

Recently Released and Promising New Citrus Varieties from the University of California Breeding Program

Timothy E. Williams
Dept. of Botany and Plant Sciences
University of California Riverside
timwill@ucr.edu

Recently Released Hybrids:

'Gold Nugget' mandarin - Late-maturing (March) diploid mandarin hybrid that combines good fruit size, excellent productivity, outstanding storage characteristics both on and off the tree, extremely rich and sweet fruit flavor and the absence of seeds even in mixed plantings. 'Gold Nugget' fruit are slightly flattened in shape, with little or no neck. The average fruit size is medium-large for a mandarin (classed as size 21 by industry packing standards) with a mean width of 68mm (2.68 in.) and a height of 58 mm (2.28 in.), giving a height to width aspect ratio of 0.85, and a mean weight per fruit of 130 grams (4.6 oz.). Rind color is pale orange. The rind texture is variable, depending on tree age, crop, but especially on the amount of pruning the tree has received. For older trees with a moderate to heavy crop, regularly pruned to maintain a smaller more rounded crown, rind texture is pitted to slightly bumpy, with depressed oil glands. Alternate bearing is also reduced in regularly pruned trees. Fruit rinds from non-pruned trees with heavy crops can be somewhat coarse and bumpy and although production can be high (up to 1200 cartons/acre) alternate bearing is likely. The rind is fairly easy to peel when fruit are mature. Rind oil is evident when peeling fresh fruit. Fruit splitting on the styler end of the fruit can occur and in some years can be significant. The fruit is juicy averaging 49% juice content. Flesh is deep orange in color with a moderately fine texture. The taste is extremely sweet when mature (brix 15.0% in March, 17.5% in May) with a very rich flavor, considered by professional taste panels to be one of the very best flavored citrus in the world.

Shasta Gold[®] mandarin ('TDE2' mandarin hybrid) – Patented (Plant Patent # 15,461), late-maturing (mid-late February) triploid mandarin hybrid that combines large fruit size, attractive deep-orange rind color, rich fruit flavor and the virtual absence of seeds even in mixed plantings. Shasta Gold[®] mandarin fruit are moderately flat in shape, with little or no neck. The average fruit size is large for a mandarin (size 15 by industry packing standards) with a mean width of 75mm (2.95 in.) and a height of 59 mm (2.32 in.), giving a height to width aspect ratio of 0.78, and a mean weight per fruit of 185 grams (6.5 oz), heavy for the fruit size. Rind color is deep orange with a rind texture generally smooth on fruit from trees with moderate to heavy crops. The rind of fruit from trees with very light crops can be excessively rough. The rind is fairly easy to peel when fruit are mature. Flesh is deep orange in color with a moderately fine texture. The fruit is juicy averaging 49% juice content and are very sweet when mature (13% brix in February, 16% in April) with a very rich, distinctive flavor. Production is very high averaging 800-900 cartons/acre.

Tahoe Gold® mandarin ('TDE3' mandarin hybrid) – Patented (Plant Patent # 15,703), mid-late season maturing (late-January) mandarin hybrid that combines large fruit size, attractive deep orange rind color, rich fruit flavor and the virtual absence of seeds even in mixed plantings. Tahoe Gold® mandarin fruit are slightly flattened in shape with a small neck. The average fruit size is medium-large for a mandarin (classed as size 21 by industry packing standards) with a mean width of 66mm (2.6 in.) and a height of 56 mm (2.20 in.), giving a height to width aspect ratio of 0.85, and a mean weight per fruit of 135 grams (4.75 oz.), heavy for the fruit size. Rind color is very deep reddish-orange. The rind texture is variable, depending on tree age and crop. Rind texture is smooth to slightly pitted on fruit from older trees with a moderate to heavy crops. The rind of fruit from trees with very light crops can be excessively rough. The rind is of medium thickness and moderately easy to peel when fruit are mature. Flesh is deep orange in color, with a fine texture. The fruit is typically very juicy averaging 48% juice content and are quite sweet (13.5% brix in February, 15.5% in March) with a rich, distinctive flavor. Production is excellent (900-1000 cartons/acre) with most fruit borne inside the crown which protects the excellent fruit color from the sun.

