Profiles of Hard Cider Apple Varieties

by Eleanor Voigt

The Apples to Apples project evaluated 41 single-varietal ciders, pressed and fermented in the fall of 2017, at four tasting events. CIAS partnered with the UW-Madison Department of Horticulture and the Fermentation Lab in the Department of Food Science on this project. The following pages provide growers’ horticultural observations of each apple variety and tasters’ comments on each cider sampled at these events.

This report is organized alphabetically by variety and includes pictures of each apple, growers’ observations, and tasting data describing the cider produced from each variety. More detailed information is provided for the promising varieties selected for multiple tastings. See Table 1 in the “Materials and methods” section of the Comparing Apples to Apples report for information on tasting methods and events in this project. The full report also provides the lab results for these ciders. The taster comments were provided by people not professionally trained as tasters, and with no specific guidance on terminology. Not all tasters provided comments. Therefore, while the taster comments are interesting, they should be considered within these limitations.

Albion Prairie Farm, Brix Cider, The Cider Farm and Cider House of Wisconsin supplied the apples for this project. The growers’ notes for each variety provide observations of the trees and fruit that have not necessarily been replicated through research. Tree and fruit qualities, productivity and performance may differ with location and growing conditions. Matt Raboin of Brix Cider and Deirdre Birmingham of The Cider Farm provided observations and comments for many varieties. The notes on the varieties from the Albion Prairie Farm are from The Illustrated History of Apples in the United States and Canada, authored by Daniel Bussey, the previous owner of the orchard. When he writes that a tree is not subject to any particular problems, he has observed that the tree will not suffer more than an average tree under stress. He is not claiming pest or disease resistance.

The art of cider making lies in blending apple varieties to achieve characteristics such as complex, balanced flavors and an appealing color. When reading these descriptions, keep in mind that these ciders were not blends, but made from a single variety. While a single variety cider may not stand alone, as sometimes evidenced by the tasting results, combined with other varieties it could make wonderful cider.
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## Antonovka

**Grower Notes - Cider House of Wisconsin**

Yellow or red, round apple with white flesh. Very cold tolerant. Good rootstock. Pink-tinged flowers.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

Farm-y, homemade taste

## Bergere

**Grower Notes - Brix Cider**

This cider hailed from the apples of a wild tree found where an old orchard had been cut down in Southwest Wisconsin. The small tree bore a very heavy crop of medium-sized apples. The apples were in good condition despite no orchard care. They did show a fair amount of sooty blotch and flyspeck, which are mostly of cosmetic concern and unimportant for cider apples. The tree shows potential as a cider apple, as the fruit provides an intense bitterness that could add complexity in a blend with common dessert apples.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs; Tasting event 4-co-op employees**

Oxidized, wood, musty, earthy, green, leathery with slight bitterness, bitter, astringent, tart, apple flavor yet still dry, dry, nice balance, lacks distinction, flat, soapy, alcohol, carbonation, carbolic, acid

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<tr>
<th>Color and Mouthfeel</th>
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<tbody>
<tr>
<td>Hazy, champagne, golden/pink, watery, dry, bubbly but not enough, light in color, crisp and bubbly, slight fizz</td>
<td>Complexity, astringency, discreetness, strong flavor towards the throat, apple flavor, fizz and bitterness</td>
<td>Mouthfeel, fungal, flavor absent, acidity is strong and could be too drying in excess</td>
</tr>
</tbody>
</table>

## Berne Rose

**Grower Notes - Cider House of Wisconsin**

Red apple with green striping and firm flesh

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

Banana
### Blushing Gold

**Grower Notes - Cider House of Wisconsin**

Yellow apple with dirty orange-pink blush

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

Thick and bland, bland

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### Brown’s Apple

**Grower Notes - The Cider Farm**


**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 4-co-op employees**

Floral, rose-like, melon, very apple-y, pear aroma, citrus, sour, dry, crisp, complex, full-bodied, sparkly, yeasty, stale, vinegar, wormy, earthy

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### Cap of Liberty

**Grower Notes - Albion Prairie Farm**

Cap of Liberty is a full, bitter-sharp cider variety from Martock, Somerset, England and was known as of 1873. The tree is moderately vigorous and somewhat ‘rangy’ with multiple leaders and unbranched spreading limbs. Consideration of dwarfing rootstocks might help with tree form and fire-blight pressure. It is reported that this apple does better on limestone soils. The variety is susceptible to scab, water-core, canker and apple sawfly. The apple blooms a little earlier than average. Frost pockets should be avoided. Fruit cropping is good but a little irregular. Fruit skin is yellow-green, dry and slightly rough. Cider of this apple is of good ‘vintage’ quality with a clean fruity taste; fermentation can be a bit slow (SG about 1055 and fairly high acid). This apple has been a good grower despite its reputation. No significant problems outside of some susceptibility to fire-blight.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs; Tasting event 4-co-op employees**

