pre-seed burn-off
 - Post-emergent applications at unifoliate stage to 3rd trifoliate
 - Later application depending on weed pressure
 - Conventional chemistry if volunteer RR canola an issue
 - Spray in warm conditions while plants actively growing
 - Conventional Varieties
 - Consult “Guide to Crop Protection”

Pest Control



- Disease
 - Use a seed treatment (we are seeding into cool conditions)
 - Soybean affected by pythium, rhizoctonia and fusarium like canola and peas
 - Sclerotinia (scout fields and be prepared to apply fungicide if disease conditions warrant)
- Insects
 - Wireworms
 - Grasshoppers

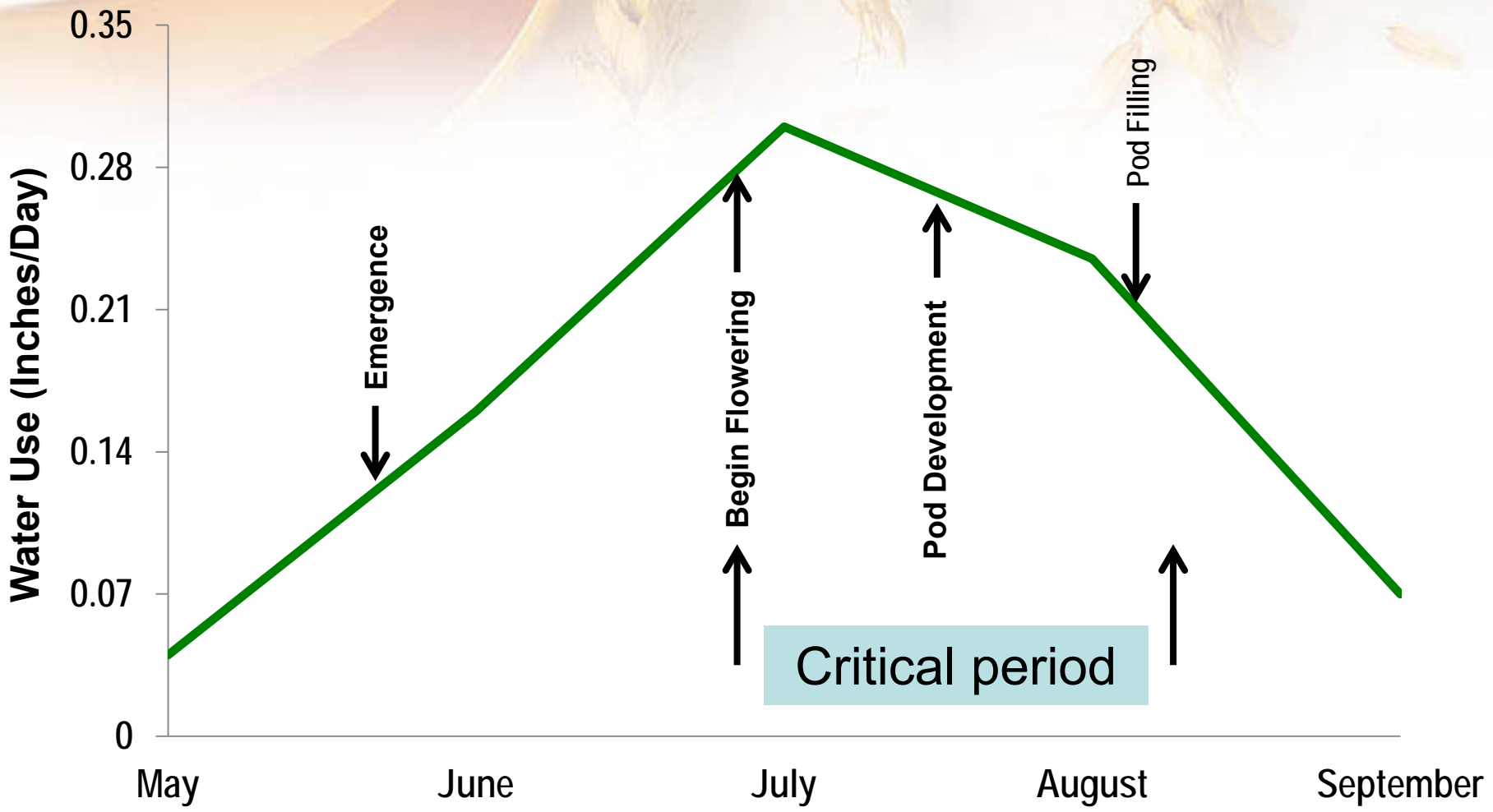
Irrigation



- No irrigation recommendations or scheduling yet developed for SK
- Soybeans handle “wet feet” better than other pulse or oilseed
- Maintain soil moisture during vegetative growth to avoid drought but **US experience & research indicates no appreciable yield advantage above that from irrigation applied only during reproductive development**



Estimated Water Requirements



Adapted from C. Duand, NorthStar Genetics

Maturity & Harvest



- Plants mature when 95% of pods have turned “buckskin,” seed rattles in pod
- Your likely going to be waiting for a killing frost
- Can be combined at 20% moisture but better to allow dry down to $\approx 14\%$
- Pods do not easily shatter and lodging likely not to be a concern
- Leave beans to later if you have a more weather vulnerable crop to deal with



Maturity



5% Yellow Pod

95% Yellow Pod

95% Mature Pod

(Can be brown or tan colour)

Harvest



- Slower cylinder speeds and wider concave settings reduce internal cracking
- Flex header ideal (air assist reel a bonus)
- Splits and cracks not as big an issue in marketing as other crops (allowed $\approx 15\%$ split/cracked and 5% green seed)
- Monitor harvest loss ($4 \text{ seeds/ft}^2 = 1 \text{ bushel/ac}$)
- Store at 13% seed moisture (11% over winter storage)



Conclusions



- 1st Soybean Crop
 - Limit acreage
 - Start with **lower** CHU varieties
 - Calculate seeding rate by target population and adjust for seed weight and germination
 - Use a seed treatment and double inoculate (ensure seed treatment and seed inoculant are compatible – check planting window)
 - Wait to soil temperature reaches 10° C
 - Patience required for maturity....go fall fishing!

Thank You



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