

Promoting Sustainable Beekeeping Practices through
local production of nucs (nucleus colonies) and local queen honeybees

APPENDIX

Hive Assessment Tool

Sample Online Data Collection Form

SARE participant evaluation

SARE queen class evaluation

SARE Press Release

SARE Implementation Year Kickoff Meeting Handout

SARE Welcome letter (Word doc)

SARE Participant Agreement

Overview of SARE Implementation Plan and Simplified Nuc Making Handout

PWRBA Nuc 2011 guidelines

PWRBA Association Sustainability Visual

Ways to Get Bees Handout

Sustainable Beekeeping for Non Beekeepers Handout

Hive Sheet Hive ID _____ Who Inspected: _____ Date/Time: _____

Weather

Today _____ Recently: _____

Blooming

Temperament

☐ Calm ☐ Nervous ☐ Aggressive

Saw Queen

☐ No ☐ Yes

Marked? ____ New? ____ Color _____

Notes: _____

Brood Laying pattern

☐ Beautiful (*Solid & Uniform*)
☐ Mediocre (*intermittent/spotty*) ☐ Poor (*Spotty*)
☐ Hygienic (spotty due to hyg. behavior)

Eggs/Larvae

☐ E No ☐ E Yes ☐ L No ☐ L Yes

Comments: _____

Bee Population ☐ Heavy ☐ Moderate ☐ Low

Excessive drone brood ☐ No ☐ Yes

Drone Brood Removal:

☐ Cut out ☐ Frame out/froze ☐ Mites Present?

Queen cells

☐ No ☐ Yes Frame bottom: # _____

Middle: # _____ Small cups # _____

Disease/Pests

☐ CB ☐ Nosema ☐ EFB ☐ AFB ☐ SHB

☐ Wax Moth ☐ Mites (*count?*) _____

Notes: _____

Food Stores

Honey/Nectar

☐ High ☐ Average ☐ Low ☐ Near brood

Pollen

☐ High ☐ Average ☐ Low ☐ Near brood

Hive Condition

☐ Burr comb ☐ Excessive Propolis ☐ Odor

☐ Moisture ☐ Mold ☐ Damage ☐ Robbing

Other: _____

Actions taken

☐ Fed hive syrup

____ Gal ____ Qt. ____ Ratio

☐ Fed Pollen ☐ Fed fondant/sugar/candy

Comments: _____

☐ Added # ____ **D** ____ **M** ☐ honey supers # ____

☐ Added Excluder

☐ Requeened (*notes*) _____

☐ Reversed brood boxes ☐ Swapped frames

Comments: _____

☐ Added mouse guard ☐ Reduced entrance

☐ Split hive (*new hive #* _____)

☐ Replaced frames

Other: _____

IPM/Medications Added

☐ Apiguard ☐ Formic Acid ☐ Fum B

☐ Powdered Sugar (*mite drop*) _____

☐ Other: _____

Removed

☐ Apiguard ☐ Formic Acid ☐ Fum B

☐ Other: _____

Honey Removal/Extraction

____ # Supers Removed ____ # lbs. Honey Extracted

Recommendations:

☐ Add supers ☐ Split ☐ Replace Queen

☐ Monitor for swarming

☐ Replace Equipment: _____

Other: _____

Observations/Notes:

July 2009 SARE Nuc/Split Hive Inspection Form (Group ABC)

1. WHAT WAS IT LIKE OUT?

Tell us what it was like out the day you inspected and what the weather sun, clouds, rain, wind, temperature, etc.) has been like in the past several weeks.

1. Name and Email

Name

Email

2. Date, Time, Weather, and Blooms

Date

Time of Day in Hive

Weather Today

Weather Recently

Blooming nearby

2. WHAT DID YOU SEE?

This section asks about what you saw when you looked in the hive. Just get a general idea, you do not need to look at every frame. Also, you do not need to find the queen every time you inspect- eggs and young larvae are signs you have a queen.

