



Hard Cider Varieties Suitable for Northern Michigan

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Hard Cider Planting at NWMHRC

- Planted in 2001 and 2002
- First apples in fall 2004
 - Most varieties are biennial
- 2006-2012
 - evaluated fruit for color, shape, stem length, firmness, flesh quality and color, sugar content, flavor, & starch
 - evaluated tree yield, vigor, and harvest date
- 2007: We fermented 25 varieties



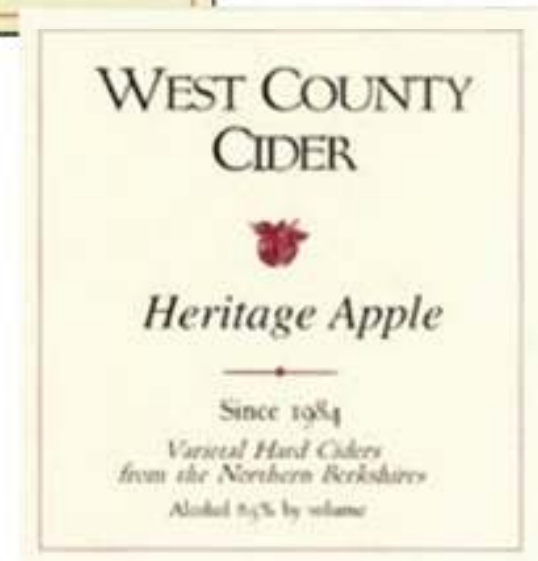
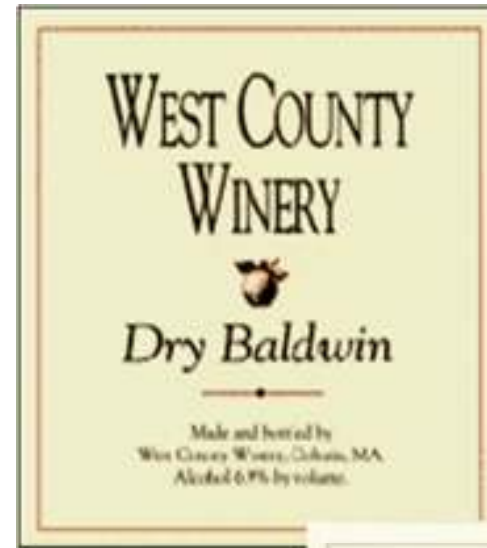
Hard Cider Apples

- Cider apples are similar to wine grapes—their qualities are only noteworthy when made into wine or hard cider
- Cider apples have flavor characteristics acquired only in fermentation process



The Fermented Product

- Most hard cider is composed of blends of apples with varying qualities:
 - Brix levels
 - Tannin contents
 - Acidities
 - Elemental complexes
- Single variety ciders



Cider Variety Classification System

- **Sweet (SW):** tannin < 0.2 g/ml, malic acid < 0.45 g/ml (low tannin, low acid)
- **Bittersweet (BSW):** tannin > 0.2 g/ml, malic acid < 0.45 g/ml (high tannin, low acid)
- **Sharps (SH):** tannin < 0.2 g/ml., malic acid > 0.45 g/ml (low tannin, high acid)
- **Bittersharps (BSH):** tannin > 0.2 g/ml, malic acid > 0.45 g/ml (high tannin, high acid)

