

Hurdle Jumping

The Case of the Hickory

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Why Hybrid Hickory?



The “Gateway”

Why Hybrid Hickory?

Multi-purpose nuts

- Automated cracking
- Home cracking
- Milking
- Oil pressing
- Press cake milking/fodder potential

Fewer hurdles

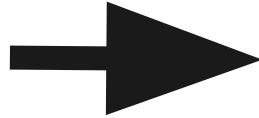
- No/low husking
- Less sediment concern in oil



“Weschcke” - The top dual purpose hickory

Why Multi-Purpose Nuts?

- All transitions need to be incremental.
- Create the farms for oil that offer development of kernel cracking



“Edger” - A badgersett selection

Let's Get Jumping!

- Little processing equipment and knowledge
- Little quality germplasm
- Lack of long-term quality data in multiple locations
- Poor understanding of weevils in the North
- Poor understanding of disease
- Poor automated cracking options
- Costly and challenging propagation
- Delayed bearing
- Slow tree growth
- Poor understanding of genetics and heritability
- Poor understanding of the carya outside of pecan
- Rapid rancidification of the unrefined oil



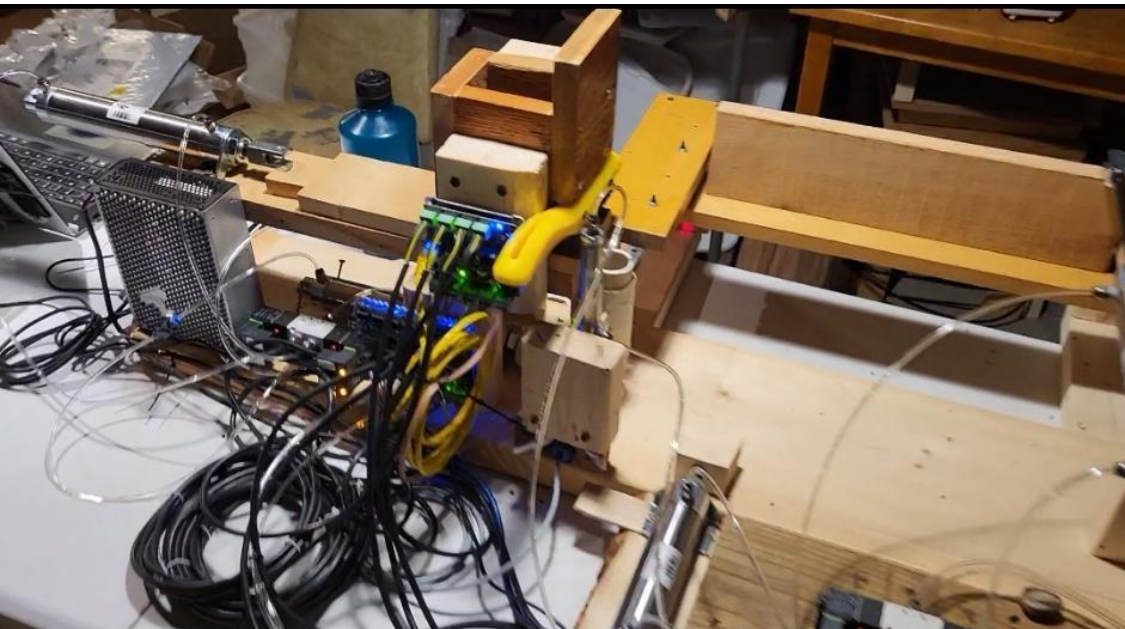
How to Automated Crack?

Just start moving stuff with your hands!



How to Automated Crack?

Just keep moving!



How to Automated Crack?

Just keep moving!



How to Automated Crack?

- When tracking: **you don't know where you are going, but you know how to get there**
- Pass off all information so that others can take the next steps



How to Propagate?

- Experiment with alternatives to fix frustrations
- Ask people in other disciplines for stories



How to Propagate?

