Apple blending for cider

By Claude Jolicoeur
Introduction

- This presentation will hopefully summarize the experience I have gained on the subject of blending in over 20 years of cider making.
- WARNING: The material presented here will sometimes differ from the accepted (or the “By the book”) way of blending and making cider.
- Note that “My way” of doing it is not necessarily the only good way!
Contents

- What are we aiming for?
- Measuring things
- Discussion on key elements
  - Sugar / Acidity / Tannin / Nitrogen
- Categories of apples
- Planning the blend
What are we aiming for?

- The best possible cider!
  - We need to consider:
    - The type of cider wanted
    - The apples available

- The ideal cider blend

- The quality of the apples
What are we aiming for?

- The ideal cider blend:
  - High sugar content
    - S.G. 1.060 or more (Brix 15 or 8% potential alcohol)
  - Moderate (or balanced) acidity
    - T.A. around 0.6 - 0.8 % as Tartaric acid
  - Tannin content according to the type of cider wanted
  - Low nutrient content (Nitrogen) for slow fermentation
What are we aiming for?

- The highest quality of apples for cider are obtained from:
  - late maturing varieties
  - fully ripe or slightly overripe
  - from a nutrient depleted natural orchard
  - from old standard trees
  - may be scabby and wormy

- Cultural practices:
  - apples for cider should not be grown the same way as apples for fresh eating!
Cortland apples, commercial vs my orchard
Measuring things

- Making a juice sample - mini press
- measuring sugar - hydrometer / refractometer
- measuring acidity - titrable acidity kit / pH meter
- evaluating tannin - tasting (measurement possible, but more difficult)
- evaluating Nitrogen - cultural practices / size of fruits / orchard
- The importance of keeping records
Discussion on the key elements:

- Sugar
- Acidity
- Tannin
- Nitrogen
Sugar

- high sugar for alcohol
- high sugar goes with late apples - more flavor
- high sugar goes with low Nitrogen - slower fermentation
- min blend SG for a good cider is 1.050 (Brix 12.5, potential alcohol 6.2%), the more the better
- if SG lower, try to find better apples rather than raising SG by adding sugar...
<table>
<thead>
<tr>
<th>Sugar content</th>
<th>S.G.</th>
<th>Brix</th>
<th>% pot.Alc</th>
<th>comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>very low</td>
<td>1,040</td>
<td>10</td>
<td>5</td>
<td>no good for cider</td>
</tr>
<tr>
<td>low</td>
<td>1,050</td>
<td>12.5</td>
<td>6.2</td>
<td>entry level</td>
</tr>
<tr>
<td>medium</td>
<td>1,055</td>
<td>13.5</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>1,060</td>
<td>15</td>
<td>7.8</td>
<td>good</td>
</tr>
<tr>
<td>exceptionnal</td>
<td>1,070</td>
<td>17</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>
Acidity

- It is important to keep the acidity of the blend in the range of 0.5 - 0.9 % T.A. (expressed as Tartaric acid)
- Too much acidity will give a tart cider
- Too little acidity might give problem during fermentation, also the cider will lack freshness
Acidity

- For a refreshing sparkling Champagne type, we would try to be in the upper limit of this range (i.e. 0.8% TA)
- For a flat cider, European style, we would rather try to be in the lower limit (0.55%)
- When fermentation is slow, the acidity will mellow with time through a process called malo-lactic fermentation that usually naturally occurs the following summer
Acidity

