

Beekeeping Equipment

(Chapter Meeting Presentation Version)

Presenter:

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Master Beekeeper

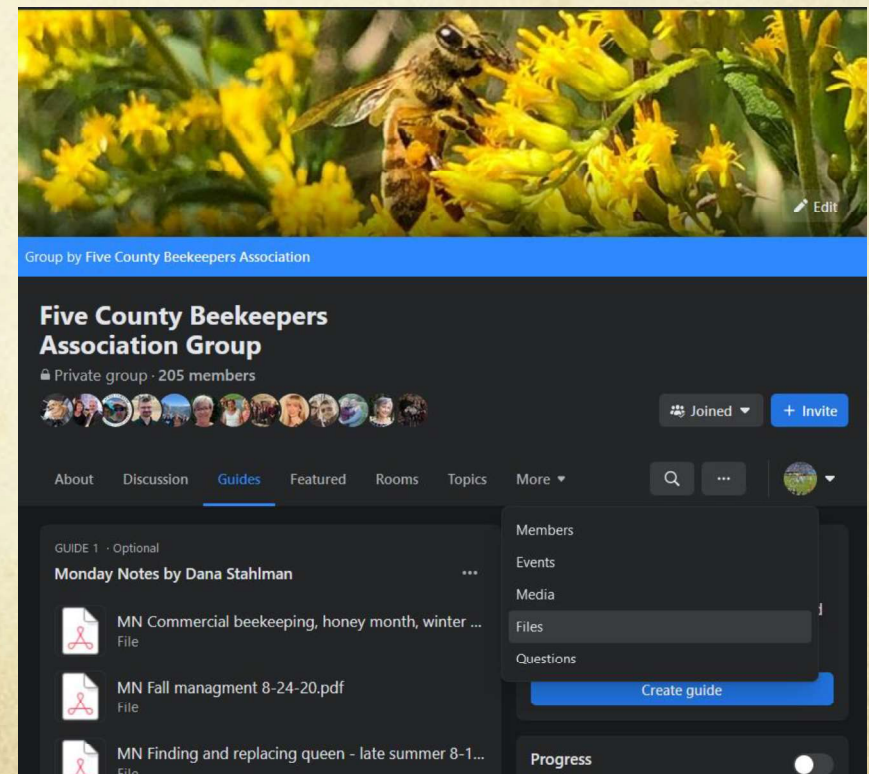
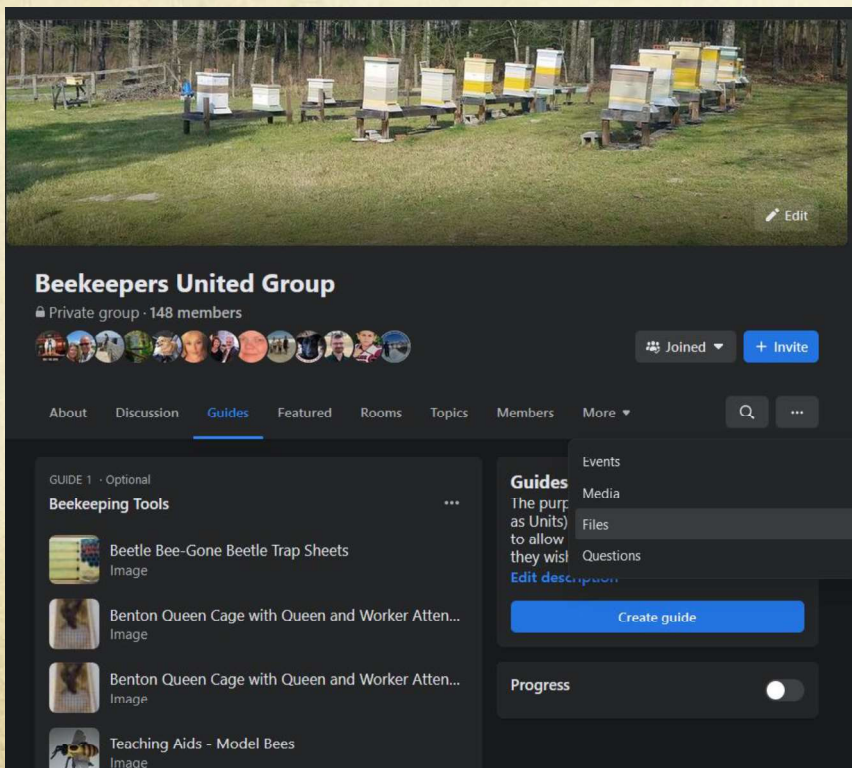
AGENDA

- Additional sources of information
- Books and guides
- Hive components
- Protective equipment
- Beekeeping tools
- Equipment for more advanced beekeepers

- Reminder: You don't have to get everything all at once!
- Strongly recommended items will be marked with *

