

## What's New with Mandarins

**M**andarins have been in the forefront of variety discussions in California for at least the past 10 years. In the last 5 years, significant acreage of Clementines and W. Murcott Afourer have been planted, primarily in the Kern, Tulare and Fresno Counties. The importation of Spanish and Moroccan Clementines in the late fall and Christmas season has influenced consumption of citrus in the United States which has led some California producers to place mandarins in their portfolio of varieties in an attempt to compete.

In recent years, it has been hard to keep up with all the new mandarin varieties that are available from the University of California and the Citrus Clonal Protection Program (CCPP). As of this writing, 51 cultivars have been released for propagation and nearly 30 more are on the verge of release! To make this large group easier to discuss in this article, I'll break them down into four smaller groups that make sense from a marketing and horticultural perspective. The four groups we'll discuss are: Satsuma Mandarins, Clementine Mandarins, Other Seedless Mandarins, and Other Mandarins. Before you continue, you might want to read another of our TreeSource Resources, *Understanding Mandarins*, which can be found on our web site at [www.citrustreesource.com](http://www.citrustreesource.com) or you can request a copy by calling the office at 559-592-2304. If mandarins are new to you, reading *Understanding Mandarins* before you get into the information below would give you a better overall picture of all mandarins.

### SATSUMA MANDARINS

Satsumas are parthenocarpic like navel oranges and rarely have seeds. They have been in California longer than most other mandarin selections, but have lost market share to Clementines. Owari and Okitsu Wase are the most common in California. Currently there are 11 Satsuma selections released from the CCPP and there are 7 new selections on the verge of

release in the next couple of years. I developed a photographic story board from some preliminary observations made from Lindcove Field Station in November of 2004 which can be viewed at the TreeSource office. Here's the best of the newer ones:

**Miyagawa** was recently released to California and is Japan's most extensively grown variety. It appears to be slightly later than Okitsu Wase as is the case in Japan. The flavor seems better than Okitsu and it would likely be an October Satsuma in most locations in California.

**Miho Wase**, like Okitsu Wase, was derived from Miyagawa in Japan. Later than Miyagawa with a larger tree and smaller fruit than Okitsu.

**Kuno Wase** and **Kawano Wase** have been studied since 1995 and haven't offered earliness or superiority to other choices. The same is true of **Silverhill** which was planted in 1997.

**China S-9** is an unreleased cultivar planted at Lindcove in 2000. It appears to be as early as Miyagawa, but not as early as Okitsu, yet tasted better than Okitsu.

**China S-2, #3, #6, and #7** are also unreleased and showed nothing of great value when observed in 2004.

**Aoshima** is also unreleased and appears to be a late Satsuma and still had green rind when I observed it in late November 2004. It showed a S/A ratio of 8.7 and was greener than Owari when sampled by CCPP on November 5. Strangely enough, it also had seeds when I saw it.



*A Gold Nugget Mandarin in March. Fruit can have a more pebbly appearance in some years.*

**Xie Shan** had good color and flavor in November of 2004, but is not as early as other selections. May be worth watching for its flavor.

### CLEMENTINES

Clementines have become the most important group of mandarin cultivars in the world. They are rich in flavor, have tender flesh, peel easily and are seedless when isolated from other seeded citrus. They are much more difficult to farm than Satsumas and require annual pruning, auxin treatments and sometimes girdling to insure crop set. It is estimated that annual production costs in California could be as high as \$2,000 per acre and their harvest window may be 6 weeks or less. Fina Sodea was the first to be planted around 1996 and was followed by Clemenules, the most widely planted selection in the world. Additional public varieties released by CCPP in the 1990's are Monreal, Caffin, Sidi Aissa, Oroval, and Fina. New releases are Corsica #1, Corsica #2, SRA 92, SRA 63, Carte Noir, Marisol, and Nour. It is

Please see **WHAT'S NEW** on page 3





# “Industry Interview”

**JIM BATES** has been the Chief of Financial Operations

for Fowler Packing since 1989. Owned by the Parnagian family, the operation farms, packs and markets grapes, tree fruit and mandarins. Jim is a CPA by training, but also has been farming his own mandarins since the early 1990's.

**TS: How did you first get interested in Mandarins?**

**Jim:** By luck. One of the ranches I purchased in the early 1990's had some Satsumas so I started to investigate. Most folks don't think favorably about Satsumas, but after I evaluated them it seemed the right direction given the changing worldwide consumption trends. Sats are seedless with peel a kid could remove, with a good flavor and easy to grow from a stone fruit grower's perspective.