Yosemite Gold® mandarin ('TDE4' mandarin hybrid) – Patented (Plant Patent # 16,289), late season (mid-February) maturing triploid mandarin hybrid that combines large fruit size, an attractive very deep orange rind color, rich fruit flavor and the virtual absence of seeds even in mixed plantings. Yosemite Gold® mandarin fruit are oblate (moderately flat) in shape, with little or no neck. The average fruit size is large for a mandarin (classed as size 15 by industry packing standards) with a mean width of 75mm (2.95 in.) and a height of 58 mm (2.30 in.), giving a height to width aspect ratio of 0.78, and a mean weight per fruit of 175 grams (6 oz.), heavy for the fruit size. Rind color is very deep reddish-orange with a smooth rind texture for fruit on trees with moderate to heavy crops. Rinds of fruit from trees with very light crops can be excessively rough. The rind is quite easy to peel when fruit are mature. Flesh is deep orange in color with a medium texture. The fruit is moderately juicy averaging 42% juice content and are quite sweet (13% brix in February, 16% in April) with a very rich and very distinctive flavor. Production is very good averaging 700-900 cartons/acre

Promising New Hybrids:

Lee x Nova mandarin hybrid (release in 2008) - seedless under all conditions, low probability of causing seeds in other mandarins, early season maturity (November), high brix (13° in November, 15-16° in late December) and very rich, distinctive flavor, pale rind color, mean fruit size 24, round shape (not flattened) with tendency toward a blossom end nipple. Moderately easy to peel. Good holding ability on tree through February. Moderate production with tendency to alternate bear.

'Dawn' (Pummelo/Blood Orange hybrid) – Triploid hybrid of Acidless pummelo by tetraploid 'Ruby' blood orange. Large grapefruit-sized fruit (36-48s) with a pebbly, orange-colored rind. Matures in January. Flesh color is orange flecked with red, variable from light flecking to very intense red-flecking depending on the climatic year (cooler weather intensifies color). Rich, low acid pummelo/orange flavor, moderately sweet (12-14° brix). Fruit holds well on the tree for 2-3 months. Heavy production (1000+ cartons/acre).

Released Irradiated Varieties:

'Tango' mandarin – Patented (Plant Patent # 17863) irradiated selection of W. Murcott mandarin. Fruit of 'Tango' are similar to W. Murcott in all appearance, quality and production characteristics with the exception of seed numbers. 'Tango' fruit are deeply oblate in shape with no neck. The fruit is medium sized for a mandarin (classed as Large by State of California standards and size 28 by industry packing standards) averaging 59mm (2.32 in.) in diameter and 48 mm (1.89 in.) in height with a very smooth, deep orange rind color. The rind is relatively thin and at maturity is easy to peel. The fruit interior has a fine flesh texture with 9-10 segments and a semi-hollow axis of medium size at maturity. Fruit are very easy to peel. The fruit are juicy averaging slightly over 50% juice with an average weight of 90.6g (3.2 oz.). Tango matures in winter (late January) and holds its fruit quality characteristics through April into May. Production is excellent averaging 800-900 cartons/acre when planted at densities of 250-300 trees/acre. Fruit from trees on Carrizo and C35 citrange rootstocks average 11.1-13.1% soluble solids and 0.97-1.19% acid in January increasing to 13.5-15.4% soluble solids with decreasing acid of 0.54-0.82% in April. **'Tango' averages from 0.04 - 0.2 seeds per fruit in the presence of cross-pollination at seven trial locations throughout California compared to 11.6-22.6 seeds per fruit for W. Murcott.** Pollen of 'Tango' has very low viability consequently it has a very low likelihood of causing seeds in other citrus, particularly mandarins, when planted nearby. Like W. Murcott, trees of 'Tango' have a tendency to overbear and therefore need to be regularly pruned to maintain good, not excessive production and to maintain fruit size and prevent alternate bearing. Crop yields should be limited to about 150-170 lbs./tree (6-7 mandarin boxes) through a combination of pruning and, if needed, fruit thinning and should be harvested on time, not left on the trees as this can lead to alternate bearing.

