

Tennessee Bicolor Sweet Corn Variety Evaluation

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When you are choosing sweet corn varieties to grow, your choices are nearly endless. You can choose a variety by the color of the kernels- white, yellow or bicolor, by the maturity date- early, mid-season or late, or by the how easy they are to grow, their kernel sweetness and their storage life, which are all affected by their genetics.

Normal sugary varieties have the *su* gene. These varieties were the standard for sweet corn for many years. It has the lowest sugar content and needs to be eaten soon after harvest. As time passes, the sugar in these varieties is quickly converted to starch, making them chewy and less tender, instead of creamy. 'Butter and Sugar' is an example of a normal sugary variety.

Sugary enhanced varieties have the *se* gene. These varieties are sweeter than the *su* types and their sugar turns to starch more slowly, which means they will maintain their creamy texture and store for 2-4 days, if refrigerated. One of the most well-known *se* varieties is 'Peaches and Cream'.

The supersweet, or shrunken, varieties have the *sh2* gene. These varieties are 2-3 times sweeter than the *su* and *se*'s, and have a slow sugar to starch conversion rate, so corn will remain sweet for up to 10 days after harvest, if stored properly. However, *sh2* types can be less tender, more crispy to eat and harder to grow than the other types and must be isolated at least 500 ft from all other types. Otherwise, cross pollination with those other types will cause *sh2*'s to become starchy and tough.

Synergistic sweet corn varieties combine the best of both worlds- the sweetness of the supersweets and the tenderness of the sugary enhanced varieties. Their genetics can include a variety of crosses between types. They are easy to grow, like the *se* and *su*'s and they have the storability of the *sh2*'s.

Objective: The purpose of this trial was to evaluate bicolor, synergistic sweet corn varieties suitable for Tennessee that will please both the grower, with high yields, and the customer, with superb flavor.

Methods:

This experiment was conducted at the Plateau Research and Education Center (PREC) in Crossville, TN and the Highland Rim Research and Education Center (HRREC) in Springfield, TN. Twenty-one varieties were planted at the PREC on May 15, 2007 and 18 varieties were planted at the HRREC on May 1, 2007. In both locations, spacing was 30 inches between rows and 10 inches between plants within the row. There were four replicated plots per variety and plots consisted of four 25-foot long rows. These plots were randomly assigned within each replicate to account for field variability.

Fertilizer was applied according to soil test recommendations at each location. Weeds, pests and diseases were managed according to the 2007 PBI282 UT Commercial Vegetable Disease, Insect and Weed Control Manual.

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Harvesting began in mid-July and continued through early August. The plant and ear characteristics measured included: plant emergence (%), plant height, days to maturity, total and marketable yield, number of ears per plant, ear length, ear width, tip fill, tip cover, husk color and tightness and kernel sweetness.

Results:

Yields from the PREC trial were higher than those from the HRREC, due to reduced insect damage and supplemental irrigation. The top performing varieties were Montauk, Sweet Rhythm, Charisma, Vitality and Sweet Chorus (Table 1). Montauk is a mid-season variety, with a marketable yield of over 500 crates/acre and a vigorous plant and ears 7.5 inches long (Table 2). Sweet Rhythm is an early maturing variety, yielding just under 500 crates/acre with very good tip fill and excellent tip cover. Charisma yielded 480 crates/acre and matured early-mid-season on a medium-sized plant. Vitality and Sweet Chorus were other early-mid season maturing varieties and yielded 466 and 462 crates/acre, respectively.

At the HRREC, Cameo, BC0805, Providence, Serendipity and SS MS Var#950 BC were the top yielding varieties. Cameo, a mid-season maturing variety, yielded around 350 marketable crates/acre, with nice long ears. BC0805, also a mid-season variety, yielded just under 300 crates/acre and has the Attribute Insect Protection. Attribute provides built in protection against European corn borer & corn earworm through the incorporation of a gene that produces the protein found in *Bacillus thuringiensis* (Bt). Bt is a naturally occurring soil bacterium that crystallizes in the gut of these target pests so that when they feed on leaves, stalks, silks or ears of the corn, they ingest the protein and die. Bt is harmless to beneficial insects, birds, fish, reptiles and mammals. The seed is more expensive than traditional seed, but this technology can reduce the number of insecticide sprays that you will need to use during the season and, therefore, can pay for itself. This is one component of an IPM program, and while it can reduce the number of sprays needed, it is important to still scout and spray if insect populations reach the economic threshold. Providence is the non-BT version of BC0805. These varieties are identical except for the Bt gene. Serendipity and SS MS Var#950 BC yielded over 250 crates/acre and are main season maturing varieties with nice, long ears. Though the varieties at the HRREC did not yield as well as those at the PREC, the HRREC trial demonstrated how varieties would perform under high insect pressure and drought conditions.