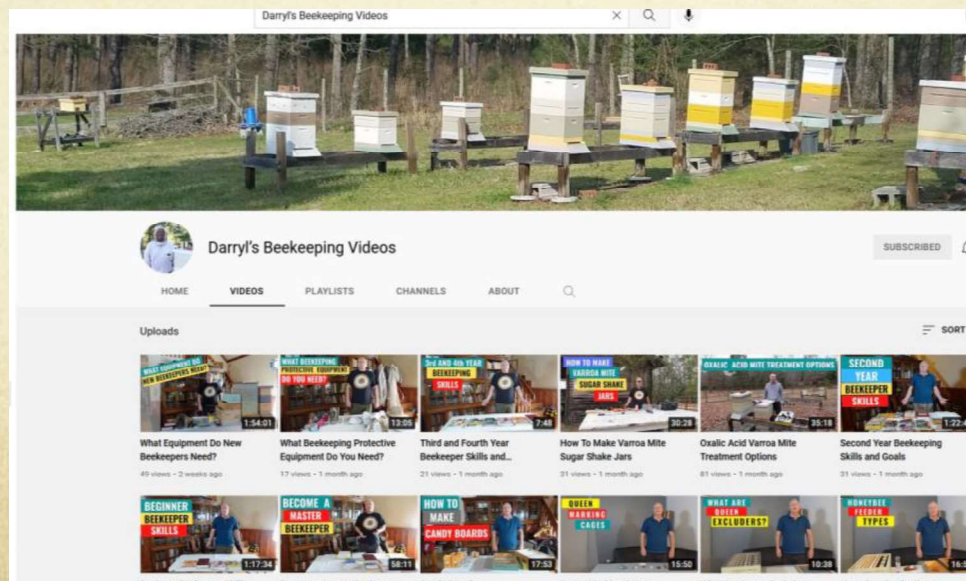
ADDITIONAL INFORMATION

- Facebook groups
 - Beekeepers United Group
 - <https://www.facebook.com/groups/BeekeepersUnitedGroup>
 - Five County Beekeepers Association Group
 - <https://www.facebook.com/groups/653967841714991>
 - Look in the “Guides” and “Files” sections



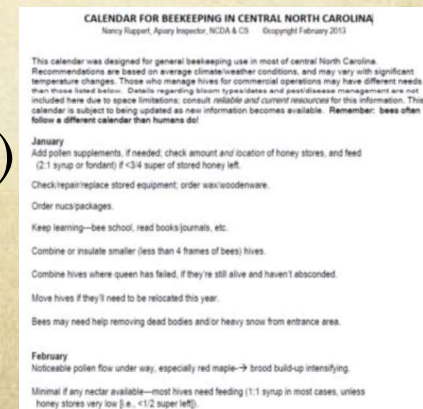
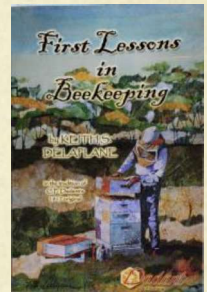
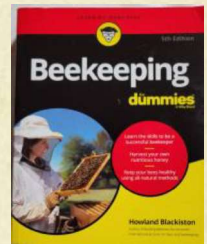
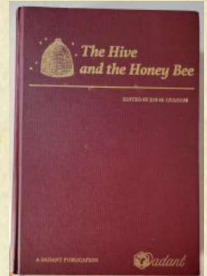
ADDITIONAL INFORMATION

- YouTube
 - Darryl's Beekeeping Videos
 - https://www.youtube.com/channel/UCX-Va2I_z4P-iNvM1DwOljA
 - 1hr 57 min Beekeeping Equipment class
 - How to choose box size, frame size, feeders, etc.
 - How to assemble equipment
 - Beekeeping skills: 1st year, 2nd year, 3rd & 4th year skills
 - Master Beekeeper Program
 - How to inspect a hive, how to use oxalic acid, etc



BOOKS AND GUIDES

- *The Hive and the Honey Bee by Dadant Publishing
 - 2015 edition
 - ISBN: 978-0-915698-16-5
- Beekeeping for Dummies by Howland Blackiston
 - Latest edition
 - ISBN-13: 978-1119702580
- First Lessons in Beekeeping by Keith S. Delaplane
 - ISBN-13: 978-0915698127
- * Beekeeping calendar
 - CALENDAR FOR BEEKEEPING IN CENTRAL NORTH CAROLINA by Nancy Ruppert (now retired NCDA&CS Apiary Inspector)
- More books and references can be found (I have 115+ books)
 - In the Facebook Groups References Guide area
 - The Beekeeping Calendar can be found in the Files area



HIVE COMPONENTS

WARM MONTHS

- Telescoping top or Migratory top
- Ventilated inner cover (if used)
- Hive top feeder (if used)
- Honey supers
- Brood chambers (hive bodies)
- Slatted rack
- Solid or screened bottom board
- Sloped landing board stand
- Hive stand
- Metal dog bowl “moats” with water and veg. oil



HIVE COMPONENTS

COLD MONTHS

- Hive wrap (optional)
- Telescoping top or Migratory top
- Ventilated inner cover
- Quilt box
- Candy board
- Brood chambers (hive bodies)
- Slatted rack
- Wood entrance reducer
- Solid or screened bottom board
- Sloped landing board stand
- Hive stand
- Metal dog bowl “moats”



