

Northern Great Plains Variety Selection:

**Decisions For A
Changing Environment**

Cuthills Vineyards Grape Breeding

- Started in 1997
- Original hybrids with local riparia x Tempanillo, Sangiovese, or Cabernet Franc
- Later crosses with Cab. Sauvignon, Syrah, Chambourcin, Calzin, and many hybrids

Have the criteria changed?

- For our breeding program the major criteria have not changed
- Cold Hardiness
- Disease Resistance
- 2,4-D Tolerance
- Drought Tolerance
- Late bud break
- Short to mid growing season



Cuthills Vineyards



The First Step- the birds & the bee's



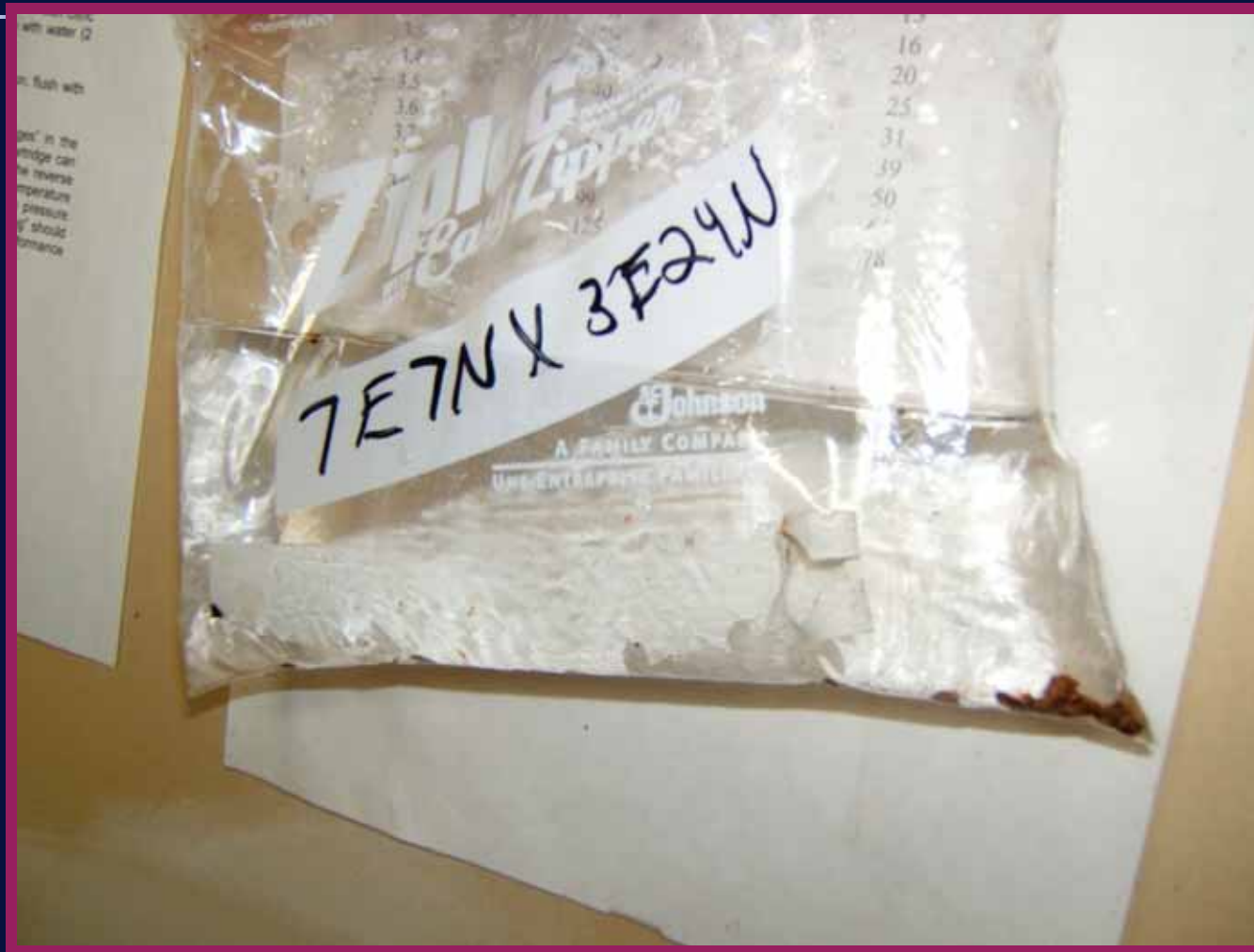
NEW GRAPE BABIES



Removing seeds from grapes & cleaning



Seeds cleaned periodically in ozonated water



Planting Seeds



New Seedlings



Seedling in it's first year



Main Hybrid Vineyard



Mature seedling with fruit



Some that look good

CV-RT97-2 (Temparia)



Harvest Parameters

Cultivar	Brix	TA Grams/liter	pH	Cluster Wt., Avg.	Berry Wt., Avg.	Date Harvested
CVRT-97-2	23	13	3.34	100 g	1.1 g	9-21-06
CVRTCA-06-1	24.5	10.1	3.1	150 g	1.5 g	8-25-06
(RxT) x Chancellor	20.2	9.8	3.43	160 g	2.5 g	9-06-06
Chancellor x Calzin	21.6	7.5	3.31	?	1.5 g	9-06-06
Syrah	21.5	6.15	3.6	160 g	1.5 g	9-20-05
(R x T)x Calzin	22.5	8.6	3.33	?	1.3 g	9-09-06
Red Muscat	23.6	9	3.42	?	1.25 g	9-10-06
Petite Amie	18	9.3	3.38	220 g	2.3 g	8-31-06
2N8W	28	13.5	3.31	150 g	1.6 g	9-21-06

