

Recommended Tomato Cultivars from K-State Trials

Great Plains Growers Conference 2014

Dr. Charles Barden
Pabodha Galgamuwa



I am an avid hobbyist vegetable grower, having sold at farmers markets and grocery stores.



Few replicated cultivar yield trials are being done in the region

- Expensive and labor intensive to document yield of numerous varieties, planted in several plots across a field.
- Results are not likely to be published in a research journal.
- But, we need this information, or do we just believe the write-up in the catalog?

K-State Master Gardener Vegetable Trials

- For many years, new tomato and later pepper cultivars had been provided to K-State MG groups by Chuck Marr.
- In 2007 observational and limited yield data began to be collected.
- Citizen Science is a system of involving non-scientists in the collection of research data.

KSU MG Trial Methods

- Not typical replicated research trials.
- Each site gets just 6 plants of each cultivar.
- Each site, from St. Joseph, MO to Hays, KS, and Hutchinson to Emporia are treated as a rep.
- Each year plants are provided to ~ 15 sites, with usable data from ~ 10.
- Most sites provide relative ratings, a few collect yield data

Cooperating Companies

- Seed donations provided most years
 - Harris
 - Seedway
 - Rupp
 - Abbott & Cobb
- Seed donations provided occasionally
 - Rispens, Rogers, Siegers, Stokes, Syngenta, Johnny's, American Takaii

What I provide MG groups

- A flat containing 6 plants each of 10 different tomato cultivars.
- Data collection notebooks.
- If a cultivar does well, it is included in the following years to confirm.
- If it does poorly, it may be dropped.



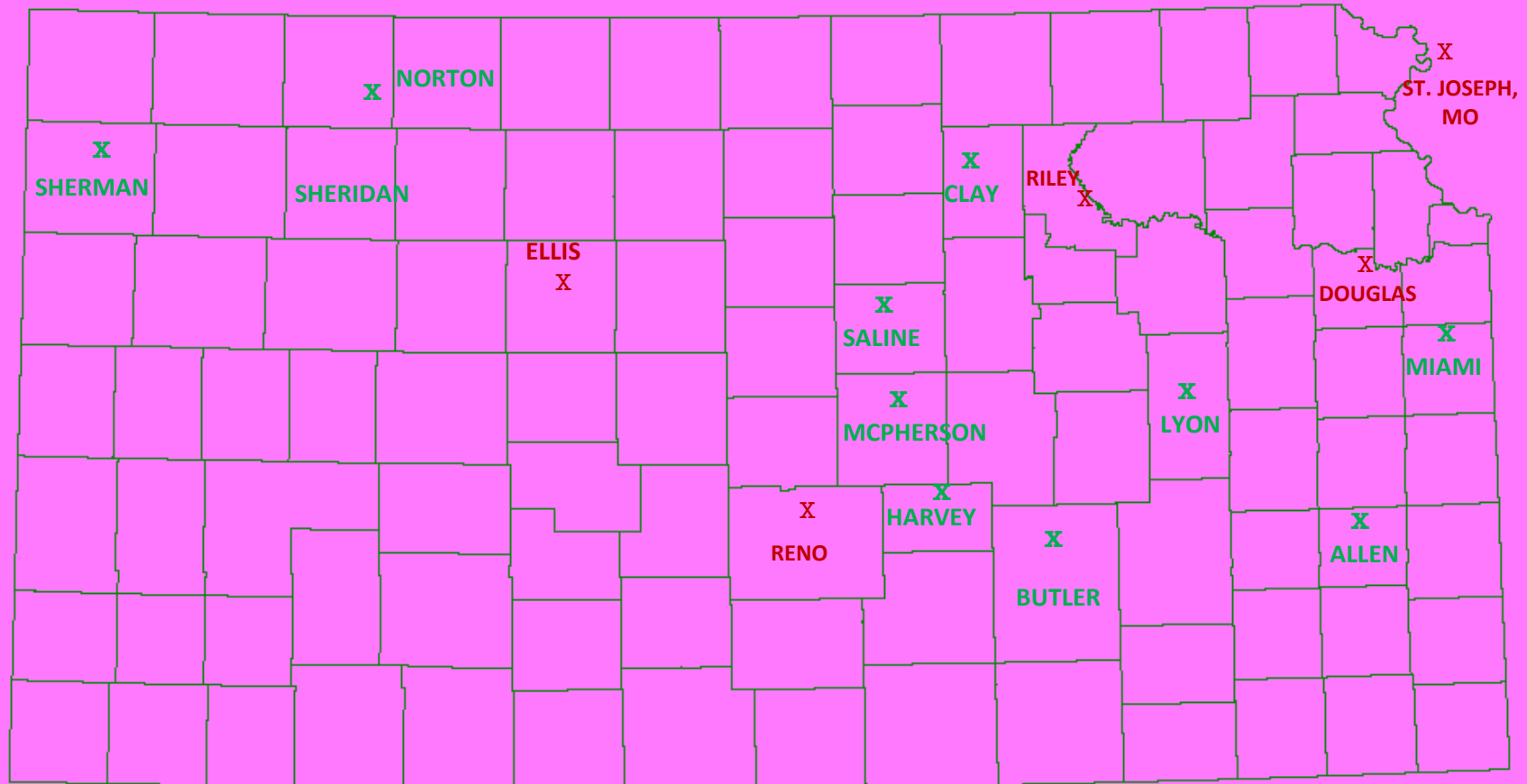
A growing program

	2007	2008	2009	2010	2011	2012
# plants per cultivar, n=	8	27	24	40	30	35
Sites providing rating data	3	6	7	10	8	10
Sites providing yield data	0	1	2	4	4	5

Counties Providing Data

X - Provide yield data

X - Provide only rating data



Field Planting



Most sites use stake
and weave



Cooperators are asked to rate the plants > 3 times over the season, using the provided forms



Example rating sheet

Please rate all the varieties on a 1 = poor, 2 = fair, and 3 = good scale. Please also compare the test varieties with the 'check' and rate them better (+), worse (-) or same (0)

Thus, the boxes of the test varieties will include two entries, i.e. 2+)

Plant Characteristics

Fruit Characteristics

Disease

<i>Variety</i>	<i># Plants</i>	<i>Vigor</i>	<i>Resistance</i>	<i>Relative yield</i>	<i>Uniformity</i>	<i>Cracking</i>	<i>Comments</i>
Cultivar							
Jetstar – Check	6	2	3	2	3	3	Sunscald
Country Taste	6	3+	30	2+	2-	30	
Big Beef	5	3+	30	3+	3+	3+	
German Giant	6	2+	2-	1-	2-	2-	XL fruit
Mr. Ugly	6	20	30	2-	2-	2-	Blossom End Rot

Yield data is collected from several sites annually, K-State, St. Joe, Hays, Hutchinson and Lawrence

