

**California Cling Peach Advisory Board**  
**2022 Annual Report**

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<b>Project Titles:</b>	Regional Testing of New Cling Peach Selections
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**Summary.**

This last year was pivotal in many respects. The freeze in February 2022 combined with subsequent frosts resulted in widespread damage to both evaluation and breeding plots. However, a large portion of this damage was mitigated by changes made over the COVID-period to make the breeding and field evaluation process more labor efficient. As an example, the move to greater mechanical hedging and mechanical thinning allowed us to selectively manage different breeding/evaluation plots to individually compensate for freeze/frost damage while the use of isolated and/or caged trees made it possible to make a large number of controlled self-pollinations despite the challenges from freeze and frost damage as well as erratic bloom. (Many of our controlled cross-pollinations, however, were killed though the consequent high return bloom in 2023 should act to improve successful takes in spring 2023. The freeze and frost damage also forced us to refocus longer term breeding objectives associated with climate change with the realization that in addition to milder winters and associated problems with timing of flowering and successful fruit set, we need to simultaneously focus on the risk of variable weather patterns such as early freezes/frost. For example, our breeding emphasis on varieties capable of developing a compact bloom following warmer winters, often resulted in greater vulnerability to freeze damage because there were fewer straggler flowers to compensate for those killed by frost (though interesting exceptions were also observed). This (continuing) reevaluation of breeding priorities for both the immediate and longer-term processing peach futures also comes at a time where I am contemplating retirement in the next 5-8 years. With the ongoing increases in UCD field and labor costs, this short to long-term breeding strategy will require the capture the greatest possible range of genetic solutions (disease and bruise resistance, stress resistance, single-pass harvest, water use efficiency, etc.) with the fewest possible trees (to reduce orchard costs). This year also marked the transition of the Regional Testing program from the previous testing of over 22 selections in grower test plots to the propagation of the next round of regional evaluation advanced selections. The last round of Regional Testing as resulted in the recent release of 4 varieties: Kader and Vilmos, and in 2023: Schuler and Ogawa. Fifteen new breeding selections have now been advanced to grower testing with the majority in the Early to Extra-Early harvest seasons (Table 1). The unprecedented genetic diversity within these advanced selections offers improved opportunities to develop genetic and so more sustainable solutions to current and emerging industry problems though because of their novelty, it also require extensive regional testing to identify major deficiencies prior to large-scale and long-term grower plantings.

## Progress report.

Regional performance over the last decade for UCD released varieties as well as the last 4 to 6 years for new selections advanced to regional grower testing are summarized in Table 1 and subsequently briefly reviewed based on harvest season.

Table 1. Summary of all recent evaluations of advanced breeding selections in regional testing as well as selections recently advanced to consideration for regional testing. (Data for new regional testing candidates is preliminary and so subject to change as additional information on regional performance becomes available.).

Item	Prop2023	Seed Parent	Pollen Parent	Origin	Firm	Ripe	Ripe vs. Ceres-Carson	Red in Pit	Splits & Frag.
Ogawa		D62-193	mutation	Brazil	(lbs.)	1-Jul	-3	+	+
Extra-Early#4		Andross	Kakamas	South Africa	6.1	10-Jul	12	+	+
Extra-Early#5	x	DrDavis	Ogawa	Exotic	6.3	16-Jul	18	+	-
Extra-Early#6	x	03,5-209	self	Almond	6.2	7-Jul	10	+	-
Extra-Early#7	x	Vilmos	96,3-153	PI 234198	5.8	18-Jul	17	-	-
Kader		Ross	R1-1	PI.292557	6.2	16-Jul	18	+	-
Early#8	x	05,27-232	Self	PI 234198	6.2	18-Jul	21	-	+
Schuler		Woltemade	Extra-Late#2	PI 234198	5.6	18-Jul	21	-	+
Early#10	x	Loadel	99,12-155	PI 234198	7.5	21-Jul	22	-	+
Compact#5		Cason	96,9-292	mutation	6.3	20-Jul	23	+	+
Early#7	x	DrDavis	Ogawa	Exotic	7.3	21-Jul	24	+	+
Early#12	x	2008-57-35	clone	Almond	7.8	21-Jul	24	-	-
Early#11		05,20-118	OP	Wild almond	6.1	25-Jul	24	+	+++
Early#9	x	Schuler	self	S. Africa	7.7	27-Jul	25	-	+
Early#14	x	LateROSS	01,8-49	95,5-262	Self	14-Jul	21	-	+
Andross		Fortuna	Dix,5A-1	Standard	5.4	1-Aug	26	+++++	+++
Vilmos		Loadel	F10E,6-27	Standard	6.1	3-Aug	29	+	-
Compact#6		Cason	96,9-292	mutation	6.5	5-Aug	30	+	+
Compact#4		18,8-11	mutation	mutation	6.2	28-Aug	36	-	+
Extra-Late#2	x	18,6-33	87,13-13	standard	7.2	30-Aug	38	-	+

