Gulf Coast Fruit Study Newsletter

Volume 14, Issue 2 Edited By: Ethan A. Natelson, M.D. October 12, 1999 Meeting

Current Meeting:

The next Gulf Coast Fruit Study program will occur on October 12, 1999 at 7:00 PM and will be devoted entirely to citrus. George McAfee will present slides and discussion on the various citrus rootstocks, cultivars and diseases with emphasis on cold-hardiness and fruit quality. Contrasts between the needs of the home gardener and the commercial grower will be emphasized. Representatives from several of the larger plant nurseries in the Houston area will be present and interested in what types of citrus the audience would like to see the retail nurseries make available to the public.

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Citrus Varieties for the Texas Gulf Coast (by John Panzarella)

I am growing about 120 varieties of citrus at my home in Lake Jackson, mostly in flowerpots. After trying to grow anything and everything that tastes good in my backyard, by the process of elimination I have ended up mainly with citrus trees. They are relatively easy to grow and do not have too many diseases and insect problems. They have one great advantage: I do not have to worry about the squirrels, raccoons, possums, or birds eating them, unlike with other fruits and nuts. Of course, there are a few exceptions, and once in a while a desperate squirrel will take a fruit and try to eat the seeds out of it. And for some unknown reason, the bird that is taking over Texas, the grackle, will sometimes scratch up the young fruit with their beaks. The main drawback is that many citrus varieties freeze at about 28° F. So if you can provide some kind of protection to keep the tree about 28° F, most of your problems are solved. And, of course, grow your citrus on trifoliate rootstock so that your tree will be relatively cold hardy, small, and easy to cover or move inside if growing in a pot.

Insect problems are mainly the citrus leaf miner (CLM) on tender new growth that comes on after April, the orange-dog caterpillar, white flies, and, occasionally, grasshoppers. CLM is the hardest to control. A light dormant oil spray slows them down, but does not stop them. You have to be careful not to burn the leaves with oil in the summer. Use about 3 tablespoons of dormant oil to a gallon of water, and apply when the temperature will not get into the 90's. This also takes care of white fly and sooty mold. In the wintertime, you can go up to about 8 tablespoons per gallon to get rid of the sooty mold. There is a beneficial wasp in the Texas Citrus Valley that controls CLM, but we do not have it here — yet. Agri-Mek controls CLM, but it is a restricted chemical.

Varieties:

There are so many varieties, color, shapes, sizes and flavor of citrus—more than I think of any other fruit. I will list my favorites, plus some weird ones:

Mandarins and satsuma:

My favorite variety is the **Fairchild** mandarin. It is a cross between the **Clementine** mandarin and the **Orlando** tangelo. All of **Fairchild's** sisters are good, too, such as **Nova**, **Robinson**, **Lee**, **Osceola**, and **Sunburst**, but **Fairchild** has in my opinion the best flavor. Its only drawback is that it has lots of seeds and is not too easy to peel. **F6-9-10** is another good mandarin, along with **Bell**, which is larger and has fewer seeds. **Clementine** has been the mother to many hybrids, and almost all are good to eat, including **Clementine** itself.

Next are satsumas. All the satsumas are good with maybe **Kimbrough** being my favorite. Satsuma mature their fruit before the freezes come, they are easy to peel, and are relatively seedless. Good varieties are **Owari**, **Neopolitana**, and **Armstrong Early**. My **Neopolitana** is a heavy producer of fruit. **Brown Select** is also supposed to be good, but I just got mine this year, and it has not yet fruited.

Sweet Oranges:

The **Tarocco** blood is a very good tasting orange, although it gets only streaks of red when grown in our climate (next page).

The **Red navel** and the **Cara-Cara dwarf** are both good with lots of red color. The **Brazilian navel** is large, almost seedless and good flavor. Bill Chapman made a cross with **Umatilla** and **Moro blood orange** to get a hybrid we are calling **Rasberry tangor**. This variety is just now starting to fruit on a number of trees and appears to get the red color and a slight raspberry flavor. **Moro** and **Sanguinelli** blood are also sweet and good but only develop a little red color in our warm humid climate.

