

# **EVALUATION OF ALTERNATIVE VARIETIES FOR CALIFORNIA PEAR ORCHARDS**

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## **ABSTRACT**

The California pear industry relies mainly on Bartlett and a few other varieties for its commercial fresh market production. Increased consumer interest in diverse produce choices offers new possibilities for acceptance of alternative fresh market varieties. Two pear variety evaluation trials were established in Lake County in 1995 and 1997, respectively. 26 varieties, some bred for fire blight resistance, are being tested for production, post-harvest quality, and sensory traits. Results to date indicate several varieties have potential to be accepted by consumers, particularly Blakes Pride and Cinnamon.

## **INTRODUCTION**

The California pear industry relies mainly on the Bartlett variety due to its versatility and longstanding consumer preference. Many Bartlett trees are between 30-60 years or even older. Bosc (mainly the russeted strains) and Red Clapp's Favorite (a.k.a. Starkrimson, Super Red) comprise most of the remaining acreage. This is very different from other types of tree fruit for which numerous varieties are available and grown. California growers have experimented with alternative varieties for the fresh market in previous years, including red-skinned cultivars (e.g. Crimson Gem Comice, Canal Red, Sensation Red Bartlett), Beurre Precoce Morretini, and others. Few attempts have met with permanent success, for reasons such as poor external and/or internal quality in the field or post-harvest, inadequate promotion - and consequently - lack of retailer or consumer familiarity and acceptance, poor ability to be propagated, poor production characteristics (yield, fruit size), among others. As a result of past failures, as well as current tenuous pear economics, few growers are considering replanting pear orchards, much less diversifying varieties.

There has been, however, recent interest expressed by some growers in planting new varieties. There is also renewed interest and activity worldwide, with cultivars becoming (or soon to become) available from Australia, Europe, New Zealand, South Africa, and the U.S. Some of the cultivars mentioned in trade literature include Banjo, Blakes Pride, Concorde, Gold Rush, Potomac, and Taylors Gold Comice.

There is a lack of consistent data on most new varieties in California. Growers must depend solely on trade publications, nurseries, and word of mouth. Past and current negative experiences can be avoided if systematic, objective data is obtained. Notable past and present examples are the poor yields and tree vigor of Crimson Gem Comice and the partial russetting of Taylor's Gold in California.

Two pear variety trials were established in Lake County in 1995 and 1997. The former is in Scotts Valley and consists of five products from Dr. Richard Bell's fire blight resistance breeding program at USDA in Kearneysville WVA. The latter is in Kelseyville and is a group of 22 selections chosen in collaboration with USDA, OSU and nursery experts (Table 1). In 2004, two sensory evaluations

were carried out in collaboration with OSU Hood River Experiment Station personnel and the OSU Food Innovation Center in Portland to attain data on consumer acceptance.

The trials are currently the only source of local, systematic, objective information on Blakes Pride, Concorde, Cinnamon, and Taylor's Gold, among others.

In 2005, project objectives were to:

- Continue to develop a database on existing varieties.
- Remove unsuitable cultivars and replace as appropriate.
- Replace several unsuitable USDA fire blight selections with selections from the Harrow (Ontario, Canada) program (Harrow Sweet, Harrow Gold, Harrow Delight, etc.).
- Research and collect new promising cultivars.
- Carry out several more sensory evaluations (200 consumers each per year).

## PROCEDURES

The Scotts Valley trial site originally consisted of five selections bred at Kearneysville, WVA to be fireblight resistant: 76115-10, 66131-21 (now named Blakes Pride), 67218-83, 66170-47, and Potomac. The rootstock was *Pyrus betulaefolia*. In 2005, data were taken only on the most promising two varieties, Blakes Pride and 66170-47; the other three were abandoned in spring 2005 and grafted to Bartlett. Plot design is randomized complete block (RCBD) with five single tree replications. The orchard is conventionally farmed, 9' x 15', on Still loam alluvial soil.

The Kelseyville trial site consists of 21 varieties. All except "Comice-types" are planted on two rootstocks, *P. betulaefolia* and Old Home x Farmingdale 97. Each group of five trees is planted linearly across five rows east to west (row direction is north to south), thus there is no randomized replication of the treatments. Comice and Taylor's Gold Comice are also planted on Quince BA29C and Comice on Pyrodwarf (total of 15 Taylors Gold and 20 Comice trees). The orchard is certified organic, 9' x 14', on Cole clay loam.

Both sites are irrigated by under tree sprinklers. No special pruning practices are employed nor do varieties receive differential pest control, fertility, or other practices. The growers are responsible for decision making with UCCE staff only determining harvest timing.

Data collected for each variety/rootstock combination include bloom and set phenology, pressures and sugars 3-4 weeks prior to and at harvest, tree yield/fruit size, and trunk circumference to calculate yield efficiency.

For each variety, fruit from both rootstocks is combined and evaluated at the UC Davis Post-harvest Lab prior to storage and then after 1, 2, and 3 months in storage (pre- and post-ripening for 5-7 days depending on variety). Data include days to ripen, ground color, % russeting, % blush, internal browning, % soluble solids, % Titratable acid, color (Minolta colorimeter), firmness, and starch.

Three sensory evaluation analysis events were held in 2005 (two in 2004), two at major Lake County agricultural festivals, and one at the Ferry Building Farmers Market in San Francisco. Each event targeted 250 consumers who each tasted 4-5 varieties and completed standardized ballots.

Each evaluation was staffed by UCCE staff and Lake County Master Gardener volunteers, who were joined by several interested pear industry members. Every participant in the evaluation was certified by the UC Davis Human Subject Research Program. Fruit was stored until 5-7 days before each evaluation, then ripened to eating pressure of 2-3 lbs. firmness.

Each consumer "taster" received a gift bag of sample pears, recipes, and other items donated by the California Pear Advisory Board and the County of Lake Marketing program. Ballots were analyzed using the Compusense software at the Oregon State University Food Innovation Center in Portland, Oregon.

## RESULTS

### 1) Orchard evaluations (Tables 2a-b and 3a-b)

**Bloom phenology** - Spring 2005 was cold with prolonged rain. Overall, North Coast yields and cosmetic quality were poorer than in 2004. Full bloom dates varied slightly with rootstock and ranged from March 21 to April 5. The only varieties that bloomed before Bartlett (March 28 in Scotts Valley and April 5 in Kelseyville) were Coscia, Blake's Pride, Concorde, and Dr. Jules Guyot. Despite heavy scab pressure, scab was very minimal in the trial due to adequate sulfur treatments. The only notable pest problem was pear slug.

**Rootstocks** - Yield per tree was 26% more on *P. betulaefolia* (*P. bet* vs. OHxF97, despite 62% more fruit that dropped prior to harvest. While OHxF97 (97) fruit size was 7% larger than *P. bet* (likely due to the lower yield), this failed to offset the lower yields. Comice had better yield and fruit size on Quince than on *P. bet* or 97. No data was available from Pyrodwarf in 2005, as the trees have yet to bear measurable fruit. Calipers will be taken in winter 2006 to calculate yield efficiency.