Fruity, melon-y, citrus , apple, apple undertones, pear, caramel, sour dust, sour, sour candy, sour warhead candy flavor, warhead tartness, tart, bitter, very astringent, strong, sweet, too sweet, sweet and sour, tasty, sparkly, fizzy, wine-y, acidic, acid, vinegar, yeasty, wild, sulphuric, SO2, rotten egg smell, rancid, needs sweet to balance, would be good blended with Swaar and Liberty CH
### Chisel Jersey

**Grower Notes - The Cider Farm**
Similar in growth habits to Dabinett, but in this farm's experience more prone to fire blight. Good crop every year.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs**
Strawberry, tannic acidity, wine-alcohol, acrid, not sweet, sour, bitter, medical, bitter, slightly sweet, would be a good component of dry cider

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<tbody>
<tr>
<td>Rust color, hazy, golden, golden warm dry, yeasty/ bubbly, flat, think, wine-like, apple juice color, crisp and bubbly, slight fizz</td>
<td>Tannic, Pabst-like but flat, crisp, nice, bitter, slight sweet</td>
<td>Lingering bitter, yeasty, lacks crispness, not sweet enough, a little boring</td>
</tr>
</tbody>
</table>

### Cinnamon Spice

**Grower Notes - Albion Prairie Farm**
California variety from the Bolinas – Olema Valley. Fruit is generally medium in size but can run smaller. The skin is predominantly wine-red over yellow ground color. The flesh is very rich, with a cinnamon-like flavor that lasts a long time after eating. A lovely intense flavor. The tree is somewhat to moderately vigorous with upright shoots; needs attention to training to maintain good shape. Ripens late October. The tree has survived nicely in hardiness region 4b – 5a without any particular problems.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**
Unusual
### Crittenden Crab

**Grower Notes - Brix Cider**

Crittenden Crab is primarily ornamental and good for birds and wildlife, due to its abundant flowers and heavy crop of bright red and yellow fruit that persists well into winter. We included it in the experiment out of curiosity, but the small fruit size would not make it viable for an orchard production system.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

No notes

### Dabinett

**Grower Notes - The Cider Farm**

Non-vigorous. Nice tree structure with good branch angles. Sensitive to fire blight. Known to be sensitive to soil K-deficiency. Good crop every year.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs; Tasting event 3-conference**

Fruity, melon, citrus, sour, bark, malty with tannins, tannin, bitter in front and back of mouth, bitter finish, moderately bitter, high bitterness, high in alcohol and bitterness like moonshine, IPA of ciders, very dry finish, bland, low in sour and sweetness, slightly sweet, sweet, rubbery, waxy on roof of mouth, would buy in a blend, almost like a tincture, medicinal, musty, yeasty aroma, bittersweet apple, out of balance, try mixing with golden russet

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<tr>
<td>Cloudy, light gold, apple juice color, apricot, dry, golden, flat, bitter, smooth</td>
<td>Maltiness, alcohol content, thoroughly bitter, complexity</td>
<td>Bitterness, sweets, woody, no balance/ flavor, rubbery aroma, flat, tastes like soap, ABV (alcohol by volume) too high, out of balance</td>
</tr>
</tbody>
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### Driftless Cider

**Grower Notes - Brix Cider**

Wild apple tree found in Southwest Wisconsin. Brix Cider harvested several bushels of medium sized apples from the same tree, two years in a row. Apples were in good condition, despite no orchard care. The lingering astringency of the apple, plus its acidity, gives it good blending potential for complex ciders.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 4-co-op employees**

Fruity, black currant, citrus-y, “fake” apple, bitter , astringent, acidic, solvent-like, caustic, sour, slightly sour, watered down, powdery
### Fayette

**Grower Notes - Albion Prairie Farm**

This apple was sourced from the Raven Island Nursery on Waldron Island, Washington. It’s one of the best apples for fresh eating and is exceptional for cider because of its rich sugar-acid balance and great aroma. The fruit is medium size, yellow with orange-red blush and overall russet. The flesh is yellowish, crisp, fairly fine-textured and of excellent quality. The fruit is said to store well. Scab is not an issue nor has fire-blight been any sort of problem. The tree is an upright grower and should be trained early to maintain good tree shape. Should be better known than it is!