3. What was the population of bees like?

☐ Low

☐ Normal

☐ High

4. What was the temperament (mood) of the hive?

☐ Calm

☐ Nervous

☐ Aggressive or overly Defensive

5. Did you see:

	No, not sure	No, Did not See	Yes, Very little	Yes, Some	Yes, A lot
Eggs?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Larvae?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. What was the LAYING PATTERN of the brood (consider larvae and capped brood)

☐ Solid and Uniform (Beautiful)

☐ A Little Spotty (Average)

☐ Very Spotty (Poor)

7. What percentage of the center frames had capped brood?

☐ 100 %

☐ 75%

☐ 50%

☐ 25%

☐ less than 25%

8. How much FOOD and POLLEN STORES were in the brood boxes?

	Low (very little)	Average (four or less)	High (several)
CAPPED HONEY	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
NECTAR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
POLLEN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

July 2009 SARE Nuc/Split Hive Inspection Form (Group ABC)

9. If you started out or added any new foundation, how much comb has the nuc/split hive drawn out?

☐ N/A ☐ Little to None ☐ Some ☐ Most ☐ All

10. Did you see the queen?

	Yes	No	Not Sure
Saw Original Queen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saw New Queen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Did you see Queen Cells? (check all that apply)

☐ NO, did not see any Queen Cells ☐ YES, saw cells in the middle of the frame ☐ YES, saw cells on the bottom of the frame

12. Were there any signs of disease? (check all that apply)

☐ No, no signs of disease ☐ Yes, DYSENTERY/NOSEMA (lots of brown streaks) ☐ YES, SMALL HIVE BEETLE ☐ Yes, CHALK BROOD ☐ YES, MITES

Other (please specify)

13. How much food was consumed (since last time fed)?

3. WHAT DID YOU DO IN THE HIVE?

This section asks about what you did in the hive, the actions you took.

14. Did you FEED the nuc/split hive (syrup,pollen,honey bee healthy, and/or hard sugar or fondant)?

	SUGAR SYRUP 1 to 1	SUGAR SYRUP 2 to 1	Honey B Healthy	POLLEN SUPPLEMENT OR SUBSTITUTE	HARD SUGAR OR FONDANT
YES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. Did you ADD a hive body? (check all that apply)

	N/A	ADDED	REMOVED
HIVE BODY (Deep)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HIVE BODY (Medium)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SUPPLEMENTAL HIVE BODY (medium on top of 2 deeps)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Did you ADD OR REMOVE any honey supers? (check all that apply)

	N/A	ADDED	# added	REMOVED	# removed
MEDIUM HONEY SUPER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHALLOW HONEY SUPER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

July 2009 SARE Nuc/Split Hive Inspection Form (Group ABC)

17. Did you reverse hive bodies?

☐ N/A

☐ Yes

☐ No

18. Did you move frames or replace frames within the nuc/split hive or between hives?

☐ Yes

☐ No

Please describe what you did and why

19. Did you use any IPM (Integrated Pest Management) Methods?(check all that apply)

☐ Powdered Sugar treatment

☐ Drone Comb (froze or scratched open)

☐ Beetle Traps

☐ Mite count

☐ Other (please specify) or Describe from above

20. Did you APPLY or REMOVE any medication? (check all that apply)

	Api Life Var/Apiguard	Apistan	Formic Acid	Grease Patties	Terramycin	Fumagillan	Menthol	OTHER
ADDED/APPLIED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
REMOVED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

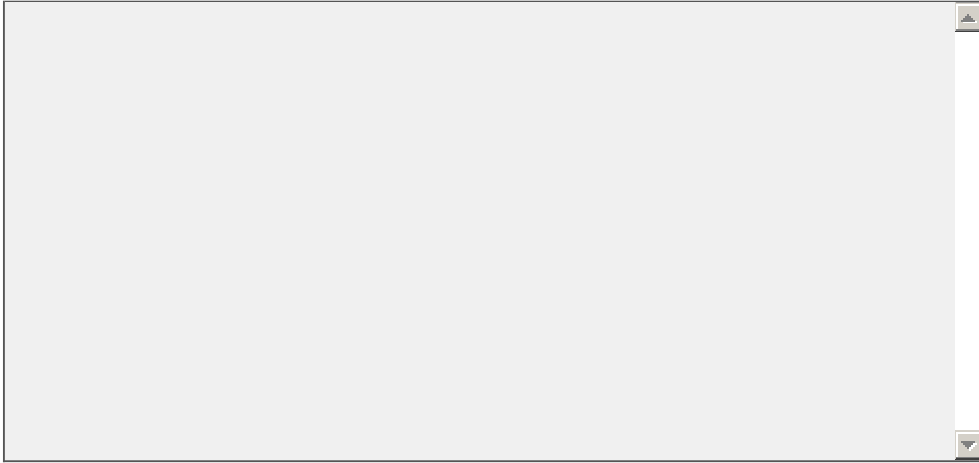
Other (please specify)

4. SUMMARY AND RECOMMENDATIONS

This section is for you to summarize what you saw and did today in the hive. You can also make comments about the shape of your equipment, apiary, and recommendations about future hive management.