HIVE COMPONENTS

HIVE STANDS

- Purpose:
 - Protect wood and hive from ground moisture
 - Helps keep grass out of the hive
 - Helps bees fend off predators (skunks, racoons, dogs, etc.)
- Types:
 - Bricks, blocks
 - Blocks with landscape timbers
 - 2"x6"x8' untreated wood with 4"x4" treated wood posts, plus 1"x2"x8' furring strip on top of rear 2"x6"x8' rail (gives hive forward slope)
 - Tip: Use hay string as strap anchor points
 - Single commercial stands



HIVE COMPONENTS

- *Sloped landing board stand
 - Adds a porch for bees to land on
 - Optional, but suggested
- Solid bottom board
- Screened bottom board
 - With or without Integrated Pest Management (IPM) board
- *Slatted rack
 - Helps keep the hive cooler in hot months
 - Helps keep the hive warmer in cold months
 - Encourages the queen to lay lower on bottom frames



HIVE COMPONENTS

- New or used equipment?
 - New: More expensive, but less risk of disease
 - Used: Cheaper, but higher risk of disease (American Foulbrood)
- Assembled or unassembled?
 - Assembled: More expensive, but little to no tools required
 - Unassembled: Cheaper, but some tools required
- Painted or unpainted?
 - Painted: More expensive
 - Unpainted: Cheaper
 - Paint all OUTSIDE surfaces – different box colors or pictures
 - Never paint inside surfaces, except 2” inside bottom board
 - Latex paint (exterior preferred, but interior works too), acrylic paint is also ok (provides hard finish)

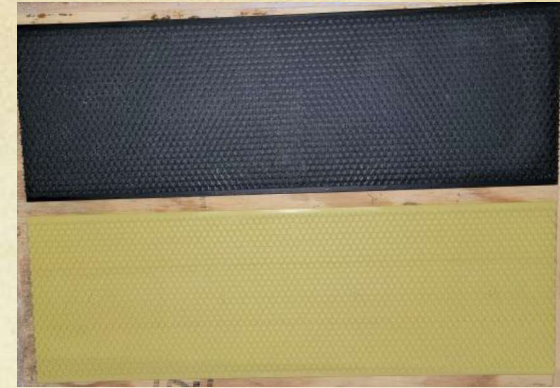
HIVE COMPONENTS

- Frame and box dimensions vary by manufacturer...the bees don't care if it's not perfect!
- Deep boxes and frames
 - 9 5/8" high x 19 7/8" long x number of frames wide
 - Honey super or brood chamber
 - Uses 9 1/8" high frame
 - Holds 8 pounds honey / frame
- Medium (a.k.a. Illinois Super) boxes and frames
 - 6 5/8" high x 19 7/8" long x number of frames wide
 - Honey super or brood chamber
 - Uses 6 1/4" high frame
 - 4 to 6 pounds honey / frame
- Shallow boxes and frames (it comes in two sizes)
 - 6 5/8" high x 19 7/8" long x number of frames wide
 - Uses 6 1/4" high frame
 - 5 7/8" or 5 11/16" high x 19 7/8" long x number of frames wide
 - Uses 5 3/8" high frame
 - Only good for honey (normally cut comb honey)
 - Not practical to use as brood chambers since the frames are shallow
 - 3.5 to 4 pounds honey / frame



HIVE COMPONENTS

- Plastic foundation or natural beeswax foundation?
- Starter strips vs full sheets?
- Plastic – With or without beeswax coating
 - Has rigid cells
 - No support wires needed
 - Comes in yellow or black (black easier to see eggs some claim)
 - More expensive than natural beeswax
 - Harder to remove old / dark comb
 - Bees sometimes reject it and can abscond
- Natural beeswax
 - With or without metal support wires
 - You can cross wire it yourself (wire or fishline)
 - Spur embedder (get a small head) (wire)
 - Form board (used with wire cross wire)
 - Readily accepted by bees
 - Cheaper if bought in bulk – 25 pounds (roughly 275 sheets)
 - Cell sizes
 - 5.4mm (most popular size)
 - 5.1mm (transition size)
 - 4.9mm (small cell size)
- Drone comb frames (green frame)

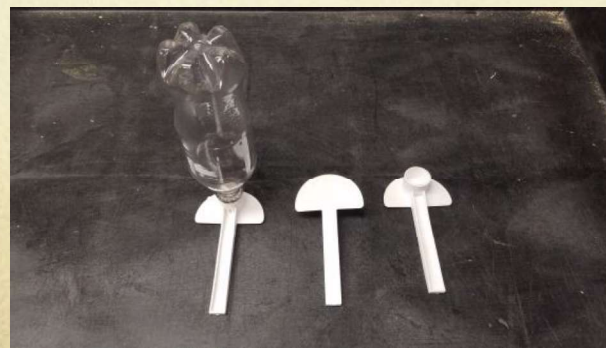


Tools Used to embed horizontal wire into foundation Pictured Items:
A. Form board – Commercial supplier versions have a fourth dado cut which is made for shallow frame that isn't widely used any more, so in my homemade version I don't have it.
B. Form board with a honey super placed on it. NOTE: Wipe mineral oil on the wood prior to using the form. The oil acts as a release agent to keep beeswax from sticking to the board.
C. Cross wire dispensing jig. Homemade item that has a wood wedge on top of the board to apply resistance to the wire spool.
D. Small head grooved wire embedding tool (the best version). Large head embedding tools easily slip off the cross wire and don't have the groove in the tool head. Technique: I only use metal wire on honey super frames. I use 15 pound fishing line cross wires for brood chambers, so I can cut out queen cells if they happen to be on top of a horizontal wire. I then put the queen cell in a needy hive or make splits with the queen cell.