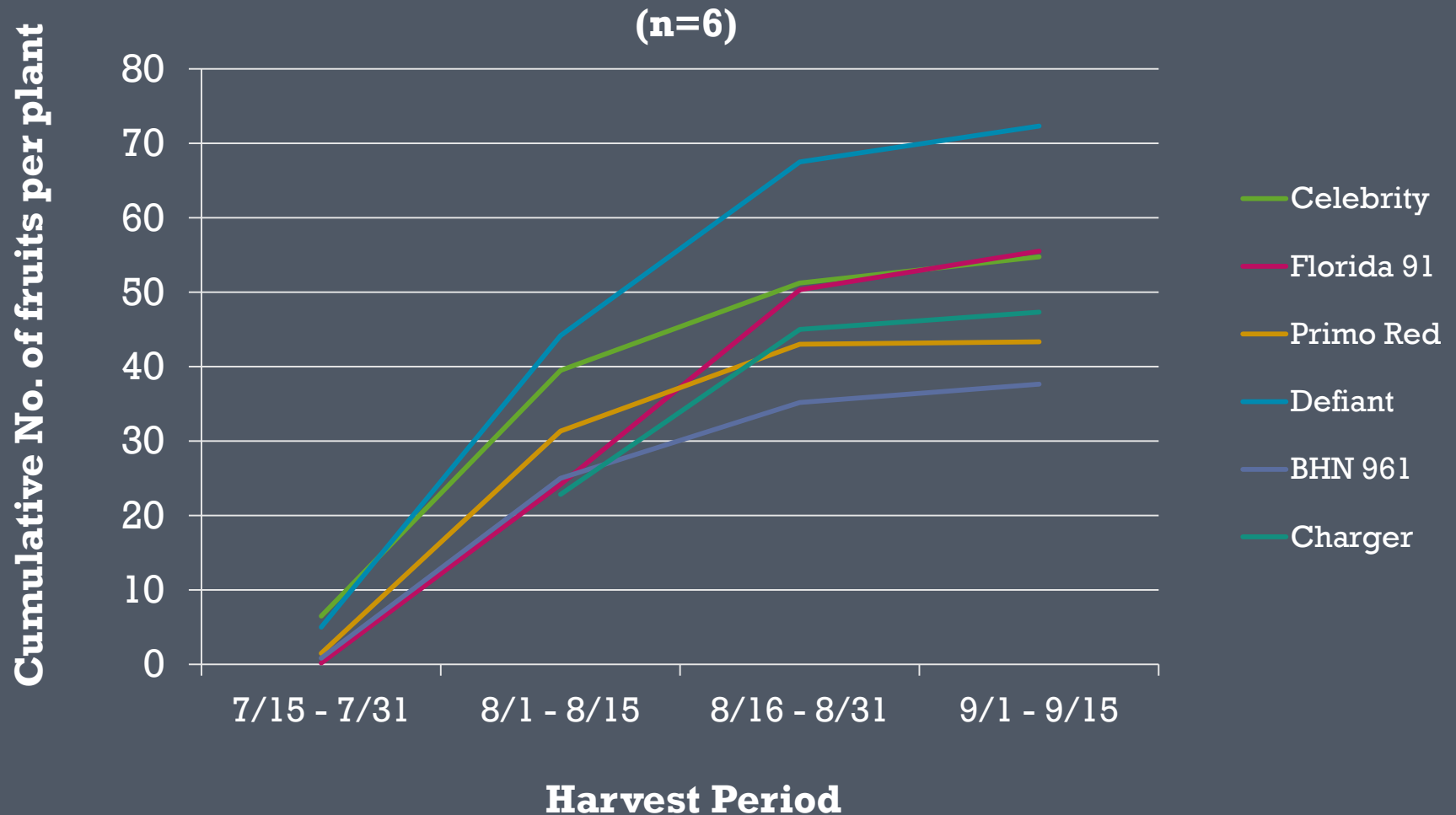


Results – Determinate Tomato

Cultivars Evaluated

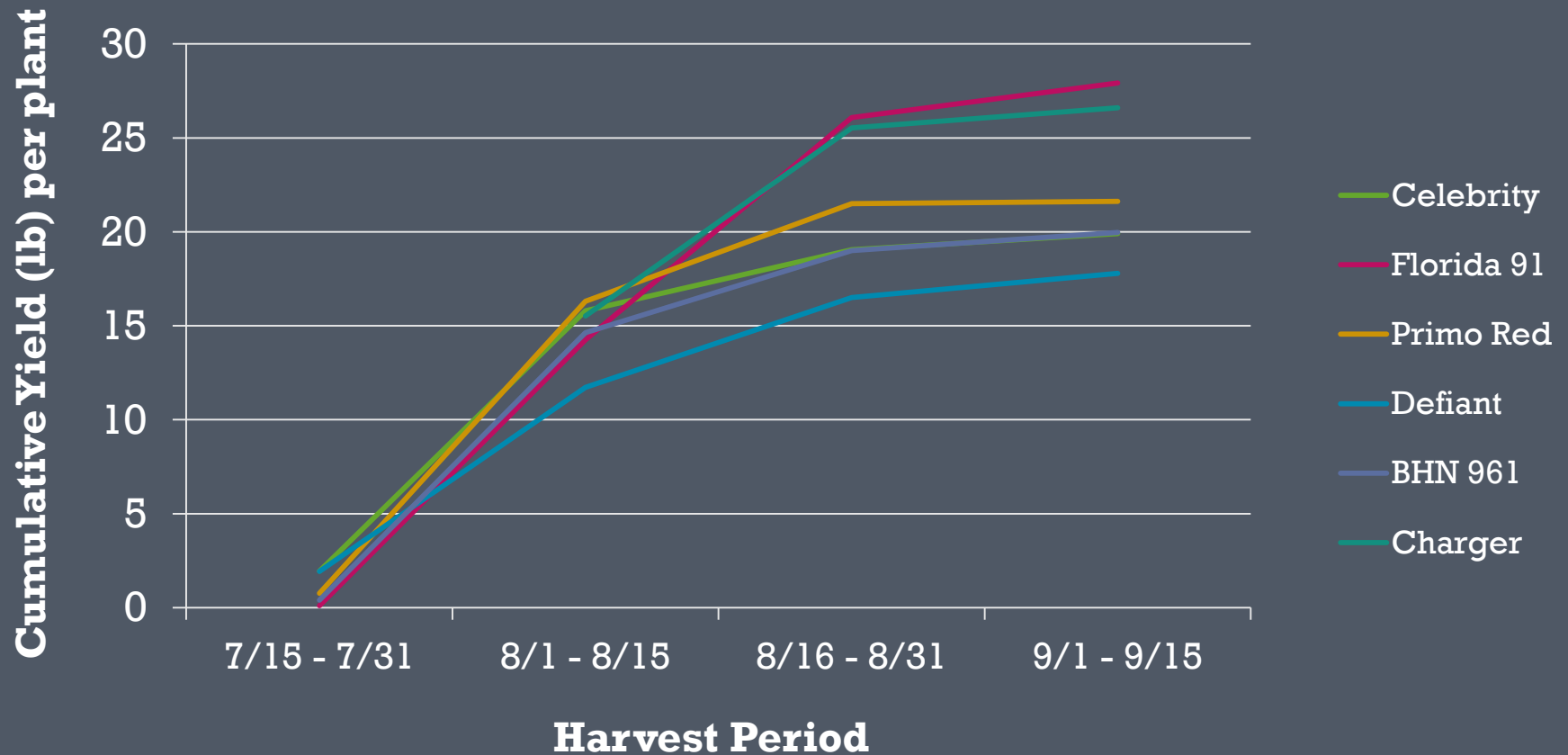
2007	2008	2009	2010	2011	2012
Celebrity-Check	Crista-Check	Crista-Check	Amelia-Check	Crista-check	Celebrity-check
BHN 602	Amelia	Florida 91	Mt. Fresh	BHN 602	BHN 961
Crista	BHN602	Husky	Primo Red	Fabulous	Fabulous
Florida 91	Florida 91	Scarlet Red	Scarlet Red	Florida 91	Florida 91
RFT 6153	RFT 6153	Road Runner 3	Road Runner 3	Hy Beef	Defiant
Sunmaster	Scarlet Red	Red Defender	Security 28	Mt. Glory	Charger
		RFT-6153	Valley Girl	Mt. Fresh+	Mt. Fresh+
		Security 28		Primo Red	Primo Red
		Mt. Glory		Red Defender	
				Tribeca	