**Varieties** - Yields were generally lower than 2004. Louis Bonne D'Jersey produced the most, but had very small fruit (<100 gm.). The best overall producers (yield and fruit size) were Cascade/*P. bet* and 97, Abate Fetel/*P. bet* and 97, and Atlas Red Sensation/97. Poorest overall producers were Blanquilla (almost no fruit, very vegetative), Comice on *P. bet* and 97, Atlas Red Sensation on *P. bet*, Concorde/97, and Dr. Jules Guyot/97. Other varieties had either high yield and poor size or visa versa.

**Fruit Drop** - The Kelseyville orchard is farmed organically so no NAA is applied. *P. bet* trees dropped over twice as much fruit than did 97 trees, but still had 65% greater yield and only 7% smaller fruit size. The PGR Retain<sup>®</sup> is OMRI-approved and should be tested as a possible substitute for NAA in organic orchards.

**Harvest** - It was decided to harvest some varieties at lower pressures than in 2004 in order to attain better sensory quality, and there were eight harvest dates (vs. three in 2004) in order to achieve more exacting harvest timing.

Commercial Bartlett harvest in the Scotts Valley trial block was August 12 and August 17-18 in Kelseyville. Varieties harvested prior to this were Coscia, Blakes Pride, Concorde, and Dr. Jules Guyot. Most varieties were harvested through September, with Cinnamon and Noble Russet Bosc the latest on September 21.

## 2) Post-harvest evaluations (Table 4)

Fruit ripened in 5-7 days depending on variety, initial firmness, and storage duration (1-3 months). Those taking **5** days to ripen after one month storage (and initial firmness) were Atlas Red Sensation (18.5), Blakes Pride (15.2), Blanquilla (12.7), Cascade (11.0), P15/57 (13.5), Rosemarie (12.0), and Z1 (14.6); **6** days - 66170-47 (15.5); and **7** days - Abate Fetel (13.3), Cinnamon (15.7), Comice (10.6), Concorde (14.3), Conference (13.2), Coscia (12.2), Dr. Jules Guyot (16.1), Louise Bonne d'Jersey (13.0), and Noble Russet Bosc (16.8).

The only varieties expressing symptoms of storage breakdown (and months stored) were Cinnamon (1-2), Comice (3), Conference (1 + 5 days), Coscia (3 + 6 days), Noble Russet Bosc (1 + 5 days), Rosemarie 1-3 + 5 days), Z1 (1-3 + 5 days), and Z2 (1, 1 + 5 days).

Cosmetically (important after a rainy spring and multiple sulfur applications for pear scab in the organic block), 47 (conventionally-grown), Atlas Red Sensation, Blanquilla, Coscia, Dr. Jules Guyot, Louise Bonne d'Jersey, Rosemarie, and Z1 had the cleanest fruit. The most russeted were Abate Fetel, Blakes Pride (conventionally-grown), Cascade, Comice, Concorde, Conference, and P15/57. Cinnamon and Noble Russet Bosc were 100% russeted, as they should be (Taylor's Gold Comice was also fully russeted in 2005 but lacked enough fruit for harvest or post-harvest evaluation).

Other notable characteristics were: 1) blush (Atlas Red, Cascade, Z2; somewhat Rosemarie and Z1), 2) soluble solids > 13% (66170-47, Abate Fetel, Cinnamon, Concorde, Conference, Louise Bonne d'Jersey, Noble Russet Bosc, P15/57, and Z1).

## 3) Sensory Evaluations (Appendix 1 and 2)

Three evaluations were done in 2005 (**bolded** indicates standard comparison variety):

- September 24, Kelseyville Pear Festival (also in 2004)  
2004 - Abate Fetel, Bartlett, Blakes Pride, Conference  
2005 - **Bartlett**, Blakes Pride, Coscia, Rosemarie, Z-2
- October 8, Steele Winery Harvest Festival, Kelseyville (also in 2004)  
2004 - Abate Fetel, Bartlett, Cinnamon, Concorde  
2005 - Abate Fetel, **Bartlett**, Blakes Pride, Cinnamon, Rosemarie
- November 5, Ferry Building Farmers Market, San Francisco (winter pear emphasis)  
2005 - Abate Fetel, Cascade, **Comice**, Concorde, Noble Russet

Results of the five (blind tasting) consumer evaluations revealed similarities and differences. Most panelists were between 45 and 59 years old (though there was a large number between 35-44 in San Francisco), and predominantly women ( $\geq 60\%$ ). In every case, stated annual pear consumption is

relatively low ( $\leq$  1-3 times a month, though again more San Francisco panelists proclaimed weekly consumption). Adults preferred large pears for themselves and smaller for children.

Only one pear on one event date (Rosemarie on October 8) scored below the acceptable level for purchase intent. Bartlett was highly preferred, but Blakes Pride and Cinnamon were also well liked. Abate Fetel was less acceptable, possibly due to lack of full ripeness at tasting. Conference and Concorde also lacked appeal in these tests.

## SUMMARY

In 2005, several of the 23 varieties being tested showed commercial promise, particularly Blakes Pride, Cascade, and Cinnamon, all of which scored as well as Bartlett for overall liking and purchase intent. While well known in Europe and a productive tree, Abate Fetel was difficult to ripen to eating pressure and was poorly accepted by consumers. Concorde, Conference, and Rosemarie had inconsistent acceptance. Consumers were mostly familiar with Bartlett, but surprisingly, their second choice for variety eaten most often was "other", meaning either they did not know or were considering an unlisted type (e.g. Asian). Comice was consistently the least known variety.

2006-2007 plans include:

### **Varietal changes:**

**eliminated** - Arganche (too early, falls off the tree, too small), Scarlet Comice (virused), Packham Triumph (too much competition from So. America), Taylors Gold (inconsistent russet in California), Bronze Beauty Bosc (almost no fruit).

**possibly eliminate** (decide after 2006) - Coscia. 47, Concorde, Blanquilla.

**still lacking sensory data** - Dr. Jules Guyot, Louise Bonne D'Jersey, Blanquilla, Z1.

**to be added in 2006 and 2007** (year depends on rootstock) (Table 5) - Carmen, Dawn, Flamingo (So. Africa), Flemish Beauty, Harrow Crisp, Harrow Delight, Harrow Gold (Canada), Norma, R1T14/15 (Winters, UC Davis), Tosca, Turnadot, and Warren.

New trees are being propagated on *P. betulaefolia*, 97, Pyrodwarf, OHF87, and OHF69 by Fowler Nurseries in Newcastle. R1T14 is currently on OHxF87, but will also be propagated on the others for the trial.

Blakes Pride and 47 wood was cut in summer 2005 and sent to Fowler for propagation. These varieties will be moved from Scotts Valley to Kelseyville and the Scotts Valley plot ended.

**Post-harvest and sensory evaluation** - 4-5 promising varieties will be harvested at several pressures, then evaluated after several storage intervals. This will provide more information on ideal handling procedures. Variable harvest pressures will also be a factor during at least one sensory evaluation.

