



Hop Breeding, New varieties, & new uses for common or less utilized varieties

- I. Hop Breeding –
 - a. General Breeding – why is it done?
 1. To increase vigor or yield
 2. To improve flavor or create new ones
 3. To combat disease and insect susceptibility
 - b. Hops are dioecious – separate male and female plants
 1. Where breeding is done, great care needs to be in place to assure no cross-contamination, the pollen is wind born
 - c. New breeds require 7 to 10 years or more to develop
 1. Crosses are intentionally done from both male and female parent lines
 2. As many as 100,000 seeds are collected from each pollenated cross
 3. Those 100,000 seeds are germinated, rogued, subjected to multiple disease pressures, but mainly Powdery & Downy Mildews
 4. From those survivors $\leq 10,000$ are kept, potted up, then a 2nd roguing occurs
 5. Year 2- 1000 of the 10000 are selected
 6. Years 3-5 Intermediate Selection: Remaining plants transplanted to 18' trellis – 1% selection rate
 7. Years 6-8 Advanced Selection: Expand selections to multi-hill plots, 2% selection rate
 8. Years 9-11 Elite Selection: Expanded to Commercial Lots, ? % selection rate
 9. Year 11+ Commercial Production- TO RELEASE OR NOT TO RELEASE, THAT IS THE QUESTION
- II. SOME OF THE NEWER BREEDS THAT HAVE COME OUT IN THE LAST COUPLE DECADES
 - a. American Types – Citra, Simcoe, Amarillo, Mosaic
 - b. German Types – Polaris, Hüll Melon, Mandarin Bavaria, Hallertauer Blanc
 - c. Other areas- Slovenia, Japan (Sorachi Ace), New Zealand, others...
- III. NEW USES FOR COMMON or LESS UTILIZED VARIETIES
 - a. There are over 100 commercially available varieties out there, with only a couple dozen used primarily. There's a lot to play around with.
 - b. Regional Differences in hop aromas – just starting to be realized with MI vs. PNW - flavors and aromas
 - c. There are more “dual-purpose” hops than you might realize. Many high alphas, because they also have high oils, can have fantastic aromas- you just have to be careful not to create a bitter bomb. Cases in point: HHF Nugget, HHF Chinook-wet & pelleted, Polaris (Germany) 18-24% alpha, up to 4.4 mg/100g oil content- fantastic aromas



Hop Head Farms, LLC.
www.hopheadfarms.com

4630 West Hickory Road
Hickory Corners, MI 49060

Phone: 269.671.4439
Fax: 269.671.4460