Acknowledgements:

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University of Tennessee 2007 Bicolor, Synergistic Sweet Corn Variety Trial

Variety	PREC Total Yield	PREC Mktbl Yield	PREC % Mktbl	HRREC Total Yield	HRREC Mktbl Yield	HRREC % Mktbl	Reason for unmarketable ears*
	(60 ear crates/acre)			(60 ear crates/acre)			
1 BC0805	423	340	80	348	296	85	insect damage
2 BC0808	444	401	90	348	235	68	insect damage
3 Cameo	466	453	97	392	348	89	insect damage, tip fill
4 Charisma	571	480	84	348	157	45	insect damage, tip fill
5 Frisky	270	266	99	348	53	15	insect damage, tip fill
6 Kristine	401	353	88	348	227	65	insect damage, tip fill
7 Montauk	610	510	84	357	235	66	insect damage, fill
8 Nantasket	357	323	90	348	209	60	insect damage
9 Polka	283	270	95	348	113	32	insect damage, tip fill
10 Providence	479	370	77	357	270	76	insect damage
11 Reflection	370	327	88	348	70	20	insect damage, fill
12 Renaissance	357	314	88	365	140	38	insect damage, size
13 Revelation	348	283	81	348	79	23	insect damage
14 Serendipity	501	383	76	348	262	75	insect damage, disease, fill
15 SS MS Var#502 BC	457	388	85	348	192	55	insect damage
16 SS MS Var#950 BC	501	444	89	409	253	62	insect damage, fill
17 Sweet Chorus	567	462	81	348	122	35	insect damage, tip fill
18 Sweet Rhythm	606	484	80	348	209	60	insect damage
19 Synergy	540	440	81	---	---	---	---
20 Temptation	447	372	83	---	---	---	---
21 Vitality	523	466	89	---	---	---	---

^Assuming 20892 plants/acre

*Reason for unmarketability at HRREC

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	Variety	Days to Harvest	Plant Height (ft)	Height to Collar (in)	Ear Length (in)	Brix (%)	Tip Fill	Tip Cover	Insect Damage (%)*	Supplier
1	BC0805	81	6.5	17	8.5	18.6	8.75	8.75	3.75	Syngenta
2	BC0808	77	7	18	8.75	16.9	8	7.25	2.5	Syngenta
3	Cameo	76	7	21	8	14.5	8.5	6.25	1.25	Crookham
4	Charisma	72	6.5	20	7.25	16.6	8.5	8	1.25	Seedway
5	Frisky	73	5	8	5.75	16.5	3	5.75	10	Crookham
6	Kristine	76	6	15	7.75	15.5	8.5	7.25	1.25	Seedway
7	Montauk	75	6	17	7.5	17.0	8.25	7.5	0.25	Seedway
8	Nantasket	73	7	20	7.25	15.1	9	9	0	Seedway
9	Polka	71	5	11	6.75	17.4	7.5	7.5	0	Crookham
10	Providence	83	6.5	19	8.5	18.0	8.75	8.5	5.5	Syngenta
11	Reflection	71	6	18	7	16.9	7.75	8.75	0.75	Harris Moran
12	Renaissance	74	6.5	17	7.5	12.4	7.5	7.63	0	Harris Moran
13	Revelation	72	5.5	14	7.25	15.9	7.75	7.75	2.5	Harris Moran
14	Serendipity	79	7	19	8	15.5	8	7.5	6.25	Syngenta
15	SS MS Var#502 BC	79	6.5	22	7.75	13.5	8.75	7.75	0.5	Abbott and Cobb
16	SS MS Var#950 BC	78	6.5	21	7.25	16.0	8.25	6.75	4	Abbott and Cobb
17	Sweet Chorus	72	6	13	7.5	13.1	6	7.5	0.75	Harris Moran
18	Sweet Rhythm	70	6.5	19	7.25	16.0	7	8	0.5	Harris Moran
19	Synergy	78	6.5	19	7.5	17.1	9	7	0.75	Seminis
20	Temptation	73	6.5	19	7.5	14.5	7	8.5	2.5	Seminis
21	Vitality	72	5.75	12	6.75	16.6	7	7.25	2.5	Seminis

All scores for tip fill and tip cover are based on an evaluation of 5 ears on a scale from 1-9: 1=Poor 9=Excellent

*Insect damage at PREC

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