

Bell pepper variety trial: California Wonder versus Catriona

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Cooperator:

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http://bit.ly/pfi_horticulture

In a Nutshell

- Iowa vegetable farmers have many options for sweet pepper varieties.
- Mark compared two varieties: California Wonder and Catriona.
- Mark planted four replications of each variety of sweet peppers in a randomized complete block design.
- Catriona out performed the California Wonder, but not enough to be cost effective considering the seeds are expensive.
- Given this trial was only conducted on one farm, and it was a wet cold spring, replicating the trial would increase data quality.

Project Timeline:

June 2013 to September 2013



Pepper variety trial at Scattergood farms compared two varieties of sweet peppers: California Wonder and Catriona

About the Cooperator

Scattergood Friends School is a small Quaker boarding school near Iowa City, with 10 acres of IDALS-certified organic gardens and orchards and 30 acres of pastures used for grass-finish beef and lamb. Scattergood also raises a few heritage breed Guinea hogs, a small flock of turkeys, occasional broiler flocks, and a laying flock of about 100 chickens. Scattergood primarily grows food for their school, but also markets some products through New Pioneer Coop in Iowa City and Coralville.

Background

Sweet peppers are popular crops for vegetable farmers to grow in Iowa. Peppers require warm growing temperatures and grow poorly during periods of cool and wet weather. There are numerous different

pepper varieties to choose from. In this study, the cooperator tried two different sweet pepper varieties side by side – Catriona and California Wonder. Many Practical Farmers have voiced interest in Catriona, having heard it is a promising variety, but have been leery of the cost. Compared to other common pepper varieties, Catriona pepper seeds are quite costly, almost \$10 for 10 seeds at High Mowing Organic Seeds in Vermont. California Wonder, on the other hand, is a more common variety which is priced at a remarkably lower rate of \$2.75 for 1/64 oz (approximately 62-70 seeds) at the same seed house. For this project, cooperators compared these two varieties based on marketable yield.

Two Pepper Varieties for this Study

Introduced in 1928, California Wonder is an open-pollinated heirloom bell pepper variety which is known as a perfect stuffing pepper because of its thick flesh and large size. The pepper takes 75 days to mature and color is green to yellow when ripe.

Catriona is an early maturing blocky bell pepper that is often recommended for high tunnel or greenhouse production, although it is suited for open field production as well. The days to maturity is 60 days and the color is green to yellow when ripe. This variety is known for its robust disease resistance ability.

Method

Cooperator Mark Quee planted four replications of each variety of sweet peppers in a randomized complete block design. Each treatment was planted in double rows of 10 (20 plants per treatment), 18 feet long with 42 inches rows between treatments. In-row-spacing was 24 inch- staggered row with 18 inches between rows. Plants for the trial were started in the greenhouse on March 27 and transplanted on May 16, 2013. Some plants died before harvest. Harvest records (number of marketable and cull fruits, as well as weights of marketable and cull) were taken four times during the season, on September 11, 19, 28, and October 9. Mark defined marketable and cull fruits before the harvest time. "Marketable" was defined as 100% yellow on a good sized fruit with no blemishes (Mark showed the picker the size standard each time. He referred to the size that he saw sold at New Pioneer Food Co-op and the farmers market in Iowa City). Cull fruits were those with any visible blemish and/or those of an inadequate size. All treatments were transplanted into black plastic with a single drip irrigation hose under the plastic.

Data were analyzed with SAS, using a mixed model. Harvest date, variety, row, and location within row (rep) were used as main effects. Despite planting 20 of each variety in each replication initially, not all 20 survived. Adjusted values were calculated by determining the per-plant yield, and multiplying by 20 to find the theoretical yield had all plants survived. Values reported are least-squares means; differences were considered significant at the $\alpha = 0.05$ level, with tendencies noted if $\alpha < 0.10$.

Results and Discussion

Table 1 shows the number of cull and market fruits and the weight of marketable fruits across the entire season. There were no differences between varieties in

terms of marketable fruits or pounds of marketable product. However, Catriona plants produced fewer cull plants. There were some differences between rows and replications as well.

Individual dates had markedly different yields, as shown in **Table 2**. Cull fruit yield was greatest on the third harvest date, intermediate on the first, and lowest on the second and fourth. Market fruit yield and marketable weight were similarly greater on the first and third harvest dates, intermediate on the second, and lowest on the fourth.

Within each harvest date, there were variety differences for market fruits and marketable weight (variety*date, $P = < 0.01$; **Figure 1**). Catriona yielded more marketable fruits and total marketable weight on the first harvest date, while California Wonder yielded more on the second harvest. There were no differences on the other two harvest dates.



Cooperator Mark Quee examines plants in pepper variety trial at Scattergood Farm.