21. SUMMARY OF YOUR OBSERVATIONS and ACTIONS

22. RECOMMENDATIONS, EQUIPMENT NEEDS, ETC



Prince William Regional Beekeepers
Sustainable Agriculture Research and Education (SARE)
Evaluation and Feedback

1. What were some of the best things about participating in the SARE project?
2. What were some of the most challenging things about participating in the SARE project?
3. What did you learn by participating in SARE?
4. Do you think that you improved your ability to assess a hive during hive inspections?
5. How has your beekeeping management changed as a result of participating in the SARE project?
(*please describe*)
6. Do you continue to make nucs?
7. Have you sold, given away, or bartered nucs? If yes, about how many?
8. Are you more likely to seek out regional or “northern” sources of queen bees? Queen bees with specific attributes such as VSH, etc.?
9. Are you more likely to seek out regional sources of replacement bees such as nucs?
10. Have you taught other people anything that you learned in the SARE project? If yes, what kind of things?
11. Did you try any queen rearing (*include letting your own hive requeen itself, taking frames of queen cells out of hive, grafting, and any other method*)?
12. If you did any queen rearing, how successful were you?
13. Did you sell or give away any queens, queen cells, or virgin queens? If yes, about how many?
- 14. Please offer any additional comments**

Prince William Regional Beekeepers
Sustainable Agriculture Research and Education (SARE)
Queen Rearing Class Evaluation and Feedback

1. Did you try any queen rearing (*include letting your own hive requeen itself, taking frames of queen cells out of hive, grafting, and any other method*)?
2. If you did any queen rearing, how successful were you?
3. If yes, did you sell or give away any queens, queen cells, or virgin queens? If yes, about how many?
4. Are you more likely to seek out regional or “northern” sources of queen bees? Queen bees with specific attributes such as VSH, etc.?
5. How has your beekeeping management changed as a result of participating in this class? (*please describe*)
6. Have you taught other people anything that you learned in this class? If yes, what kind of things?
7. What were some of the best things about participating in this class?
8. What were some of the most challenging things about participating in this class?
9. **Please offer any additional comments**

Press Release

Contact: Karla Eisen (703) 314-8530

FOR IMMEDIATE RELEASE

March 28, 2008

**Prince William Regional Beekeepers Association Awarded
Sustainable Agriculture Research and Education Grant to
Promote Sustainable Beekeeping Practices.**

PRINCE WILLIAM COUNTY, VA, APRIL, 2008: The Prince William Regional Beekeepers Association (PWRBA) has recently been awarded a Southern Sustainable Agriculture Research and Education (SARE) grant to Promote Sustainable Beekeeping Practices through the local production of nucs (nucleus colonies) and local queen honeybees. Out of over seventy grants submitted the association was one of only 10 grants awarded.

The goals of the project are to:

- 1) Increase the knowledge and skill of local beekeepers in producing nucleus colonies (nucs) from existing hives and to test the viability of hives made from locally produced nucs to those made from packaged bees;
- 2) Engage local beekeepers in the study of queen rearing and initiate local queen rearing efforts and

3) Promote sustainable beekeeping practices overall by emphasizing integrated pest management (IPM) and organic beekeeping practices throughout all of our educational and outreach efforts.

The project will test the viability of hives started from local nucs with locally reared queen bees compared to those raised with non-local queen bees, as well as to hives started from packaged bees. Beekeepers will participate in workshops on nuc production and queen rearing and be provided materials to make nucs from their existing apiaries. Cooperators will be available for ongoing consultation as needed.