St. Joseph, MO - No. of fruits per plant 2012

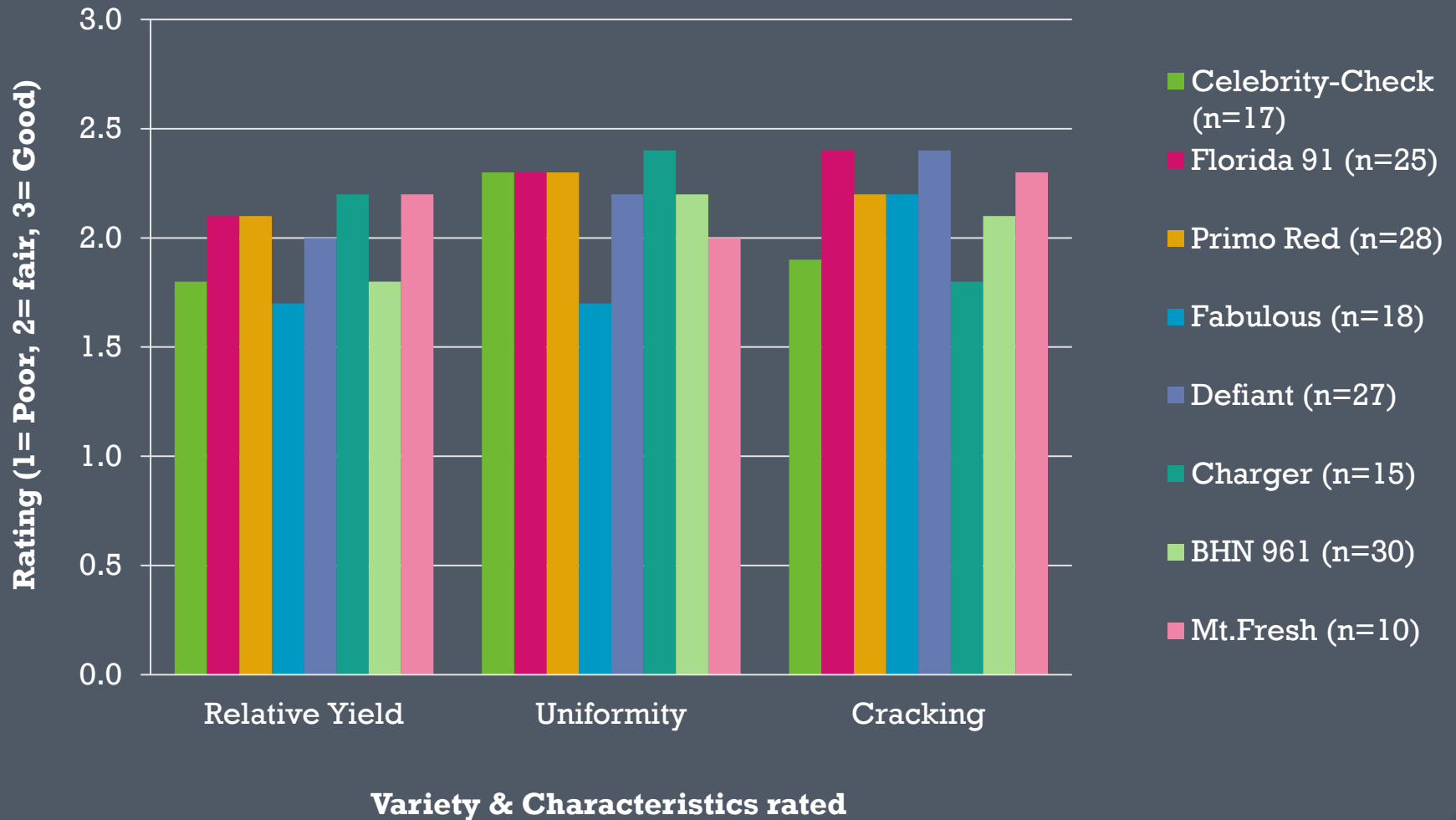


St. Joseph, MO – Weight per plant 2012

(n=6)