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**Table 1 - Current Lake County Variety Trial Selections**  
(commercial standards bolded)

Name	Origin	Sensory Evaluation		2006 Status
		No.	Year(s)	
<b>Kelseyville</b>				
Abate Fetel (Abbe Fetel)	Italy	4	2004,2005	Keep
Arganche (Klementinka)	Bulgaria		N/A	Removed 2005
Atlas Red Sensation	U.S.			Keep (1 year)
<b>Bartlett</b>	U.S.	4	2004,2005	Keep
Bella de Giugno	Italy			Keep (1 year)
Blanquilla	Spain			Keep (1 year)
Bronze Beauty Bosc	Hood River, OR		N/A	Removed 2005
Cascade	Medford, OR	1	2005	Keep
Cinnamon	Hood River, OR	2	2004,2005	Keep
<b>Comice</b>	France	1	2005	Keep
Concorde	England (East Malling)	1	2004,2005	Keep (1 year)
Conference	France, Eng., Hol., Belg.	1	2004	Keep (1 year)
Coscia	Italy	1	2005	Keep (1 year)
Dr. Jules Guyot	Europe (Fr., It., Llimonera Spain)			Keep (1 year)
Louis Bonne d'Jersey	France		gift fruit 2005 sensory 2006	Keep
Noble Russet Bosc	Okanogan Valley, WA	1	2005	Keep (1 year)
Packham Triumph	Australia			Remove 2006
Rosemarie	South Africa	2	2005	Keep
Scarlet Comice	Medford, OR		N/A	Removed 2005
Taylors Gold Comice	New Zealand			Remove 2006
Z1 (green pear)	Modesto, CA			Keep
Z2 (red pear)	Modesto, CA	1	2005	Keep
<b>Scotts Valley</b> (fire blight resistant, move Blakes Pride and 47 to Kelseyville in 2006 or 2007)				
Blakes Pride (66131-21)	USDA, Kearneysville, WVA	3	2004,2005	Keep
Potomac (US625 37-048)	USDA, Kearneysville, WVA		N/A	Removed 2005
76115-10	USDA, Kearneysville, WVA		N/A	Removed 2005
66170-47	USDA, Kearneysville, WVA		2006	Keep (1 year)
67218-83	USDA, Kearneysville, WVA		N/A	Removed 2005

Table 2a. Bloom phenology (sorted by harvest date), *P. betulaefolia* rootstock, Lake County Variety Trial, 2005.

Harvest Order #	Variety / <i>P. betulaefolia</i>	Bloom Data <sup>1</sup>							Harvest Date
		3/8	3/14	3/21	3/28	4/5	4/11	4/18	
1	<b>Coscia</b>	GC	WB	<b>FB</b>	PF	FS	FS	FS	8/4
2	<b>Blake's Pride</b> ( <i>Scotts Valley</i> )	GC	WB	<b>FB</b>	PF	PF	FS	FS	8/12
3	<b>Bartlett</b> ( <i>Scotts Valley</i> )	GT	WB	WB	<b>FB</b>	PF	FS	FS	8/12
4	<b>Concorde</b>	GT	GC	WB	1st B	<b>FB</b>	FS	FS	8/15
5	<b>Dr. Jules Guyot</b>	GT	GC	WB	<b>FB</b>	PF	FS	FS	8/15
6	<b>Bartlett</b> ( <i>Kelseyville</i> )	SB	GC	WB	1st B	<b>FB</b>	PF	FS	8/17
7	<b>66170-47</b> ( <i>Scotts Valley</i> )	SB	WB	<b>FB</b>	PF	FS	FS	FS	8/22
8	<b>Blanquilla</b>	SB	GC	WB	1st B	<b>FB</b>	FS	FS	8/24
9	<b>Z1</b>	GT	---	---	---	---	---	---	8/24
10	<b>Comice</b>	GT	GC	WB	<b>FB</b>	PF	FS	FS	9/2
11	<b>Rosemarie</b>	GC	WB	<b>FB</b>	PF	FS	FS	FS	9/2
12	<b>Louis Bonne D'Jersey</b>	BB	WB	<b>FB</b>	PF	FS	FS	FS	9/9
13	<b>Abate Fetel</b> ( <i>Abbe Fetel</i> )	BB	WB	<b>FB</b>	PF	FS	FS	FS	9/13
14	<b>Z2</b>	D	GC	WB	1st B	<b>FB</b>	PF	FS	9/13
15	<b>Atlas Red Sensation</b>	SB	GC	WB	1st B	<b>FB</b>	PF	FS	9/16
16	<b>Cascade</b>	BB	GC	WB	1st B	<b>FB</b>	FS	FS	9/16
17	<b>Conference</b>	SB	GC	WB	<b>FB</b>	PF	FS	FS	9/16
18	<b>Cinnamon</b>	BB	GC	WB	<b>FB</b>	PF	FS	FS	9/21
19	<b>Noble Russet Bosc</b>	GT	BB	WB	<b>FB</b>	PF	FS	FS	9/21
-----	<b>Bella de Giugno</b>	SB	GC	<b>FB</b>	PF	FS	FS	FS	No Fruit
-----	<b>Taylor's Gold Comice</b>	D	BB	WB	<b>FB</b>	PF	PF	FS	No Fruit
-----	<b>Std. Bosc</b>	D	GT	GC	WB	<b>FB</b>	PF	FS	No Fruit

<sup>1</sup>: SB = swollen bud BB = bud break GT = green tip GC = green cluster WB = white bud FB = full bloom PF = petal fall FS = fruit set



Table 2b. Harvest parameters sorted by harvest date, *P. betulaefolia* rootstock, Lake County Variety Trial, 2005.

Variety / <i>P. betulaefolia</i>	Harvest			# Fruit Harvested		# Fruit on Ground <sup>1</sup>		Weight (kg)		Calculated Yield		Size	
	Date	Pressure	Sugar	Total	Average / Tree	Total	Average / Tree	Total	Average / Tree	kg/ha (1,000s)	ton/ac	gms./fruit	Box Size
Coscia	8/4	12.7	7.9%	2,384	476	131	26	154.9	31.0	26	11.8	65	180
Blake's Pride (S.V.)	8/12	16.3	9.9%	1,535	307	49	10	250.4	50.1	43	19.1	163	135
Bartlett (S. V.)	8/12	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Concorde	8/15	15.6	10.9%	440	88	9	2	78.1	15.6	13	6.0	178	120
Dr. Jules Guyot	8/15	18.0	9.5%	751	150	543	109	121.9	24.4	21	9.3	162	135
Bartlett (Kelseyville)	8/17	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
66170-47 (S. V.)	8/22	14.9	13.1%	478	96	80	16	129.2	25.8	22	9.8	269	80
Blanquilla	8/24	16.0	9.7%	5	1	1	0	0.1	0.0	0	0.0	30	180
Z1	8/24	16.0	11.5%	793	159	53	11	144.4	28.9	25	11.0	182	110
Comice	9/2	11.5	11.0%	70	14	1	0	10.0	2.0	2	0.8	143	150
Rosemarie	9/2	16.9	11.8%	830	166	42	8	158.6	31.7	27	12.1	191	110
Louis Bonne D'Jersey	9/9	15.3	12.7%	2,892	578	118	24	250.0	50.0	43	19.1	86	180
Abate Fetel (Abbe Fetel)	9/13	14.3	14.1%	352	70	156	31	79.2	15.9	14	6.0	226	90
Z2	9/13	14.6	13.4%	106	21	157	31	24.0	4.8	4	1.8	228	90
Atlas Red Sensation	9/16	18.8	11.7%	248	50	212	42	48.3	9.7	8	3.7	193	110
Cascade	9/16	12.7	10.0%	523	105	347	69	152.2	30.4	26	11.6	290	70
Conference	9/16	13.8	11.5%	623	125	256	51	121.3	24.3	21	9.2	194	110
Cinnamon	9/21	15.0	14.1%	139	28	482	96	37.3	7.5	6	2.9	268	80
Noble Russet Bosc	9/21	19.5	13.9%	245	49	270	54	62.5	12.5	11	4.8	255	80
Bella de Giugno		No Fruit		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Taylor's Gold Comice		No Fruit		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Std. Bosc		No Fruit		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

<sup>1</sup> NAA applied **only** to Blake's Pride, 66170-47, and Bartletts (Scotts Valley).