Kumquats and Kumquat hybrids:

The best Kumquat is **Changshou**. It is larger and sweeter than **Meiwa**, which is second-best. **Changshou** has a dimple on the flower end. **Meiwa** is round like a marble. Dr. Brown crossed **Meiwa** and the sour juiced/sweet skinned kumquat **Nagami** and got a seedless hybrid that has the characteristics of the **Nagami**. For someone looking for a highly ornamental, but slightly tart kumquat hybrid, the **Indio Mandarinquat** would fill the bill. It is a cross between the **Nagami** kumquat and the **Dancy Tangerine**. It gets lots of bright orange tear drop-shaped fruit the size of a large lime at Christmas time. In a pot it is very showy. Another interesting cross is the **Meyer** lemon crossed with a kumquat which we are calling the **Sunquat**. It is sweet when left on the tree past December and you can eat the whole thing. Generally speaking, the Kumquats are more cold hardy than the other fresh eating citrus.

Grapefruit and Pummelo:

A grapefruit that is getting a lot of attention is the **Golden** grapefruit. It is probably not a true grapefruit since it is less acid than most grapefruit. It has a beautiful golden color inside but does have a lot of seeds. If you like an easy to peel white grapefruit, then try **Bloomsweet**. You can peel and eat this one like a tangerine. **Bloomsweet** does have many seeds. The best pummelo I have eaten is actually a cross between a pummelo and a grapefruit. It never got a name, so we call it **Red Blush x Webber**, its parents' names. It is a red fleshed fruit that has less acid and is larger than a grapefruit. Grapefruit evolved from crosses with pummelo.

Limes:

There is a lime that Hines Nursery is calling the **Thornless** lime. I believe this to be the Mexican lime that you see in the grocery store. Several local nurseries are selling the Thornless lime. It is grown from cuttings and is very prolific. One fruit cut and juiced in a glass of water with sugar makes a good limeade drink. Limes are small and may be easily maintained in pots.

Lemons and Lemon hybrids:

The **Meyer** lemon is the best for this area, althout it is probably not a true lemon. It is usually grown on its own roots from cuttings. The improved **Meyer** lemon means that it is resistant to the tristesta virus. **Ujukitsu** is a sweet lemon-like fruit from Japan that you peel and eat fresh like a tangerine. It does have a lot of seeds. It is bright yellow when ripe and the size of a large tangerine with a teardrop form. I wish it didn't have so much membrane between segments, but it is good.

Tuti fruiti:

If you like growing weird stuff you can try **Buddha's hand**, the fruit that looks like fingers but has no juice. It does have a good fragrance when the fruit is scratched and can be candied. There is the **Australian Finger** lime that has very tiny leaves which probably would make a good bonsai tree and bears little limes that look like pickles and just about tastes like a pickle. See the article written about it in the September/October 1999 issue of the "Fruit Gardener" by the California Rare Fruit Growers Association. The **Emerocitis** plant has leaves that look like a small olive tree, and the fruit look and taste like Mexican limes the size of large marbles. One or two in a glass of water makes a nice limeade drink. The plant in my yard still thinks it's in Australia, so the fruit ripens in July, which is winter in Australia. **Thomasville Citrangequat** is 1/2 kumquat, 1/4 orange, and 1/4 poncirus trifoliate. It is very cold hardy once it is about 3 feet high and has a tart juice with a semisweet skin. This is the one to grow if you don't want to worry about the tree freezing. Once established, it should take the upper teens to lower 20s and is edible, but nothing to brag about. **Buxifolia Severinia** has fruit that look like small black grapes and taste like soap and can be used as rootstock. **Variegated Citrofortunella** is a highly variegated sour little lime the size of a marble. It is highly prolific, but the fruit is very sour. It makes a nice ornamental.

These are the best varieties I have fruited so far (except for the Tutu fruit section which are just curiosity items). I have others, such as the **clusterquat**, and a **Benji Hassaku** seedling that are fruiting for the first time and will be ripe this winter. If you would like to taste these and many other varieties, I have an open house each year at my home the second Saturday in December. The tasting is free, and there will be a very limited number of trees for sale. This year it will be December 11, 1999, at 404 Forest Drive, Lake Jackson, TX from 3:00 PM to 5:00 PM. Everyone is invited that likes to taste citrus fruit. There will be at least 30 varieties of citrus to taste and maybe some persimmon or papaya.

In case of bad weather the tasting table will be set up in the warm greenhouse. Call (409) 297-2120 or e-mail jpanzarella@computron.net for a new date if extreme bad weather is predicted or if you have other questions or need directions to my house. If you e-mail me your e-mail address, I will send you an e-mail reminder in December.