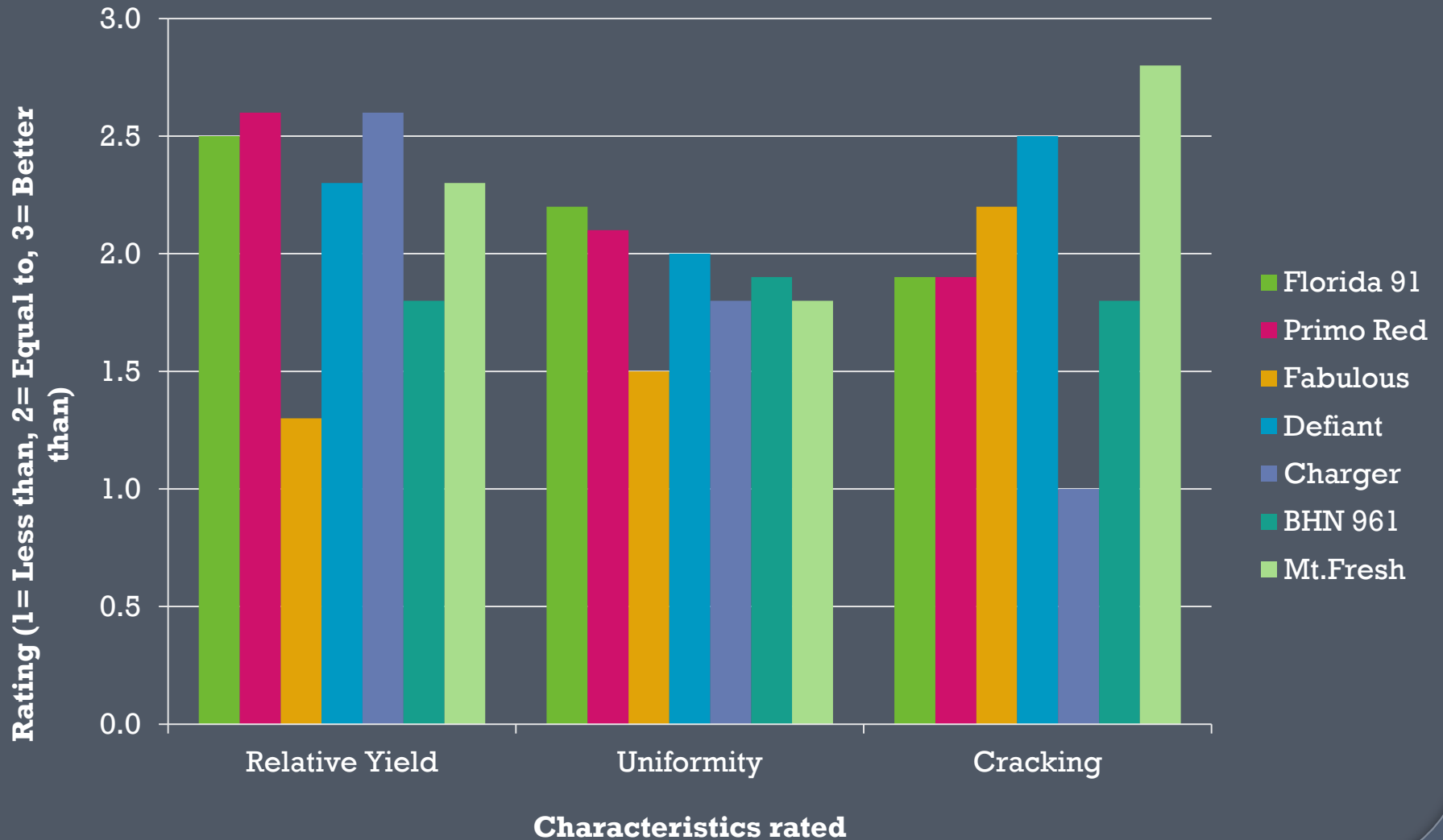


Determinate type Tomato Ratings - 2012



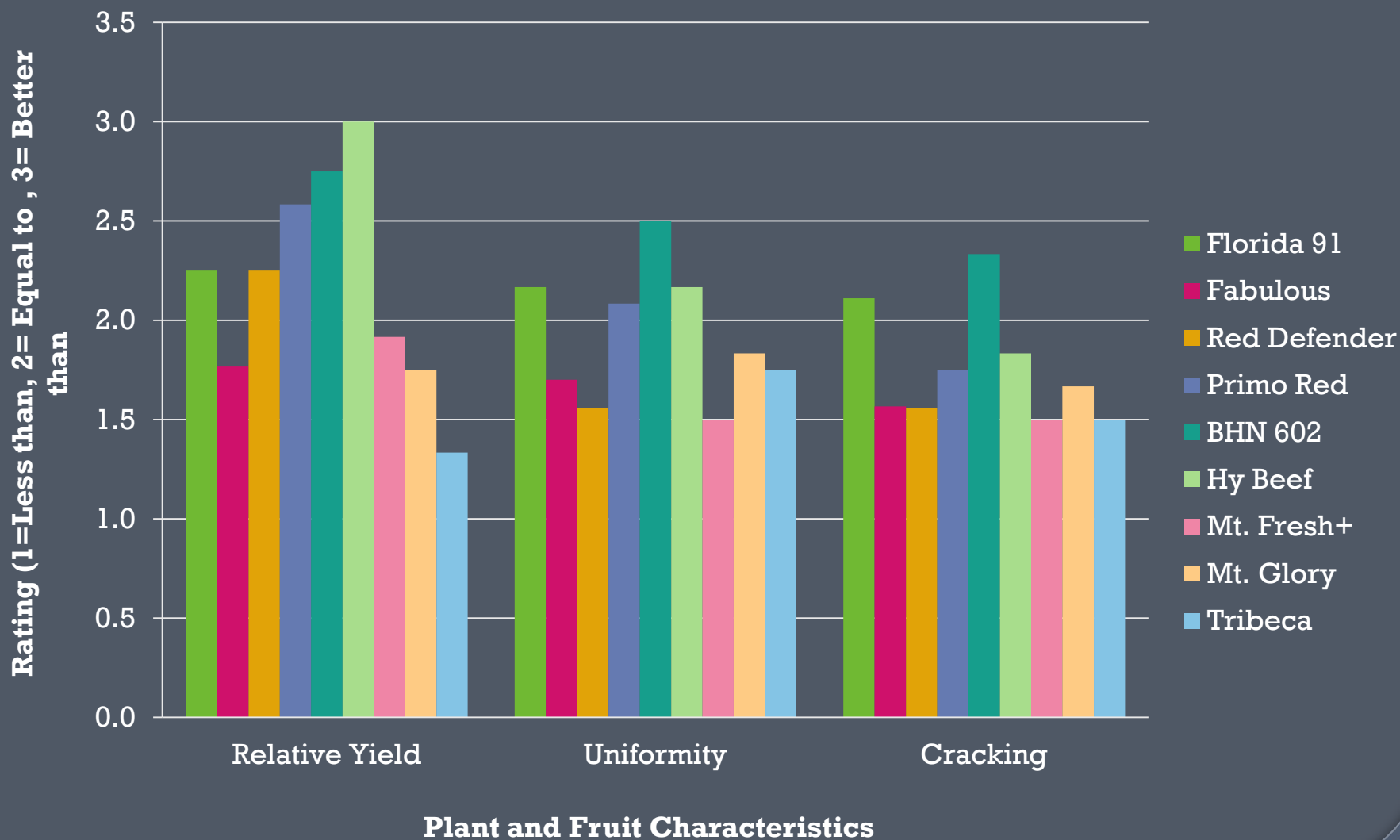
Determinate Tomato

Comparison to Celebrity – Check cultivar 2012



Determinate Tomato

Comparison to Crista – Check cultivar 2011



Determinate Tomato

Comparison to Amelia – Check cultivar 2010



Recommended Determinate Cultivars

Cultivar	Performance exceeds check	Sources
Amelia	check	Harris, Seedway, Twilley
Crista, Celebrity	check	Harris Harris, Rupp, Seedway, Stokes, Twilley, Johnny's, Pinetree, TGS
Florida 91	3 / 5 (1 time equal)	Seedway, Twilley, TGS
Primo Red	2 / 3	Harris, Seedway, Stokes
RFT 6153	1 / 3 (1 time equal)	Seedway
BHN 602	1 / 3 (1 time equal)	Seedway
Defiant	1 / 1	Johnny's, Stokes
Charger	1 / 1	Rupp, Seedway, Johnny's, HPS, TGS
Hy Beef	1/1	Stokes
Sunmaster	1 / 1	
Red Defender	1 / 2	Harris
Scarlet Red	1 / 3	Harris, Seedway, Stokes
Mt. Fresh	1 / 3	Harris, Seedway, Stokes, Twilley, Johnny's, HPS
BHN 961	0 / 1 (1 time equal)	

Determinate cultivars that have done poorly

Cultivar	Performance exceeds check
Mt. Glory	0 / 2
Security 28	0 / 2
Road Runner 3	0 / 2
Fabulous	0 / 2
Husky	0 / 1
Valley Girl	0 / 1
Tribeca	0 / 1

Questions on Determinates?

Results – Indeterminate Tomato

Cultivars Evaluated

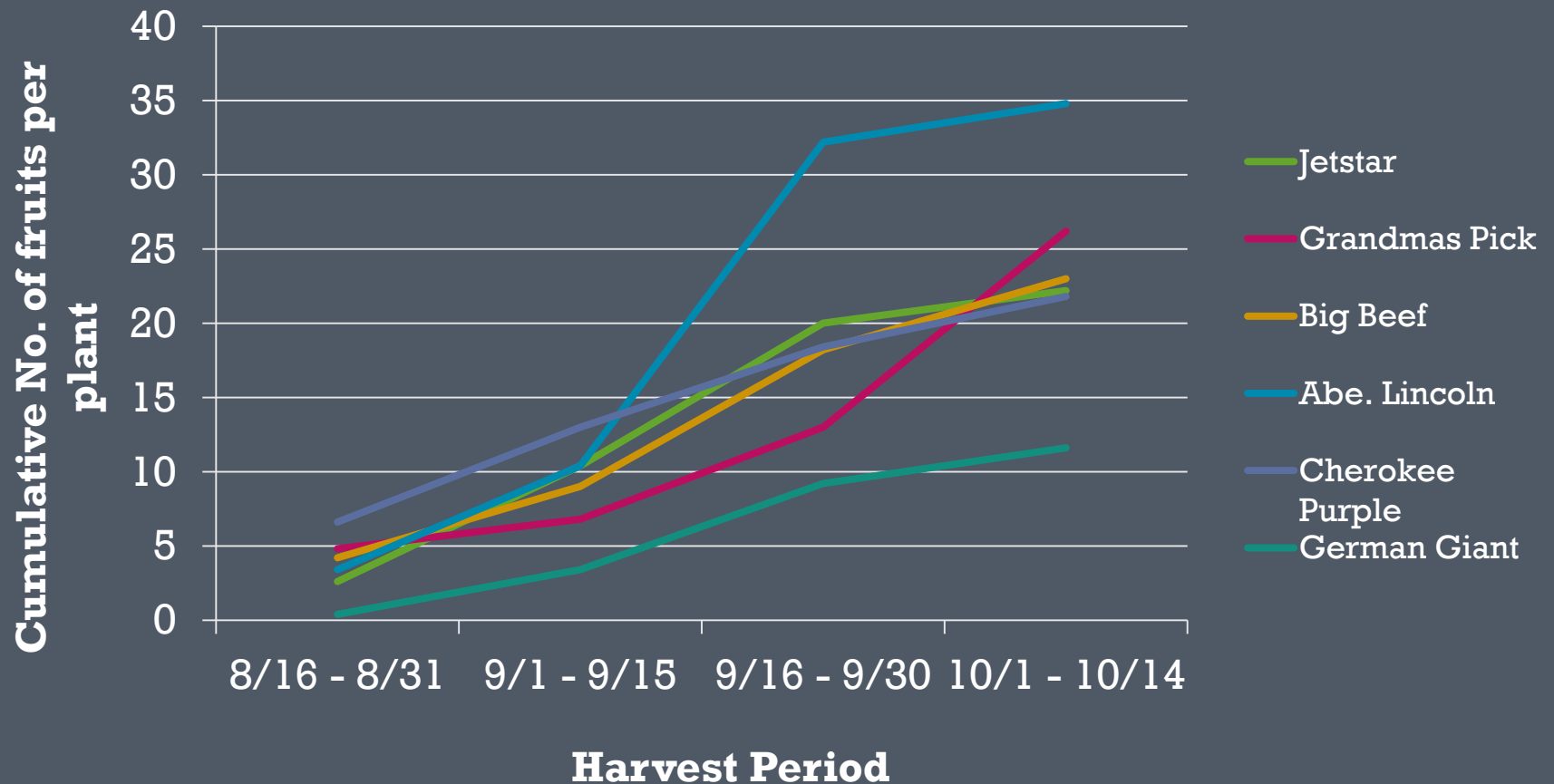
2007	2008	2009	2010	2011	2012
Jetstar- Check	Jetstar-Check	Jetstar-Check	Jetstar-Check	Jetsetter-check	Jetstar-check
Beefy Boy	Big Beef	Country Taste	Country Taste	Big Beef	Abraham Lincoln
Big Beef	Conestoga	Jetsetter	Pink Beauty	Conestoga	Big Beef
Juliet	Grandma's Pick	Sunsugar		Country Taste	Country Taste
				Mr. Ugly	Cherokee Purple
					Grandma's Pick
					German Giant
					Mr. Ugly
					Pink Beauty

Indeterminate types

- Typical Hybrid (ie Jetstar, Big Beef,)
- Hybrid “Heirloom” bred to exhibit heirloom qualities, like scalloped shape, flavor, color (Conestoga, Tie Dye, Country Taste, Mr. Ugly).
- True Open-pollinated Heirlooms (Cherokee Purple, Striped German, Brandywine)