Table 3a. Bloom phenology (sorted by harvest date), OHxF97 and Quince, Lake County Variety Trial, 2005.

Harvest Order #	Variety / OHxF97	Bloom Data <sup>1</sup>							Harvest Date
		3/8	3/14	3/21	3/28	4/5	4/11	4/18	
1	<b>Coscia</b>	GC	WB	<b>FB</b>	PF	FS	FS	FS	<b>8/4</b>
2	<b>Bartlett</b> ( <i>Scotts Valley</i> )	GT	WB	WB	<b>FB</b>	PF	FS	FS	<b>8/12</b>
3	<b>Concorde</b>	SB	GC	WB	1st B	<b>FB</b>	FS	FS	<b>8/15</b>
4	<b>Dr. Jules Guyot</b>	GT	GC	WB	<b>FB</b>	PF	FS	FS	<b>8/15</b>
5	<b>Bartlett</b> ( <i>Kelseyville</i> )	SB	GC	WB	1st B	<b>FB</b>	PF	FS	<b>8/17</b>
6	<b>Blanquilla</b>	GC	WB	<b>FB</b>	PF	FS	FS	FS	<b>8/24</b>
7	<b>Z1</b>	BB	---	---	---	---	---	---	<b>8/24</b>
8	<b>Comice</b>	GT	GC	WB	<b>FB</b>	PF	FS	FS	<b>9/2</b>
9	<b>Rosemarie</b>	GC	WB	<b>FB</b>	PF	FS	FS	FS	<b>9/2</b>
10	<b>Louis Bonne D'Jersey</b>	SB	WB	<b>FB</b>	PF	FS	FS	FS	<b>9/9</b>
11	<b>Abate Fetel</b> ( <i>Abbe Fetel</i> )	GC	WB	<b>FB</b>	PF	FS	FS	FS	<b>9/13</b>
12	<b>Z2</b>	D	---	---	---	---	---	---	<b>9/13</b>
13	<b>P15/57</b>	BB	WB	<b>FB</b>	PF	PF	FS	FS	<b>9/13</b>
14	<b>Atlas Red Sensation</b>	SB	GT	WB	<b>FB</b>	PF	FS	FS	<b>9/16</b>
15	<b>Cascade</b>	GT	GC	WB	<b>FB</b>	PF	FS	FS	<b>9/16</b>
16	<b>Conference</b>	GT	GC	WB	1st B	<b>FB</b>	FS	FS	<b>9/16</b>
17	<b>Cinnamon</b>	SB	GC	WB	1st B	<b>FB</b>	FS	FS	<b>9/21</b>
18	<b>Noble Russet Bosc</b>	SB	BB	GC	WB	<b>FB</b>	FS	FS	<b>9/21</b>
----	<b>Bella de Giugno</b>	GC	WB	<b>FB</b>	PF	PF	FS	FS	No Fruit
----	<b>Taylor's Gold Comice</b>	GT	GC	WB	<b>FB</b>	PF	FS	FS	No Fruit
<b><u>Variety / Quince</u></b>									
1	<b>Comice</b>	SB	BB	WB	1st B	<b>FB</b>	PF	FS	<b>9/2</b>
----	<b>Taylor's Gold Comice</b>	SB	GC	WB	1st B	<b>FB</b>	PF	FS	No Fruit

<sup>1</sup> SB = swollen bud BB = bud break GT = green tip GC = green cluster WB = white bud FB = full bloom PF = petal fall FS = fruit set



Table 4: Post-harvest Quality Analysis (averages) - Lake County Pear Variety Trial - 2005

Variety	Eval. Time	Date	# Fruit /eval	Ground Color	Percent Russetting	Percent Blush	IB score	%SS	%TA	Firmness (lbf)	Starch score
47	Initial	8/22/05	30	1.2	1.1	2.5	0.0	12.4	0.268	15.5	0.6
47	1m0c	9/22/05	30	1.6	4.1	6.0	0.0	13.4	0.182	15.8	.
47	2m0c	10/26/05	30	2.1	2.6	4.3	0.0	13.9	0.182	15.8	.
47	3m0c	11/30/05	30	2.1	1.9	2.7	0.0	.	.	13.7	.
47	Initial+6d20c	8/30/05	30	3.3	2.0	3.2	0.0	13.0	0.238	1.9	.
47	1m0c+6d20c	9/27/05	30	3.0	3.2	4.5	0.0	13.5	0.183	2.5	.
47	2m0c+5d20c	10/31/05	30	3.8	3.5	7.8	0.0	13.3	0.158	1.5	.
47	3m0c+6d20c	12/5/05	30	4.0	1.6	4.2	0.0	.	.	2.2	.
Abate Fetel	Initial	9/14/05	30	1.0	28.2	0.7	0.0	10.9	0.168	13.3	4.0
Abate Fetel	1m0c	10/14/05	30	1.1	20.7	1.0	0.0	13.1	0.204	12.5	.
Abate Fetel	2m0d	11/16/05	30	1.6	25.3	3.3	0.0	14.6	0.133	12.0	.
Abate Fetel	3m0c	12/13/05	30	2.3	21.3	4.0	0.0	.	.	10.5	.
Abate Fetel	Initial+7d20c	9/21/05	30	2.2	18.3	3.0	0.0	13.3	0.185	3.7	.
Abate Fetel	1m+7d20c	10/21/05	30	3.9	14.2	0.5	0.0	14.6	0.157	3.7	.
Abate Fetel	2m0d+7d20c	11/23/05	30	3.3	19.5	2.0	0.0	13.2	0.144	2.6	.
Abate Fetel	3m0c+7d20c	12/20/05	30	3.7	19.8	1.2	0.0	.	.	3.4	.
Atlas Red	Initial	9/20/05	30	1.3	6.8	37.3	0.0	12.8	0.192	18.5	5.6
Atlas Red	1m0c	10/12/05	30	1.8	3.0	23.8	0.0	12.4	0.175	16.2	.
Atlas Red	2m0d	11/16/05	30	2.7	6.9	37.8	0.0	12.5	0.152	16.2	.
Atlas Red	3m0c	12/14/05	20	3.0	5.9	44.0	0.0	.	.	14.9	.
Atlas Red	Initial+5d20c	9/26/05	30	3.7	5.3	45.3	0.0	12.7	0.192	2.3	.
Atlas Red	1m0d+5d20c	10/17/05	30	3.9	5.8	34.2	0.0	13.3	0.200	2.2	.
Atlas Red	2m0d+5d20c	11/21/05	30	3.7	5.2	48.2	0.0	12.8	0.180	2.4	.
Atlas Red	3m0c+5d20c	12/19/05	20	4.0	8.0	43.3	0.0	.	.	2.8	.
Blake's Pride	Initial	8/16/05	30	1.0	25.7	0.7	0.0	9.9	0.319	15.2	1.4
Blake's Pride	1m0c	9/15/05	30	1.4	25.7	1.8	0.0	11.6	0.234	14.9	.
Blake's Pride	2m0c	10/12/05	30	2.0	1.5	0.5	0.0	11.9	0.206	14.2	.
Blake's Pride	3m0d	11/17/05	30	2.1	26.3	2.3	0.0	12.4	0.173	13.8	.
Blake's Pride	Initial+5d20c	8/22/05	30	3.6	30.8	0.7	0.0	11.7	0.271	2.5	.
Blake's Pride	1m0c+5d20c	9/19/05	30	3.6	25.8	2.0	0.0	12.1	0.215	2.0	.
Blake's Pride	2m0d+5d20c	10/17/05	30	4.0	4.8	1.3	0.0	12.5	0.202	1.9	.
Blake's Pride	3m0d+5d20c	11/22/05	30	3.8	20.7	3.5	0.0	12.6	0.190	1.4	.
Blanquilla	Initial	9/7/05	30	1.0	2.5	0.0	0.0	11.9	0.242	12.7	5.2
Blanquilla	1m0c	9/30/05	15	1.0	0.7	0.0	0.0	11.8	0.227	12.3	.
Blanquilla	Initial+5d20c	9/12/05	30	1.0	1.3	0.0	0.0	12.4	0.223	2.6	.
Blanquilla	1m0c+5d20c	10/5/05	15	1.0	1.3	0.0	0.0	12.5	0.183	2.2	.
Cascade	Initial	9/20/05	30	1.3	10.5	27.2	0.0	12.2	0.231	11.0	5.2
Cascade	1m0c	10/12/05	30	1.7	1.2	21.8	0.0	12.8	0.239	11.0	.
Cascade	2m0d	11/16/05	30	3.0	11.5	26.7	0.0	12.8	0.197	10.9	.
Cascade	3m0c	12/14/05	20	3.3	12.5	20.0	0.0	.	.	8.7	.
Cascade	Initial+5d20c	9/26/05	30	2.8	8.5	31.3	0.0	12.2	0.236	1.9	.
Cascade	1m0c+5d20c	10/17/05	30	3.9	3.8	14.5	0.0	12.9	0.232	2.0	.
Cascade	2m0c+5d20c	11/21/05	30	3.8	17.2	22.3	0.0	12.9	0.230	2.2	.
Cascade	3m0c+5d20c	12/19/05	20	3.9	13.8	21.8	0.0	.	.	2.1	.

