

Project No: 13C-3755-2038

Title: Genetic Improvement of Strawberry

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Results

Short Day Strawberry Cultivar Development

The Washington Strawberry Commission has been disbanded. No June-bearing strawberry crosses were made in 2018, but selections were made among the 2017 seedling field. The short day seedlings selected in 2018 will be evaluated in 2020 and 2021. However, there are selections that are already in the field that appear promising and will be evaluated.

The day-neutral strawberry breeding will continue.

Selections. Thirteen strawberry selections were made among the strawberry seedlings planted in 2017. The parents most represented among the selections were 'Charm' as a parent of 7 selections, WSU 2728 parent of 4 selections and WSU 3135 a parent of 3 selections. These selections will be planted in a new planting in 2018 and harvested in 2019 and 2020.

Evaluation of selections. In the planting established in 2016, WSU 3170 had the greatest yield and had good fruit quality (Table 1). Several selections in the 2017 planting had large firm fruit, but yields were less than expected (Table 2). There were problems with the irrigation system in 2018 and yields were reduced this year.

Table 1. 2017 and 2018 Harvest of 2016 planted strawberries, Puyallup, WA

	Yield			Rot		Fruit weight		Fruit firmness		Midpoint of harvest	
	2018	2017	Total	(%)	(%)	(g)	(g)	(g)	(g)		
WSU 3170	9.7	18.9	28.6	8.7%	11.9%	12.1	19.3	266	223	6/8/18	6/14/17
WSU 2646	10.9	15.7	26.6	7.2%	12.8%	9.6	13.9	260	219	6/5/18	6/12/17
WSU 3163	7.2	15.1	22.3	4.9%	4.9%	9.9	16.5	336	250	6/15/18	6/21/17
WSU 3167	7.2	14.9	22.1	4.0%	9.5%	7.9	13.4	289	215	6/11/18	6/7/17
WSU 3190	6.6	15.1	21.7	3.9%	13.3%	6.3	12.7	243	223	6/13/18	6/19/17
WSU 3175	3.3	10.4	13.8	18.6%	23.4%	11.3	19.5	249	216	6/9/18	6/12/17
WSU 3174	3.2	10.0	13.3	19.8%	6.1%	7.9	12.3	321	227	6/11/18	6/16/17
Totem*	5.4	5.4	10.8	0.12	15.7%	6.5	11.5	178	179	6/11/18	6/16/17
Hood	3.0	7.3	10.3	12.9%	16.4%	5.5	7.6	207	179	6/8/18	6/10/17
Tillamook	1.4	6.7	8.1	17.6%	17.7%	4.2	11.0	342	307	6/9/18	6/13/17
	5.8	12.0	17.8	0.11	13.2%	8.1	13.8	269	224	6/10/18	6/14/17

* mean of three plots

Table 2. 2018 harvest of 2017 planted strawberries

	Yield	Rot	Fruit weight	Fruit firmness	Midpoint
	(t/a)	(%)	(g)	(g)	of harvest
WSU 3228	7.07	7.6%	14.5	287	6/19/18
WSU 3226	6.74	7.6%	9.5	252	6/11/18
WSU 3203	6.56	14.7%	11.3	207	6/9/18
WSU 3218	5.95	6.0%	9.5	305	6/13/18
WSU 3214	5.61	10.5%	10.0	311	6/11/18
WSU 3219	5.31	7.0%	8.9	283	6/13/18
WSU 3209	5.18	17.6%	10.3	259	6/13/18
Hood*	5.12	9.9%	9.5	180	6/8/18
WSU 3201	5.06	14.5%	10.3	250	6/13/18
WSU 3207	4.83	10.6%	10.3	233	6/9/18
WSU 3229	4.55	18.8%	11.1	331	6/15/18
WSU 3212	4.36	3.8%	11.4	321	6/11/18
WSU 3221	4.31	13.0%	9.6	240	6/13/18
WSU 3215	4.15	12.7%	7.9	225	6/13/18
WSU 3205	3.86	8.9%	10.2	345	6/7/18
WSU 3202	3.82	10.0%	10.3	259	6/7/18
WSU 3213	3.71	2.8%	7.8	325	6/9/18
Totem*	3.62	9.5%	8.9	218	6/9/18
WSU 3119	3.50	7.6%	8.1	327	6/10/18
WSU 3168	3.43	4.6%	15.8	262	6/5/18
Puget Crimson*	2.28	21.5%	10.4	256	6/18/18
	4.71	10.4%	10.3	270	6/11/18

* mean of three plots

Day-neutral strawberry Cultivar Development

Wendy Hoashi-Erhardt

Seedlings

We evaluated 388 seedlings from 9 families, and made 6 selections based on emphasis on consistent pattern of fruiting, plant architecture, and fruit quality.

Selections

Previous evaluations of non-replicated plots have identified 3 WSU selections that look promising and need further evaluations in replicated plots and at other regional sites: WSU 14-27, WSU 12.216-3, and WSU 13.209-1. These evaluations have been delayed so far due to lack of funding.

We were successful at securing a grant for evaluating day-neutral selections through a Specialty Crop Block Grant beginning in 2017 and through 2020. In September 2017, a replicated

selection trial was planted with several promising selections along with 'Albion' and 'Aromas' as fruit quality and yield standards, respectively. First-year results will be available in fall 2018. Two selection trials of selections from WSU and cooperating breeding programs are slated to occur in fall 2018 and fall 2019 as well.

Summary

This project will develop new strawberry cultivars using conventional breeding methods. The primary goal of the program has been to develop new June-bearing strawberry cultivars that are easily harvested, with improved yields and fruit quality. However, the short day program will be discontinued. As short day selections are evaluated the short day program will be phased out. Promising short day selections appearing promising will continue to be evaluated. The day-neutral breeding effort has been initiated and will continue. Controlled pollinations have been made, seedlings grown, selections made among the seedlings and these selections evaluated.