- 78F-85F greenhouse setting
- 50% cheeswax, 50% beeswax NO oil mixed in! Oil kills cambium!
Wax whole epicotyl
- Melon and tomato grafting clips (red and clear)
- Shagbark rootstock or dominant shag rootstock genetics
- Cleft grafting close to the nut
- Burying the whole graft union and clip so no epicotyl is above soil level
- Use thick scion
- Aligning one side only
- One large bud on the scion stick
- 3"+ epicotyl length before grafting
- 50% take rate was achieved with these rules



What Makes a Good Nut?

- Eat the crop as a staple that you are growing
- Go in depth with all ways of eating & processing the crop
- Always grow dry corn as a baseline



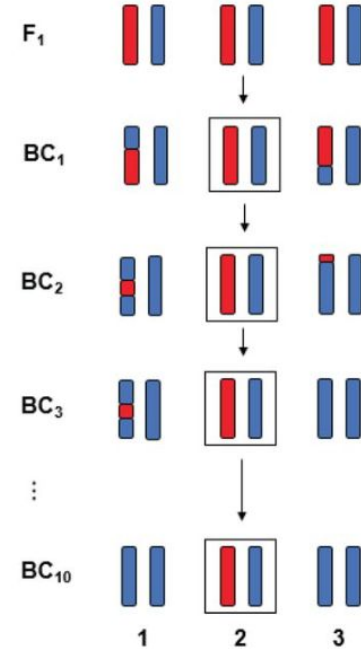
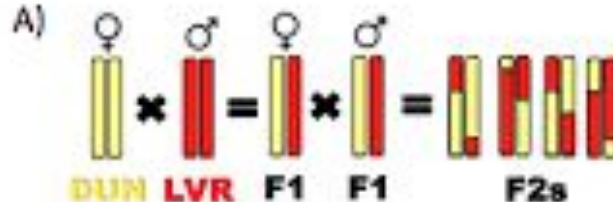
How Do We Breed?

Do Not:

- Backcross to pure species or homozygous single species

Do:

- Cross to species and regional F1s, F2s, F3s +
- Breed for chaos



How Do We Breed?

Why breed for chaos? **We know nothing!**



General Breeding Concepts

- Breed like the academics and non-profits if you want:
 - Great, normal plants
 - Slow and consistent progress
 - OR
 - Seedling orchards on farms in the short term
- Breed for chaos if you want to:
 - Make leaps in genetics
 - Develop something we have never seen before
 - Redefine what we want and what is useful in a species
 - Dangly nut chestnut
 - Hazel on a cob
 - Anomalous flowers
 - Chestnuts that die from overbearing without fertilizer
 - 4 catkin cluster hickories



What Equipment to Use?

Do Not:

- Try to start your own system without talking to others

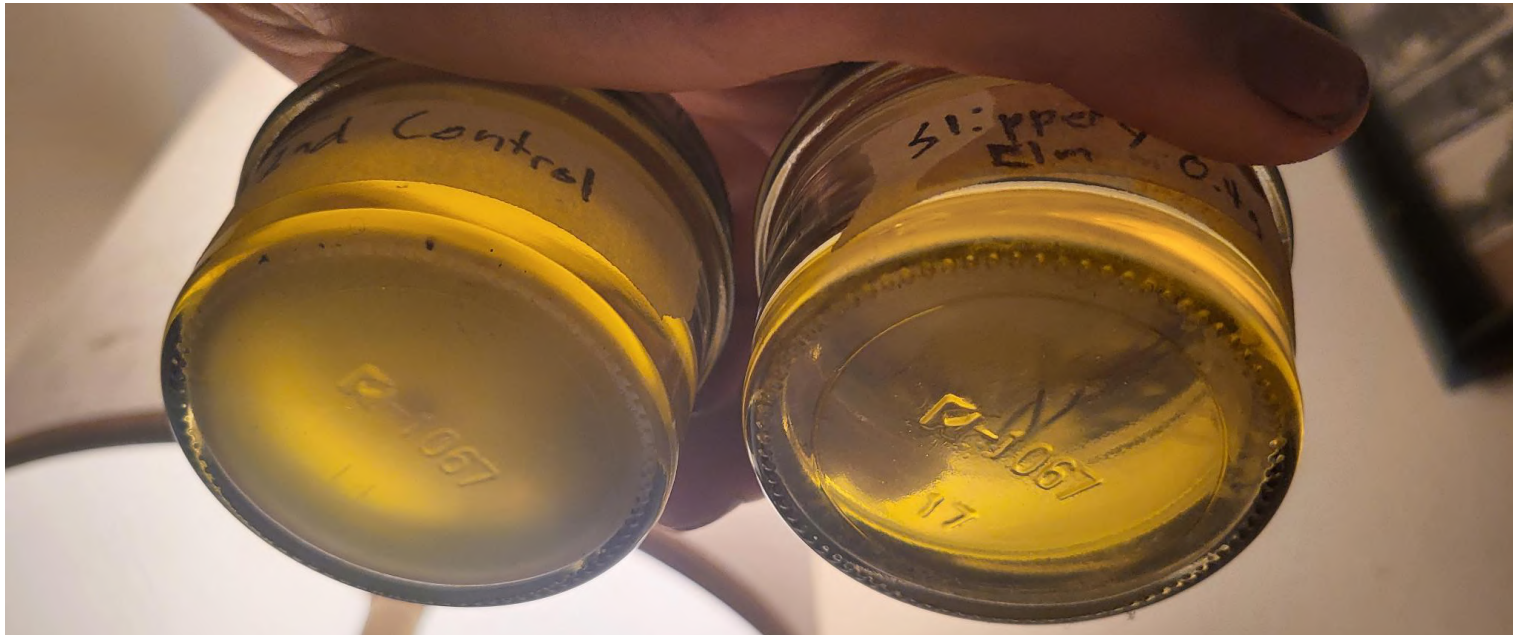
Do:

- Ask what experts what they struggle with, what they would do differently, and what works well
- Spend time with the issue to understand the solution's requirements better



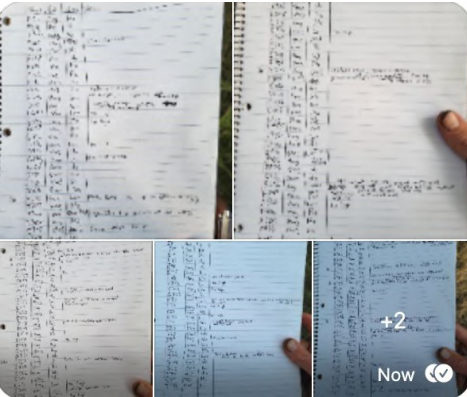
How to Prevent Rancidity?

- Always experiment/learn with CONTROLS!



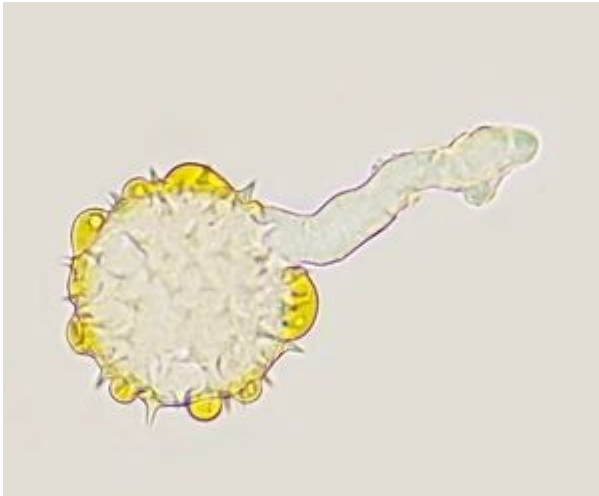
What Are Traits of Interest in the Tree?

- Engage with all aspects of the trees life - prop, growth, & harvest
- Observe as many details as possible even if they seem irrelevant



Many of our Best Selections are Pollen Sterile

- 30% of the badgersett (BS) population of hickories is Pollen Sterile (PS)
- 100% of my dual purpose selections over 45% kernel are PS



How to Evaluate?

Do Not:

- Evaluate without metrics, standards, and noted context

Do:

- Work as a team
- Know differences in priorities across the team
- Evaluate for all people and purposes



Oil-making Equipment is Costly

Do Not:

- Make your own new processing space without talking with nearby processors

Do:

- Focus on the processing that needs to be hyper local (hulling)
- Consider joining a nearby processing group and spend the same amount of \$