Table 4 continued

Variety	Eval. Time	Date	# Fruit /eval	Ground Color	Percent Russetting	Percent Blush	IB score	%SS	%TA	Firmness (lbf)	Starch score
Cinnamon	Initial	9/22/05	30	4.0	100.0	0.0	0.0	15.0	0.327	15.7	3.8
Cinnamon	1m0c	10/21/05	30	4.0	100.0	0.0	0.1	15.9	0.265	12.9	.
Cinnamon	2m0d	11/17/05	10	4.0	100.0	0.0	0.2	14.6	0.191	9.4	.
Cinnamon	Initial+7d20c	9/27/05	30	4.0	100.0	0.0	0.0	15.3	0.270	2.6	.
Cinnamon	1m0c+5d20c	10/26/05	30	4.0	100.0	0.0	0.0	14.9	0.211	2.2	.
Cinnamon	2m0c+5d20c	11/22/05	11	4.0	100.0	0.0	0.0	15.7	0.193	3.0	.
Comice	Initial	9/7/05	30	1.0	39.2	1.2	0.0	12.0	0.323	10.6	3.0
Comice	1m0c	9/30/05	30	1.0	35.3	0.2	0.0	13.6	0.300	10.4	.
Comice	2m0d	11/4/05	30	1.2	49.7	0.8	0.0	12.7	0.267	10.9	.
Comice	3m0d	11/30/05	30	1.3	41.3	2.0	0.4	.	.	11.2	.
Comice	Initial+7d20c	9/14/05	30	1.3	50.6	0.8	0.0	12.0	0.245	3.3	.
Comice	1m0c+5d20c	10/5/05	30	1.1	36.3	1.7	0.0	12.9	0.236	2.3	.
Comice	2m0c+5d20c	11/9/05	30	2.0	43.8	1.5	0.0	13.3	0.249	1.0	.
Comice	3m0c+5d20c	12/5/05	30	2.1	31.8	1.8	0.0	.	.	0.7	.
Concord	Initial	8/16/05	30	1.0	48.8	0.0	0.0	11.6	0.222	14.3	1.0
Concord	1m0c	9/15/05	30	1.0	38.2	0.0	0.0	12.5	0.203	13.3	.
Concord	2m0c	10/14/05	30	1.0	35.2	0.3	0.0	13.4	0.155	12.9	.
Concord	3m0c	11/16/05	30	1.4	40.2	0.0	0.0	13.8	0.163	12.8	.
Concord	Initial+7d20c	8/24/05	30	1.0	52.8	0.0	0.0	12.4	0.239	2.7	.
Concord	1m0c+7d20c	9/21/05	30	1.1	35.2	0.0	0.0	13.3	0.229	3.4	.
Concord	2m0c+7d20c	10/21/05	30	2.0	16.7	0.0	0.0	13.7	0.204	1.7	.
Concord	3m0c+7d20c	11/23/05	30	2.2	51.5	0.0	0.0	.	.	2.1	.
Conference	Initial	9/20/05	30	1.0	85.6	0.0	0.0	13.8	0.159	13.2	4.4
Conference	1m0c	10/12/05	30	1.0	91.9	0.0	0.0	13.3	0.134	11.9	.
Conference	2m0c	11/16/05	30	1.1	93.4	0.0	0.0	13.3	0.134	11.3	.
Conference	3m0c	12/14/05	20	1.6	89.6	0.0	0.0	.	.	11.6	.
Conference	Initial+7d20c	9/26/05	30	1.1	82.8	0.0	0.0	13.1	0.124	2.9	.
Conference	1m0c+5d20c	10/19/05	30	2.4	84.9	0.0	0.1	13.7	0.155	1.1	.
Conference	2m0c+7d20c	11/21/05	30	2.0	93.5	0.0	0.0	13.2	0.132	1.3	.
Conference	3m0c+7d20c	12/19/05	20	2.1	90.5	0.0	0.0	.	.	1.4	.
Coscia	Initial	8/8/05	30	1.3	1.4	0.9	0.0	9.8	0.154	12.2	4.9
Coscia	1m0c	9/7/05	30	1.6	0.7	0.3	0.0	10.3	0.139	11.7	.
Coscia	2m0c	10/7/05	30	2.2	0.8	1.8	0.0	10.8	0.121	11.5	.
Coscia	3m0c	11/4/05	30	2.5	0.8	1.0	0.0	11.4	0.121	10.9	.
Coscia	Initial+7d20c	8/16/05	30	3.9	0.7	0.2	0.0	10.9	0.156	2.0	.
Coscia	1m0c+5d20c	9/12/05	30	2.9	1.5	1.5	0.0	10.9	0.128	3.0	.
Coscia	2m0c+5d20c	10/12/05	30	3.7	0.1	0.7	0.0	11.0	0.106	3.5	.
Coscia	3m0c+6d20c	11/10/05	30	4.0	0.7	1.2	0.1	11.2	0.116	3.7	.
Jules Guyot	Initial	8/16/05	30	1.7	3.1	4.5	0.0	10.1	0.258	16.1	0.8
Jules Guyot	1m0c	9/15/05	30	1.7	4.7	4.5	0.0	10.8	0.234	15.8	.
Jules Guyot	2m0c	10/12/05	30	2.8	6.3	4.3	0.0	11.5	0.215	14.4	.
Jules Guyot	3m0c	11/17/05	30	3.1	5.6	8.3	0.0	11.3	0.191	11.1	.
Jules Guyot	Initial+7d20c	8/24/05	30	3.7	5.7	3.0	0.0	11.1	0.271	1.2	.
Jules Guyot	1m0c+5d20c	9/20/05	30	3.8	4.8	3.3	0.0	11.7	0.235	1.9	.
Jules Guyot	2m0c+7d20c	10/19/05	30	4.0	5.2	3.3	0.0	11.5	0.232	1.6	.
Jules Guyot	3m0c+5d20c	11/22/05	30	3.9	6.4	4.7	0.0	11.3	0.225	2.2	.