Each beekeeper who agrees to “field” the project will get at least one “hive starter set” consisting of one nuc and one package of bees. They will be responsible for purchasing the rest of the materials needed to build full hives, supplemental feed, treatments, and commit to collect and record data on the hive assessment form. Beekeepers will receive an honorarium for their efforts.

Any beekeeper interested in any aspect of this project are urged to contact the Prince William Regional Beekeepers Association at PWSBeekeepers@gmail.com or (703) 314-8530.

-End-

**Prince William Regional Beekeepers Association
Southern Sustainable Agriculture Research and Education (SARE) Grant**

SARE Implementation Year Kickoff Meeting- March, 2009

What are the goals of the SARE project and why are we doing this?

- To increase the knowledge and skill of local beekeepers in producing nucleus colonies (nucs) from existing hives.
- To engage local beekeepers in the study of queen rearing and initiate local queen rearing efforts.
- To promote sustainable beekeeping practices overall by emphasizing integrated pest management (IPM) and organic beekeeping practices throughout all of our educational and outreach efforts.

Our approach to promoting sustainable beekeeping is centered on our ability to utilize existing honeybee hives to produce sufficient nucleus colonies (nucs) and to use nucs to replace dead or diseased hives instead of Southern packages. ¹

What is our “experiment”?

- Test the viability of hives made from locally produced nucs to those made from “packaged bees”
- More specifically, test the viability of hives started from local nucs with locally reared queens compared to those raised with non-local queens, as well as to hives started from packaged bees.
- Secondary goal to increase our skills in queen rearing does not have any “experiment” associated

What is success?

- Will hives made from nucs develop into different/stronger/more viable hives?
- Will we become more comfortable making and using nucs for Spring Management, Increases, Overwintering?
- Will we be able to provide nucs out of apiaries in increasing numbers for the new students in 2010 and beyond?
- Will we become more proficient rearing our own Queens? (long term goal)
- More ideas on what success means?

How will we measure our progress?

- Hive Assessment Form (required)
- Other “measures” include Qualitative notes and records, Photos, Forum discussions, etc.

What tools do we have to help?

- Books, Articles, Educational Videos, Nuc induction board, cardboard nuc boxes, Queen muff, nuc boxes, frames and foundation, queen induction cages, queen rearing supplies, etc.

**Prince William Regional Beekeepers Association
Southern Sustainable Agriculture Research and Education (SARE) Grant**

- Cooperators and Consultants (Dr. Fell, Pat and Jim Haskell, Mike Palmer, etc.)
- More Experienced Club Members and Friends

What are the Outreach Requirements?

- Document our process and share the information with other beekeepers (ideas include brochures, fact sheets, articles, etc.)
- Semi Formal Presentations
 - VSBA?
- Other ideas?

What are we asking you to do?

- Take some bees from your apiary and start a hive with a new Queen by first making a nuc or a split (*we have live nucs to supplement those who do not have viable hives this year*)
- Compare the hive made from a nuc or split to a hive started from a Southern package
- Take good notes and photos
- Participate in the on line forum
- Help develop and Complete the hive assessment forms
- Help Outreach and Education to the beekeeping community by spreading the word and working on our outreach
- Work on any other ideas you have to promote sustainable beekeeping

¹ TEXT FROM OUR PROPOSAL:

Currently most Virginia beekeepers rely on purchased “package bees” and queen bees to restart their hives or establish new hives. These generally come from commercial suppliers in the South and are often less suitable for the local climate and are less effective in honey production and pollination. Many hives started with packaged bees do not survive the winter. Packaged bees are randomly “shook” out of existing hives and put together with mass produced queen bees without any regard for sustainable characteristics. They are also increasingly at risk of being affected by severe pests including the Africanized honey bee (AHB) and small hive beetle (SHB). The ever increasing potential for the accidental introduction of AHB into Virginia would not only affect bees, but pose a significant danger to domesticated animals and the general public. The decline of honeybee health and survivability in Virginia directly affects not only the sustainability of beekeeping and honey production at all levels (hobbyist, sideliner, and commercial pollinator) but the production of specific agriculture crops that rely on honeybees for pollination (such as cucumbers, melons, apples, etc.).