Table 2

Production totals of pepper plants				
Effect	Value	Cull Fruits (#)	Marketable Fruits (#)	Marketable Weight (lb)
Row	1	16	27	8.9
	2	19	28	10.1
Rep	1	20	26	9.2
	2	20	26	8.0
	3	16	31	10.7
	4	15	28	10.0
Variety	California Wonder	19	26	8.4 b
	Catriona	16	30	10.6 a
Date	Sept 11	23 b	37 a	13.1 a
	Sept 19	9 c	27 b	9.7 b
	Sept 28	32 a	38 a	12.5 a
	Oct 9	8 c	9 c	2.5 c

Table 1

Cumulative yield of pepper plants				
Effect	Value	Cull Fruits, Total	Market Fruits, Total	Marketable Weight, Total (lb)
Row	1	64 b	109	35.6
	2	78 a	112	40.3
Rep	1	81 a	106	36.8
	2	80 a	103	32.2
	3	64 b	122	42.8
	4	60 b	112	40.0
Variety	California Wonder	78 a	103	33.6
	Catriona	64 b	119	42.4



Peppers were separated based on marketability

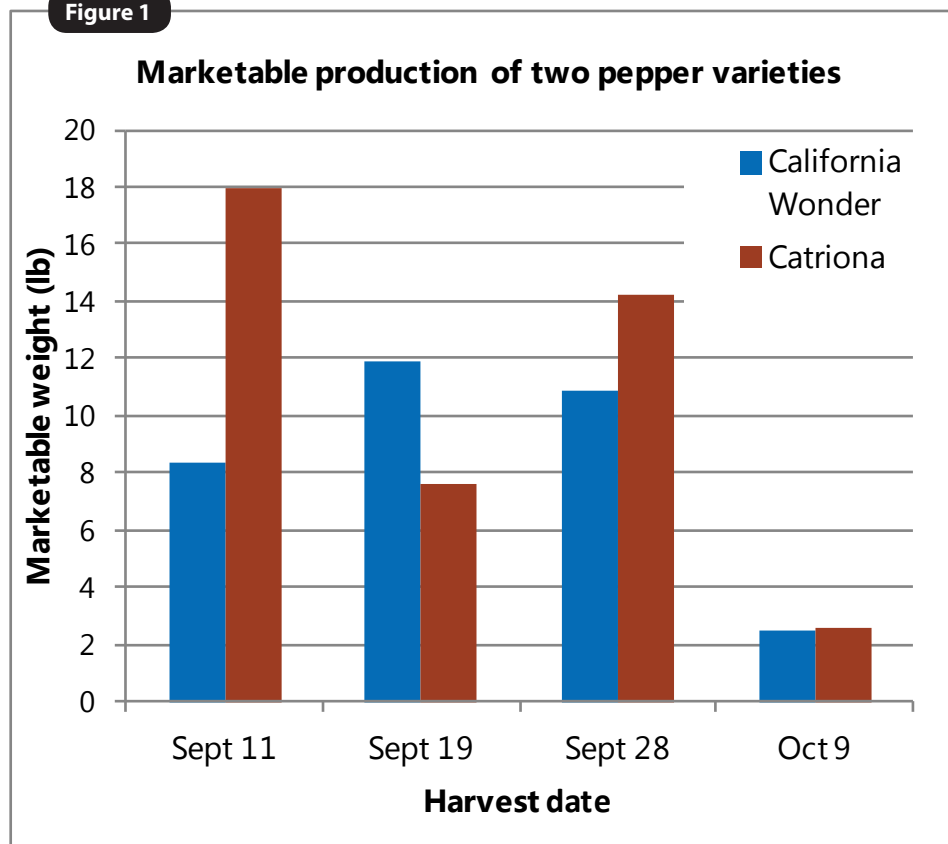
Conclusions and Next Steps

It was very dry and cool in Iowa in July, 2013. Before harvest started, Mark noted that he was surprised to see Catriona outperforming California Wonder because they had seen very few diseases overall due to the drought condition, and the added expense for Catriona pepper seeds were for its disease resistance quality. However, once they started harvesting, they saw all the blossom end rot and all the culls, especially in the California Wonder. Catriona seemed to have fewer blemishes. However, both varieties had lots of blossom end rot, as well as some anthracnose and bacterial spotting. Catriona also seemed to have better coloring. They seemed to ripen more uniformly, rather than leaving a large green area. Mark didn't do any taste tests, however he doesn't recall anything significant in terms of taste from either one. Shapes of each were marketable, though Catriona could have been a bit blockier, with a fatter blossom end.

The cost for California Wonder was \$24.60/.25oz (Approx 1000 seeds) while Catriona was \$71.00 for 100 seeds. Mark does not think they will purchase the more expensive Catriona seeds next year since they are not able to make back the added expense through sales. Instead, he would like to look for a different F1 sweet yellow pepper with disease resistance to grow instead of Cal Wonder, but not one that is as expensive as Catriona.

Since the variety trial was conducted only on one farm this year, it might be worthwhile to set the trial in multiple locations next year to test if that will yield some difference in yield and fruit quality/size.

Figure 1



See also

Jett, L.W. Growing Sweet Peppers in Missouri. Division of Plant Sciences. University of Missouri Extension. <<http://extension.missouri.edu/p/G6372>>

PFI Cooperators Program

PFI's Cooperators' Program gives farmers practical answers to questions they have about on-farm challenges through research, record-keeping, and demonstration projects. The Cooperators' Program began in 1987 with farmers looking to save money through more judicious use of inputs.