Table 4 continued

Variety	Eval. Time	Date	# Fruit /eval	Ground Color	Percent Russetting	Percent Blush	IB score	%SS	%TA	Firmness (lbf)	Starch score
Louis Bonne D'Jersey	Initial	9/14/05	30	1.0	0.9	4.7	0.0	13.9	0.262	13.0	4.2
Louis Bonne D'Jersey	1m0c	10/10/05	30	1.0	2.4	3.7	0.0	14.2	0.289	13.2	.
Louis Bonne D'Jersey	2m0c	11/9/05	30	1.0	2.8	2.8	0.0	14.4	0.261	12.2	.
Louis Bonne D'Jersey	3m0c	12/14/05	30	1.2	2.5	1.5	0.0	.	.	11.3	.
Louis Bonne D'Jersey	Initial+7d20c	9/21/05	30	1.6	5.0	4.5	0.0	14.4	0.269	2.7	.
Louis Bonne D'Jersey	1m0c+9d20c	10/19/05	30	3.6	2.3	0.7	0.0	13.6	0.232	1.0	.
Louis Bonne D'Jersey	2m0c+6d20c	11/14/05	30	2.0	2.2	3.7	0.0	14.3	0.213	1.6	.
Louis Bonne D'Jersey	3m0c+5d20c	12/19/05	30	2.1	3.4	2.8	0.0	.	.	2.2	.
Noble Russet Bosc	Initial	9/22/05	30	4.0	100.0	0.0	0.0	14.4	0.186	16.8	2.1
Noble Russet Bosc	1m0c	10/21/05	30	4.0	100.0	0.0	0.0	15.3	0.168	14.8	.
Noble Russet Bosc	2m0c	11/16/05	30	4.0	100.0	0.0	0.0	16.7	0.155	15.3	.
Noble Russet Bosc	3m0c	12/13/05	30	4.0	100.0	0.0	0.0	.	.	14.4	.
Noble Russet Bosc	Initial+7d20c	9/29/05	30	4.0	100.0	0.0	0.0	15.9	0.162	3.4	.
Noble Russet Bosc	1m0c+5d20c	10/27/05	30	4.0	100.0	0.0	0.3	16.2	0.165	4.2	.
Noble Russet Bosc	2m0c+7d20c	11/23/05	30	4.0	100.0	0.0	0.0	15.8	0.165	2.9	.
Noble Russet Bosc	3m0c+6d20c	12/20/05	30	4.0	100.0	0.0	0.0	.	.	3.7	.
P15/57	Initial	9/14/05	30	1.8	15.7	0.0	0.0	12.8	0.237	13.5	4.4
P15/57	1m0c	10/12/05	30	2.2	6.8	2.2	0.0	13.4	0.222	12.8	.
P15/57	2m0c	11/16/05	8	2.9	10.6	3.1	0.0	14.1	0.189	12.8	.
P15/57	Initial+5d20c	9/19/05	30	3.5	16.0	1.5	0.0	13.3	0.246	2.7	.
P15/57	1m0c+5d20c	10/17/05	30	4.0	5.3	1.7	0.0	13.6	0.213	2.5	.
P15/57	2m0c+5d20c	11/21/05	8	4.0	6.5	1.3	0.0	13.1	0.210	2.5	.
Rosemarie	Initial	9/7/05	30	1.8	0.3	4.8	0.0	11.9	0.256	12.0	5.1
Rosemarie	1m0c	9/30/05	30	2.1	0.7	3.5	0.0	12.0	0.251	11.4	.
Rosemarie	2m0c	11/4/05	30	3.1	0.2	8.0	0.0	13.1	0.212	10.3	.
Rosemarie	3m0c	11/30/05	30	2.7	0.6	6.5	0.0	.	.	10.5	.
Rosemarie	Initial+5d20c	9/12/05	30	3.2	0.6	4.2	0.0	12.7	0.237	2.2	.
Rosemarie	1m0c+5d20c	10/5/05	30	4.0	0.8	2.8	0.1	12.9	0.195	2.5	.
Rosemarie	2m0c+6d20c	11/9/05	30	4.0	1.0	6.8	0.1	13.0	0.168	3.0	.
Rosemarie	3m0c+6d20c	12/6/05	30	4.0	0.5	6.8	1.1	.	.	3.6	.
Z1	Initial	9/7/05	30	1.6	4.1	2.0	0.0	12.5	0.373	14.6	3.4
Z1	1m0c	9/22/05	30	2.1	4.0	7.8	0.5	13.5	0.268	12.5	.
Z1	2m0c	10/26/05	30	3.6	3.1	5.5	0.0	13.6	0.306	12.7	.
Z1	3m0c	11/30/05	30	3.7	3.5	4.3	0.0	.	.	11.3	.
Z1	Initial+5d20c	9/12/05	30	4.0	2.7	1.7	0.1	13.1	0.388	2.5	.
Z1	1m0c+4d20c	9/26/05	30	4.0	3.5	1.2	0.0	13.3	0.359	3.3	.
Z1	2m0c+5d20c	10/30/05	30	4.0	2.7	3.8	0.1	13.2	0.324	2.9	.
Z1	3m0c+5d20c	12/5/05	30	4.0	3.9	5.7	0.6	.	.	3.1	.
Z2	Initial	9/14/05	30	2.4	21.0	56.0	0.3	13.0	0.203	7.4	5.5
Z2	Initial+5d20c	9/19/05	30	3.9	2.4	73.5	2.1	11.0	0.196	1.8	.

Ground color: 1=green; 2=light green; 3=light yellow; 4=yellow

IB score: 0=none; 1=slight; 2=moderate; 3=severe

Starch scores: 0 = no starch clearing, 6 = all starch cleared (Granny Smith starch chart). Starch measurements only at initial evaluation.