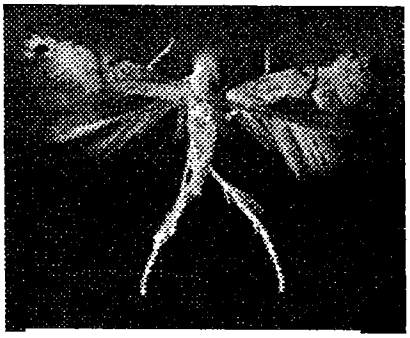
New Varmint In Town

The citrus leaf miner (***Phyllocnistis citrella***) has entered Houston with a vengeance. First seen in Florida in 1993, this beastie has slowly found its way into Texas and has now worked its way North from the Rio Grande Valley. John Panzarella had a serious problem last year in the Lake Jackson area, and the pest is now invading citrus in Houston. The problem is obvious with shiny, silvery, snake-like trails on the leaves, which then curl and shrivel. It is most apparent on new growth, since the larva have some difficulty in chomping on mature, hardened leaves.

This critter is a tiny, night-flying moth about 2 mm long, with a wing span of 4 mm. Thus, it is about the size of a white fly but much more vicious. It lays its eggs on the underside of the leaves, hurriedly, since it only lives a few days. The hatched larva does the damage, and new generations of moths appear about every three weeks.

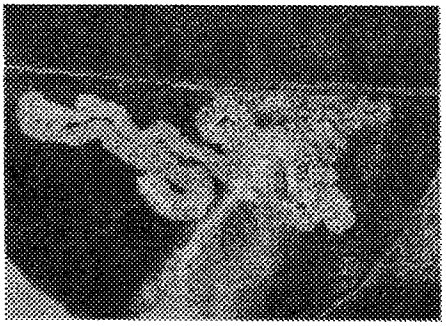
There is no ideal control, and pherome traps to parasitic wasps have been tried. Oil sprays are helpful since they reduce the egg population. Generally, the oil is mixed with ***Malathione*** and a soap solution, and the plants are sprayed weekly — particularly when there is a flush of new growth. The oil can create a problem with leaf burn in the very hot weather, so one must be cautious. Vegetable oil is said to be preferred over fossil oil without much evidence. The soap and oil also act as a spreader-sticker for the pesticide.

The most effective insecticide is ***avermectin***, long used by your local vet to control mites and other pests in dogs, cats, horses and cattle. To large animals, it has been given orally, as a rub-down and by injection. A typical brand name for cattle is ***Ivomec***, which is a 1% solution sold as a "pour on." It is formulated in a 2% solution for spray control of leaf miner as ***Agrimek*** (Novartis) and ***Avid*** (Merck), but watch out for sticker shock. An 8 oz bottle of ***Avid*** (which would spray about 300 gallons when diluted as recommended) is about $85.00. You would really have to love your trees to use this. Additional controls are under study, as this moth is considered a major threat to the citrus industry, and it particularly likes grapefruit. When the infestation is overwhelming, even the surfaces of the fruit may be attacked.



Phyllocnistis citrella Stainton, adult (4 mm wing spread).

Twisted and curled leaves are symptoms of leafminers



They leave a characteristic snake-like 'mine' when they feed on the underside of leaves

Good Books

There are many books on citrus, but two that are beautifully illustrated and quite readable:

1. ***Citrus Varieties of the World***, by James Saunt. ISBN: 1-872960-00-6, 1990
2. ***Citrus: How to Select, Grow and Enjoy***, by Richard Ray, Ray Walheim, and Lance Walheim. ISBN: 0-89586-076-7, 1980.

Although both of these titles are currently out of print, another excellent resource is the following book, which is available:

3. ***Citrus: A Complete Guide to Selecting and Growing More Than 100 Varieties for California, Arizona, Texas, the Gulf Coast and Florida***, by Lance Walheim, et al. ISBN: 0962823643, 1996. List Price: $17.95. If ordered through Amazon.com: $14.36 (paperback)

Citrus Jargon

Most of us would have no difficulty in forming a visual image of a lime or lemon or a grapefruit, and would easily be able to describe these unique fruits to others. But what is a citrangequat? Are a **Mandarin** orange and a **Satsuma** the same thing? Are all tangerines **Mandarins**? Welcome to the confusing world of citrus terminology. Often, the classification in this field is as much based upon history as it is with true genetic principles.

The term **Mandarin** refers to the offspring of citrus cultivated in China for thousands of years. Most of these are sweet, with a loose skin. The designation, **Satsuma**, refers to one class of **Mandarins**. The ***Owari***, commonly grown here in Houston, is a **Satsuma**. The term tangerine would be synonymous. Others in the **Mandarin** group have a thinner, tighter skin. ***Clementine*** would be an example of this trait. ***Clementine*** is considered a "common" **Mandarin**, and not a **Satsuma**. Additional **Mandarins** are in the Mediterranean and the King group.