## Recently Released Selections

### **Kader**

Kader harvests between Carson and Andross (the harvest gap left by the loss of the Dixon variety). Kader showed moderate fruit loss from the 2021 freeze damage and moderate to good tolerance to freeze damage (low percentage of surviving fruit showing skin and flesh damage from February freeze and April frost events). The moderate vulnerability to fruit loss from the February freeze was in part due to the relatively concentrated bloom which has been targeted in advanced UCD processing peach selections so that final fruit maturity times will be more concentrated (as part of our target of concentrated fruit ripening for once-over-harvest). A more compact bloom period, however, made flowers more vulnerable to freeze damage because there will be fewer later blooming buds to compensate for the lost flowers. Subsequent fruit samples of Kader collected in regional trials continued to show good-quality fruit including the ability of the fruit to hold on the tree for one week or more after developing to the full-ripe stage. Late-harvested fruit did not show the extent of pink staining of the pit observed in 2021.



Kader's improved resistance to Monilinia fruit brown-rot and resistance to flesh browning/bruising also contribute to good harvest and post-harvest quality, even when fruit left on the tree for a week or more after the tree-ripe stage. Good processing conditions were achieved in 2022 at the UCD Mondavi Pilot Plant resulting in good canned food evaluation conditions. (Improper calibration of the rotary cooker resulted in overcooked fruit samples in 2021).



In field plots, Kader continues to show very good fruit-sizing capacity with good fruit eating quality and a stay-ripe firmness allowing delayed harvest so that interior and otherwise

slower-growing fruit can continue to size, further contributing to a high yield potential. Fruit weight under conditions of heavy flower thinning is among the largest of the Extra- Early and Early selections tested. This indicates an aggressive compensatory-sizing (similar to Andross) which should facilitate consistently good grower yields even when over thinned. Fruit Brix (averaging about 13 over the past 8 years) is also amongst the highest for this maturity seasons) and Brix/TA ratio is above the desired level of 20. Fruit are generally symmetrical; though occasionally show some cheek asymmetry. Flesh color is golden-yellow. Limited fruit drop was observed in heat/water stressed sites, being less than 2020 and 2021.

### **Vilmos**

Vilmos ripens with or just after Andross and possesses fruit and tree characteristics similar to the variety Ross. Moderate fruit loss was observed in the 2022 frost for Vilmos being similar to Kader. (Vilmos also has a more concentrated bloom which is the probable reason for the greater susceptibility to frost damage of fruit). Orchard subjected to frost/freeze showed slightly more damage than Kader orchards for both skin and flesh. Fruit is similar to Ross in size though slightly more oblate in shape and with less red-blush. As with the 2021 seasons, we once again saw unusually high June/July

temperatures in some of the regional test plots.

Vilmos fruit from 2022 harvest also showed slight pinking in many pits as well as some flesh staining adjacent to highly blushed skin areas. We previously observed that in hotter regions such as the southern San Joaquin, some Vilmos fruit flesh may develop a reddish stain particularly when 5 or more days overripe. As with Kader, Vilmos flesh continues to show low bruising/browning potential and fruit readily hold on the tree for 7 days or more after initial tree-ripe even under these higher temperatures allowing greater flexibility in grower and processor harvest. In the 2021 Mondavi plant processing failures which led to flesh darkening of