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

No notes

### Freedom

**Grower Notes - Cider House of Wisconsin**

A reliable producer with fairly large apples. Management is pretty simple because it is a disease-resistant variety. The apples have a pretty limited shelf life, but are good for eating fresh.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

Grape, apple peel, 4-EP (a phenolic compound produced by the spoilage yeast Brettanomyces that can cause desirable or undesirable flavors)

### Golden Russet

**Grower Notes - Brix Cider**

One of the most well known of the russeted apples, Golden Russet is often used by cider makers due to its typically high brix and rich flavor. Fruit generally ripens in October. The 30 Golden Russet trees in Brix Cider’s orchard are not performing well, compared with other apple varieties. The apples for this study were picked from a tree at Seed Savers Exchange. It bore a medium crop, but many of the apples had to be discarded due to insect damage and rot.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 3-conference**

Rose-like, banana, peach, apple, baked apple, apple juice/ apple candy, watery, culinary, candy hearts and Belgian beer, a bit sour, off, odd aftertaste, vinegar, chemical, estery, brett, low acetic acid
**Hoople's Antique Gold**

**Grower Notes - Brix Cider**

Mostly russeted apple discovered in Ohio as a “sport” of Golden Delicious. Medium sized, very flavorful apple that ripens late in the season. The tree at Seed Savers Exchange, where we harvested these apples, provided a good crop of healthy apples, without any spraying.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

Vinegar, butter, brandy-like, off-aroma but good flavor

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**Kandil Sinap**

**Grower Notes - Cider House of Wisconsin**

Cylindrical shaped apple, color washes from red to yellow to green with white flesh. Grapefruit scent and balance of sweet and sour. Skinny tree that originated in Turkey.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs**

Fruity, bubble gum, sour and grassy, dry, bitter, tart, fizzy, bitter, slightly bitter/sweet, astringent, bright, dry, acidic, sour, acidic, needs sweet to balance, acid, little complexity, hint of aroma

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<tr>
<td>Light and tangy, flat, clear, golden, yellow, light gold, white wine, watery, thin, flat, golden, light, smooth, apple juice color, crisp and bubbly, yellow, crisp, amber, smooth</td>
<td>Unusual flavor up front, bitter back end, color smoothness, apple and astringent balance, flavor intensity</td>
<td>Plastic aftertaste, missing a base flavor, smooth, no flavor on the front, not enough apple, too dry, acidic, one-note flavor, low complexity</td>
</tr>
</tbody>
</table>
### Kingston Black CH

**Grower Notes - Cider House of Wisconsin**
Produce mild, bitter-sharp juice, slow to start bearing, red apple.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**
Smells like fake butter, dark orange color.

### Kingston Black CF

**Grower Notes - The Cider Farm**
Moderately vigorous. Does not produce a good tree structure. Prone to scab and fire blight. Can be a light cropper.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**
Good tannin blender, good blender, floral, good, bananas.

### Liberty CH

**Grower Notes - Cider House of Wisconsin**
Deep red apple, disease resistant. Crisp, juicy flesh, trouble-free management.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs; Tasting event 4-co-op employees**
Fruity, grape, banana, little apple flavor, like white wine, anise, bitter, dry, drying, sweet, tart throughout but good intensity, sharp, sour, sour yet flavorless, sour vinegar, acidic, very acidic, only one note, bland, blah, flat, viscous, warming, light, ester-y.

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<tbody>
<tr>
<td>Medium color, pale yellow, golden, light color, tannic finish, bubbly, bubbly but still needs more bubbles, sticky mouthfeel</td>
<td>Acidic, bitter, tart and bitter intensities, sour</td>
<td>Bland finish, sweet, similar to royal russet but not as good, needs more tartness, mouthfeel too acidic, one note</td>
</tr>
</tbody>
</table>
### Liberty CF

**Grower Notes - The Cider Farm**
Consistent cropper. Resistant to fire blight, cedar-apple rust, and scab. Easy to grow. Plum Curculio-resistant like Liberty. Harvest in early- to mid-October.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 3-conference**
Floral, very floral, strong apple flavor, bittersweet apple, apple, Macintosh, citrus, fruity, tart, smooth, sweet, round, yeast, dry, flat, tastes young and flat