Many genetic crosses of well-known citrus types have been made in the past, and hybrids continue to be developed. The description of some of these is as follows:

1. Citrange: Sweet Orange (this might be a Parson Brown, for example) X Trifoliata

2. Citrumelo: Grapefruit X Trifoliata

3. Limequat: Lime X Kumquat

4. Orangequat: Sweet Mandarin X Kumquat

5. Tangelo: Sweet Mandarin X Grapefruit

6. Tangor: Sweet Mandarin X Sweet Orange

Sometimes three parent types are involved:

7. Citrangequat: Kumquat X Citrange (Sweet Orange X Trifoliata)

The new fruit, ***Ambersweet***, is a Sweet Orange X Tangelo (Mandarin X Grapefruit) cross. Some of these crosses are to introduce a new flavor or to introduce a degree of cold hardiness. Often, crosses emphasizing the latter trait, unfortunately, produce fruit that tastes like kerosene.

The Root of the Matter

Like many fruits we grow, the desired citrus cultivar is usually grafted onto a particular rootstock. This may induce early fruiting and give uniformity to the trees, as well as providing tolerance for local soil conditions such as high salt, heavy clay, loose sand, and the presence of high concentrations of fungal or viral vectors. Most citrus are compatible with each other, but certain ones have proven advantages and others, distinct disadvantages, when used as the understock. For example, the rough lemon as a rootstock causes the cultivar fruit to be less juicy and with a thicker rind. The ***Cleopatra mandarin*** as the root system generates reduced yield and smaller fruit.

In the Houston area, we have used the deciduous citrus, ***trifoliata***, or its smaller, curved thorn variant, ***flying dragon***, as the rootsystem. This combination of rootstock and cultivar produces good quality fruit and imparts some cold hardiness to the system. The ***trifoliata*** has not been used widely for commercial purposes in the Rio Grande valley because most strains do poorly in heavy salt soils and fruit yields are less than with other rootstocks.

Most have found ***citranges***, such as ***Troyer*** and ***Carrizzo***, to be excellent rootstocks and these are in wide use in California. In Florida, the ***Swingle citrumelo*** is an extremely vigorous rootstock, especially well-suited for grapefruit and navel oranges. It also brings some increased cold tolerance. We have not used this one widely in Houston because it is thought to do poorly on heavy clay soils and to not be ideal as an understock for mandarins. It may be particularly useful to "push" the growth of weaker growing cultivars. It is under test here.

KUMQUAT CHICKEN (yield: 6 servings)

4 oz. Neufchatel cheese, softened	3/4 tsp. dried whole tarragon, divide	8 chicken breasts
1 egg white	1/4 c. water, divided	1/3 c. fine, dry breadcrumbs
2 T. Toasted wheat germ	1 1/2 c. unsweetened orange juice	1 T. sugar
1 clove garlic, halved	1 tsp. cornstarch	2 T. white wine vinegar
1 1/2 T. Orange-flavored liqueur	1 1/2 c. sliced kumquats divided	

Bone, cut in half, and skin the chicken breasts. Combine cheese & 1/2 tsp tarragon; set aside. Flatten chicken to 1/4 inch thickness; spread cheese mixture evenly on each piece of chicken; roll up, tuck in sides. Combine egg & 2 T. water in a small bowl; stir. Combine breadcrumbs & wheat germ in a shallow dish. Dip each roll in egg white mix; dredge in bread crumb mix. Place in a 12x8x2 inch baking dish coated with cooking spray. Bake at 400 for 30 min. Set aside; keep warm. Combine juice, sugar, and garlic in a small saucepan; boil. Cook 6 minutes or until reduced to 1 cup. Combine 2 T. water & cornstarch; stir. Add to juice mix, stir. Add 1/4 tsp. tarragon, vinegar, liqueur & 1 cup kumquats; simmer 5-min or until kumquats are tender, stirring constantly, remove & discard garlic. Serve with sauce.

LEMON TORTE (yield: 6 servings)

1 pk. Pepperidge Farm Lemon Crunch Cookies crushed (approx. 5-1/2 oz pk.)	1 c. sugar	1 1/2 c. heavy cream (whipped)
	1/2 c. lemon juice (fresh)	1 pk. raspberries (10 oz)
4 egg whites	1 1/2 T. lemon peel (grated)	3 oz butter (melted)
4 egg yolks		

CRUST: Combine crushed cookies with melted butter. Pat into bottom of a 9" springform pan. Refrigerate. LEMON FILLING: Beat egg whites until foamy. Gradually add sugar and beat until stiff peaks form. Beat yolks in another bowl until thick and lemon-colored. Stir in lemon juice and peel. Gently fold in egg whites. Fold in whipped cream. Pour into crust and freeze. RASPBERRY SAUCE: Puree raspberries. Pour through a strainer into a serving bowl. Let torte stand at room temperature for 10 minutes. Remove springform. Slice and serve with raspberry sauce.

