



# News & Notes of the UCSC Farm & Garden

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## Selecting, Growing, and Ripening European Pears

– by Orin Martin

*On the growing of backyard fruits –*

“Its object is to show the range and variety of our resources and to emphasize very firmly that to have the best fruit you must grow it yourself.”

– Edward A. Bunyard, *The Anatomy of Dessert*

Such is the way with European pears (*Pyrus communis*), which actually hail from regions of temperate Europe and Western Asia (Southern Caucasus Mountains into the Northern Mountains of Iraq and Iran, formerly Persia). Pears have been cultivated for over 4,000 years. Dried slices of cultivated pears have been unearthed in Swiss cave dwellings dating to 400 B.C.E. Both ancient cultures of the Greeks and Romans show records of pear propagation, cultivation and appreciation as a dessert fruit. Most of the quality varieties of today were bred by first French and Italian monks (1500s–1800s) and then their Belgium counterparts (1800s).

Commercial pear variety offerings are stuck in the same rut apple varieties were mired in until 20 or 30 years ago. With apples you could get any variety you liked as long as it was Granny Smith (green), Red Delicious (red), or Golden Delicious (yellow). These days supermarket (as well as your New Leafs, Staff of Lives, etc.) pears devolve to: Bartlett (early and yellow), Comice (midseason and the world’s most popular mail order gift fruit at Christmastime), D’Anjou (late and green) and Bosc (later still and a dull bronzy, russet color). It’s not that these aren’t exquisite pears at their peak of ripeness, it’s just that there are so many other choices that expand and extend the eating experience and season of ripeness (*see varietal descriptions, page 6*).

As a home-grown, backdoor fruit, the pear properly grown, picked in a timely manner and ripened off the tree can be both a sublime and rewarding experience. On the other hand, pear growing has its demerits to offset its merits. Pear growing is not for the impatient, with standard size trees taking up to 20 years to reach their stride and bear a sizeable crop. Even semi-dwarf trees take 5–8 years to carry a good fruit load. There are no truly dwarfing rootstocks for pears and it is hard to keep tree height under 12–18 feet. Fortunately there are a few natural dwarf varieties: Seckel, Honey, Dana’s Hovey and Bella Di Guigno (*see page 6 for descriptions*).

Ah yes, and then there is “pestilence”—disease. With pears, scab is not as big a problem as it is with apples. The leaves are virtually immune owing to their waxy cuticle (surface) while the fruit is susceptible under moderate temperatures (50s–70s°F) and persistent wetness (> 7–9 hours consecutive hours). We call this spring in Santa Cruz. Sulphur sprays, especially liquid lime sulphur sprayed annually just at bud break, can keep fungal populations of scab at bay. If wetness persists longer than 7–10 hours at a stretch (nighttime doesn’t count as scab needs light to germinate) repeat sprays are required from flowering through leafing out and young fruit (grape-size) set.

I only spray the Chadwick Garden’s pears in the “bad” years, when wet conditions persist well into the spring (May–June). They usually exhibit little or no fruit scab and virtually no leaf scab. In truth, because pears are often mildly russeted they don’t “show” the scab as much as apples and there seems to be higher consumer acceptance/tolerance for scab on pears than on apples. However, failing to spray sulphur during the wet years has fairly disastrous results that season and will build up an inoculation count that can be devastating for years to come.

The other, and in truth more devastating, disease issue with pears is fire blight, which is caused by a bacterium, *Erwinia amylovora*. Fire blight overwinters as cankers on pears, apples (although not in the Santa Cruz area

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yet), quinces (bigtime), and the ornamental Cotoneaster and Pyracantha. Fire blight enters the tree via flowers during warm, wet springs when the bloom period is long and weak, as happens in El Niño and low chill winters, and is spread from branch to branch and tree to tree by pollinating honey bees.

Because it is a bacterial rather than a fungal infection, fungicides are of no help in combating the disease. The way it affects the tree is to cause rapid die back, which appears as a blowtorch-like withering of branches “tip to stern.” It can spread at a dramatic pace—I once watched a beloved 15-foot-tall heirloom Flemish Beauty pear die to the ground in a little over a week. In Santa Cruz County you can expect a bad fire blight spring 1–3 years in ten. The 1990s featured 4 or 5 such El Niño springs. Thankfully, this millennium has yet to see an outbreak—the upside of episodic dry stretches.

The remedy(s) for fire blight is simple:

- Cut out all infected wood ASAP. Disinfect your loppers and saw in a bleach solution between each cut and burn infected wood.
- Plant fire blight resistant varieties, such as Seckel, Honey, and Atlantic Queen. Note, Bartlett is especially prone to fire blight.
- Light a candle at the house of worship of your choosing, genuflect and offer a prayer of contrition...

On the low-maintenance scale, pears require far less scrupulous thinning than apples: They can be thinned to 2 and occasionally 3 per cluster, whereas apples must be thinned to 1 per cluster and about 6” between fruit on a limb. Pears’ long, tapered necks and long stems allow room for 2 or 3 fruit in a cluster to both enlarge and color. Pears don’t color as highly or brightly as apples, thus not all portions of the fruit need exposure to sunlight.