### Major

**Grower Notes - The Cider Farm**
Produces lots of branches, making it a bushy tree. Slow to produce. Late blooming. Small apples that stay green. Prone to rot and water core. **Brewer note:** Did not press well.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**
Slight anise, juice, sour

### Malinda

**Grower Notes - Brix Cider**
A pleasantly sweet apple with a pear/citrus-like flavor. Malinda is the parent of many apples that came out of the University of Minnesota breeding program, chosen in part because of its cold hardiness. The source tree at Seed Savers Exchange bore a very heavy crop of nearly unblemished apples, even without spraying.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**
Banana, leather, interesting flavor—could be good in a blend, flowers, nutmeg, bubbly
## NY 74828-12

**Grower Notes - Cider House of Wisconsin**
Red apple

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**
No notes

## NY 75413-30

**Grower Notes - Cider House of Wisconsin**
Red apple

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**
Peach/apricot, sour, thin

## Old Nonpariel

**Grower Notes - Brix Cider**
An old French apple variety, known to provide a fairly good crop on trees with average vigor. The tree at Seed Savers Exchange where this apple was harvested had produced a good crop of medium sized, flavorful apples that were in good condition, without any spraying.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 3-conference**
Fresh apple, fruity, sharp, crisp, tart, bitter, acidic, medicine, green/wasabi/horseradish, weak, off, too much acid—can’t taste anything else, bad intensity, plain, sour
### Priscilla

**Grower Notes - The Cider Farm**

Resistant to fire blight, cedar-apple rust and scab. Easy to grow. Consistent cropper. Apples can split with rainfall near harvest. Harvest in mid-September.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

No notes

### Red Delicious

**Grower Notes - Cider House of Wisconsin**

Intensely red apple. Thick, bitter skin. Yellow flesh. Keeps good looks even after flavor is gone.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 3-conference**

Caramel, toasted, floral, geranium, butter, interesting aromatics, nice complexity— could use some fruitiness, flavor on its own is not that good, but could be an interesting blender, off, bad, dirt, metallic, watery, thin, not much flavor, flat, light, blah, pasty

### Redfield

**Grower Notes - Albion Prairie Farm**

This is a 1924 cross of Wolf River x *Malus niedzwetskyana* (Russian redflesh crab) from the New York State Experiment Station at Geneva. The fruit grows to a full medium-to-large size. The skin color is very dark red and the flesh inside is reddish in the outer half (near the skin) and cream colored in the inner half (near the core). The flesh is fairly firm, dry, coarse, not aromatic and sour, but it adds a good flavor and color to ciders. The tree is a stocky, healthy grower with ornamental qualities of dark green leaves and grayish wood. This apple blooms about four days (on average) before Delicious and ripens after Delicious in late October. No particular problems growing this tree or fruit.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

Too orange colored, not great appearance, rose color, sour ferment flavor
**Rosemary Russet**

**Grower Notes - Albion Prairie Farm**

This is an English dessert russet known as of 1831. Fruit is oblate conic, a little bit ribbed and medium in size. Skin: yellowish green with a brownish-red blush and covered with a light brown russet. The flesh is white tinged greenish to yellowish, firm, fine textured and sweet/subacid. It has a good sugar-acid balance and is aromatic. Overall, a pleasant apple for fresh eating and cider.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

Cherries, acid

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**Royal Russet**

**Grower Notes - Brix Cider**

An older English variety. Limited information is available on this uncommonly grown, russeted apple. The source tree at Seed Savers Exchange had a medium crop of smallish apples that were highly flavored.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs**

Yum, would be a good component, best balance of the group, needs sweet to balance, strong fruit, wine (grape), no apple taste, green apple, grapefruit, tart, thoroughly mediocre tartness, cotton candy, dry, slightly sour, acid, slight sweet, light, good, clean

<table>
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<tr>
<th>Color and Mouthfeel</th>
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<tbody>
<tr>
<td>Light color, light, light yellow, pale yellow, golden, balanced mouthfeel, smooth, feels light, flat, watery, bubbles, bubbly and crisp</td>
<td>Balance, floral, sweet, good taste, tart only, dry</td>
<td>Lacks dimension, strong acid</td>
</tr>
</tbody>
</table>
Ruppert’s Sweet

Grower Notes - Brix Cider
Wild apple tree discovered along a fence row in Southwest Wisconsin. Large, round apples. Eight or more bushels were harvested from the same tree two years in a row. The tree and the apples seemed healthy and mostly blemish-free, even with no care for the tree. The tree is broad and spreading. Apples have a sweet, nectar-like flavor. Apples stay on the tree and can be harvested into November. Cider apple tree with good potential due to its high yield under low maintenance and high brix when harvested late in the season.