Classified Varieties at NWMHRC

Sweet

Binet Rouge
Sweet Coppin

Sharp

Brown's Apple
Cox Pippin

Bittersharp

Dufflin
Kingston Black
Stoke Red

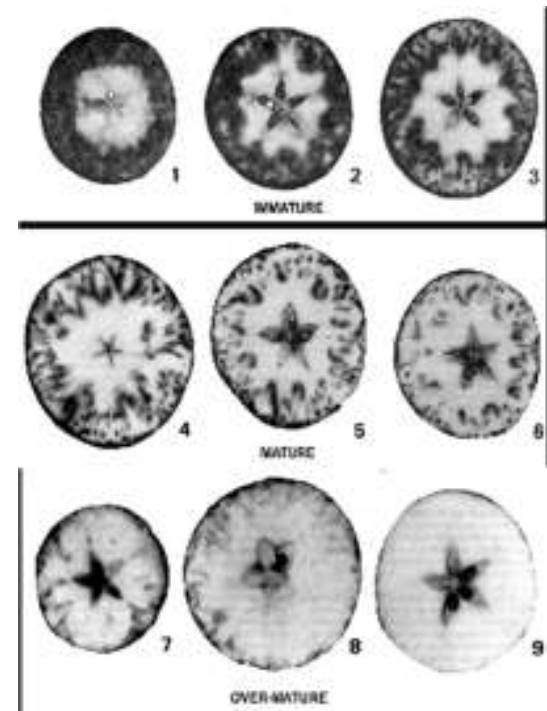
Bittersweet

Bedan
Brown Snout
Brown Thorn
Bulmer's Norman
Ellis Bitter
Harry Master's Jersey
Major
Medaille D'or
Michelin
Nehou
Reinette de Pommes
Vilbrie
Yarlington Mills

Evaluation Methods

- 2006 - 2012: Evaluated apples based 'dessert' apple maturity:
 - firmness, brix, starch
 - flavor, blush, shape, flesh color and quality
 - tree vigor and yield

❖ NOTE: Most Varieties are biennial bearing
- Fermented 25 varieties in 2007:
 - Titratable Acidity
 - pH
 - Brix
 - Alcohol content



Adams Apple

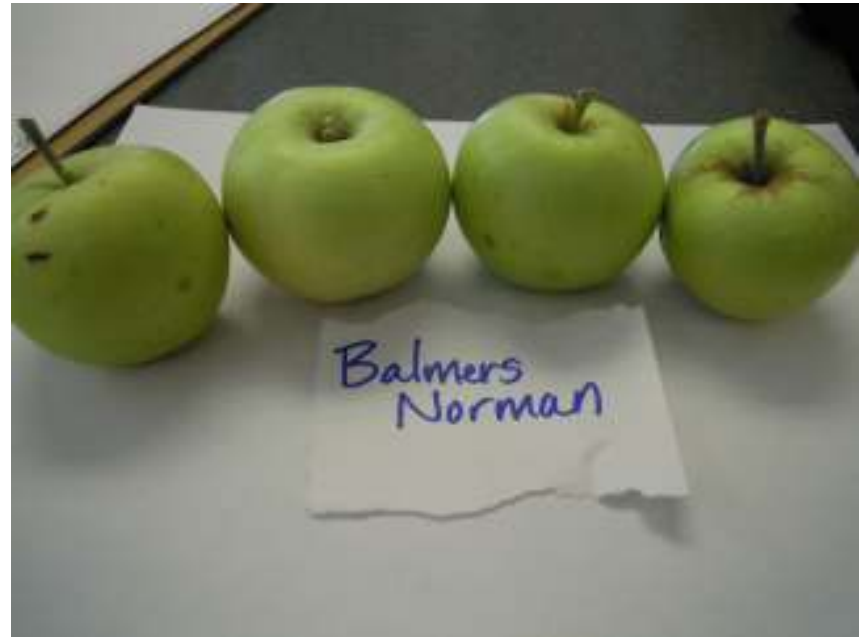
- Late season, dark maroon apple with bland red delicious flavor
- Healthy, vigorous trees
- Moderate yield



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3341	12.5	0.17 L

Balmers Norman

- Early-season, green apple
- Vigorous trees, moderate yeild
- Soft fruit, very bitter



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples	Cider Category
3020	13.6	0.14 L	Bittersweet

Bedan

- Mid-season, green apple with rose blush
- Vigorous trees, moderate yield
- Slightly sweet but bland