The project is designed to positively influence the natural resource base upon which beekeeping and local pollination depends and to support the viability of local beekeeping operations. Many beekeepers feel that the sustainability of beekeeping hinges on new ways of operating that depend on our ability to produce a consistent supply of local honeybees. There is an active movement in Virginia towards strengthening the local supply of honeybees through the use of nucleus colonies (nucs) made from existing local hives and reducing dependence on packaged bees from out of state sources. A local supply of honeybees directly contributes to sustainable beekeeping and increases the potential to develop “survivor stock” (bees that are better adapted for the local conditions).



March 28, 2009

Dear PWRBA SARE Participant,

Welcome to the SARE project! We are excited to finally get going with some live bees after planning and talking about this for so long. In a few weeks we will have the hive assessment form available in hard copy and web based (on survey monkey), but until that time, we ask you to keep notes on what is going on with the hive you are starting from the package of bees.

STEP ONE starts today! All of the groups will start one hive from one package of Georgia reared bees. Please complete 1) the enclosed package installation form and 2) please sign and return the PWRBA SARE agreement form if you did not already do so at the package pick up on Saturday.

The next step depends on which group you are in. The SARE project consists of three groups. Your group is written on the outside of the yellow folder. There is still some room for flexibility to change groups depending on the condition of your hive.

GROUP A will start a new hive from locally produced nucs using non-locally reared queens. They will start a nuc or split in mid April. Queens for Group A are scheduled to arrive Via Fed Ex (to Karla's) on Friday April 17th from Koehnen Apiaries, Glen, CA.

GROUP B will start a new hive from locally produced nucs using local queens. They will start a nuc or split in mid May. Queens for Group B nucs are scheduled to be ready on Sunday, May 17th from VP Queens, Frederick, MD. If Group B has to make a nuc or split before their queen arrives due to congestion in their hive, they will requeen that nuc or split with this SARE provided queen.

GROUP C will start a hive from locally produced nucs using locally reared queens. Group C will not make their own nucs/splits, but instead they will get a live Nuc in late April with an overwintered local Queen. Group C nucs will be ready on or about May 2nd from Paul Kinser's Apiary in Luray, VA. We will bring them up to Gainesville/Haymarket for pick up.

All dates are subject to change. Meanwhile, have a good time, learn a lot, take notes, take pictures, and keep in touch.

Thanks for being part of the SARE project!

Karla Eisen

John Strecker



PWRBeekeepers@gmail.com



www.PWRBeekeepers.com



SARE PARTICIPANT AGREEMENT FORM:

Prince William Regional Beekeepers Association (PWRBA) and the Southern Sustainable Agriculture Research and Education (SARE) are providing equipment, honeybees, and queen bees in order to start one hive of bees from a package of bees and one hive of bees from a nuc or split, or to start one hive from an actual live nuc. In accepting receipt of this equipment, honeybees, and queen bees the undersigned agrees to:

- 1) Participate in SARE meetings or workshops to obtain instruction on the SARE goals, mission and protocol.
- 2) Install 1 package of bees into a hive and grow into a full hive
- 3) For groups A and B, make a nuc or split from your hive (or a friend's hive) using the SARE provided queen and grow that nuc or split into a full hive. *If you need to make a nuc or split before your SARE queen arrives, you agree to requeen that nuc/split with the SARE provided queen.*
- 4) For group C, obtain a live nuc from SARE in a nuc box and grow that nuc into a full hive.
- 5) Collect data on PWRBA SARE project data collection forms (hard copy or web based) at package installation, nuc/split making, and at regular "hive assessments" intervals for the duration of the SARE grant (approximately April 2009 through April 2010) with the exception of the winter months when opening up the hive is not safe for the bees. You will receive a small honorarium (approx. \$75).
- 6) Indemnify, defend, and hold harmless, the Prince William Regional Beekeepers Association, Southern SARE, its officers, agents, and employees from any claims damages and actions of any kind or nature, whether at law or in equity, arising from the equipment, honeybees, or queen bees provided or the use thereof.
- 7) Understand that failure to collect required data in a timely fashion will jeopardize the PWRBA SARE study and any future attempts for PWRBA to secure SARE funding.