**TS: Do you have a favorite Mandarin cultivar today?**

**Jim:** I like the W. Murcott Afourer. It's got great taste and a heavy and early producer. I'm also partial to a variety I tasted in Spain called Primasol. It is a cross between a Satsuma and a Clementine, which harvests earlier than the earliest Clementine and also has good production. I don't think it has been brought to California yet. Also, people call me crazy, but I like a good Satsuma that's harvested at the right time and farmed properly.

**TS: How do you think Mandarin production will impact other types of citrus?**

**Jim:** I think there will be some early navel displacement but mostly other seeded tight skinned mandarins grown in California and Florida will suffer the most. I also believe there will be less imported fruit from Spain in the domestic market place. I spent 4 weeks in Spain and Morocco in mid-September 2003 to understand the international marketplace and competition. I believe the Spaniards are primarily sending their second tier varieties like Marisols over here which have historically done well, but that is changing. I believe we are going to beat the Spaniards to the market with a much higher quality piece of fruit and we can compete favorably with them on growing costs.

**TS: Do you think Mandarins will find new consumers for California citrus that navels couldn't serve?**

**Jim:** Without a doubt-Yes. I believe the US will follow the trend set in Europe. They consume a lot more mandarins on a per capita basis. Efforts on the part of large grower-packer-marketers are going to open up Mandarins to more consumers. We've got the Spaniards to thank for the development of the market because of their exportation of Clementines. The growth in demand for their fruit has been exponential nearly every year and the U.S. market is not even their primary market! Mandarins are here to stay and will have a large percentage of the market share of the citrus industry here and abroad.

**TS: How much growth do you see for more plantings of Mandarins?**

**Jim:** As the plantings have increased so has demand. The saturation point will be determined by how successful the industry is in educating retailers and consumers about the eating qualities of mandarins. California's 2004 Ag statistics report listed 9,000 acres bearing and non-bearing tangerines and 4,000 acres of Tangelos. Relate that to California's total acreage of 257,000 acres of citrus which includes 54,000 acre of Valencias. If we could sell that many Valencias is there room for more Mandarins? 13,000 acres of Tangerines and Tangelos is 5% of the industry. I believe all the acreage wasn't reported, but there is room for growth.

**TS: What is your read on the future of the Mandarin market for California?**

**Jim:** Demand to extend the season will increase and growers will be asked to provide mandarins mid-September through May. Clearly we don't have the plantings and the varieties today that can meet all the market possibilities that exist. We'll have to continue to go to China and the Mediterranean countries to find the varieties that will be successful here. Mandarin plantings will be dominated by Satsumas in front, Clementines in the middle, then the newer seedless crosses, and finally the W. Murcotts to close the season.

Please see **Interview** on page 4

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- **72 HOURS PRIOR TO PICK-UP:** Even the smallest order requires paperwork and inspection. Allowing the staff time to get your order together will help us serve you better



## WHAT'S NEW continued from page 1

difficult to determine which selection is best, but a few things can be said:

**Nour** is more late maturing and in Morocco can handle cold storage well if harvested slightly green.

**SRA #92** has good flavor, but appeared to be granulating in late November.

**Corsica #2** had a heavy crop in 2004 and showed better fruit size than Clemenules.

**Marisol** is an early variety considered of poor eating quality.

### OTHER SEEDLESS MANDARINS

Developing a seedless mandarin that will compliment or replace the Clementines and Satsumas has been a goal of citrus breeders worldwide. It takes decades to develop new varieties and some releases in recent years show some promise.

**Pixie** is primarily grown in the Ojai Valley in Ventura County. Although not recommended for San Joaquin Valley growing conditions, it can be an important niche variety in areas where it can be grown. Tree alternate bears.

**Gold Nugget** was released in 1999 and has a very similar appearance to the Pixie but is more productive. Although the rind can be pebbly at times, it's an easy peeler with a very rich flavor. Alternate bearing is a concern, but the variety is capable of holding on the tree well into May or even June.

**Shasta Gold™** (TDE No. 2) Its red-orange color and large fruit size has drawn attention to this new release from the University of California. Alternate bearing is an issue, but fruit holds on the tree into the first week of May.