No %SS and %TA values for 3m0c and 3m0c+ ripening evaluations

Shaded areas are evaluations done by someone other than B. Biasi

**Table 5 - Some new and potential varieties** (not all suitable; need to be researched)

<b>Name</b>	<b>Origin</b>	<b>Planting Status</b>
Angelys	France	
Banjo (Lariza)	Hood River, OR	
Best Ever	Medford, OR	
Carmen	Italy	2006-2007
Chateau Royale	Belgium	
Dawn	USDA, WVA	2006-2007
Elliot	UC Davis, CA	
Flamingo	South Africa	2006-2007
Flemish Beauty	Belgium	2007
Harrow Crisp	Ontario, Canada	2006-2007
Harrow Delight	Ontario, Canada	2007
Harrow Gold	Ontario, Canada	2006-2007
Harvest Queen	Ontario, Canada	
Honey Sweet	Purdue, IN	
Louis Pasteur	France	
Moore Red	Hood River, OR	
Norma	Italy	2006-2007
R1T14	UC Davis, CA	2006-2007
Rescue	Canada	
Rocha (Madeira)	Portugal	
Shenandoah	USDA, WVA	
Tosca	Italy	2006-2007
Turnadot	Italy	2006-2007
Warren	Mississippi, US	2007

In addition, there are Asian x European hybrids from New Zealand and Australia which should be pursued by the California industry (view in March 2006).

**Appendix 1-1: 2005 Pear Variety Observations, Pear Festival, Kelseyville, September 24, 2005**

VARIETY	ORCHARD LOCATION	HARVEST DATE	HARVEST PRESSURE/ SUGAR	TASTING PRESSURE/ SUGAR	NOTES FROM COLD STORAGE AND DURING RIPENING
ABATE FETEL	Kelseyville	09/13/05	14.0 / 14.0%		back up, not ripe enough
ATLAS RED SENSATION	Kelseyville	09/16/05	18.5 / 11.8%		back up, not ripe enough
BARTLETT	Kelseyville			3.8/13	small this year, tasty at 5-2.5 lbs
BLAKE'S PRIDE	Scotts Valley	08/12/05	16.3 / 9.9%	3/12.4	small this year, flavor less stellar than last year,
CASCADE	Kelseyville	09/16/05	13.0 / 11.3%		
CINNAMON	Kelseyville	09/21/05	17.0 / 14.6%		
COMICE	Kelseyville	09/02/05	11.9 / 11.2%		
CONCORDE	Kelseyville	08/15/05	16.2 / 11.3%		
CONFERENCE	Kelseyville	09/16/05	14.2 / 12.5%		
COSCIA	Kelseyville	08/04/05	11.0 / 8.7%	8.3/10.5	too small for cutter, color fades unpleasantly when ripe, taste was good, inconsistent ripening
LOUIS BONNE D'JERSEY	Kelseyville	09/09/05	16.2 / 13.6%		used in parade and thank you bags
NOBEL RUSSET	Kelseyville	09/21/05	19.4 / 14.0%		
ROSEMARIE	Kelseyville	09/02/05	16.4 / 11.5%	5.2/12	beautiful, has small range of optimal ripeness, loses flavor when overripe, thin skin
ROSI RED Bartlett	Kelseyville				
Z-2	Kelseyville	09/13/05	13.8 / 12.9%	7.2/10	large pear, sections badly bruised, good parts tasted great, lumpy shape, ripened in storage
47	Scotts Valley	08/22/05	14.9 / 13.1%		back up, core breakdown



**Attachment 1-2: 2005 Pear Variety Observations, Steele Winery, Kelseyville, October 8, 2005**

VARIETY	ORCHARD LOCATION	HARVEST DATE	HARVEST PRESSURE/ SUGAR	TASTING PRESSURE/ SUGAR	NOTES FROM COLD STORAGE AND DURING RIPENING
ABATE FETEL	Kelseyville	9/13/05	14.0 / 14.0%	3.2/14.8	large- difficult for cutter, flavor improved with storage, flavors range from asian pear, floral, to juicy fruit gum
ATLAS RED SENSATION	Kelseyville	9/16/05	18.5 / 11.8%		back up, tasted great, nice color, some bruises
BARTLETT	Kelseyville			3.6/12.5	did not store well visually, taste is consistent
BLAKE'S PRIDE	Scotts Valley	8/12/05	16.3 / 9.9%	4.4/13.5	
CASCADE	Kelseyville	9/16/05	13.0 / 11.3%		
CINNAMON	Kelseyville	9/21/05	17.0 / 14.6%	3/15	ripened too fast, flavor better at 5 lbs, good but sweetness cuts down on flavor, color not as nice as last year
COMICE	Kelseyville	9/2/05	11.9 / 11.2%		
CONCORDE	Kelseyville	8/15/05	16.2 / 11.3%		
CONFERENCE	Kelseyville	9/16/05	14.2 / 12.5%		
COSCIA	Kelseyville	8/4/05	11.0 / 8.7%		
LOUIS BONNE D'JERSEY	Kelseyville	9/9/05	16.2 / 13.6%		
NOBEL RUSSET	Kelseyville	9/21/05	19.4 / 14.0%		
ROSEMARIE	Kelseyville	9/2/05	16.4 / 11.5%	4.4/14	keeps it's color nicely, not very consistent in flavor, quite good in small range of ripeness
ROSI RED Bartlett	Kelseyville				back up, beautiful pear, consistent flavor, good range of ripeness
Z-2	Kelseyville	9/13/05	13.8 / 12.9%		
47	Scotts Valley	8/22/05	14.9 / 13.1%		

**Appendix 2-3: 2005 Pear Variety Observations, Ferry Building, San Francisco, November 5, 2005**

VARIETY	ORCHARD LOCATION	HARVEST DATE	HARVEST PRESSURE/ SUGAR	TASTING PRESSURE/ SUGAR	NOTES FROM COLD STORAGE AND DURING RIPENING
ABATE FETEL	Kelseyville	9/13/05	14.0 / 14.0%	5.2/14	taste was superb when slightly overripe (soft), stored the best of all
ATLAS RED SENSATION	Kelseyville	9/16/05	18.5 / 11.8%		delicious, perfect at 4-5lbs
BARTLETT	Kelseyville				went soggy in storage
BLAKE'S PRIDE	Scotts Valley	8/12/05	16.3 / 9.9%		visually still ok, but got dehydrated and rubbery
CASCADE	Kelseyville	9/16/05	13.0 / 11.3%	3/11	beautiful color, watery and bland until just right- then delicious, stored well, very large unpearlike shape
CINNAMON	Kelseyville	9/21/05	17.0 / 14.6%		stored fairly well, some stem ends got moldy
COMICE	Kelseyville	9/2/05	11.9 / 11.2%	2.4/11	grainy skin, horrible when underripe, nice contrast b/w tart skin and sweet flesh, delicious when just right
CONCORDE	Kelseyville	8/15/05	16.2 / 11.3%	4/11	got overripe in parts and lost flavor, tough outer layer, soft inside, juicy
CONFERENCE	Kelseyville	9/16/05	14.2 / 12.5%		back up, watery and insipid when underripe, delicious when slightly overripe, asian pear flavor
COSCIA	Kelseyville	8/4/05	11.0 / 8.7%		got dehydrated and rubbery, very pale color, size of a fig
LOUIS BONNE D'JERSEY	Kelseyville	9/9/05	16.2 / 13.6%		stored very well, kept nice green color when ripe, crisp fresh flavor,
NOBEL RUSSET	Kelseyville	9/21/05	19.4 / 14.0%	5.4/14	had some harvest bruises, ripening range wide, consistent but average flavor, nice coppery color
ROSEMARIE	Kelseyville	9/2/05	16.4 / 11.5%		went mushy, keeps it's blush but rest of pear fades, skin is thin, flavor bland when too ripe, delicious otherwise
ROSI RED Bartlett	Kelseyville				non left to test again
Z-2	Kelseyville	9/13/05	13.8 / 12.9%		non left to test again
47	Scotts Valley	8/22/05	14.9 / 13.1%		went way south in storage