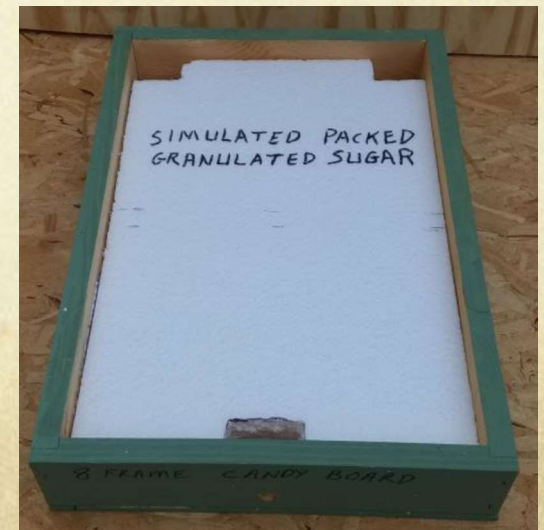
HIVE COMPONENTS

- Syrup and water Feeders
 - Entrance (a.k.a. boardman feeder) & soda bottle entrance feeders
 - Division board feeder — Get one with a cap and ladder system if you use this feeder
 - Hive top feeders —
 - Single chamber vs two chamber (long axis slot vs short axis slot)
 - Screen & ladder system (Miller feeder) vs float system (Dadant feeder)
 - Jar, jug, or bucket type feeders
 - Community feeders



HIVE COMPONENTS

- Dry Feeders – Pollen and/or loose granulated sugar
 - Commercial (blue shown is about \$155 from Mann Lake)
 - PVC pipe (about \$12 from Midnight Bee Supply)
 - Mountain camp (aluminum foil wrap placed on top of frames with loose sugar on it)
 - Candy board (emergency use)



PROTECTIVE EQUIPMENT

- Veil at a minimum
- Jacket
- Pants (tip: get suspenders too)
- Full Suit
- *Ventilated material
- Solid material
- Try on & buy at a local store
- Get 1 -2 sizes larger than you wear
- Avoid black and fuzzy material



PROTECTIVE EQUIPMENT

- Gloves or no gloves?
- Nitrile gloves
- Ventilated or unventilated goat skin gloves
- *Smoker
 - 4"x7" or 4"x10"
 - Get one with a finger guard
 - Masks pheromones, drives bees away from your area
 - Fuel: Anything solid that burns except poisonous plants, animal poop, petroleum based, or chemical based fuel
 - OK: Pine straw: Works great!
 - OK: Raw cotton, wood chips
 - OK: Wood pellets
 - OK: Cardboard



Toy
Smoker



PROTECTIVE EQUIPMENT

- Personal Protective Equipment (PPE) when using pesticides
- ALWAYS follow the product label!
 - Long sleeve shirt and pants
 - Acid resistant gloves
 - Goggles
 - Respirator mask (half face or full face) WITH particulate filter



MISCELLANEOUS EQUIPMENT

- Beetle Blaster Trap
 - Fill $\frac{1}{2}$ full with mineral oil



- Propolis trap
 - Collects clean propolis
 - Sell the propolis
 - Make tinctures, deodorant, etc.