**Tahoe Gold™** (TDE No. 3): Earlier than its sister, the Shasta Gold, this large, red-orange mandarin is harvested between January and March, depending on location. Alternate bearing is an issue and, in the nursery, the trees appear to be more frost sensitive than other mandarin varieties.

**Yosemite Gold™** (TDE No. 4): This variety is not as late as Shasta and not as early as Tahoe. Some may argue it is the better tasting of the three sisters, but there isn't clear agreement on this point.

Its larger fruit and red-orange appearance have gotten it noticed along with Tahoe and Shasta Gold

**The Afourer** (W. Murcott): The Afourer was originally released from CCPF with the name W. Murcott. The variety is a late mandarin that can hold on the tree into May. It is a public variety and has been very popular in the last few years. It has mild alternate bearing traits, but the fruit is red-orange in color, easy to peel, is seedless when isolated from other seeded citrus and is rich in flavor. Its greatest handicap is the need for isolation, which means it must be at least a half-mile from varieties like Clementine, Minneola, Valencia, pummelo and lemon. Afourers with seeds are not as marketable and if isolation cannot be achieved, they should not be planted.

**Seedless Kishu:** A new variety that is very small in size. Although not as small as a Kumquat, the fruit is small enough to be bite-sized. It produces in October-November, peels easily and seems to bear consistently. Few, if any, have been planted commercially, but this variety is truly seedless without isolation.

### OTHER MANDARINS

Many heirloom varieties fall in the category of "other mandarins." Because these varieties are not seedless and can put seeds into Afourers and Clementines, they have become less popular. Here are a few of the most interesting varieties of this group:

**Michal mandarin:** An intensely red-orange color, smaller fruit size, and rich flavor draws attention to Michal mandarin, which is imported from Israel. It is doubtful it will have a place in commercial acreage, but its intense

rind color is very attractive.

**Kara:** This heirloom variety is very late and is popular with producers for the farmer's markets. The fruit does not have a place in commercial production, but its rich flavor and ability to hold on the tree in spring makes it attractive for direct marketers.

**Page:** Another heirloom variety that has the best flavor of any citrus fruit. The fruit tends to be small and it's tough to peel, but with just a few seeds, red-orange color, and consistent cropping habit, it has drawn attention over the years. The fruit holds well on the tree and its peelability improves the longer the fruit hangs.

### CONCLUSION

Any discussion on mandarins that does not take "book form" is bound to leave out a lot of details. It is difficult to recommend any new varieties without many years of cropping results because most mandarins tend to alternate bear. We have now reached a time when many of these new varieties are worth observing at the Lindcove Field Station, but timing is important since many of the cultivars have a short harvest period. Varieties that require isolation to be seedless will have seeds at Lindcove and the seeds probably help set the crop, which makes Clementine observations tough. It is good to have many choices, but we have much more to learn!

There is no doubt that citrus consumers worldwide are enamored by the convenience of easy peeling, seedless citrus fruit that is easier to eat than a navel orange. The desire to meet that demand will meet with some successes and some failures, but the opportunity is there if you make all your decisions carefully.

In California we have many choices of varieties that will supply seedless, easy-peeling fruit to the consumer. Afourer and Clementine have led the charge for mandarin development in recent years. The questions remains, however, is there room for more of the same or should there be development of acreage of new varieties that will also compete for market share? That's where the careful decision-making comes in and at TreeSource, we're here to help.



*8 year old Miho Wase (left) & Okitsu Wase (right) Satsuma trees on Carrizo. Note tree size difference. Photo taken in November.*



**INTERVIEW** continued from page 2

**TS:** What are some of the limitations to more Mandarin expansion?

**Jim:** Growing regions that are suitable to mandarins. Not too hot in the springtime and located in areas without seeded citrus nearby. There is going to be a lot of effort deciding where to plant because there are a lot of microclimates in California that are con-

ducive for mandarins but not for all varieties. Furthermore the management intensity that the mandarins require to set and retain a crop will be a limiting factor as well. We are fortunate that our operations have had 3 good crops in a row, but not all producers have had the same success. We've probably been more lucky than good. There really isn't anybody yet that has a proven track record of success with Clementines in our climate. We will need many years to improve our farming

practices and find and develop more suitable selections to our hot, arid climate. Another limitation will be that some growers may have trouble getting the best returns for their fruit versus other growers with sophisticated marketing programs. In the final analysis I believe that Mandarins are going to be profitable for quite a while for those growers successful in growing and marketing the crop.

**TS:** Thanks Jim.

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