resultant processed fruit including Andross, Dr. Davis and Ross standards, Vilmos fruit samples were among the least affected, showing better color than even Kader fruit, despite both having relatively high bruising resistance. Vilmos fruit continue to size as in previous seasons, requiring less thinning than other varieties such as Loadel, though over-thinned fruit will develop only to a medium to medium-large size rather than the distinctly larger fruit observed in varieties such as *Kader* and *Dr. Davis* when over-thinned. Trees are hardy with yields comparable to Andross. Some fruit drop has been observed, particularly if developing fruit are left in clumps and harvest is delayed for a week or more after initial tree ripe. Fruit process well, and the relatively small pit, combined with lower incidence of pit-staining and pit fragments can result in higher case yields than *Andross*. Some pit fragments and split-pits have been observed (~5%) as in previous samplings, but consistently less than *Andross* and other accessions ripening at this very vulnerable time period.

### **Release in 2023.**

**Schuler.** Schuler (Early#6) continued to perform well in 2022, with good yields of uniform fruit size shape and quality and pit/flesh color even under the unusually high June/July temperatures. This is partly because Early#6 has a gene for suppressing all red anthocyanin production in the fruit. [Interestingly, fruit samples that were included in the 2021 problematic UCD canning were comparable to Kader in their degree of flesh darkening, with Vilmos showing the least darkening, despite possessing the distinct red blush compared to the lack of blush in Early#6]. We are finalizing the patenting and release process which has been frustrated by COVID as well as new descriptor requirements such as aspects of bloom which had to be remeasured in 2023. Bred as 9,12-155, Early-6 represents 3rd-generation germplasm, being an advanced breeding selection developed from Californian and South African germplasm (PI234198) combining the distinct stay-ripe potentials of Wolvamide and UCD-



Late#4 with a more traditional golden-yellow flesh color and a ripening time within the crucial Dixon-Andross gap. So far, this selection has consistently shown superior fruit color as well as harvest- and post- harvest firmness along with good cropping potential over a multi-year test period. Fruit can maintain integrity and quality 10 days or more after tree-ripe (stay-ripe trait) allowing delayed or once-over harvest. Good levels of fruit brown-rot resistance have also been achieved as demonstrated in both lab and field evaluations, and it also demonstrates improved levels of resistance to *Monilinia* flower blight. Bloom time also remains relatively concentrated even in years of low winter chill such as occurred in 2021 resulting in more uniform fruit ripening times. (This concentrated bloom, however, made it more vulnerable selections to the 2022 freeze/frost damage as there were relatively few late developing flowers to compensate for the earlier buds lost in the frost). This combination of traits makes it a promising varietal-type for addressing anticipated warmer winters over the next decades but could also make it more vulnerable to frost damage. Fruit is medium large, uniformly round and firm, even when overripe. Fruit remain free of red blush on the skin with no red staining of the fruit pit-cavity even up to two weeks beyond the full-ripe date. Pit-cavity is medium and somewhat ragged. Fruit weight following heavy thinning was moderately large, being similar to Ross though somewhat smaller than Kader. As mentioned in previous reports, however, fruit can be slow to size, and this was particularly true in some 2022 orchards receiving reduced irrigation water. Trees tend to be upright-spreading and have otherwise been consistently productive under a range of summer temperatures. Clean nursery foundation stock has been provided to FPS.

### **Ogawa.**

Currently being tested in both the Sacramento and San Joaquin valleys as Ultra-Early#1, this selection is derived from a combination of Brazilian (Conserva485) with probable Eastern European (NJC5102893) peach germplasm from the Rutgers University breeding program of Dr. Fred Hough that was terminated in the 1980s. The initial New Jersey parent expressed unusual sections of stem necrosis that we determined to be possibly chimeric rather than disease in origin. A series of clonal-source selections during the 1990's (based on the Noninfectious-Bud-Failure elimination strategies developed for almond) has eliminated all trace of this condition in subsequent UCD and regional grower trees. Tested as Ultra-Early#1, this improved clone source combines very good size and cropping potential for its very early maturity of approximately 3 d

before Ceres-Carson. Despite its early maturity, this selection demonstrates exceptional compensatory-sizing capacity (i.e. the ability to aggressively size fruit as more resources become available, as would occur when the crop is over-thinned or due to early fruit loss from weather, disease, etc.). The aggressive fruit sizing compensates by making remaining fruit, and so final yield, larger. *Ultra-Early#1* has also shown good resistance to fruit brown-rot and has been an important parent for conferring fruit brown-rot resistance as well as early maturity, good fruit size and firmness. The exceptional size and yield potential for such an early season combined with its high level of brown-rot resistance have made this a particularly attractive variety for grower trials for organic