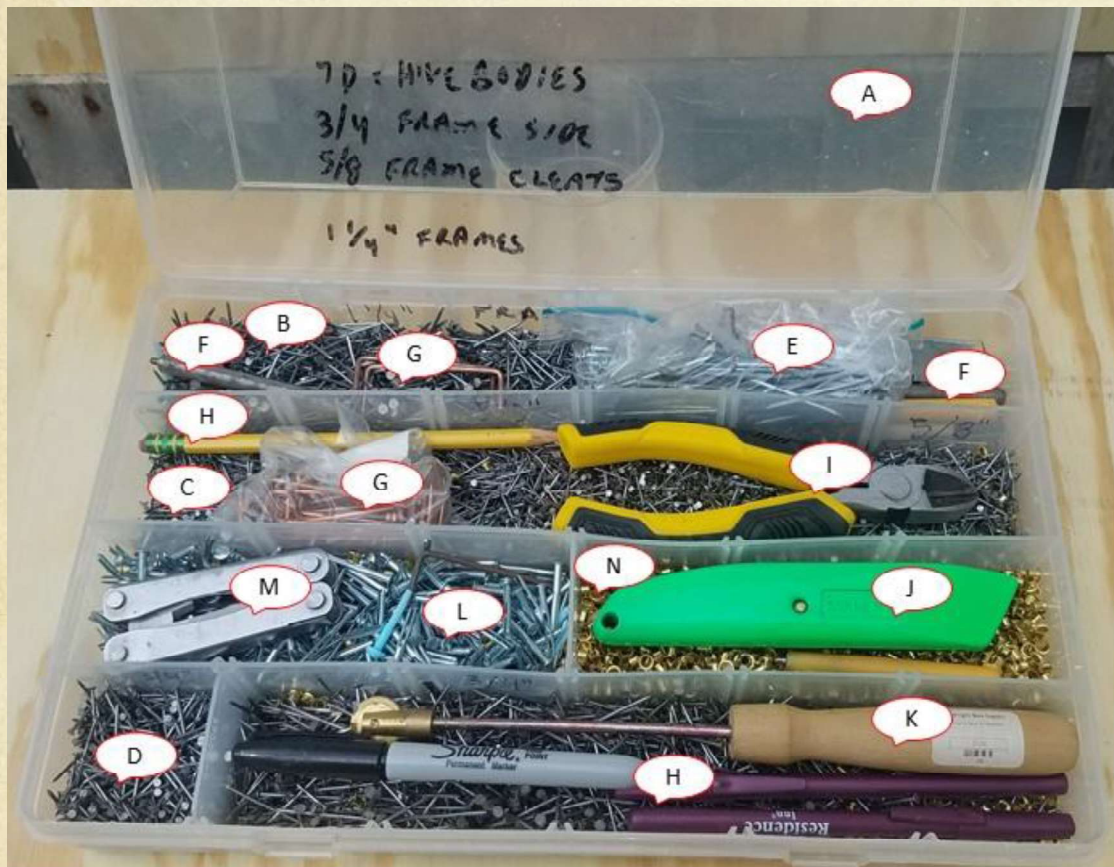
BEEKEEPING TOOLS

- LED Flashlight (to spot eggs)
- Reading glasses (I use 1.5x glasses)
- Sweat head band if warm weather



BEEKEEPING TOOLS

- Tack hammer (Pittsburgh 7 oz from Harbor Freight)
- Nail kit



Nail Kit Pictured Items:

- A. Electronic parts storage box, any brand will do. I list the nails and purpose on the lid.
- B. 1 1/4" nails for frame assembly
- C. 5/8" nails to attach cleats to frames
- D. 3/4" nails to put in the ends of frames (secures the top bar better)
- E. 7d (7 penny) nails to assemble hive bodies if I don't use 1 1/2" pneumatic staples
- F. Grommet tools (most have been dipped in Plasti-dip coating to prevent rust)
- G. Hive staples
- H. Pens, Pencils, and markers to mark wood as needed
- I. Diagonal wire cutters to cut wires (mostly foundation support wires)
- J. Utility knife (mostly to trim off excess foundation to fit in a frame)
- K. Crimp wire groove spur embedder (small head is the best type)
- L. Foundation pins (plastic and metal versions) – used to secure foundation instead of cross wiring (I don't use them any more since they don't always hold the foundation)
- M. Small, folding multi-tool (handy to have)
- N. Grommets (brass or aluminum) – used to keep horizontal crimp wire from digging into the Frame end bars.



BEEKEEPING TOOLS

- Hive tool: *L-shape, *J-hook, or gadget type
 - Pry apart boxes & remove frames
 - Remove excess propolis and burr comb or brace comb
 - Did you know? The hole is a nail puller!
 - Amazon is cheapest place = \$3 to \$5 each vs \$11 at local store



BEEKEEPING TOOLS

- Frame perch
 - Holds 3 to 5 frames outside hive body
 - Can drop the queen if she is on it!
- *Spare hive body and telescoping top
 - Holds same # frames as your hive body
 - Can “isolate” the queen
 - Protects you from dropping the queen



BEEKEEPING TOOLS

- Frame grips
 - Not needed for most beekeepers



- Queen excluders
 - Prevents a queen from moving to another box or area
 - Uses:

- During a nectar flow
- Splits (Doolittle method)
- Swarm prevention (Demaree method)
- Queen rearing (in a custom box: 1 frame empty comb & queen placed between 2 vertical excluders, so you get 1-day old larvae for grafting on day 4)



- Metal, wood bound metal, or plastic
- Entrance protector version queen excluder
 - Virgins can still swarm!
- MUST remove during cold months



BEEKEEPING TOOLS

- *Imrie shim (about \$5 each)
 - Spacer
 - Uses:
 - If you need space between boxes
 - Emergency upper hive entrance for snow / flood
 - Queen introduction — top of frames
 - Pesticide treatments
 - Apiguard
 - Formic Pro / MAQS
 - Pollen patty on top of frames
- Suggest you get at least two Imrie shims!



