

'Last Call'

U.S. Plant Patent 25,386

High Chill

Description

LAST CALL is a late season Northern Highbush variety with harvest timing similar to 'Elliott' and 'Aurora'. 'Last Call' is a high yielding, vigorous variety with good flavor, especially for a late season cultivar. This selection was identified as a seedling in 2006, and has been observed since 2010 in multiple plant plots at the Fall Creek research farm in Oregon and other trial sites in the Pacific Northwest.

'Last Call' has some distinct advantages in comparison to 'Elliott' and 'Aurora'. The biggest advantage is that the fruit tastes generally sweeter and more flavorful than either 'Aurora' or 'Elliott'. The bush is also very vigorous and had good yields at the Fall Creek Research Farm in the years 2011 and 2012. The fruit of 'Last Call' is more firm with less shriveling and wrinkling during storage than 'Elliott'. 'Last Call' has an upright growth habit, and an estimated chilling requirement of 1000 hours based on the pedigree. The relative ease of machine harvesting this variety is unknown, though the upright shape and easy fruit release, should be advantageous for machine harvest.

Berries of 'Last Call' are light blue in color, large (average of 212 berries per pound), and slightly flattened. The picking scar varies from small to medium but is usually quite shallow and dry. The calyx end scar is large and shallow. 'Last Call' berries have medium firmness, similar to 'Liberty' but more firm than 'Elliott'. The berries have a strong, 'classic' blueberry flavor similar to 'Jersey' or 'Darrow'. The flavor can be tart in the earlier picks but in blind taste tests the fruit were preferred over 'Elliott' and 'Aurora'.



Figure 1. 'Last Call' berries.

Yield

'Last Call' has had excellent yields at the Henry Farm in Lowell, Oregon during the years 2011-2012 (Figure 2). In their third year harvest in 2012, 'Last Call' plants yielded 9.9 lbs of fruit per plant, equivalent to 7.2 tons per acre at 3' x 10' plant spacing. This was slightly higher than the yield for 'Elliott', which averaged 9.7 lbs per plant or an estimated 7.0 tons/acre. 'Elliott' is one of the highest yielding blueberry cultivars available. 'Last Call' yields were much higher than 'Aurora' (5.7 lbs/plant in 2012), which has a smaller plant in the initial years of orchard establishment. 'Last Call' fruit hangs well on the plant without shriveling.

In 2012, the first pick of 'Last Call' coincided with the first picks of 'Aurora' and 'Elliott' (Figure 3). 'Last Call' had 4 main picks of approximately equal size in 2012, and a final small cleanup pick.

The season generally spanned the same dates as 'Elliott' and 'Aurora'.

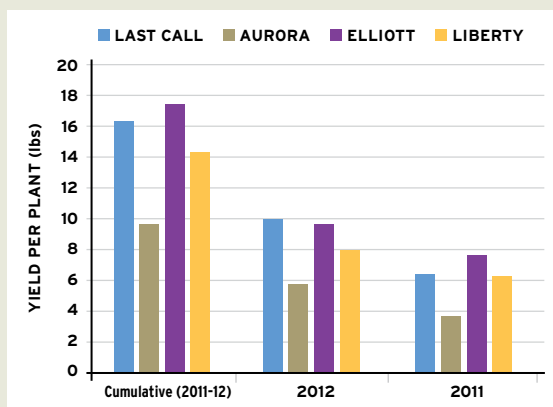


Figure 2. Figure . Yield data for 'Last Call'. Cumulative (2011-2012) column represents the sum of yields from 2011 and 2012. Yield data was collected from nine plants at the Henry Research Farm in Lowell, Oregon. All plants were planted in 2008.

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Yield continued

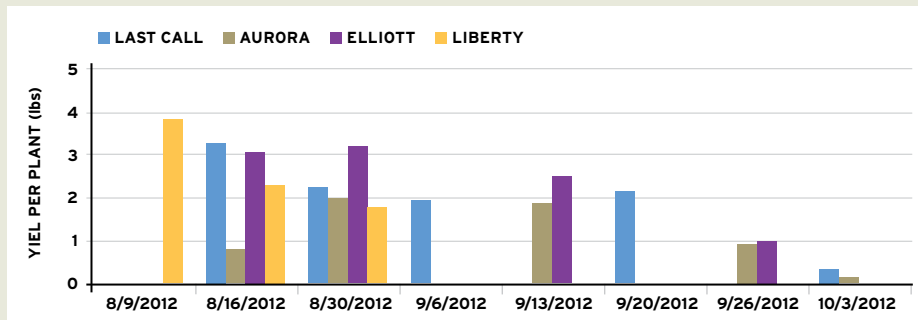


Figure 3. Yield by picking date for 'Last Call' in 2012. Ripening times at the Henry Research Farm in Lowell, Oregon are typically 7-10 days later than in the Salem, Oregon.