production of processed product because it allows the product to be processed in in the cannery before contamination by non-organic fruit. Early processing of this golden-orange colored selection would also result in a more desirable processed product without the undesirable risk of mixing with later maturing lighter colored fruit varieties (which would result in an inconsistent canned product color). High temperatures during fruit development (as occurred in 2020 and to a greater extent in 2021 and 2022) can result in irregularly shaped fruit. While this would discourage its use for processing peach-halves, much of the very early processing peach fruit is diced with some slicing, neither of which seem to present a problem for this time-period based on processor discussions. Ogawa tends to flower early, between Ross and Andross, which made it more susceptible 2022 free/frost damage though it's more protracted bloom while normally undesirable proved useful in providing later viable buds for subsequent fruit set. The potential for good fruit production and quality as well as brown-rot resistance in a very early processing peach variety offers the opportunity for both season-extension and expansion of organic production. Because both of these options are inherently risky, it has been decided to release this selection without patenting under the name *Ogawa* to make it accessible to the industry for grower/processor experimentation. Clean nursery foundation stock has been provided FPS.

## **Breeding Program Selections Advanced to Regional Testing**

### **Extra-Early Season**

#### **Extra-Early#4.**

This has been one of our most productive selections in the Extra-Early ripening period. While it has good fruit firmness at the initial tree-ripe stage, it softens rather quickly with time making it unsuitable for mechanical or otherwise delayed harvest. Nonetheless, the higher yield potential and good fruit quality and desirable harvest time between Carson and Bowen suggest that it may have regional commercial potential. Fruit have good size and symmetry and show low incidence of split-pits and fragmentation in the limited trials done to date. Some slight pink staining was observed in the unusually hot conditions of June/July 2021 with even less observed in 2022, though these were limited to a few fruits and primarily the inner flesh. The similarly slight staining of the pit cavity has been observed during previous growing seasons having an unusually warm spring/summer temperatures but have consistently cooked-out with processing. Pits are medium in size though with a somewhat larger pit tip which could present problems for processing. Processed fruit show good sugar levels as well as sugar/acid ratios. A medium red blush covers approximately 60% of the fruit skin. Regional trials are being established in Fresno, Merced and Yuba counties. Flower and fruit damage from the 2022 freeze/frost were comparable to nearby Carson trees.



#### **Extra-Early#5.**

Representing a 3rd generation breeding selection, this genotype resulted from a cross between Dr. Davis (containing PI292557 germplasm) and advanced selection UltraEarly-1, which itself is derived from germplasm from Brazil. The tree is productive and produces fruit of good size and firmness. Fruit quality and firmness are maintained for 1 weeks or more after tree-ripe. Fruit show good field resistance to fruit brown-rot which has been verified in laboratory studies in the Bostock lab. [Both the Dr. Davis seed parent and UltraEarly-1 have been identified as



dependable sources of brown-rot disease resistance with putative molecular markers for this trait identified]. Moderate to good freeze/frost tolerance was observed in 2022 owing in part to a later and more extended bloom. Irregular fruit sizing has been observed in 2022 as well as 2019. Fruit have a desirable golden-yellow flesh color with clean pits though some slight staining has been observed in overripe fruit following heat spells of 2020



and 2021 with less staining observed in 2022. Fruits are medium to large in size with a relatively small pit cavity, resulting in potentially improved case yields. Fruit blush is pink to light red covering approximately 40% of the skin. Fruit are moderately resistant to flesh-bruising but becoming less so in overripe fruit. Fruit sizing tendency is such that over-thinned fruit can continue to size up to harvest resulting in larger fruit that can compensate for the smaller crop load. While fruit tend to have good firmness that is maintained for a week or more after tree-ripe, large fruit that sized-up late achieve this by significant water uptake making those fruit more susceptible to rapid softening after tree-ripe. Trees are currently being propagated for regional grower testing in the Sacramento and San Joaquin Valleys to augment current test utilizing topworked trees.