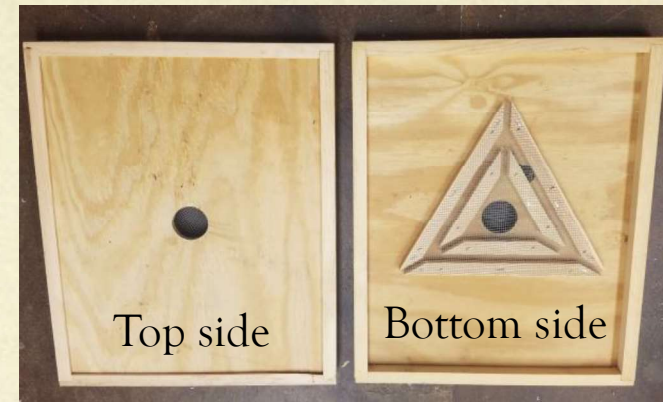
BEEKEEPING TOOLS

- Inner cover
 - Used during cold months
 - Can be used with a Porter Bee Escape (honey removal)
 - Can be used with a jug feeder & box
 - Not needed if using:
 - Candy boards (I put 2 on each winter hive)
 - Quilt box
 - Notch up: Winter use
 - Notch down: With Porter Bee Escape
- *Ventilated inner cover
 - Used to add ventilation
 - Can pour syrup through it into hive top feeders (Bees are great fliers... horrible swimmers 😊)



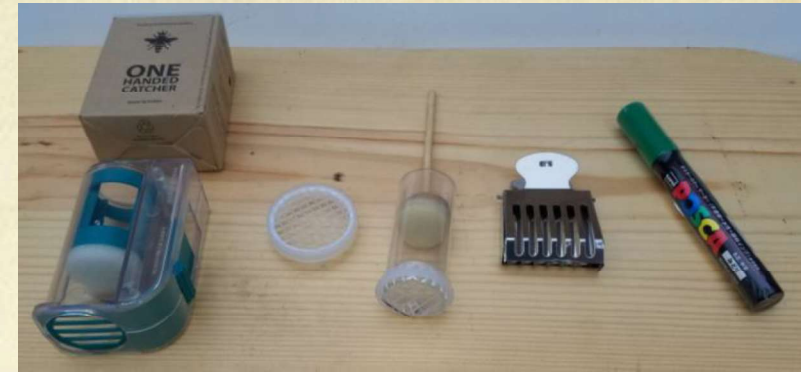
BEEKEEPING TOOLS

- *Bee brush
 - Synthetic hairs better than animal hair
 - Bees don't like animal hair
 - Used
 - Brush bees off frames or boxes
 - Can be used instead of bee escapes or fume boards
- Frame spacers
 - Same # frames as box
 - For brood chambers
 - One less # than box (10 Fr. to 9 spaces)
 - For honey supers



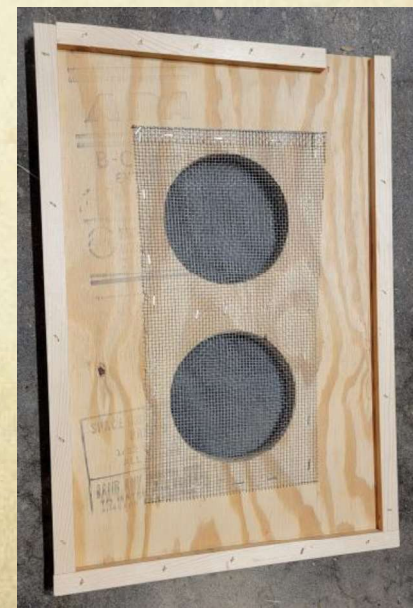
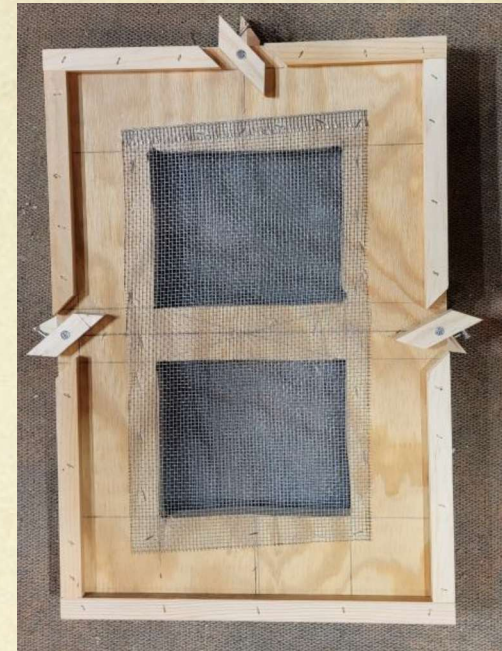
BEEKEEPING TOOLS

- Queen cages
 - Uses
 - Mark the queen
 - Temporarily detain the queen
 - *One-handed queen catcher is best
- Use water based paint
 - Amazon is cheapest
 - Use international queen marking color
 - Will You Raise Good Bees
 - White: 1 or 6
 - Yellow: 2 or 7
 - Red: 3 or 8
 - Green: 4 or 9
 - Blue: 5 or 0