Berry Quality at Harvest

'Last Call' had larger berries than 'Elliott', 'Aurora', or 'Liberty' in 2012 (average 18.14 mm, Table 1). Averaged over 2011-2012, 'Last Call' had fewer berries per pound (212) than 'Aurora' (238), 'Elliott' (266), and a

TABLE 1: Berry quality data. All values except for the average diameter are the average of 2011 and 2012 values.

VARIETY	AVERAGE DIA. (mm) ¹	BERRIES PER POUND	CULLS (%) ²	BRIX (%)
Last Call	18.14	212	5.0	11.50
Aurora	16.58	238	6.0	11.20
Elliott	16.22	266	5.0	12.25
Liberty	16.38	215	6.0	13.55

¹ Average of 24 berries, measured at widest diameter, from 2012 data.
² Culls are defined as any berries too soft, damaged, or off-color to meet commercial grade for fresh market.

similar number of berries per pound as 'Liberty' (215) (Table 1). The percent culls (fruit not meeting USDA fresh market standards) were similar for 'Last Call' and the commercial standard varieties. The average brix in 2011-2012 for 'Last Call' (11.5%) was similar to 'Aurora' (11.2%) and lower than 'Elliott' (12.25%) or 'Liberty' (13.55%). It is important to note that brix is more relevant to processed fruit quality for purees and concentrates than fresh market quality; the perceived sweetness of fresh fruit depends on the balance of brix and acidity more than absolute brix levels.

Postharvest and Storage Data

Fall Creek Variety Development conducts an in-house taste test to evaluate fruit quality of advanced selections over three weeks of cold storage. Berries are stored in clamshells in a walk-

TABLE 2: Blind Taste Test of Cold Stored Fruit

VARIETY	FIRMNESS ¹ DAY 0	FIRMNESS DAY 13	FIRMNESS DAY 20	FLAVOR ¹ DAY 0	FLAVOR DAY 13	FLAVOR DAY 20
Last Call	3.5	3.5	3.0	2.5	3.0	2.5
Aurora	2.0	3.0	2.5	2.0	2.5	2.0
Elliott	2.0	2.0	1.5	2.0	2.5	1.5
Liberty	2.5	2.0	2.5	3.5	2.0	2.5

¹ Firmness and flavor rated on 1- 4 scale, 1 = poor, 4 = excellent.
 Values are the average of 2011 and 2012 data.

in cooler and evaluated after 0 days, 13 days, and 20 days of storage. Fruit is evaluated on a subjective scale by the Variety Development team for firmness and flavor. The taste test is conducted in blind fashion, with selections and standard varieties being coded to avoid bias by the taste testers. In the blind taste test, 'Last Call' firmness

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Postharvest and Storage Data continued

was rated higher than ‘Aurora’, ‘Elliott’, or ‘Liberty’ at all storage dates (values averaged over years, see Table 2). For flavor, ‘Last Call’ ranked higher than ‘Aurora’ or ‘Elliott’ over all storage dates (Table 2). ‘Liberty’ ranked higher than ‘Last Call’ for flavor on day 0, but ‘Last Call’ was rated better than or equal to ‘Liberty’ at later storage dates. Some tartness in the flavor of ‘Last Call’ was noted in comments over both years of the taste test, but much less so than for ‘Aurora’.

Advanced selections from Fall Creek were also tested for firmness throughout storage using a Firmtech 2 fruit firmness tester (Figure 4). This fruit was stored in a commercial cold storage facility and tested with the Firmtech 2 after an initial cooling period (24 hours), and then again after 2 weeks cold storage. The firmness testing data indicate that ‘Last Call’ had a similar firmness profile to ‘Liberty’. The initial firmness was similar to ‘Aurora’ but fell after two weeks, in comparison ‘Aurora’ increased in firmness. ‘Last Call’ was consistently more firm than ‘Elliott’ at both storage dates.

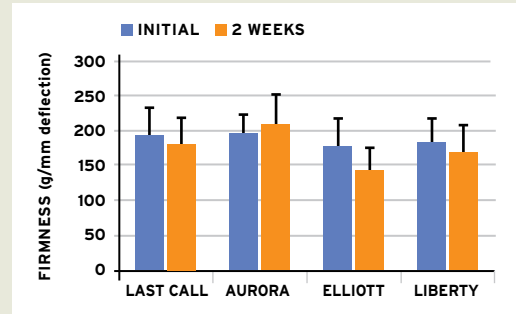


Figure 5. Firmness of ‘Last Call’ throughout storage. Firmness measured as grams per millimeter deflection (g/mm deflection) on a Firmtech 2 fruit firmness testing machine, average of 24 berries. Berries were stored in a commercial cold storage and tested for firmness after an initial cooling and again after two weeks of cold storage. Values are relative to standard varieties, absolute values tend to vary between labs and machines depending on calibration. Error bars represent one standard error from the sample of 24 berries.