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples	Cider Category
3162	13.2	0.05 L	Bittersweet

Binet Rouge

- Late-season, small apple, with striped dull red blush
- Dry flesh, slightly sweet
- Trees have low vigor, moderate yield
- ❖ Low juice production



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples	Cider Category
3326	14.2	0.07 L	Sweet

Browns Apple

- Late-season, large apple
- Striped red blush with crispy, juicy flesh
- Vigorous, healthy trees produce moderate yields



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples	Cider Category
3719	13.6	0.15 L	Sharp

Brown Snout

- Late-season, small apple, pink blush
- Mild sweet apple flavor
- Heavy yields on moderately vigorous trees
- Tendency for dry cracking



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples	Cider Category
3308	15.4	0.11 L	Bittersweet

Brown Thorn

- Late-season, small bright red fruit
- Vigorous trees produce heavy yields
- Soft flesh has mellow sweetness with bitter skin



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples	Cider Category
3493	15.2	0.12 L	Bittersweet

Burgandy

- Early apple with dark burgandy blush
- Juicy, soft flesh with sweet-tart flavor
- Vigorous trees produce moderate yields



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3000	12.2	0.17 L

Claygate Pearmain

- Mid-season, bright red-orange apple
- Juicy, crisp flesh with tart start and sweet finish
- Moderate yield on low vigor trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3311	15.9	0.15 L

Creston

- Mid-season green apple with red-orange blush
- Juicy, crisp flesh with sweet apple flavor
- Heavy yields on moderately vigorous trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3255	13.9	0.20 L

Ellis Bitter

- Early season, conical apple, striped red blush
- Flesh is grainy and dry
- Vigorous trees produce moderate yields
- Fruit tend to drop prematurely



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples	Cider Classification
2978	13.6	0.09 L	Bittersweet

Frequin Rouge

- Mid-season, small red apple
- Dry, soft flesh
- Flavor is bitter with some sweetness
- Low yields on vigorous trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3144	17.0	0.16 L

Golden Pippin

- Mid-season, small yellow apple with dull rose blush
- Juicy, crisp flesh with tart apple flavor
- Heavy yields on low vigor trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3280	13.4	0.17 L

Grenadier

- Early season, large green apple with dull pink blush
- Crisp, juicy flesh, delicious tart flavor
- Fruit has tendency to drop prematurely
- Moderate yields on vigorous trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
2903	11.7	0.16 L

King of Pippins

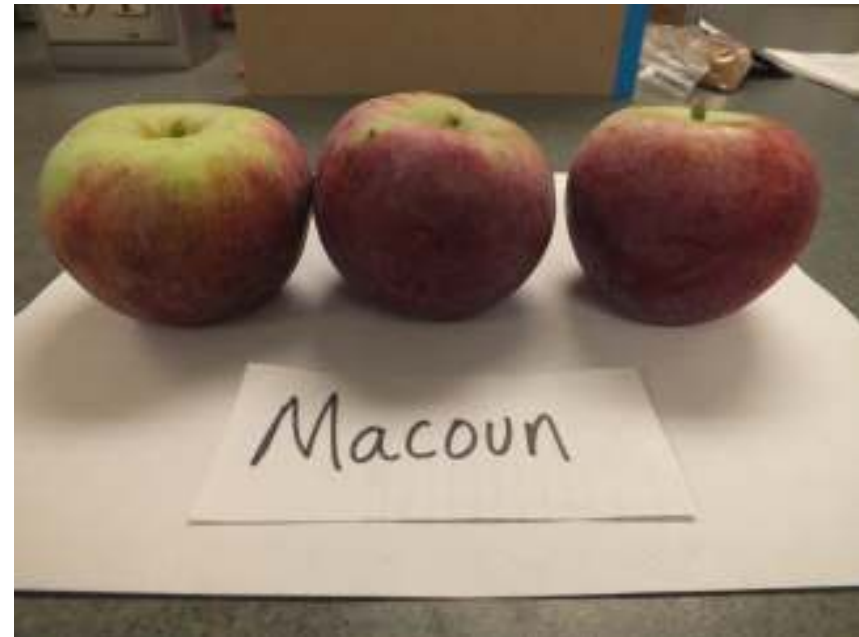
- Mid-season apple with dull red blush
- Juicy, smooth flesh
- Mellow tartness and honey sweet flavor
- Good yields on moderately vigorous trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3347	14.5	0.16 L