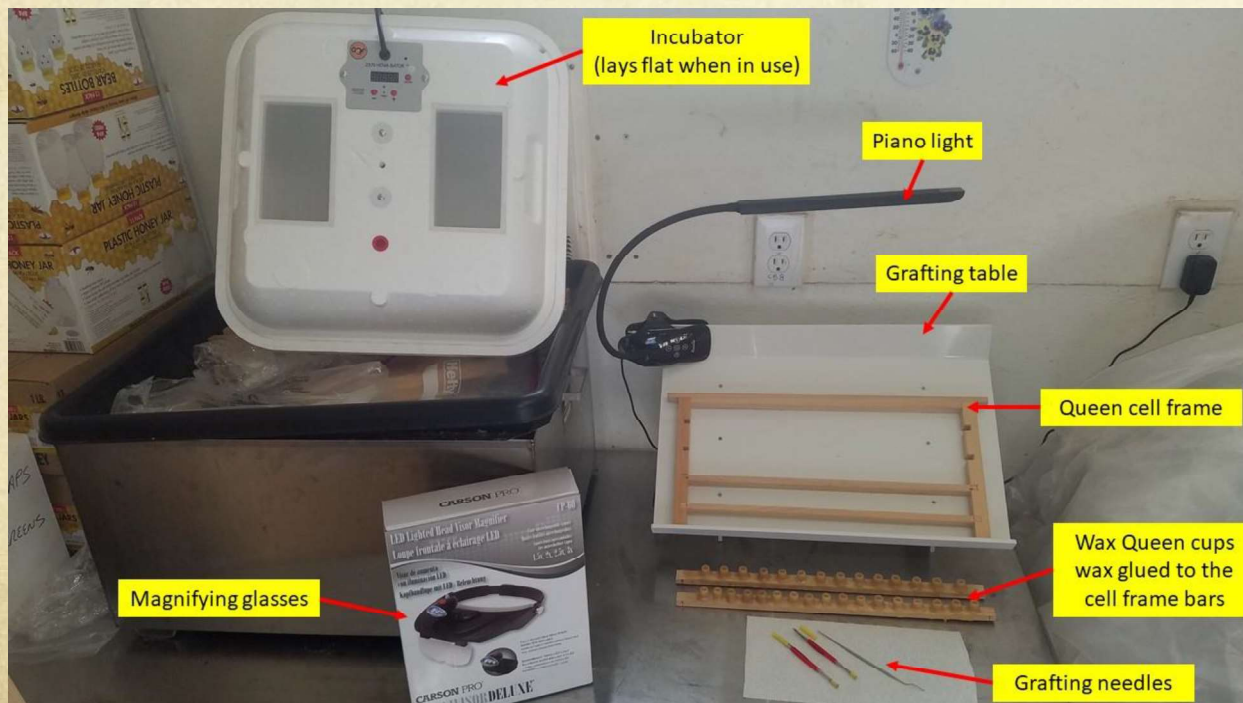
EQUIPMENT FOR MORE ADVANCED BEEKEEPERS

- Snelgrove board / double screen board
 - Invented by Leonard Snelgrove in 1934
 - Uses
 - Swarm prevention
 - Method 1 – No queen cells found
 - Method 2 – Queen cells found
 - Splits (version of the Doolittle method)
 - Keep a weak colony warm on top of a strong colony
- Modified Snelgrove board / double screen board
 - Does not have the six gate entrances
 - Typically has one open entrance
 - Same uses as the original Snelgrove board



EQUIPMENT FOR MORE ADVANCED BEEKEEPERS

- Queen rearing
 - Doolittle method (grafting)
 - Natural beeswax queen cups
 - JZ-BZ queen cups
 - Nicot queen rearing system
- Wax cups “glued” with beeswax as the glue



EQUIPMENT FOR MORE ADVANCED BEEKEEPERS

- Make your own woodenware — Power tools area
 - Limited carpentry skills needed
 - Full article in Facebook Group in the Files section:
 - AHO - Beekeeping Time and Money Saving Tips and Tools



Pictured items:

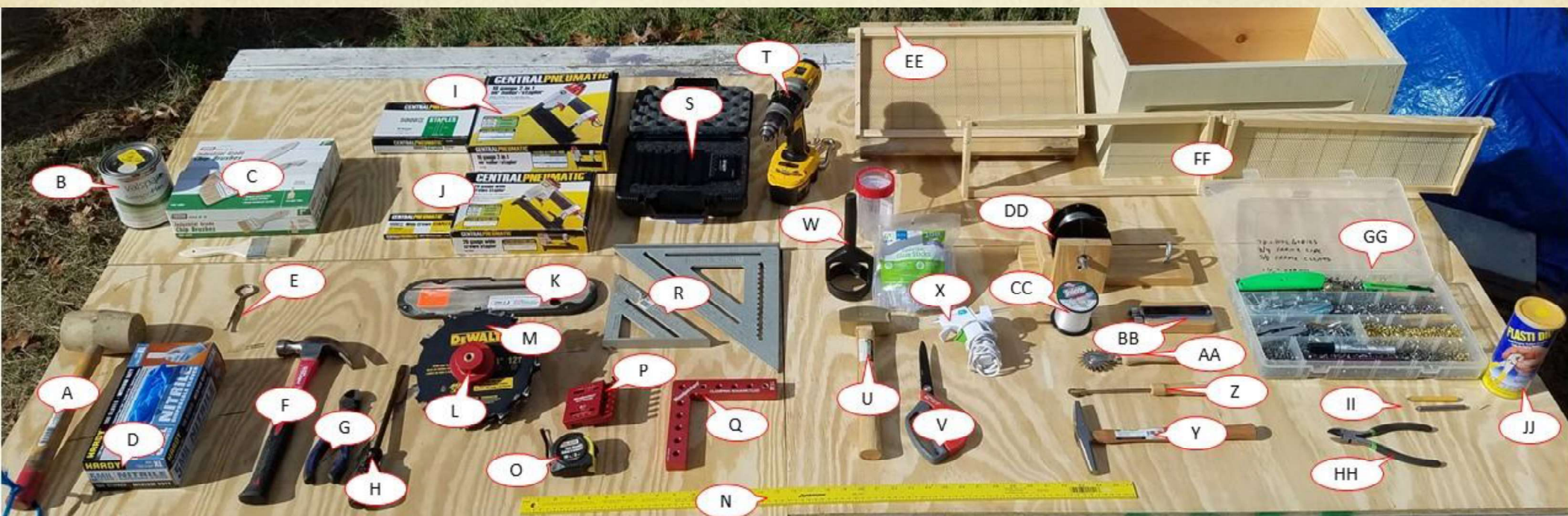
- A. Black and Decker corded leaf blower model # BV3600
- B. WEN 12-Inch Variable Speed Drill Press Model # 4214
- C. Kobalt roller stand Model # SGY-WS5
- D. Bostitch 6-Gallon Single Stage Portable Electric Pancake Air Compressor
- E. Dewalt 10-inch job site table saw. Model# DWE7491RS
- F. Kobalt 42-Inch saw horses

Pictured items:

- G. Dewalt 12-inch sliding miter saw Model # DWS780
- H. Dewalt heavy duty stand model # DWX723
- I. Bag for plastic jars for sugar shaker jar kits
- J. Scrap wood trash can for use in other projects
- K. Trash can for trash
- L. Rubber stall mats

EQUIPMENT FOR MORE ADVANCED BEEKEEPERS

- Make your own woodenware – Hand tools



Pictured items:

- A. Rubber mallet
- B. Mis-tinted latex paint
- C. Harbor Freight 2" paint brushes
- D. Harbor Freight Hardy nitrile gloves
- E. Paint can opener
- F. 16 oz claw hammer
- G. 6 inch diagonal wire cutters
- H. Large flat tip screwdriver
- I. Harbor Freight: Pneumatic nail gun # 63156
- J. Harbor Freight: Pneumatic stapler # 68029
- K. Zero clearance table saw insert plate
- L. Woodpeckers one-time tool: Dado setup fixture
- M. DeWalt 8" dado set
- N. Metal yard stick

Pictured items:

- O. 16' tape measure
- P. Woodpeckers one-time tool: Gap gauge
- Q. Woodpeckers tool: Clamping squares
- R. Johnson squares (7" and 12")
- S. Infinity Tools: Precision setup blocks
- T. DeWalt cordless drill with 1/8" drill bit
- U. 2 lb. brass hammer
- V. Wiss 10-inch general purpose scissors
- W. MSC brand 2 3/4" Arch Punch (for sugar shake jars) – Sugar shake jar is shown behind the Punch
- X. AdTech high temp mini glue gun
- Y. Harbor Freight: Pittsburg 7 oz tack hammer
- Z. Crimp wire groove spur embedder (small head) (Best)
- AA. Crimp wire spur embedder (large head) (worst type)

Pictured items:

- BB. Wood handle foundation wire crimper (Best type)
- CC. 15 lb. fishing line (for cross wiring foundation)
- DD. Metal wire dispenser (homemade) – for foundation cross wires
- EE. Form board (shown with deep hive body on it with fishing line cross wires) – Board is used with metal wire cross foundation wires
- FF. Medium frames with metal cross wires (with and without foundation)
- GG. Nail kit (Plano brand small parts box)
- HH. Diagonal wire cutters
- II. Small tip gromet tool (shown with and without Plasti Dip coating)
- JJ. Plasti Dip coating (keeps tools from rusting)

Medium hive body in background shows the plunge cut dado handles

EQUIPMENT FOR MORE ADVANCED BEEKEEPERS

- Honey extraction
 - Not recommended for 1st year beekeepers
 - A separate presentation is planned for honey extraction – Brief equipment is presented here
 - Methods
 - Crush and strain (destroys the comb)
 - Extractor (reuse the comb)
 - Extractors
 - Manual (hand crank)
 - Electric
 - Radial extractor
 - Tangential extractor
 - *Mine is Maxant 3100P



EQUIPMENT FOR MORE ADVANCED BEEKEEPERS

- Honey extraction
 - Uncapping tank
 - Stainless steel (Maxant is about \$400)
 - *Plastic (Mann Lake is around \$175)
- Uncapping tools
 - Uncapping scratcher / fork
 - Uncapping cold knife
 - Uncapping electric knife
 - Uncapping electric knife with temperature control
 - Uncapping Plane (left or right handed)
 - Uncapping Punch / Roller