### **Extra-Early#6.**

Ripening about with 2 days before Carson, fruit have been smaller than Carson in early evaluations but with better firmness and ability to hold on the tree for a week or more after the tree-ripe stage. Fruit have a desirable golden-yellow flesh color and good fruit size and uniformity for the season. Ripe fruit are firm and have a moderate red blush covering approximately 60-80% the surface.



Overripe fruit, such as those shown at right from the 2021 harvest, can develop a pink staining of the pit and inner flesh, though this has cooked out with processing. When harvested several days after tree-ripe, fruit still process well, producing a good quality product. This selection shows good field resistance to fruit brown-rot though testing using controlled inoculations in laboratory

conditions have not yet been done. Extra-Early#6 was more susceptible than adjacent Carson trees in the 2022 freeze/frost damage. Trees are currently being propagated for regional grower testing in the Sacramento and San Joaquin valleys to augment current test utilizing topworked trees.

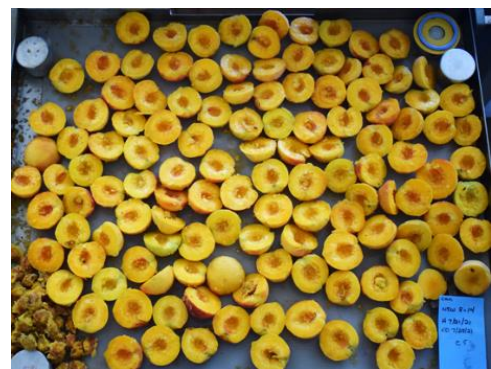
**Extra-Early#7.** Ripening between Carson and Bowen, fruit are medium in size with no tendency for developing red coloring of the pit observed over the past several harvest seasons, even those with higher-than-normal temperatures. Resulting from a cross between the more traditional parents, including 96,3-153, this selection combines early season with relatively good fruit. Firmness



holds well for a week to 10 days but in some years can soften rather rapidly after that. Fruit are consistently at the higher end of sugar concentration...Fruit size and final productivity, however, need to be more thoroughly evaluated. Softening can sometimes occur between the skin and the outer flesh resulting in potential pitting problems. Extra-Early#7 like Extra-Early#6 was more susceptible than adjacent Carson trees in the 2022 freeze/frost damage though part of this vulnerability was the result of its more concentrated bloom. Trees are currently being propagated for regional grower testing in the Sacramento and San Joaquin valleys to augment current test utilizing topworked trees.

### **Early Season**

**Early#7.** Representing a 3<sup>rd</sup> generation breeding line, this selection resulted from Dr. Davis crossed with a hybrid between PI292557 progeny and advanced selection *UltraEarly-1*. The tree is productive and produces fruit of good size and firmness. Fruit quality and firmness are maintained one week or more after tree-ripe. Fruit show good field resistance to fruit brown-rot which has been verified in laboratory studies in the Bostock lab [Both the *Dr. Davis* seed parent and



*UltraEarly-1* have been identified as dependable sources of brown-rot disease resistance with molecular markers currently being developed for these sources]. Irregular fruit sizing has been observed in some years. A slight but distinctive pink staining of the fruit pit cavities was seen in the higher temperatures of 2020 and 2021 as well as some limited split-pits. Trees are currently being propagated for regional grower testing in the Sacramento and San Joaquin valleys to augment current test utilizing topworked trees.

**Early#8.** Ripening in the Bowen harvest season, this advanced selection is a third-generation hybrid with *Vilmos* parentage, representing a further refinement/introgression of the PI292557 s lineage. As in the related selections, fruit quality is very good in terms of color, flavor, and firmness, and with good but not exceptional fruit size. The tree is productive and vigorous. Fruit quality and firmness are maintained on the tree for up to one week following the tree-ripe stage. Fruit show good resistance to brown-rot both in the field in 2018 and 2020 and in earlier Bostock lab inoculation (see attached image). Fruit also appears generally free from pit-staining and associated fragmentation and appears to contain a *hi-lighter* type gene which suppresses anthocyanin production and so eliminates the risk of red pit-staining in this and genetically related selections.

Moderate fruit sizes, without any trace of pit-staining were again observed in 2019 thru 2021 though some split-pits were observed. Trees are currently being propagated for regional grower testing in the Sacramento and San Joaquin valleys to augment current test utilizing topworked trees.