Macoun

- Mid-late season apple with dull purple/red blush
- Juicy, smooth flesh
- Tart apple flavor with sweet finish
- Moderate yields on vigorous trees
- Fruit tends to crack



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3510	13.2	0.21 L

Margil

- Mid-late season, russeted apple
- Crisp, juicy, flavorful sweet-tart taste
- moderate yields, not biennial, moderate vigor
- Some dry cracks in fruit



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3582	16.0	0.09 L

Mettais

- Late season, large apple with bright red/orange blush
- Crisp, juicy flesh with great sweet-tart flavor
- Moderate yields on highly vigorous trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3582	16.0	0.09 L

Michelin

- Mid-season, small yellow apple with dull rose blush
- Spongy flesh, some juice
- Bland sweetness
- Heavy yields on moderately vigorous trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples	Cider Classification
3296	14.9	0.13 L	Bittersweet

Nehou

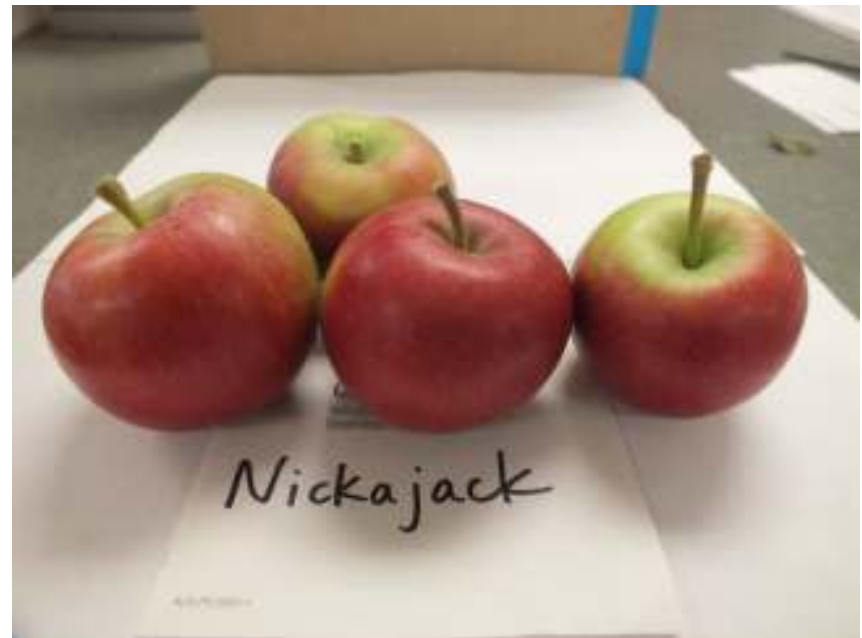
- Mid-season apple, slight red blush
- Soft, smooth flesh
- Bland bittersweet flavor
- Good yields on moderately vigorous trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples	Cider Classification
3106	15.1	0.14 L	Bittersweet