## Appendix 2-1

### 2004 Sensory Evaluation Summary

**Event #1** - Kelseyville Pear Festival - September 25 (N=173)

**Event #2** - Steele Winery Harvest Festival - October 12 (N=170)

1) **appearance** (best → worst)

#1: Abate Fetel > Blakes Pride = Bartlett > Conference

#2: Bartlett > Abate Fetel = Cinnamon > Concorde

2) **preferred size for self**

#1: 80 > 110 = 135

#2: 80 > 110 >> 135

3) **preferred size for children**

#1: 80 >> 110 = 135

#2: 135 >> 110 > 80

4) **overall taste preference** (scale 1-10; want > 5)

#1: Bartlett > Blakes Pride = Conference > Abate Fetel

7.5            6.7            6.5            5.7

#2: Cinnamon = Bartlett > Concorde > Abate Fetel

8.1            7.6            6.1            5.3

5) **purchase intent** (scale 1-5; want > 3)

#1: Bartlett > Blakes Pride = Conference = Abate Fetel

3.9            3.5            3.4            3.1

#2: Cinnamon = Bartlett > Concorde > Abate Fetel

4.1            3.9            3.1            2.7

6) **taste rank**

#1: Bartlett > Blakes Pride = Conference > Abate Fetel

#2: Cinnamon = Bartlett > Concorde = Abate Fetel

7) **reason for liking your favorite**

#1: sweetness >> texture > tartness = juiciness > smell/aroma > skin color

#2: sweetness >> texture > juiciness > tartness > aroma > skin color

8) **reason for disliking your least favorite**

#1: lack of flavor >> gritty texture > too tart > lack of sweetness > lack of juiciness > not tart enough = skin color

#2: lacks flavor >> gritty texture > lacks sweetness = lacks juiciness > too tart > not tart enough > skin color

## Appendix 2-1: 2004 Sensory Evaluation Summary (continued)

### 9) frequency of eating pears

#1: 1x - few x/month >  $\leq$  few times/year > 1-3 x/week > around holidays > daily

#2: 1 - few x/month >  $\leq$  few times/year > 1-3 x/week > holidays > daily

### 10) variety eaten most often

#1: green/yellow Bartlett >> other > Bosc > don't know > Red Bartlett > Green Anjou > Comice > Red Anjou

#2: green/yellow Bartlett >> other > Red Bartlett = Bosc > don't know > Green Anjou = Red Anjou > Comice

### 11) age

#1: 45-59 yrs. > 60+ yrs. >> 35-44 yrs. > 25-34 yrs. > 18-24 yrs.

#2: 45-59 yrs. > 60+ yrs. > 35-44 yrs. > 25-34 yrs. > 18-24 yrs.

### 12) gender

#1: female = 62%, male = 38%

#2: female = 63.5%, male = 36.5%

## Appendix 2-2

### 2005 Sensory Evaluation Summary

**Event #1** - Kelseyville Pear Festival - September 24 (N=241)

**Event #2** - Steele Winery Harvest Festival - October 8 (N=249)

**Event #3** - San Francisco Ferry Building - November 5 (N=199)

#### 1) appearance (best → worst)

- #1: Rosemarie > Z2 ≥ Bartlett ≥ Blakes Pride > Coscia
- #2: Rosemarie > Bartlett > Abate Fetel = Blakes Pride > Cinnamon
- #3: Cascade > Abate Fetel = Noble Russet = Comice > Concorde

#### 2) color

- #1: Rosemarie = Z2 > Bartlett = Blakes Pride > Coscia
- #2: Rosemarie > Bartlett > Abate Fetel = Blakes Pride > Cinnamon
- #3: Cascade > Abate Fetel > Noble Russet Bosc = Comice > Concorde

#### 3) preferred size for self

- #1: large > medium > small
- #2: large > medium > small
- #3: medium > large > small

#### 4) preferred size for children

- #1: small > medium > large
- #2: small > medium > large
- #3: small > medium > large

#### 5) overall taste preference ( scale 1-10; want > 5)

- #1: Blakes Pride = Bartlett = Rosemarie = Z2 > Coscia  
7.1            7.0            6.6            6.6            5.4
- #2: Bartlett = Cinnamon ≥ Blakes Pride ≥ Abate Fetel > Rosemarie  
8.1            6.8            6.2            5.6            4.3
- #3: Cascade > Concorde ≥ Comice = Abate Fetel ≥ Noble Russet Bosc  
7.3            6.4            6.1            5.9            5.7

#### 6) purchase intent (scale 1-5; want > 3)

- #1: Blakes Pride = Bartlett = Rosemarie = Z2 > Coscia  
3.8            3.7            3.6            3.5            3.0
- #2: Bartlett = Cinnamon > Blakes Pride + Abate Fetel > Rosemarie  
3.7            3.5            3.3            3.1            2.5
- #3: Cascade > Concorde ≥ Comice + Abate Fetel ≥ Noble Russet Bosc  
3.8            3.4            3.4            3.2            3.1

#### 7) taste rank

- #1: Bartlett = Blakes Pride > Z2 = Rosemarie > Coscia
- #2: Bartlett ≥ Cinnamon ≥ Blakes Pride = Abate Fetel > Rosemarie
- #3: Cascade > Concorde ≥ Comice = Abate Fetel ≥ Noble Russet Bosc

## Appendix 2-2: 2005 Sensory Evaluation Summary

### 8) reason for liking your favorite

#1: sweetness > texture > juiciness > tartness > skin > aroma

#2: sweetness > texture > juiciness > tartness > aroma = skin

#3: sweetness > texture > juiciness > tartness/sourness > aroma > skin

### 9) reason for disliking your least favorite

#1: lacks juiciness/flavor > gritty texture > lacks sweetness > too tart = lacks juiciness > skin > not tart enough

#2: lacks flavor > gritty texture > lacks sweetness > too tart > lacks

#3: lacks flavor > gritty texture > lacks sweetness > too tart > skin > not tart

### 10) frequency of eating pears

#1: 1-3x/month > ≤ 1-3x/year > 1-3x/week > holidays > daily

#2: 1-3x/month > ≤ 1-3x/year > 1-3x/week > holidays > daily

#3: 1-3x/month > 1-3x/week > ≤ 3x/year > holidays > daily

### 11) variety eaten most often

#1: Bartlett > other > Red Bartlett = Bosc > Red Anjou > Green Anjou > Comice

#2: Bartlett > other > Bosc > Red Anjou > Green Anjou > Comice

#3: don't know > Bartlett > Bosc > Red Anjou > Comice > Green Anjou

### 12) age (years)

#1: 45-59 > 60+ > 35-44 > 25-34 > 18-24

#2: 60+ > 45-59 > 35-44 > 18-24 > 25-34

#3: 45-59 > 35-44 > 60+ > 25-34 > 18-24

### 13) gender

#1: female > male

#2: female > male

#3: female > male