**Early#9** Despite being a progeny from Late season selection *Wolvamade* (South Africa) and *Extra-Late-2* as grandparents, this selection ripens with to just after *Bowen*. (It is not unusual for more exotic germplasm to shift ripening time beyond that of either parent. This was essentially how the Dixon gap was targeted: *Early-6* with its Dixon harvest time, has a similar lineage. This transgressive harvest shifting has been one of our core strategies for targeting the otherwise challenging Carson-Andross maturity time). As with *Early-6*, the fruit show a desirable golden yellow flesh and skin color without blush. Also similar to *Early-6*, fruit have very good firmness at tree ripe that is maintained for over 10 days post-ripe. Fruit are uniform in size though not as large as previously described selections in this group. Some fruit bruising is observed on fruit harvested longer than 10 days post-ripe, though a 10 day delay represents a rather strong selection pressure since commercial delays would not be expected to be this long. This selection also demonstrates good bloom consistency with variable winter chill as well as a delayed flowering by almost a week which allowed it to escape frost damage in some of our Davis test plots. Flesh color in fruit held on the tree for 2 weeks or more will develop from a yellow-gold to more pronounced gold color. Fruit show good resistance to flesh bruising and fruit brown rot both in the field and after controlled lab inoculations. As with *Early-6*, fruit achieve only a moderate final size with much of that growth in the final weeks/days of ripening, yet like *Early-6* yields are good and fruit quality is consistently very good, with uniform size shape and color and low defects. Trees are currently being propagated for regional grower testing in the Sacramento and San Joaquin valleys to augment current test utilizing topworked trees.



**Early#10.** A promising selection ripening about 3 days before Andross. The parents were Schuler which brings good fruit size and color from the South African plant introduction PI 234198 and the Extra-Early California variety Loadel. In early trials at Davis, trees have demonstrated good productivity as well as disease



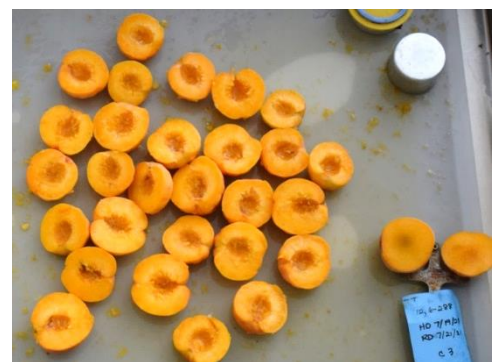
resistance. Fruit are large and exhibit the stay-ripe trait from Schuler. Fruit pits have remained free from red staining even in conducive hot summer's though some split pits and fragmentation has been observed but considerably less than nearby Andross trees. Fruit have shown good firmness, even in over-ripe fruit contributing to the stay-ripe ability to hold on the tree for 10 days or more. Trees are currently being propagated for regional grower testing in the Sacramento and San Joaquin valleys to augment current test utilizing topworked trees.

**Early#11.** Resulting from a cross between Carson and UCD 3-205 (which had almond and the wild almond *Prunus scoparia* as well as peach as parents Early-11 (originally field-tested as UCD,4-88) combines good color, firmness and disease resistance (brown rot and mildew) with a ripening time just before Andross. Productivity, however, has been hampered by small fruit size and UCD test plots. Consequently, small test plots have been established in Stanislaus County to evaluate performance under more expert management. Under hot summer conditions fruit may show some red pit staining as well as pit fragmentation though these appeared to be less than an adjacent Andross trees.



**Early#12.**

Combining both traditional and new germplasm, Early-12 (originally tested as UCD12,6-288 and UCD8 -57-35) has shown good size and quality as well as good tree holding ability. UCD Wolfskill planted test trees ripening about 5 days before Andross. Fruit have good size, color and firmness, being among the most firm in UC test plots this maturity season. Fruit pits are generally free from red pit staining with associated low proportions of split pits. (Some recent pit fragmentation was observed in 2022, possibly associated with frost damage). Fruit have a relatively small pit cavity resulting in greater processed peach case yields. Trees are currently being propagated for regional grower testing in the Sacramento and San Joaquin valleys to augment current test utilizing topworked trees.