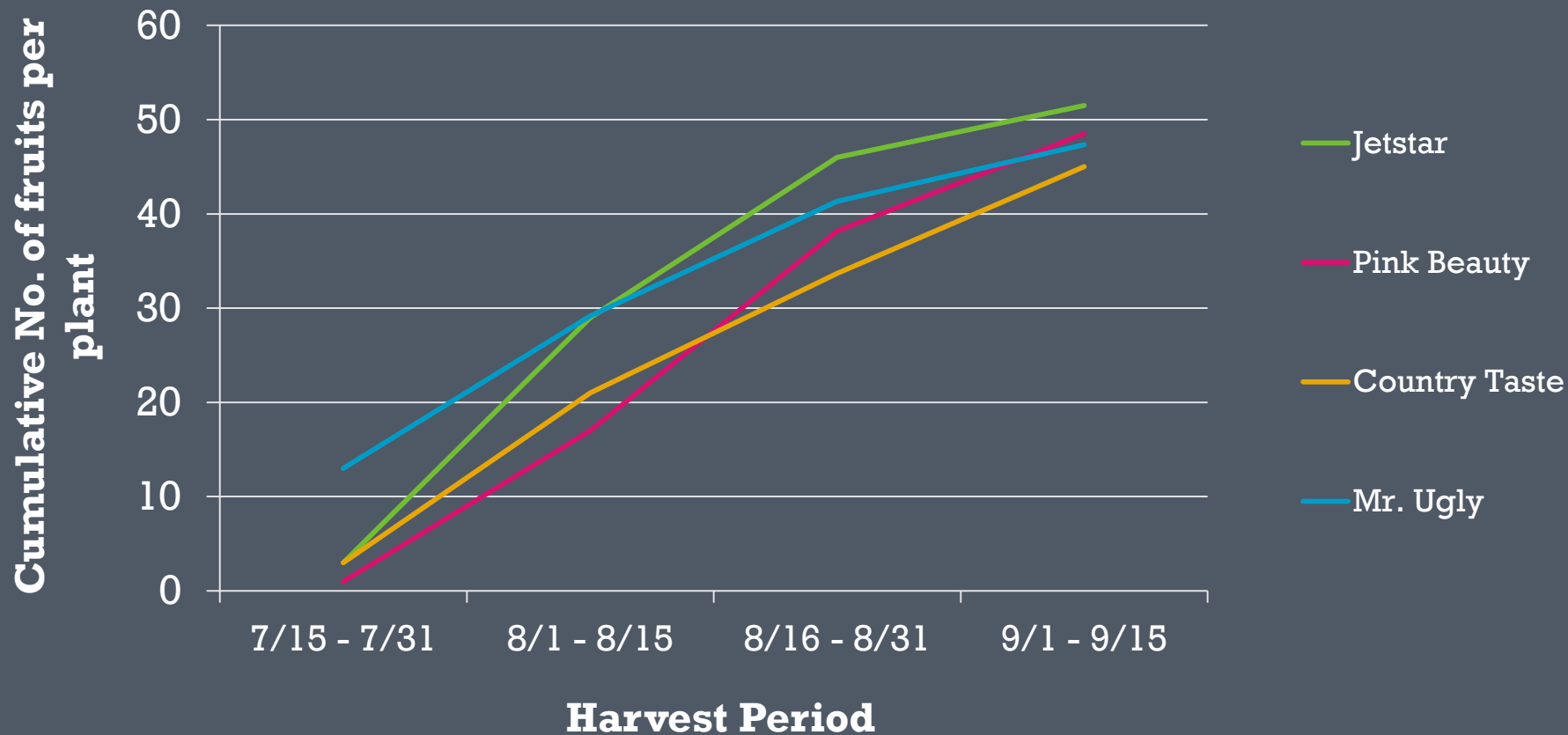
Douglas County, (HINU) No. of fruits per plant 2012

(n=5)



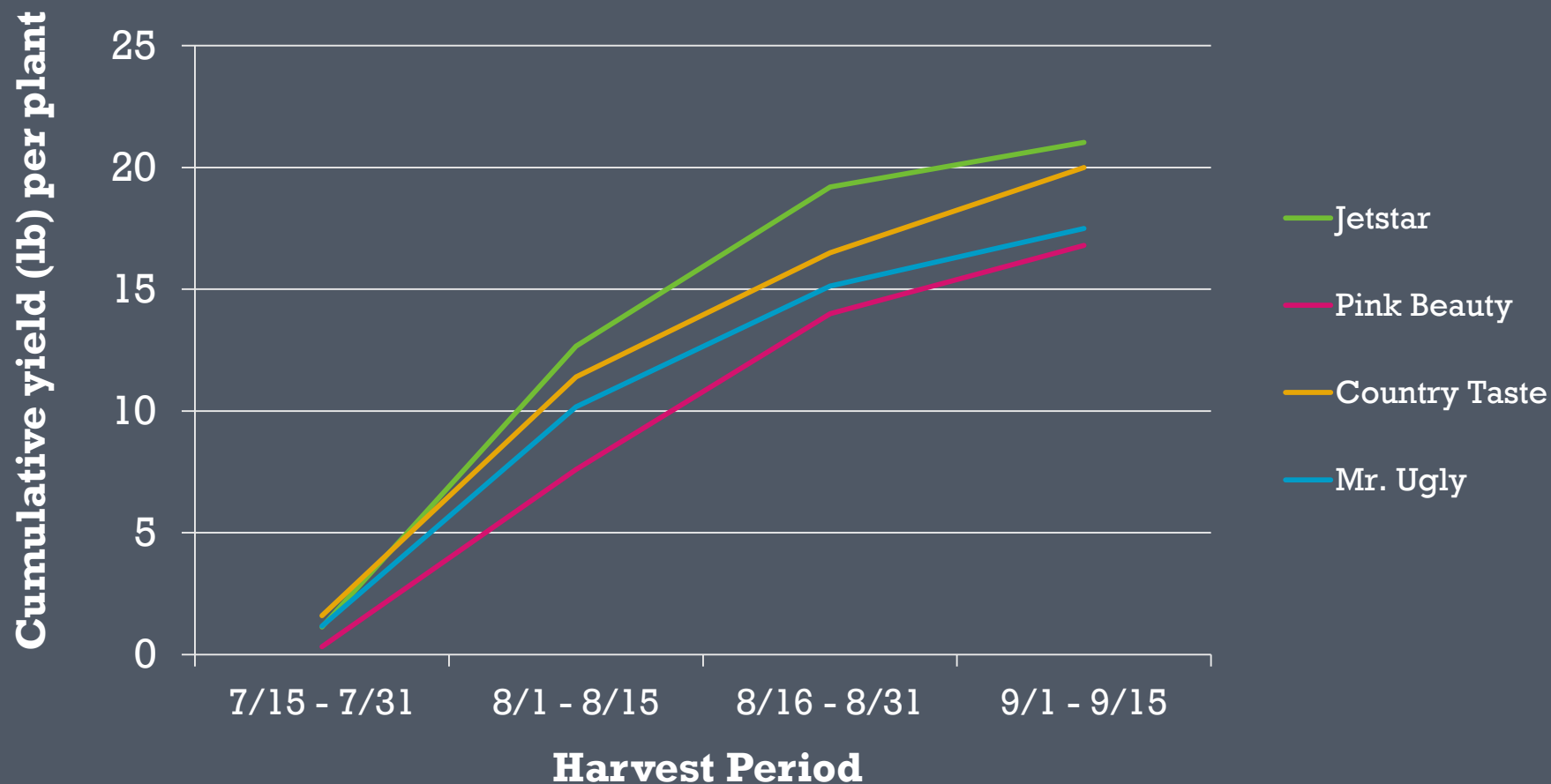
St. Joseph, MO - No. of fruits per plant 2012

(n=6)



St. Joseph, MO - Weight per plant 2012

(n=6)