Signature

Date

Print Name

Promoting Sustainable Beekeeping Practices through local production of nucs (nucleus colonies) and local queen honeybees

*Overview of Implementation Plan and Simplified Nuc Making
Feb./March 2009*

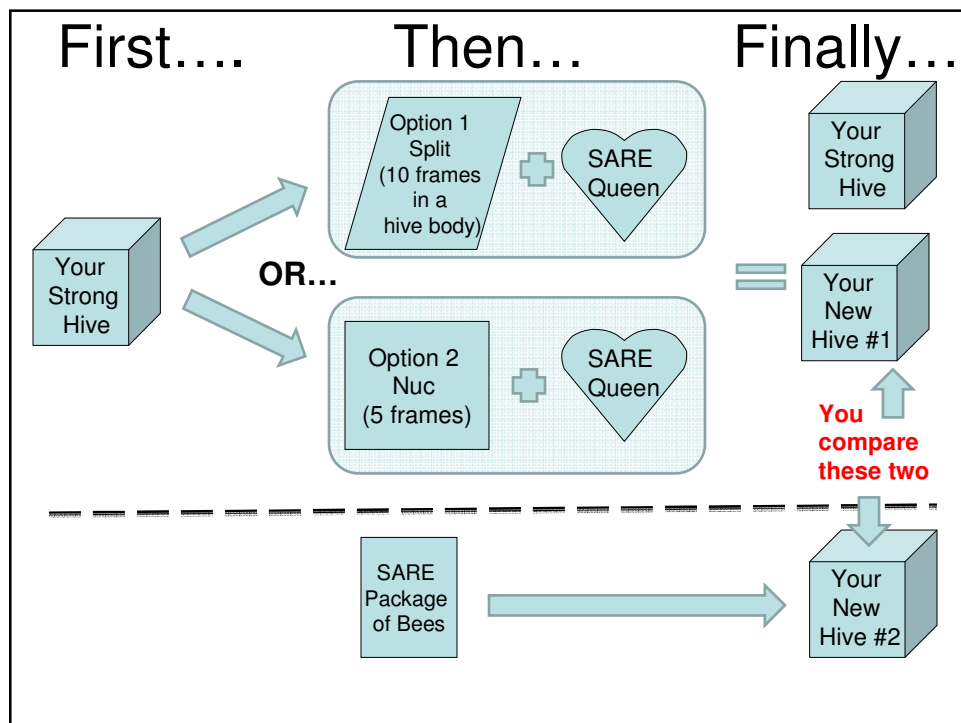


WHY NUCS? WHY NOW?

- **Local Bees = Better Adapted Bees for Winter**
 - There is an active movement in Virginia towards strengthening the local supply of honeybees through the use of nucleus colonies (nucs) made from existing local hives and reduce dependence on packaged bees from out of state
- **This year's winter survivors = next year's breeding stock**
 - A local supply of honeybees directly contributes to sustainable beekeeping and increases the potential to develop "survivor stock" (bees that are better adapted for the local conditions).

What is the SARE “experiment”?

- To test the viability of hives
 - made from locally produced nucs
- Vs.
 - those made from “packaged bees”
- How?
 - Take some bees from your apiary and start a new hive
 - Make a nuc or a split; we will GIVE you a NEW Queen --- then grow that nuc or split into a full hive
 - Compare the hive made from your nuc or split to the hive started from a Southern package of bees



SARE GROUPS

- GROUP A : test the viability of hives started from locally produced nucs with non-locally reared queens
Start Nuc mid April with Queen
- GROUP B: test the viability of hives started from locally produced nucs with local queens.
Start Nuc mid May with Queen
- GROUP C: test the viability of hives started from locally produced nucs with locally reared queens.
Get Live Nuc late April with overwintered local Queen

SARE DATES: Just Around the Corner!