**Early#14.** Resulting from a cross between Everts and one of our initial almond sources for stay-ripe trait, Early-14 (tested as UCD,835-188) ripens just before Carson at UCD Wolfskill test plots. Trees are productive, with large yellow-golden fleshed fruit and low pit staining and fragmentation. Early-14 has become one of our most promising selections for the Extra-Early processing season



because of its consistently good productivity and fruit quality and as a result this selection has been used extensively in developing the next generation processing peach breeding hybrids. Trees are upright to upright-spreading in architecture. Trees are currently being propagated for regional grower testing in the Sacramento and San Joaquin valleys to augment current test utilizing topworked trees.

### **Extra-Late Season**

**Extra-Late#2.** Ripening about Sullivan#4 time, this selection has proven to be productive with good processing quality. Fruit are medium to large with good firmness even up to a week or more after the tree-ripe stage. Fruit pits and flesh have so far remained generally free from any red staining associated with higher summer temperatures though some split pits have been observed in 2019 and 2021. This selection has shown moderate to good resistance to fruit brown rot in both field and lab evaluations. Trees are currently being propagated for regional grower testing in the Sacramento and San Joaquin valleys to augment current test utilizing topworked trees.



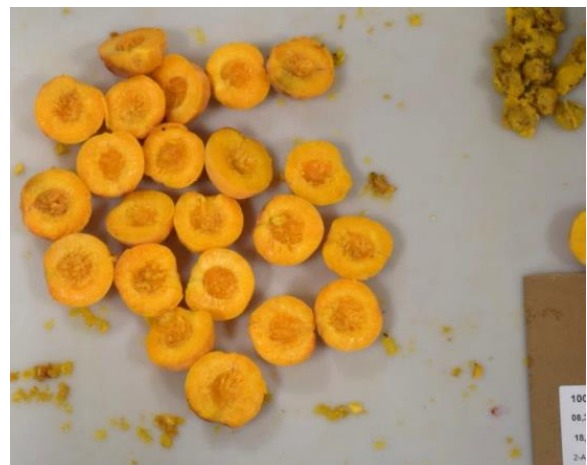
## Compact Tree Advanced Selections

**Compact#4.** This is the latest ripening in a series of compact selections where a shorter distance between leaf internodes results in a final tree size that is  $\frac{1}{2}$  to  $\frac{2}{3}$  of normal. This Late to Extra-Late harvest would complement previously developed compact selections ripening in the Extra-Early and Late seasons. In addition to a more compact tree size, all selections show a suppression of watersprout growth which can be particularly



useful for operations utilizing manual or mechanical pruning. All compact selections also express the *stay-ripe* trait allowing harvest for a week or more after the normal tree-ripe stage. As with Extra-Late#2, fruit tend to darken from a yellow-gold to a more orange-gold color with increasing time between ripening and harvest. Trees are currently being evaluated in the San Joaquin Valley utilizing both budded and topworked trees.

**Compact#5.** From a cross between traditional material and Compact-3, targeting the compact tree size and good fruit and tree-holding capabilities of Compact-3 but with a ripening about a week before Andross. Fruit skin, flesh and pit are uniform yellow-gold but can become darker when overripe. Some slight red staining of pits are sometimes observed on overripe fruit but have cooked out with processing. Split pits have



also been observed on over-thinned trees. Fruit are medium sized and somewhat asymmetrical with somewhat large and ragged pit cavities. Tree is compact and vigorous. Trees are currently being evaluated in the San Joaquin Valley utilizing topworked trees.

**Compact#6.** A sister line to Compact-5 but ripening about a week after Andross, Compact-6 (syn.UCD 9, 8-202) resulted from a cross between traditional material and Compact-3, targeting the compact tree size and good fruit and tree-holding capabilities of Compact-3. As with Compact-5, skin, flesh and pit are uniform yellow-gold but can become darker when overripe. Fruit are medium sized and somewhat asymmetrical with somewhat large and ragged pit cavities. Fruit are generally smaller than Compact-5 and more yellow than yellow golden color. Fruit firmness and tree productivity, however, appear to be better than Compact-5 in initial, small-scale testing. Tree is compact and vigorous. Trees are currently being evaluated in the San Joaquin Valley utilizing topworked trees.