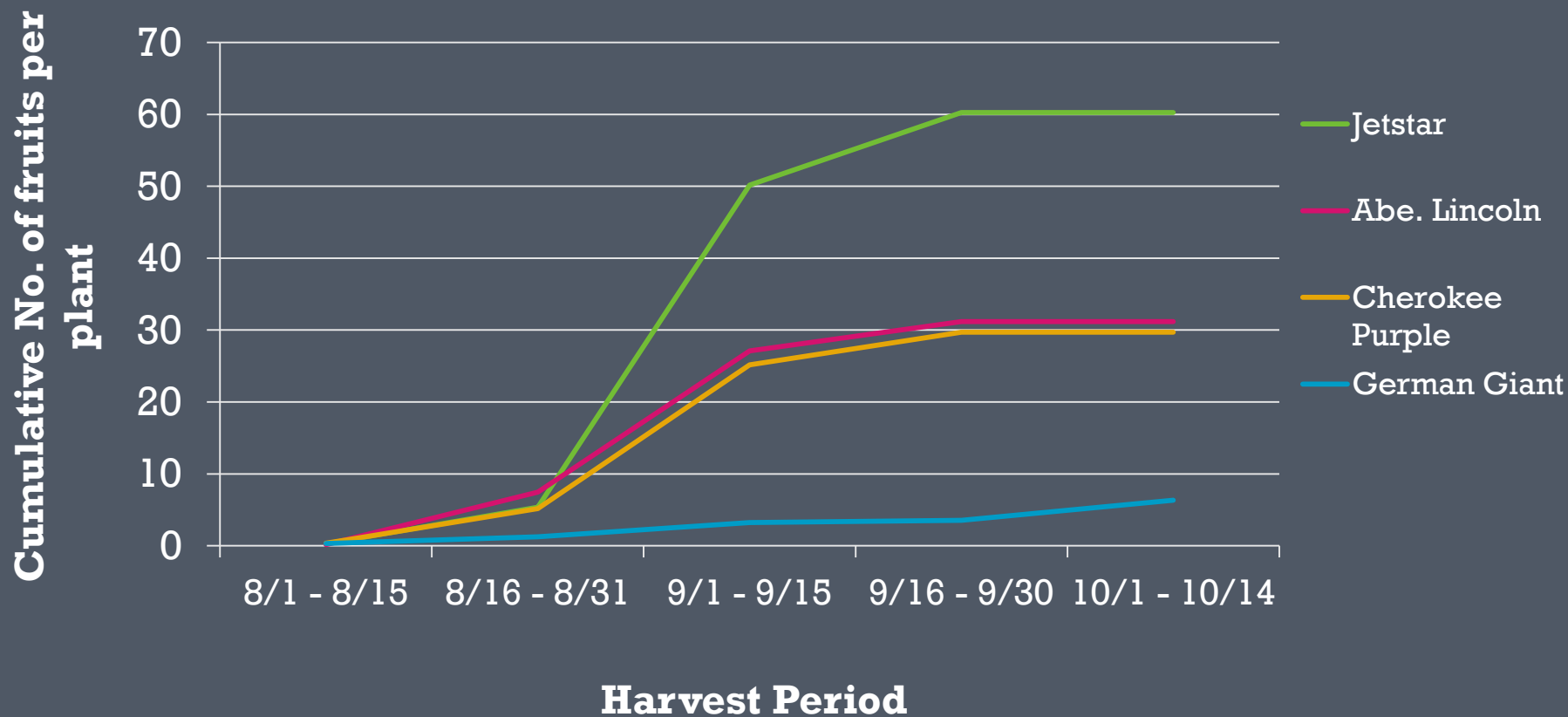
Jetstar



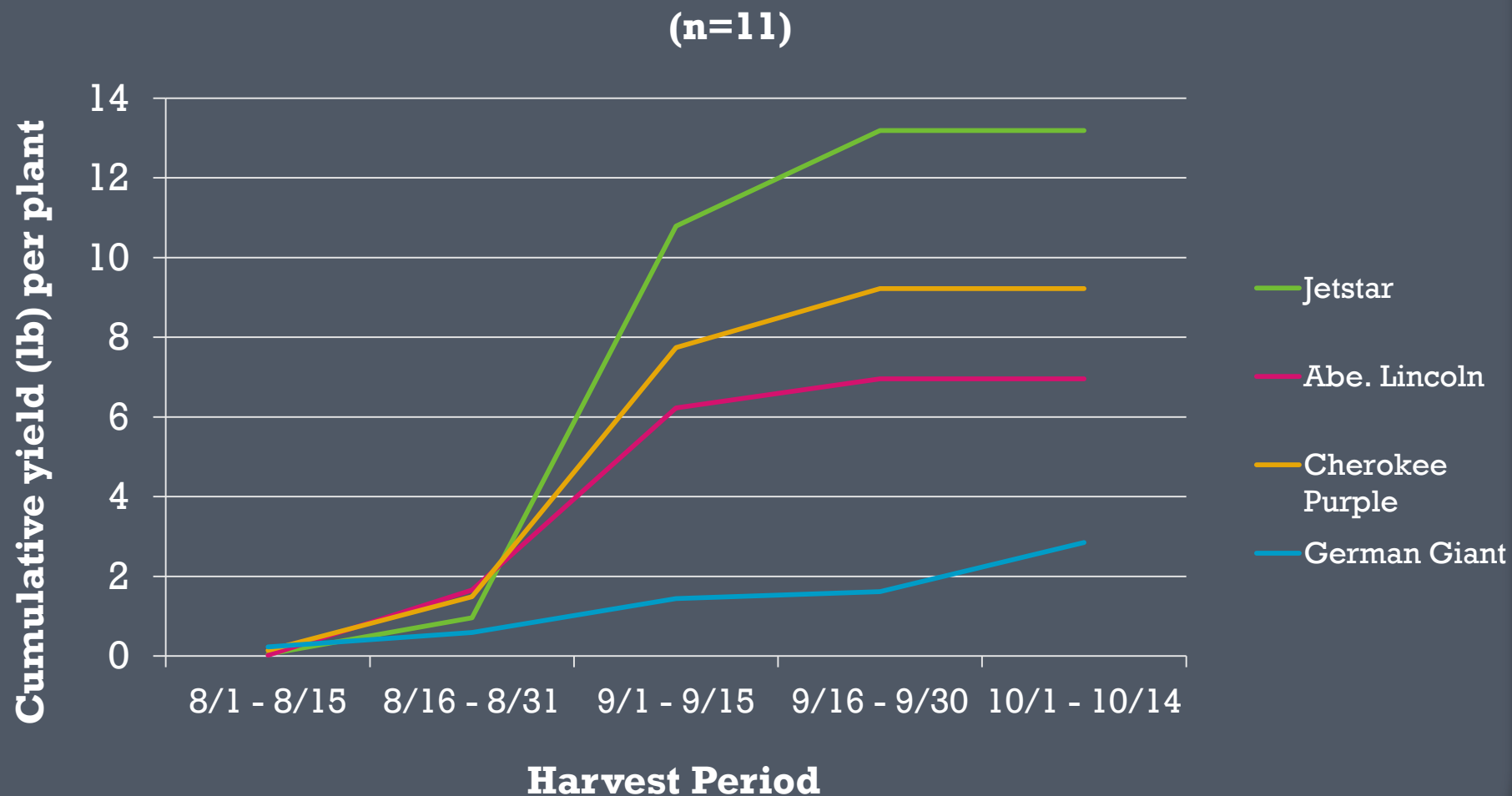
Riley County (KSU Student Farm)

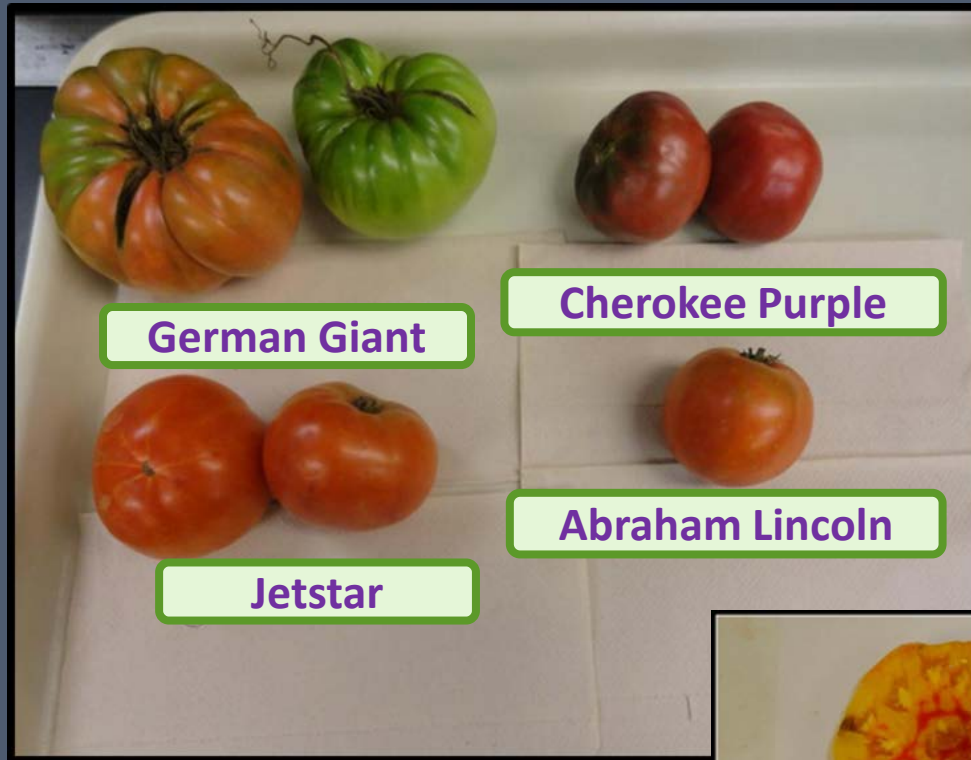
No. of fruits per plant 2012

(n=11)