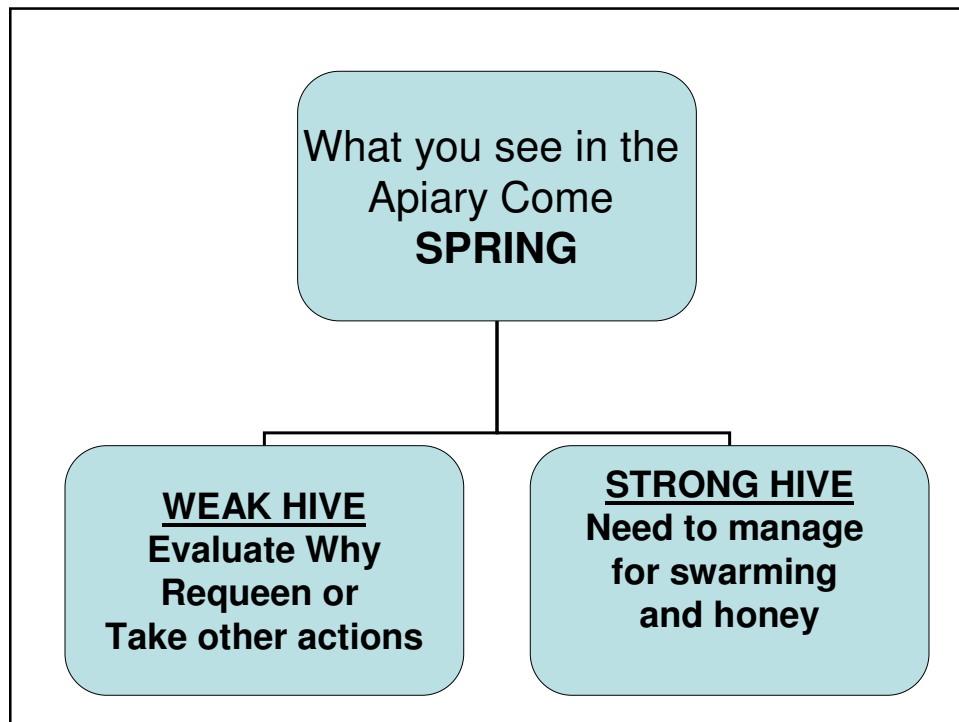
- **Apr 5th** = Package Bees arrive for Groups A, B, C (EVERYONE!)
 - Bee Packages Arrive at Eleanor C. Lawrence Park (via Dane Hannum & Larry Kelly) from Wilbanks Apiary in Baxter, GA
- **Apr 17th** = Queens for Group A nucs arrive
 - Via Fed Ex (to Karla's) from Koehnen Apiaries, Glen, CA
- **May 2nd** = Group C nucs ready for pick-up
 - Overwintered Live nucs ready at Paul Kinser's Apiary in Luray, VA
- **May 17th** = Queens for Group B nucs ready for pick up
 - Queens ready for pick up from VP Queens, Frederick, MD, Adam Finklestein and Kelly R.

DATES SUBJECT TO CHANGE

SARE Experiment al Group	Method Used	Materials Needed	
		YOU PROVIDE...	SARE GRANT PROVIDES...
Comparison A	Make Early Spring (April, 2009) Nuc/Split and Compare to Hive started from package (<i>package will arrive Early Spring/ April</i>)	<input checked="" type="checkbox"/> Bees from your current hives (or local beekeeper) to go into your nucs* <input checked="" type="checkbox"/> Hive bodies, Hive Tops, Bottom Boards, etc. for 2 FULL HIVES (one is future home for nuc, and the other is for your package) <input checked="" type="checkbox"/> Data worksheets during process	<input checked="" type="checkbox"/> NUC BOX, 5 Replacement Frames, and Foundation (VA Bee Supply) <input checked="" type="checkbox"/> QUEEN for the NUC/SPLIT, (Imported from South) April, 2009 <input checked="" type="checkbox"/> 1 box of packaged bees, with queen (Imported from South) April, 2009 <input checked="" type="checkbox"/> Honorarium
Comparison B	Make Late Spring (Mid May, 2009) Nuc/Split and Compare to Hive started from package (<i>package will arrive Early Spring/April</i>)	<input checked="" type="checkbox"/> Bees from your current hives (or local beekeeper) to go into your nucs* <input checked="" type="checkbox"/> Hive bodies, Hive Tops, Bottom Boards, etc. for 2 FULL HIVES (one is future home for nuc, and the other is for your package) <input checked="" type="checkbox"/> Data worksheets during process	<input checked="" type="checkbox"/> NUC BOX, 5 Replacement Frames, and Foundation (VA Bee Supply) <input checked="" type="checkbox"/> QUEEN for the NUC/SPLIT, (raised locally, VP Queens) mid May, 2009 <input checked="" type="checkbox"/> 1 box of packaged bees, with queen (Imported from South) April, 2009 <input checked="" type="checkbox"/> Honorarium
Comparison C*	BUY Live Nuc Late Spring (Mid May, 2009) (do not make your own nuc) and Compare to Hive started from package (<i>package will arrive Early Spring/April</i>)	<input checked="" type="checkbox"/> Finished (Live) Nucs purchased from a 3 rd party supplier (\$30 paid by you) (purchased locally with locally reared overwintered Queens) late April, 2009 <input checked="" type="checkbox"/> Hive bodies, Hive Tops, Bottom Boards, etc. for 2 FULL HIVES (one is future home for nuc, and the other is for your package) <input checked="" type="checkbox"/> Data worksheets data during process	<input checked="" type="checkbox"/> 1 box of packaged bees, with queen (Imported from South) April, 2009 <input checked="" type="checkbox"/> Honorarium