While pears exhibit some alternate-bearing tendencies (i.e., a heavy set one year, a light one the next, which is true of almost all fruit species), this is only slight compared to apples.



Buttira Precoce Morettini, by Stephanie Martin

### Ripening Summer and Winter Pears

“Getting a perfect pear from farm to table is a risky and complicated business. Each step along the way requires the attention of someone with knowledge and skill. First the pear must be picked from the tree when it is mature but not fully ripe. It must experience a period of cool storage, the optimal length of which varies according to variety. Then it must be brought to room temperature to finish ripening. At every step of the way, from tree to market, to kitchen, it must be handled gently to avoid bruising.”

Alice Waters, *Chez Panisse Fruit*

There are two basic classes of pears—summer and winter. Think of summer and winter pears as being as vastly different as summer and winter squashes.

### Summer Pears

Summer pears, as the name implies, crop early (July–September) and sweeten and ripen on the tree. They tend to be small (2–3” in length) or medium (4–5”) sized. Two notable exceptions would be the ubiquitous Bartlett (6”) and the Bulgarian bred Ubileen (8”).

Summer varieties feature a very thin, delicate and easily bruised skin that severely limits storage, shipping and thus marketing. While they have limited commercial appeal owing to their fragility, they are an easy-to-harvest, sublime treat for the home grower. They also offer intriguing possibilities to the small niche grower catering to local restaurants and local farmers’ market stalls. The taste experience goes something like this:

- Thin, dissolving skin
- Fine-textured flesh that is soft, melting and often aromatic
- A rich, buttery sweetness with a slight background taste of mild acidity

These summer pears lack the characteristic grit or stone cells of most winter pears, whose cell structure imparts a gritty but pleasant component to the taste experience.

Pears ripen from the inside out. Because of the smaller size and the makeup of cell walls in summer pears, they can be ripened on the tree, or require only a brief period (as little as 3–5 days, as much as two weeks) of post-harvest chilling to convert starches to sugar.

How to determine ripeness with summer pears:

- Taste it\*
- Color should brighten, even glow
- When (gently) squeezed fruit should give slightly, especially around the neck
- Seeds should be dark brown to black
- Fruit should be slightly aromatic, especially around the calyx (bottom) end

\*As I often tell apprentices, an indicator of *unripeness* on any fruit: 5–6 pears at the base of the tree, each with one bite taken out of it ...

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*European Pears (from page 2)*

**Winter Pears**

The winter refers not so much to time of harvest (September–November) as to both time of ripening (off the tree) and distribution for mass marketing. With high-tech, atmosphere-controlled refrigeration units (temps 32–40°F, humidity 90–95%, adjusted oxygen <1%), it is possible to hold and then ripen winter pears at room temperature through March–April.

I think pears hold up better to cold storage than any other fruit. Winter pears require 3–4 weeks (+/-) of cold storage to ripen (convert starches to sugars). If left to ripen on the tree, the interior of the fruit will be soft, mushy and fermented by the time the exterior is sweet. If picked too early, they never sweeten and remain hard. The trick is when to harvest.

The methods and tools available to large-scale commercial growers are beyond the scope and cost possible for home gardeners. Most winter pears are picked at the “green, mature stage” (maturity is a precursor to ripening), refrigerated, and then ripened at room temperature.

Indicators of maturity that commercial growers use include –

- A subtle change in skin color from dark green to light green. Red cultivars actually lose brightness 1–3 weeks prior to maturation. This change cannot be accurately assessed by the human eye. To objectify color change an expensive electronic device called a colorimeter has been developed.

- A decrease in starch and a simultaneous increase in soluble solids (mostly sugar). The tool to measure soluble solids or sugar content is called a refractometer (\$150–\$200, available from Peaceful Valley Farm Supply). This tool measures the amount of light that passes through a slice of fruit and correlates it via a color scale (Brix Scale) to a corresponding % sugar content. Most pears are picked at 8–12% sugar.

- A softening or decrease in flesh firmness. Once again, flesh firmness is objectively measured by an instrument called a penetrometer, similar in looks and function to a drill press. By measuring the resistance of the drill bit as it passes into the fruit and using an algebraic formula, mature firmness and readiness to pick can be determined.

All of this starts to sound like a Bill Murray riff in the movie *Ghostbusters*—who you gonna call—to get a ripe pear?

*Home Gardener Strategies for Picking Winter Pears,  
Prior to Placing in the Vegetable Crisper Drawer of  
Your Refrigerator for 2–4 Weeks*

When it comes to deciding when to pick winter pears, home gardeners have several less technical options than their commercial counterparts –

- By the calendar, or “Well, last year I picked my Bartletts starting around August 15. I picked in several

rounds through September 20.” This can work but also can be off by as much as 2–3 weeks either way, depending on the summer weather and temperatures. A note on the spring and (so far) summer of 2009: severely lacking in terms of both footcandles and heat index.

- A noticeable color change. Bartletts are the most dramatic in this regard, going from a dull green to a warm yellow hue. Bosc lose their green background tinge and become a dull bronze color. Red varieties lose brightness and gloss. Comice and D’Anjou start to develop a little background yellow-gold hue.