Bloom and Ripening Times

Flowering and ripening data was collected in Lowell, Oregon at the Fall Creek research farm (Table 3). In general, varieties ripen 7-10 days later in Lowell than in Salem, Oregon. ‘Last Call’ flowered at a similar time as ‘Aurora’ and ‘Liberty’. ‘Last Call’ reached 50% blue fruit at approximately the same time as ‘Aurora’ and ‘Elliott’; about ten days after ‘Liberty’. The ripening period of ‘Last Call’ as estimated by the number of

days from 5% blue fruit to 95% blue fruit was only 18 days, significantly shorter than for ‘Aurora’, ‘Elliott’, or ‘Liberty’ (26 to 30 days). However, the shortened ripening period for ‘Last Call’ was not really reflected in the picking times for 2012, when ‘Last Call’ was picked over approximately the same harvest window as ‘Elliott’ and ‘Aurora’.

TABLE 3: Flowering (bloom) and ripening times (blue) for ‘Last Call’. Dates for ‘Aurora’, ‘Elliott’ and ‘Liberty’ are averaged over the years 2009-2012. “50% Bloom to 50% Blue” is the number of days between 50% flowering and 50% ripe fruit, values have been averaged over years 2009-2012 for ‘Aurora’, ‘Elliott’ and ‘Liberty’. “5% Blue to 95% Blue” is the number of days required for the crop to ripen, values have been averaged over years 2009-2012 for ‘Aurora’, ‘Elliott’ and ‘Liberty’. All values for ‘Last Call’ are from 2012 only.

VARIETY	BLOOM					BLUE					50% Bloom to 50% Blue (DAYS)	5% Blue to 95% (Days)
	5%	25%	50%	75%	95%	5%	25%	50%	75%	95%		
Last Call	4/23	4/27	5/9	5/11	5/14	8/7	8/10	8/14	8/16	8/25	97	18
Aurora	4/27	5/2	5/8	5/12	5/16	8/5	8/11	8/17	8/23	9/4	101	30
Elliott	5/4	5/9	5/16	5/16	5/23	8/6	8/13	8/18	8/29	9/1	95	26
Blue Ribbon	4/20	4/28	5/1	5/7	5/14	7/19	7/29	8/3	8/16	8/14	94	26

Planting Recommendations

'Last Call' is recommended for fresh market growers as well as processed uses (Individually Quick Frozen berries, purees, and concentrates). The performance of the variety under machine harvesting regimes is unknown and commercial trialing for machine harvest is recommended. 'Last Call' has 'Ozarkblue' for a parent and is 1/32 *V. darrowii* and 1/32 *V. ashei* by pedigree. Ultimate winter hardiness is unknown. (However,

the cold hardiness of 'Ozarkblue' is generally considered to be very good for a variety with low chill species in its pedigree). It is recommended for commercial planting in areas like the Willamette Valley where performance has been excellent. Commercial trialing is recommended in some northern areas where varieties like 'Legacy' or 'Earliblue' have experienced hardiness problems.



Performance Updates 2014:: New commercial plantings of 'Last Call' are not established but trialing at test sites indicates that it has good cold-hardiness but poor adaptation to mid-chill zones. It is a very vigorous plant. The season for 'Last Call' in Oregon coincided closely with 'Aurora' and 'Elliott'. 'Last Call' fruit was once again preferred in blind taste tests over 'Elliott' or 'Aurora'. This year we did observe some issues with shriveling fruit and small fruit cracks in 'Last Call', similar to 'Elliott'.

Performance Updates 2015: 'Last Call' was again preferred over 'Elliott' or 'Aurora' in blind taste tests at our research farm in Oregon. In 2015 'Last Call' proved to be a heavy cropper on young plants and showed signs of over-cropping in two year old plants, so we are recommending an aggressive pruning for 'Last Call'. We did see some shrivel and cracking in 'Last Call' similar to 'Elliott'. Yield and fruit size were much better on older plants with mature root systems.

Performance Updates 2016: This year in our trials of three-year-old plants, 'Last Call' out-yielded 'Aurora' and had preferred flavor and firmness over all other late season alternatives. Commercial growers have noted that it can be picked on an eight-day cycle and has a condensed ripening schedule. On our R&D farm, when picked too early, the fruit was very tart. The lab results showed firmness increasing after 14 days in the cooler (from 199 to 242 mm/g).