<table>
<thead>
<tr>
<th>Acidity</th>
<th>% T.A. as Tartaric</th>
<th>% T.A. as Malic</th>
<th>pH</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>low</td>
<td>0.1 - 0.4</td>
<td>0.1 - 0.35</td>
<td>3.8 +</td>
<td>sweets, bittersweets</td>
</tr>
<tr>
<td>medium</td>
<td>0.5 - 0.7</td>
<td>0.45 - 0.6</td>
<td>3.5 - 3.4</td>
<td>balanced, ideal</td>
</tr>
<tr>
<td>high</td>
<td>0.8 - 1.0</td>
<td>0.7 - 0.9</td>
<td>3.3 - 3.1</td>
<td>most eating apples</td>
</tr>
<tr>
<td>very high</td>
<td>1.0 +</td>
<td>0.9 +</td>
<td>3.0 -</td>
<td>most cooking apples</td>
</tr>
</tbody>
</table>
Tannin

- Type and amount of tannins influence the type of cider.
- Sparkling Champagne (Common cider) type will normally have light tannin.
- English or Norman types will normally have stronger tannins typically obtained from special cider apples.
- Bitterness and astringency are obvious signs of tannin.
- You may make the distinction between hard (bitter) and soft (astringent) tannins.
Nitrogen

- In his book, Andrew Lea calls Nitrogen «The forgotten element». It has an influence on the speed of fermentation as N is a yeast nutrient.
- Slower fermentation -> better cider
- Fertilized orchard -> high nitrogen content
- Early apples ferment quickly while overripe late apples ferment more slowly
- Older trees give fruits with lower nitrogen
- You may reduce the N content by keeving
Categories of apples

- First choice
  - High sugar apples
  - Low acid apples
- Medium sugar apples
- Useless apples
- Special apples
Category: High sugar apples

- SG > 1.060, with medium to very high acidity
- Important to have a good supply to provide the alcohol and flavor to the cider.
- Varieties:
  - some cider apples (Porter Perfection)
  - most russets (Golden, Roxbury, Belle de Boskoop, Ashmead)
  - many high flavor late apples when well grown (King of Pippins, Sandow, Ribston, Honeygold)
  - some mild crabs (Bilodeau)
Category: Low acid apples

- TA < 0.5%, with varying amount of sugar
- Essential for blending with high sugar apples that usually contain too much acidity
- Also often rich in tannins
- Varieties:
  - sweet and bittersweet cider apples: Yarlington Mill (also high sugar), Tremlett Bitter, Bulmer’s Norman
  - some wild seedlings: Douce de Charlevoix
  - most pears.
Category: Medium sugar apples

- These have low to medium sugar (SG 1.045 - 1.055), with medium to high acidity
- Will be used when there is not enough high sugar apples
- Varieties:
  - many sharp and bittersharp cider apples: Brown’s Apple, Breakwell Seedling, Stoke Red
  - many late and mid-season eating apples: Frostbite/Minn 447, Honeycrisp, Lobo, Wealthy, Haralson, Alexander, Winter Banana, Freedom
Category: Useless apples

- very low sugar (SG < 1.045), high or very high acid (TA > 0.8%), high N, no tannin
- Preferable not to use those for cider - may be useful for fresh juice, or fermented for vinegar or cooking uses.
- Varieties:
  - most early season apples: Yellow Transparent, William's Pride, Redfree, Duchesse, Melba
  - most mass production eating apples: McIntosh
There are some apples that can bring something special to the cider even if they are not in a desirable category.

Would normally need to be blended.

Dolgo (SG 1060, TA>2%) very special perfume and aroma, but acidity so high.

Kerr is fairly similar although not quite so acid.

Geneva and other redflesh are usually very low in sugar and high in acid, but can add some nice pink color.
Planning the blend

- Demonstration of the « Blending Wizard »
  - Download it from: http://www.ciderworkshop.com/claudequeswizard.html

- Typical case examples: High acid juice with low acid juice to obtain a balanced blend

- Special apples blending examples
Conclusion

- A great cider requires great apples, and your blend is the first and most important step
  - Search for highest possible sugar content, balanced acidity, some tannin
  - Favor late season apples from unfertilized orchards - small and ugly is beautiful!

- Promote a slow fermentation
  - always remember that the most important virtue for a cidermaker is PATIENCE
  - a great cider needs time to make itself.
The End