- Seed color change. As pears mature, seed color goes from white, to beige, to dark brown or black.

- The “Cradle Test.” Gently grasp the bottom of the pear and slowly swing it from 6:00 to 9:00 and away from you in a twisting motion. It should separate (with the stem attached) easily at maturity.

Beyond these techniques there seems to be a 6<sup>th</sup> sense necessary here as well.

**Greatest Hits of Pear Varieties**

These are all being grown or have been grown at the UCSC Farm (f) or Alan Chadwick Garden (g).

**Summer Pears**

Bartlett (f, g) – The world’s most-planted pear variety. Often associated with canned pears, and while they’re good in that regard, they are also one of the best dessert pears. Goes from green to a warm yellow color at maturation (ripe). Very short holding period on the tree, 7–10 days at maturation but the fruit comes on in waves over 3–4 weeks (Aug–Sept). The flesh is juicy with a sugary, musky flavor. It is somewhat self-pollinating (doesn’t need another variety to fruit, as do most pears). But it sets a bigger crop, in both size and number, with a pollinator. Originated in Berkshire, England in the 1700s as a chance seedling, where it is known by its proper name—Williams’ Bon Chretien—and is still referred to as that or Williams’ in Europe. It is astounding that a fruit variety has enough redeeming qualities to endure for over 200 years as a leading commercial production variety. Moderately dwarf growth habit. Note: Bartlett can be treated as either a summer or winter pear. The first 7–10 days of harvest lends itself to winter treatment and thereafter summer treatment, i.e., ripe off the tree.

Ubileen (g) – An unusually large pear (summer or winter) from Bulgaria that is all sugar, no grit cells, exploding with juice and a soft, buttery texture. Heavy fruit set can induce branch breakage—thin to one fruit every 8–9” (Aug).

Bella Di Guigno (g) – Hands down the earliest pear (Guigno = June in Italian) and the smallest fruit (2–3”). Crisp, sweet over tart taste. Hard to sweeten before it goes fermenty—cute though. Sets a heavy crop annually. Also pollinates Warren!

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### *European Pears (from page 8)*

Warren (g) – Found seedling from Hattiesburg, Mississippi by noted horticulturist T. O. Warren. Medium-large, asymmetrical tear-drop shaped, dull brown fruit that's not much to look at but it's all about a smooth as butter, aromatic, sugary-sweet experience. If a pear can be too sweet, this one comes close, begging the question, can there be too much of a good thing?

Locally, Apprenticeship graduate Thom Broz of Live Earth Farms has a few acres of Warrens that were planted by former UCSC Farm manager "Big" Jim Nelson in the late 1980s (he was way out ahead of the curve). He piles them high and watches them fly at local farmers' markets. A difficult tree on which to get a good fruit set (Aug–Sept).

Buttira Precoce (Early Butter) Morettini (g) – Large tree, large fruit, large sweet, spicy rich buttery taste (Aug).

Red Clapp's Favorite (g) – originated in Michigan. Large fruit, with deep red skin and abundant annual crops. Taste-wise it's basically a Bartlett with spice.

Seckel and Honey (g) – Naturally dwarf trees, these 5–8 foot "bushes" are loaded annually with small brown-red russet fruit. Aptly nicknamed the Sugar Lump.

Dawn and Tyson (f) – I know nothing of these varieties' source or origin but they are the ultimate summer sweet butter pear; a grafting project for the winter.

### **Winter Pears**

Comice (f, g) – Or more properly Doyenne (Queen) Du Comice. Probably the world's most famous pear. Sugar balanced with acidity and smooth pear texture. Stores well for > 5–6 months (Sept).

D'Anjou (and Red D'Anjou) (f, g) (Beurré D'Anjou) – Smooth texture, lemony flavor, not the sweetest pear (Sept–Oct).

Bosc (f, g) (aka Beurré Bosc; the French have a penchant for preceding pear names with Beurré, Doyenne or Dutchess D') – Large, long-necked, tapered golden-brown, russeted skin, originally from Belgium. Spicy, sweet, aromatic and gritty good. Heavy annual crops (Sept–Oct).

Orcas (g) – Found seedling from Orcas Island, Washington. Yellow-carmine flushed skin color. Large fruit, full flavor—sweet, acid, spicy.

Rescue – Another Northwest favorite. Huge fruit with bright red-orange blush and sweet, juicy smooth textured flesh.

Other winter pear favorites include Conference, Flemish Beauty, Dutchess, and Dana's Hovey.

### **Postscript**

Twenty years have elapsed since you decided to plant a pear tree and you've just had your first home-grown pear. What made the "Queen of Fruits" so sublime?

It's not so much that pears, especially summer types, have more sugar than apples. Both are about 10% sugar by weight. However, pears have less acidity than apples (0.2% vs. 0.8%). The sugar acid ratio of apples is about 13:1; with pears it's 50:1. In fact, hard as it may be to fathom, pears have more sugar by weight than apricots and are about the same as peaches. It's all about the sugar:acid ratio. Harkening to this article's lead paragraph—those monks knew their science.