Promising Irradiated Selections likely to be released over the next three years (not all new variety names for these selections have been chosen):

DaisySL mandarin (2008) – early/mid-season maturing (early - late December) irradiated selection of 'Daisy'. Similar in all appearance, quality and production characteristics to Daisy with the exception of seed numbers (1.4-2.4 seeds/fruit compared to 14-20 seeds/fruit for 'Daisy'). Outstanding flavor (13° in early December, 15°+ brix in January). Excellent deep orange rind color with very smooth rind texture. Mean fruit size 21. Somewhat difficult to peel. Some tendency as in 'Daisy' for fruit rind deterioration by early February. Some tendency toward splitting and to alternate bear. Performs very well in all climate zones including the desert. Very good production.

FairchildSL mandarin (2008) – early-mid season maturing (early – late December) irradiated selection of 'Fairchild' mandarin. Similar in many appearance and quality characteristics to 'Fairchild' with the exception of seed numbers (2.8-3.3 seeds/fruit compared to 15-30 seeds/fruit for 'Fairchild'). Fruit are richly flavored and sweet when mature (14° brix) with a fairly smooth, orange rind. Fruit are slightly more elongated than normal 'Fairchild'. Production appears to be somewhat less than 'Fairchild' under normal field cross-pollinated conditions. Alternate bears. Very good fruit quality in all climate zones.

KinnowSL mandarin (2008) – mid-season maturing (late December – mid January) irradiated selection of 'Kinnow' mandarin. Similar in most appearance, quality and production characteristics to 'Kinnow' with the exception of seed numbers (1.8-3.2 seeds/fruit compared to 17-26 seeds/fruit for 'Kinnow'). Fruit size is excellent (size 28). Rinds are somewhat pale, similar to normal 'Kinnow', but are smoother in texture. Flavor is distinctive and very sweet at full maturity (15°+ brix). Production is excellent (800-900 cartons/acre) with fruit borne inside the crown of the tree, protected from the sun. Strong tendency to alternate bear if not pruned or harvested on time. Performs well in all locations including the Coachella Valley.

Encore IR6 mandarin – name not yet decided (2009) – late-maturing (March) irradiated selection of 'Encore' mandarin. Similar in all appearance, quality and production characteristics to 'Encore' with the exception of seed numbers (1.7-3.5 seeds/fruit compared to 22-32 seeds/fruit for 'Encore'). Outstanding holding ability on the tree (well into summer). Mean fruit size 18-21. Excellent flavor, very sweet, rich and distinctive (15-19° brix). Typical green-spotted, thin 'Encore'-type rind, moderately easy to peel. Alternate bears severely similar to 'Encore' if not pruned regularly and harvested on time.

Fremont IR2 mandarin – name not yet decided (2009-10) – mid-season maturing (late December – early January) irradiated selection of 'Fremont' mandarin. Similar in most appearance and quality characteristics to 'Fremont' (very deep orange rind color) with the exception of seed numbers (1.5-1.9 seeds/fruit compared to 16-23 seeds/fruit for 'Fremont'). Fruit size is larger (size 24) than 'Fremont' with a very rich, sweet flavor (14-16° brix at full maturity). Long-term production has not yet been determined but appears to be similar to 'Fremont' based on early evaluations. Performs well in all locations including the Coachella Valley.

NovaSL mandarin (2009) – mid-season maturing (mid December – early January) irradiated selection of 'Nova' mandarin. Similar in appearance, quality and production characteristics to 'Nova' with the exception of seed numbers (0.8-1.3 seeds/fruit compared to 12-22 seeds/fruit for 'Nova'). Fruit are somewhat larger than normal 'Nova' (size 21) but are similar in all other characters. Excellent, rich, distinctive 'Nova' flavor (14-16° brix). Long-term production has not been determined but early evaluations indicate good production. Does not tend to alternate bear.