Hard Cider Flavor Descriptions - Tasting event 1-all varieties
No notes

Secor

Grower Notes - Albion Prairie Farm
Secor is a 1906 cross of Salome x Jonathan from Iowa State and was introduced commercially in 1922. Fruit is medium to large, roundish oblate to a bit conic, with moderately bright red skin that matures to a somewhat darker purplish red and much bloom. Flesh is very firm, crisp, fairly fine textured, rich sub-acid and of very good quality. Fruit is somewhat aromatic and lends good flavor to cider as well as being an excellent fresh eating apple. The tree is an upright-spreading grower with wide-spread branching and good healthy habit. The apples ripen in October, hang well to the tree and are purported to keep from January to March with good storage conditions. No particular problems with this variety at all.

Hard Cider Flavor Descriptions - Tasting event 1-all varieties
Off-flavor, strong aroma, soap, wheaty, mildew

Somerset Redstreak

Grower Notes - The Cider Farm
Tall, vigorous tree producing many thin, very upright branches. Branches are hard to train. Fruit is prone to rot. Not a big cropper. Biennial. Fire blight sensitive.

Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 3-conference
Sweet, fruity, pear, sour, clean, flat, woody, musty, bitter, drying, dusty tannin, nothing unusual, appearance cloudy (fine for that style), cloudy
**St. Lawrence**

Yellow with red stripes and tender white flesh.

**Steele Red**

The name Steele Red is a synonym of several varieties. This is possibly the Massachusetts variety known as Sutton or the variety known as Red Canada (both are somewhat similar). If Sutton, this is a very nice old apple that’s been around since 1757. The fruit is roundish, medium to large in size with dark, purplish-red blush over a yellowish-green ground color. The flesh is yellowish, firm, fine-textured, crisp, tender, mild sub-acid and of very good quality for dessert and kitchen use. This is not a cider variety save for its good juice flavor and aromatic qualities. No tannin structure here. This apple ripens mid-October. This variety is susceptible to cedar-apple rust and scab. This apple also blooms somewhat early and is subject to biennial bearing. The tree is an upright-spreading grower and easy to manage.

**Stembridge Jersey**

This is a classic cider variety from Somerset, England. Small- to medium-size fruit with some tendency to drop as it ripens. This is a bittersweet variety with firm flesh; it is a nice apple overall and worth a little trouble. This apple is grown in modern English cider orchards and makes an excellent vintage cider. Ripens late September into October. Despite several fire blight outbreaks over the years, it is not highly susceptible and can survive with preventative care.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties**

- Boring
- Tart
- Mild rose
Swaar

Grower Notes - Brix Cider

Swaar, which means “heavy” in Dutch, was first recorded in New York in 1805 but may go back further. It’s a dense apple that can stay onto the tree into winter, with increasing complexity and higher sugar content later in the season. The apples picked at Seed Savers Exchange for this project were probably picked too early (in October). The apples were large and in good condition without any sprays applied. There are a couple of Swaar trees planted in the Brix Cider orchard. After two years, they appear healthy, with moderate vigor, but have not yet produced a crop.

Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs

Floral, floral and tart but more to be desired, citric acid, honey, low on flavor in general, one note astringent/bitter, bitter, bitter (alcohol), acidic and astringent—use in small amount, moderate acidity, tart up front, no flavor in the back, little sweetness but doesn’t need much, sour, sharp, heavy, drier, dry, dry but very palatable, grassy, tastes very fermented, clean/light feel, champagne, better than others (Bergere, Oaken Pin, Chisel Jersey) but not great

<table>
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<tr>
<td>Floral, rose water color, almost colorless, light yellow, looks like white wine, light and clear, clear, clear and clean, flat and clear, a little viscous, watery, thin, but not flat, crisp, astringent, puckering, dry, bubbly and light in flavor, more bubbly than the others but still needs more</td>
<td>Acidic, floral notes, floral is distinctive, bitter, nice balance of acid with slight bitter, flavor intensity, tastes like a warhead, clean taste, fizziness, everything</td>
<td>Low flavor, no back end flavor, bland, needs more tartness, too acidic, sour, astringency, too fermented taste, needs a stronger color, color</td>
</tr>
</tbody>
</table>

Thornberry

Grower Notes - Albion Prairie Farm

Tall, vigorous tree producing many thin, very upright branches. Branches are hard to train. Fruit is prone to rot. Not a big cropper. Biennial. Fire blight sensitive.

Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 3-conference

Sweet, fruity, pear, sour, clean, flat, woody, musty, bitter, drying, dusty tannin, nothing unusual, appearance cloudy (fine for that style), cloudy
### Tremlett’s Bitter

**Grower Notes - The Cider Farm**

Geneva version of Tremlett’s Bitter. Tree produces a heavy crop one year and nothing the next. Easy to grow. Apples develop in clusters. Some sensitivity to fire blight. No scab.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs**

Tart up front, bitter in back, weak—mild but balanced, not sweet, mild sweetness, sweet, but still dry, very subtle bitterness, bitter/sour, acidic, yeasty

<table>
<thead>
<tr>
<th>Color and Mouthfeel</th>
<th>Strongest Attribute</th>
<th>Weakest Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light, light color, golden, light in texture and color, more bubbly than others, but not enough, bubbly, fizzy!, medicine feel</td>
<td>Balanced, sweet, acidity, tart, dryness, very sparkly, no off flavors</td>
<td>Beery, would benefit from florals, not sweet, too sweet</td>
</tr>
</tbody>
</table>

### Unknown 1

**Grower Notes - The Cider Farm**

Vigorous. What the grower was given as scion wood may have been incorrectly identified as Ellis Bitter.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs; Tasting event 4-co-op employees**

Floral, fruity, sour green apple taste, bittersweet apple, apple, pear, tart and bitter, sweet, honey, sugary, sour, dry, drying, bland, watery, characterless, boring, undertone/ hint of mild acidity, acidic, acid, metallic, wine-y, potential for single varietal

<table>
<thead>
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<th>Weakest Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balanced, flat, golden, light yellow, light, clear, crisp, mild fizz</td>
<td>Herbal, floral, tart, sour flavor, dry, balanced flavor</td>
<td>Missing a round taste, color, boring</td>
</tr>
</tbody>
</table>
**Unknown 2**

**Grower Notes - Albion Prairie Farm**

The grower notes that what was supplied as Oaken Pin may be incorrectly identified. Oaken Pin is an English dual-purpose apple from Exmoor (c.1876), good for cider and kitchen use. Fruit is large, roundish-conic. Skin is yellow with dark orange-red streaks and a mahogany blush. The flesh is crisp, sweet, yellowish, aromatic, rich and very intense. Ripens late September into October. Adds great body and aroma to cider. The tree is moderately vigorous with no significant problems.

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs; Tasting event 4-co-op employees**

Pear, apple, woody, astringent, very astringent, drying, bitter, slightly bitter, low bitterness, dry, like a dry white wine, whiskey, acrid, acid, acidic, not sweet, moderate sweetness, side of tongue off-flavor tending toward rubber, plastic, antiseptic, chemical-γ, paper-γ, flat, watery, boring, gassy, overripe

<table>
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<th>Color and Mouthfeel</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Orange, cloudy appearance, green color, apple juice color, flat, plain finish, thin, bubbly yet heavy</td>
<td>Slight bitterness on finish, astringency, bubbles, not bright, watery</td>
<td>Lingering aftertaste, aftertaste, mouthfeel, rubbery off-flavor</td>
</tr>
</tbody>
</table>

**Commercial checks**

To gather sensory data on the apples used in this study, researchers conducted four cider tastings with tasters from different demographics. Each of the 41 ciders were tasted at least once by at least six people. Each cider was assigned a randomized three-letter code so that tasters wouldn’t be influenced by the varietal names. Researchers added a commercial cider as a “check” during the blind tasting as a point of reference for desirable flavor in the data collected, and these were often rated towards the top by tasters.

**Classic Dry from The Cider Farm**

**Hard Cider Flavor Descriptions - Tasting event 1-all varieties; Tasting event 2-farmers and chefs; Tasting event 4-co-op employees**

Floral, melon, vanilla, molasses, vanilla and honey, sweet, woody, moldy, sweet at first, ends with bad taste in mouth, vinegar, dead yeast, yeasty, ester-γ, gassy, watery, thin

**Tremlett’s Commercial from The Cider Farm**

**Hard Cider Flavor Descriptions - Tasting event 3-conference**

Melon-γ, artificial, pear, caramel, rich, bitter, acidic, full, cane sugar, geranium, a bit medicinal, tart at the finish, sparkle

*All apple variety images taken by Nicholas Smith of the UW-Madison Food Science Department.*