Riley County (KSU Student Farm) weight per plant 2012





2012

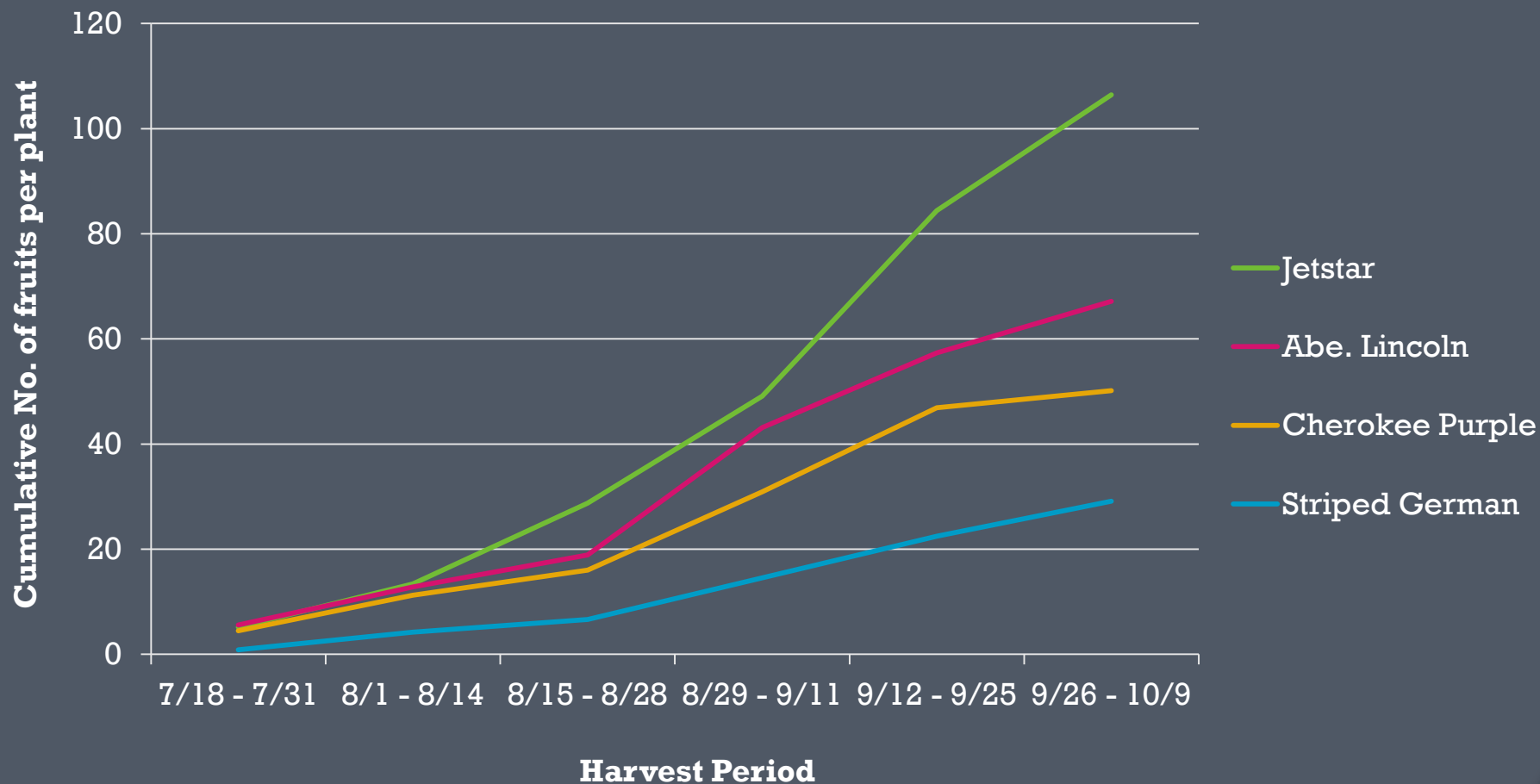
2013



Riley County (KSU Student Farm)

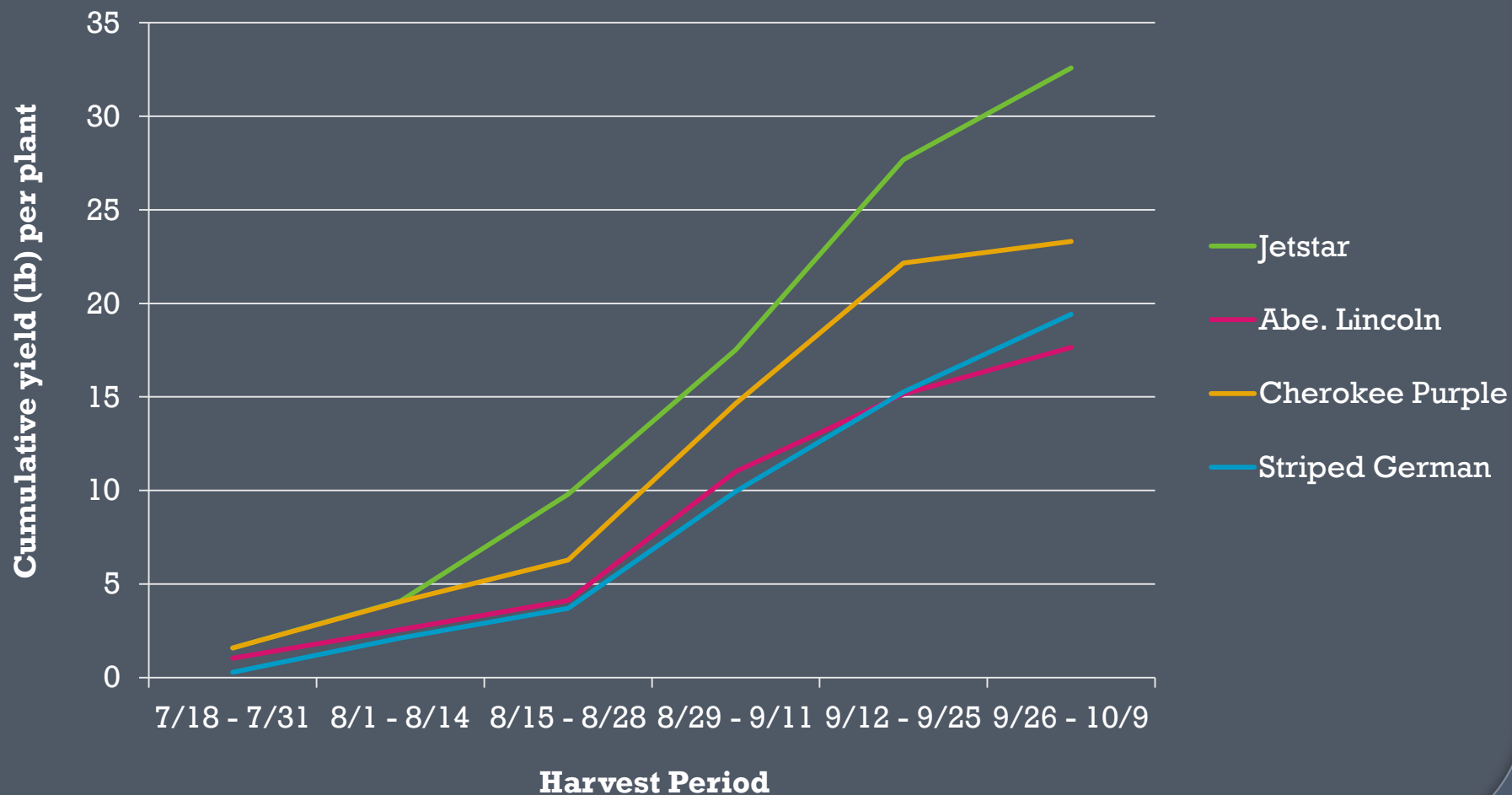
No. of fruits per plant 2013

(n=20)