MARMALADE (yield: 6 1/2 pint jars)

3 Whole Oranges (seeded, chopped)	3 Whole Lemons (seeded, chopped)
1 Water Equal To Whole Fruit	1 Sugar Equal To Cooked Fruit

Measure chopped fruit and place in heavy saucepan. Measure equal amounts of water and pour into saucepan. Bring to boil. Lower heat and simmer for 5 minutes. Remove from heat, cover, and let stand in a cool place for 24 hours. Again bring to a boil and cook over high heat for 10 minutes. Remove from heat, cover, and let stand in a cool place for another 24 hours. Measure out fruit mixture. Add equal amount of sugar. Again bring to a boil over medium heat. Cook, stirring constantly, for another 15 minutes, or until mixture begins to gel. Remove from heat and immediately pour into hot sterilized jars.

CITRUS DUMPLINGS (yield: 2 servings)

1/2 tsp. orange peel (finely shredded)	1/2 c. orange juice	2 tsp. cornstarch	1/4 tsp. ground cinnamon
11 oz. mandarin orange sect. (drain)	1/2 c. Bisquick	2 T sugar	2 T milk
1 tsp. sugar	1 dash ground cinnamon		

In a 1-quart casserole stir together orange juice, cornstarch and 1/4 t ground cinnamon. Microwave, uncovered, on 100% power for 1 1/2 to 2 minutes or until thickened and bubbly, stirring every 30 seconds. Stir in drained mandarin orange sections and shredded orange peel. Microwave, uncovered, on 100% power for 1 to 1 1/2 minutes or until mixture is heated through. Meanwhile for dumplings, stir together Bisquick and 2 T sugar. Add milk, stirring just until moistened. Drop mixture into four mounds atop the hot orange mixture. Microwave, uncovered, at 50% power for 6 to 7 minutes or until dumplings are just set. Stir together the 1 tsp. sugar and dash of ground cinnamon. Sprinkle sugar mixture atop dumplings.

ORANGE RICE (yield: 6 servings)

1 c. uncooked rice	1 c. water	1 c. orange juice	1 tsp. reduced calorie margarine.
1 dash salt	1 T. freshly grated orange rind		1/2 c. fresh orange sections (seeded)

In a 2-quart microwave safe casserole, combine the rice, water, orange juice, margarine and salt. Cover, microwave on HIGH for 5 minutes. Stir in the orange rind. Turn the bowl 1/4 turn. Microwave on HIGH an additional 10 minutes, turning the bowl after 5 minutes. Do NOT uncover the bowl. Allow to set, covered for an additional 10 minutes, or until all the liquids have been absorbed. Immediately before serving, fluff with a fork, add orange sections, and mix

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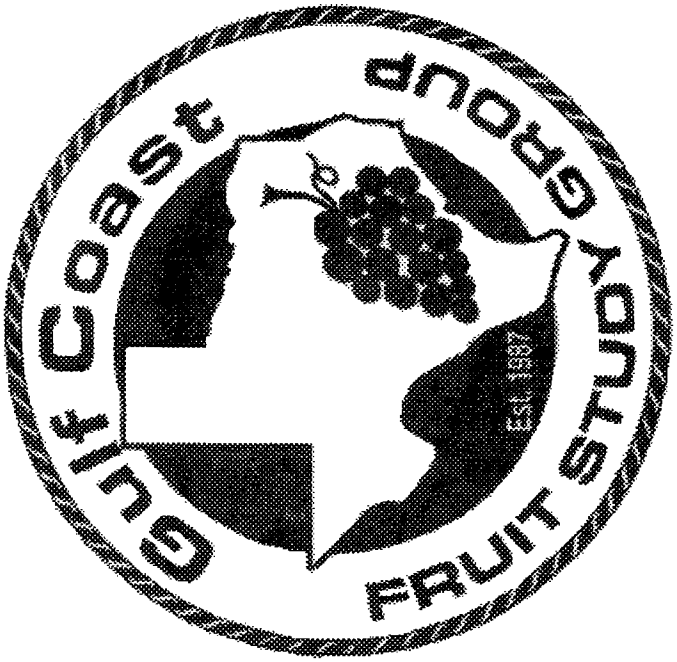

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