Fermenting fruit sources other than grapes can pose many challenges including lower starting nutrients, higher pectin content, lower starting sugar, etc. Production suggestions:

1. Enzymes
   • Use Scottzyme® Pec5L (10-20 mL/ton) and Scottyzme HC (60-100 mL/ton) at reception or at crusher to help with clarification of the pulp.
   • If possible, allow at least 2 hours of contact time with enzymes before pressing.

2. Pressing
   • Pre-treatment of the fruit with enzymes such as Scottzyme Pec5L and HC helps to achieve greater yield with less pressure.

3. Settling Agents – selection determined by bench trials or previous experience*.
   • Bentolact S is a blend of activated bentonite and soluble casein. An addition during settling can help settle and clarify the juice. It may also reduce the overall amount of bentonite needed for protein stability. Bench trials are recommended with typical dosages in juice of 20-100 g/hL (1.7-8.4 lbs/1000 gallons). Product preparation takes about 3 hours.
     Note: Some producers use bentonite alone.
   • Viniprotect is a blend of PVPP and bentonite. An addition during settling can help minimize problems associated with oxidation of polyphenols including color and bitterness. It can also aid in clarification. One hour preparation time with dosages between 20-100 g/hL (1.7-8.3 lb/1000 gal)
   • Cold Mix Sparkolloid® at a dosage of 12-24 g/hL (1.0-2.0 lb/1000 gal) can be used on its own or in conjunction with other fining agents to help settle and compact the juice lees.

   BENCH TRIALS WITH ALL THREE OF THESE PRODUCTS WILL DETERMINE BEST RESULT FOR EACH LOT OF JUICE.

   *Note: if the juice is too highly clarified, it can lead to issues with the fermentation (VA, H₂S, stuck fermentations, etc.)

4. Rack and inoculate immediately.

5. Yeast
   • Yeast selection is largely determined by what characteristics are desired in the cider.
     o For crisp, clean aromatics: Lalvin DV10™, Lalvin R2™, Lalvin EC1118™.
     o For fruit &/or floral aromatics: VIN13, Lalvin QA23™, Lalvin K1 (V1116)™, Lalvin ICV Opale®, or Enoferm M2™.
     o For improved mouthfeel: Lalvin W15™ or Cross Evolution®.

6. Yeast Inoculation
   • Rehydrate yeast with Go-Ferm® or Go-Ferm Protect Evolution. This is especially important, as fruit can be nutrient deficient.
   • Inoculate yeast at 25 g/hL (2 lb/1000gal).

7. Yeast Derivatives
   • Additions of natural yeast derivatives such as Booster-Blanc®, Opti-WHITE®, OptiMUM WHITE®, or ICV Noblesse® can have a positive impact on the colloidal balance of the wine. An addition of 25-50 g/hL of Booster-Blanc, Opti-WHITE or OptiMUM WHITE at the onset of fermentation provides early polysaccharide availability that can increase mouthfeel, improve fresh aromas and help avoid browning from oxidation. A second addition of Opti-WHITE or Noblesse towards the end of fermentation can reduce bitter or astringent characters.
8. **Tannin Additions**
- Depending on the apple varieties you are using, tannin additions might help the overall structure of the finished product.
- An addition of Scott´Tan™ FT Blanc or FT Blanc Soft (50-200 ppm) to the juice can enhance texture on the palate and also offer some antioxidant protection.

9. **Fermentation Nutrient Additions**
- Measure yeast assimilable nitrogen (YAN) in the juice. Ciders made from fresh juice tend to have significantly higher nutrient levels than those made from concentrate.
- Use Fermaid A™, Fermaid K™ and/or Fermaid O™ (depending on your Brix and YAN levels).
- Exercise caution with diammonium phosphate (DAP). DAP may favor the formation of sulfide off-flavors. In very low nitrogen juice DAP should only be used in association with a complex yeast nutrient (e.g. Fermaid K) at ⅓ sugar depletion.

10. **Temperature Control**
- Temperature management is important. There is a large amount of heat produced during fermentation. The flavor and aroma profile will change depending on the temperature range. Cooler fermentations tend to promote fruit-driven aromas and maintain a healthy yeast population. Check the optimal temperature range for the specific yeast selected.

11. **End of Alcoholic Fermentation**
- Rack 24 hours after fermentation is finished.
- Rack again 2 days later. If your lees are clean and free from off-odors, some aged ciders do well remaining on their fine lees for a time.

12. **Malolactic Bacteria Selection**
- If conducting malolactic fermentation, choose strains based on the cider chemistry and then based on desired sensory. Lalvin MBR 31® and MBR PN4® are particularly well-suited for low pH environments. Rehydrate in Acti-ML® or use in conjunction with Opti´Malo Plus® nutrient. Inoculate as soon as possible. If pH is very low (pH < 3.1) consider a standard build up strain like IOC Inobacter™ (IB) or Lalvin MT01™.

13. **SO₂ Levels Post Fermentation**
- Increase SO₂ levels once MLF is finished. Do not leave the cider unprotected!

14. **Additional Tools**
- If toasted character is desired try finishing tannins such as Scott´Tan Tannin Riche and Tannin Riche Extra.
- For cider clarification after fermentation, consider bench trials with Scottzyme KS, Cristalline Plus, and Hot Mix Sparkolloid®.
- If carbonating the cider via bottle conditioning please call and ask for yeast options.
- Multiple microbial control options are available for stabilizing the cider (SO₂ tablets and granules, Velcorin® and Lysozyme products).
- Please see our Fermentation Handbook for best practices in yeast rehydration as well as other product options that might not be mentioned in this protocol.