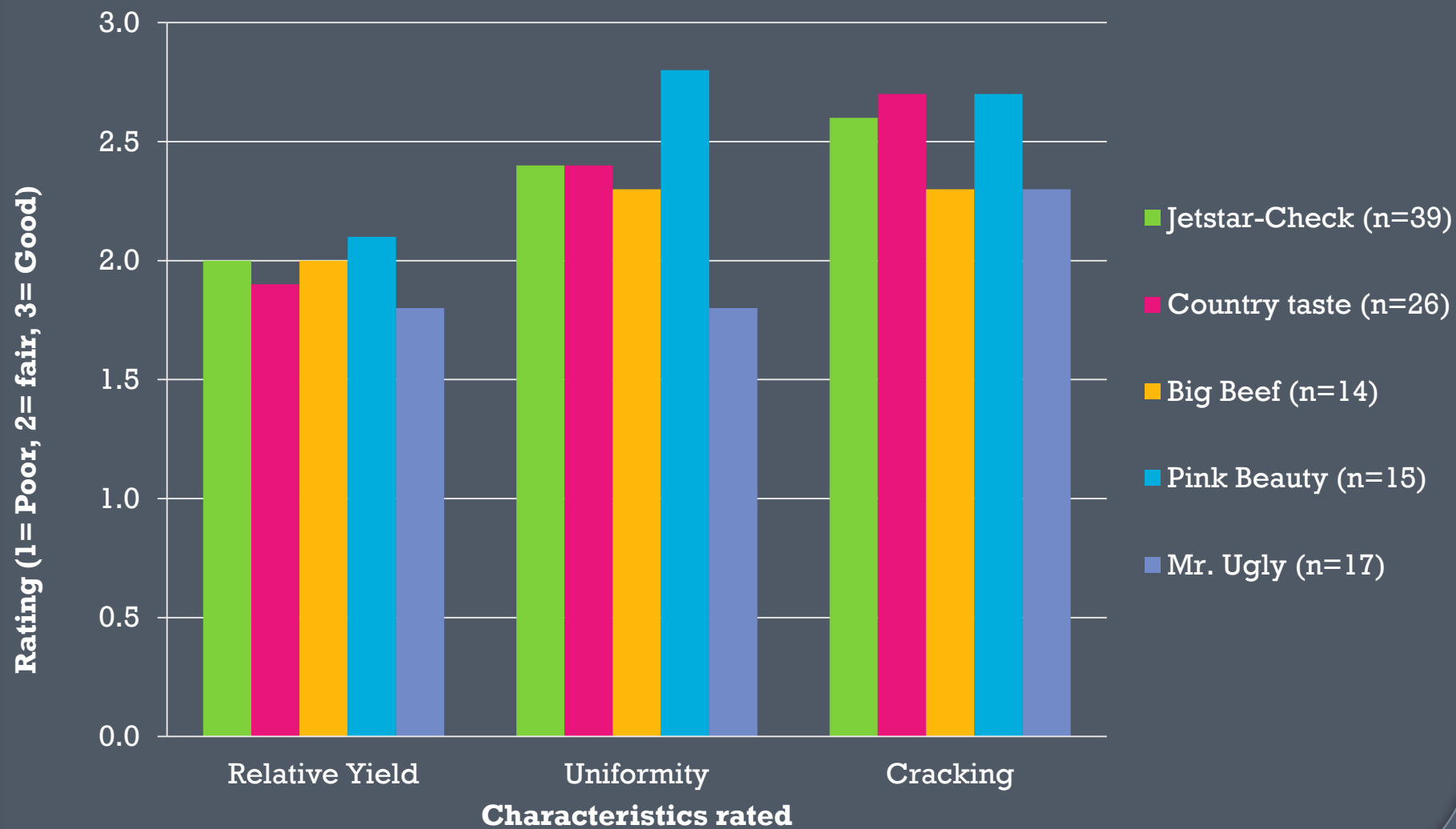


Riley County (KSU Student Farm) weight per plant 2013

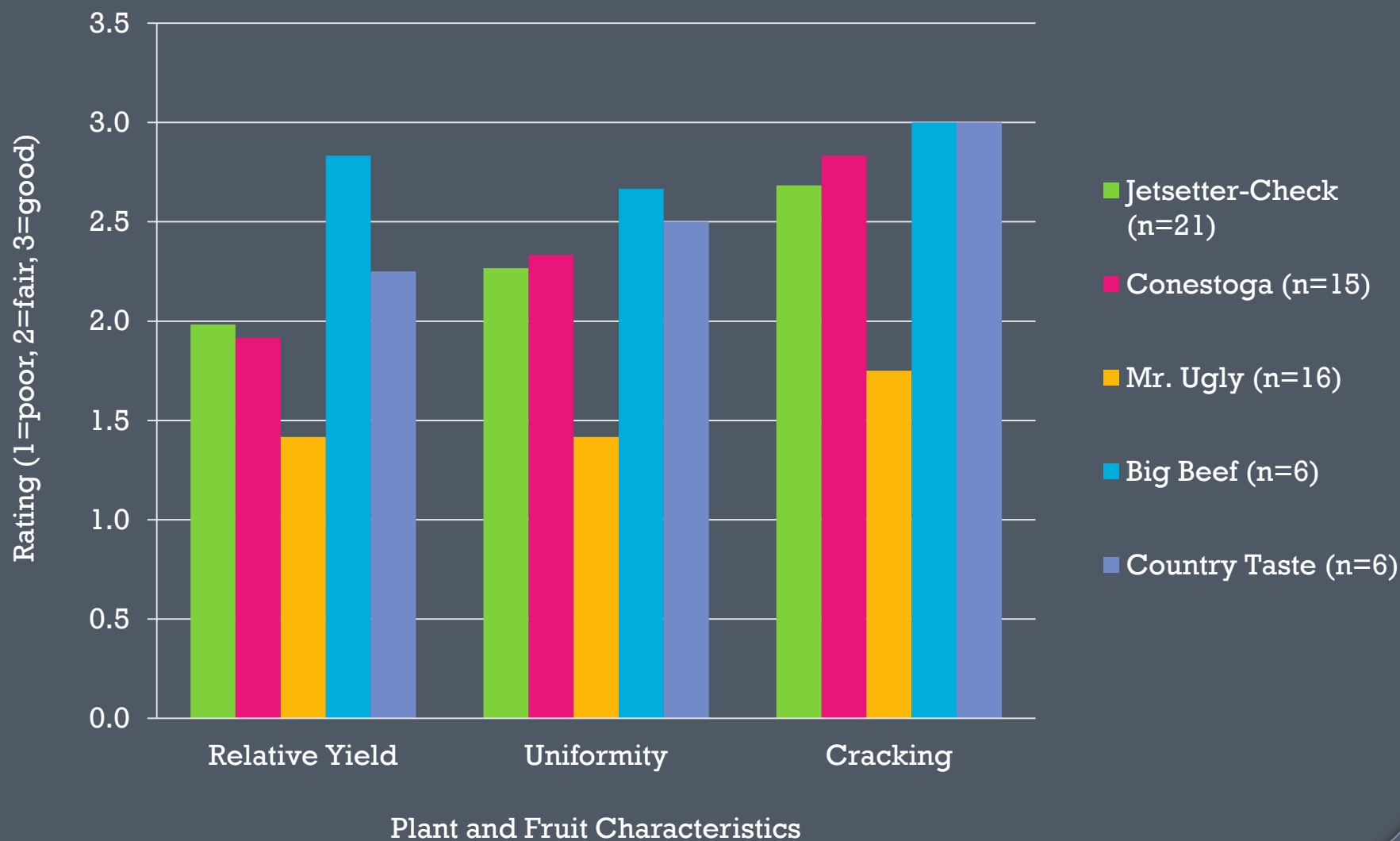
(n=20)



Indeterminate type Tomato Ratings - 2012



Indeterminate type Tomato Ratings - 2011



Indeterminate type Tomato Ratings - 2010



Recommended Hybrid Indeterminates

Cultivar	Performance exceeds check	Sources
Jetstar	check	Harris, Pinetree, HPS, TGS
Jetsetter	check	Twilley, HPS
Big Beef	3 / 4 (1 time equal)	Harris, Rupp, Seedway, Stokes, Twilley, Johnny's, HPS
Conestoga	1 / 2	Harris, Stokes
Grandma's Pick	1 / 2	Seedway, Twilley
Pink Beauty	1 / 2	Johnny's
Country Taste	1 / 4	Pinetree, HPS
Beefy Boy	0 / 1 (1 time equal)	

Hybrid Indeterminate cultivars that have done poorly

Cultivar	Performance exceeds check
Mr. Ugly	0 / 2

Heirloom Indeterminates that have done well

Cultivar	
Abraham Lincoln	2 years, smaller, soft fruit
Cherokee Purple	2 years, high yields, XL
Striped German	1 year, mod. yields, XXL

Cherry tomato observations

- ◉ Sunsugar- yellow small cherry, crack resistant and very sweet, yields up to frost
- ◉ Juliet- High yielding, oval shape, skin is tough, stores well, fruit drops easily

\$6.08 per pound all year at Walmart



Acknowledgments

- ◉ Tom Fowler and his MG
- ◉ Kansas Horticulture Agents and MG
- ◉ Haskell Indian Nations University
- ◉ USDA Tribal Colleges Research Grant