Nickajack

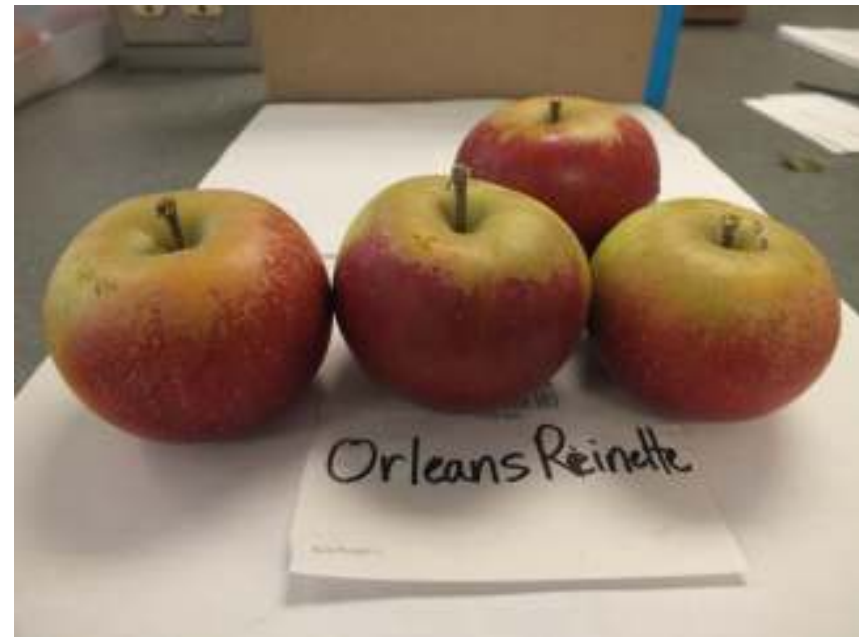
- Mid-late season, red apple
- Crisp and juicy with distinct tart flavor and bitter peel
- High yields on low vigor trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3400	13.2	0.20 L

Orleans Reinette

- Mid-late season apple, bright orange/red blush
- Crisp, juicy flesh with sweet yet tart flavor (very good!)
- Good yields on moderately vigorous trees
- Russetted skin



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3398	17.1	0.11 L

Pine Golden Pippin

- Mid-season green apple, completely russeted
- Juicy, dense flesh with great apple flavor
- Good yields on moderately vigorous trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3442	16.3	0.10 L

Standbridge Cluster

- Late season striped red apple
- Dense, crisp flesh that is mouth watering tart
- Medium yields on high vigor trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3442	16.3	0.10 L

Sweet Coppin

- Mid-season apple with rose blush
- Dense, smooth flesh with sweet perfume flavor
- High yields on high vigor trees
- Many fruit drop prematurely



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples
3442	12.6	0.11 L

Vilibirie

- Mid-late season apple, bright orange/red blush
- Soft flesh with strong bittersweet flavor
- Heavy yields on medium vigor trees



Harvest (GDD _{base 42})	Avg. Brix	Juice/lb. of apples	Cider Classification
3373	14.0	0.16 L	Bittersweet

Varieties NOT Suitable for N. Michigan

Poor Quality Fruit

Court Royal



Cox Pippin



Major



Kingston Black



Muscadet
de Dieppe



Old Non Pareil



Low or No Yield

Adams Pearmain

Champlain

Dafflin

Domains

Fenouillet de Ribours

Fenouillet Gris

Harry Masters Jersey

Marin Ouyfray

Poor Tree Health

Kerry Pippin

Stoke Red

Harvest Timeline -

for an average year in Northwest Michigan

<u>Early</u>	<u>Sept. 1</u>	<u>Sept. 10</u>	<u>Sept. 20</u>	<u>Oct. 1</u>	<u>Oct. 10</u>	<u>Oct. 20</u>
Burgandy	Balmers Norman	Bedan	McIntosh	Brown Snout	Adams Apple	Mettais
Grenadier	Ellis Bitter	Creston	Claygate Pearmain	Brown Thorn	Binet Rouge	Red Delicious
		Frequin Rouge	King of Pippens	Orleans Reinette	Browns Apple	
		Golden Pippen	Macoun	Standbridge Cluster	Jonagold	
			Margil	Vilibrie		
			Michelin	Nickajack		
			Nehou			
			Pine Golden Pippen			
			Sweet Coppin			

Thanks!