Wine Chemistry

Cultivar	Alc.	TA	pH	R.S.
CVRT-97-2	13.7	8.3	3.68	.25%
Petite Amie	10.8	8.8	3.16	3%

St.Croix x Calzin (Zinfandel x Refosco)

- Highly tannic red (thick leathery skins), with some tobacco notes from St. Croix.
- Tests last year with various reds revealed improvement with as little as 10% addition.
- Good tolerance to 2-4-D



(Riparia x Tempranillo) X Calzin (Zinfandel x Refosco)

CV-RTC

- Medium Tannins with mostly black current, only hardy to -22F. Good producer.
- Used in breeding with St. Croix x Calzin for back-crossing Calzin.
- Good tolerance to 2,4-D



St.Croix X Calzin (Zinfandel x Refosco)

CV-SCC

- Long Loose clusters, only one or two/shoot.
- Hardy to -28F.
- Medium plus tannins
- This vine was crossed with CV-RTC to form back-cross of Calzin
- Good tolerance to 2,4-D





[ES-11-2-48 X (Riraria x Tempranillo) x Chancellor]

- Well balanced wines with medium + tannins.
- No hybrid flavors
- Fruits well on secondary buds.
- Clusters- 185g avg.
- Berry – 2.3g avg.
- Brix – 23
- TA – 10.5 g/l
- pH – 3.58
- Low vigor: should be grafted for vigor and drought tolerance.
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CV-SCC-212

- St.Croix x Calzin
- Roots will not tolerate Phyloxera feeding
- Low vigor
- Highly tannic wines with good color and Zinfandel like flavors
- Hardy to -20F
- Just starting to graft – very promising
- Good tolerance of 2,4-D

CV-SCC-212



Riparia x Cabernet Franc

- Very good tannins
- No herbaceous character
- Very good numbers
- Fully hardy in NE Nebraska
- Only Bad... it's Pistillate
- Doing extensive breeding with other top Hybrids

Riparia x Cabernet Franc









- 'Arandell'—a mash-up of "arandano," the Spanish word for blueberry, and the "ell" from Cornell—is the first grape released from The New York State Agricultural Experiment Station's "no-spray" vineyard. Formerly NY95.0301.01



- 'Aromella', an aromatic, muscat white wine grape, was named by Michael Borboa, a Californian winemaker and songwriter who used a lyric exercise he uses for writing songs. 'Aromella' ranks high for winter hardiness and productivity. Reisch says its release is timely given the growing popularity of muscat wines.

T.P. 1-1-12

(Riparia x St. Croix) x E.S. 5-4-16



- 2009 Harvest 9/20/2009
23.8 Brix; pH = 3.42
- Cluster- Ave. = 225g (140-330g)
- Reliably hardy for years
at Hugo, MN (northeast of
St. Paul)
- Consistent production year
to year
- Extremely healthy, moderate
vigor, easy to manage vines
- Dark dense red wine; rather
neutral with some raspberry
and cassis; good tannin
structure; moderate acidity



T.P. 2-1-17

MN 1094 x E.S. 4-7-26

- 2009 Harvest 9/18/2009
22° Brix; pH = 3.48
- Cluster Ave. = 129g (100-250g)
- Has proven reliably hardy at 2nd test site in Minot area
- Very consistent production year to year
- Healthy, moderate vigor, easy to manage vines
- Produces light fruity red wines with cherry and raspberry aromas; moderate acidity
- Sister to Petite Pearl

Petite Pearl



- MN 1094 x E.S. 4-7-26
- MN 1094 = MN1019 x MN 1016 = (Riparia 64 x Carmine) x (Mandan x Landot 4511)
- E.S. 4-7-26 = E.S. 2-12-27 x St. Croix
- Good disease resistance
- Moderate vigor with open growth habit
- No winter injury at -32F
- Clusters 80-120g, berries 1.5g avg.

Lucien Dressel

- Crimson Cabernet- First Commercial wine in Kansas

The ever Volatile 2,4-D Problem

- ☐ Hybrids at Cuthills high in Vinifera seem to have higher tolerance
- ☐ Choose vines with medium plus vigor
- ☐ If tolerance is not known check with other growers, or put in area where vegetation will help block drift.

Drought Tolerance

- ☐ Choose known drought tolerant vines
- ☐ Use rootstock

Choosing Drought Tolerant Vines

- ❑ Most breeding programs for cold tolerant vines do not use drought for a criteria
- ❑ Make some phone calls

Going the rootstock route For Drought

- ❑ Don't forget your other Criteria, Cold Hardiness, soil, pH, vegetative cycle etc...
- ❑ 420A, 1103P(late), 140Ru(all around though not good for acid soils)
- ❑ 3309(good drought tolerance, but has other problems)
- ❑ 110R(good all around, most soils, short veg. cycle)
- ❑ Use existing hybrids that have worked on your soil

To field graft or
bench graft?