What else SARE wants you to do

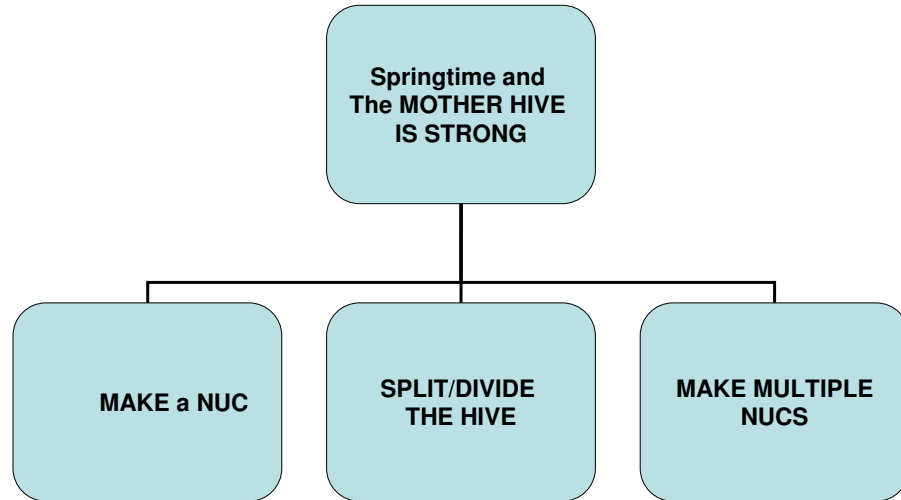
- Help develop and complete the hive assessment forms
- **PLEASE BE DETAILED (IN NOTE TAKING)!**
- Take good notes and photos
- Participate in the on line forum to share info. And ask questions
- Help provide Outreach and Education to the beekeeping community by spreading the “gospel of nucs” and working on our outreach plan
- Work on any other ideas you have to promote sustainable beekeeping



WAYS TO INCREASE the Number of Hives You Have

- Buy commercial packages and nucs
- Make nuc from a strong hive
- Make full split/divide from a strong hive
- Use a “home grown” queen from a queen cell
- Use a purchased queen
 - Local (late Spring)
 - Non Local (early Spring)
- Use an overwintered nuc

Increase Hives by Nucs or Splits in Spring



To Make a NUC

- 1) Find queen in the mother hive (MH) and set her aside so that you do not take her over to the nuc (at end put her back into the MH)
- 2) Take out 2 frames of brood (has nurse bees who will not leave the brood, they stay to take care of it, so those nurse bees will stay in the nuc)
- 3) Take out 2 frames honey/pollen
- 4) Put in 1 frame drawn comb (if possible) or foundation
- 5) Leave nuc queenless for one day (recommended - can be less)
- 6) Introduce new queen in to nuc
- 7) FEED for 3-4 weeks (can use division board feeder in place of 1 frame)
- 8) Watch for build up and overcrowding- may need to put on a 2nd nuc story or move into a full hive body sooner than you think
- 9) PROTECT by reducing entrance
- 10) If nuc remains in apiary, turn entrance to side or rear from MH Hive
- 11) If moving nuc, move more than 3 miles away from Mother Hive
- 12) Replace frames taken out of Mother Hive with foundation or drawn comb (if foundation, feed if no nectar flow)

To make a Split/Divide

- 1) Find queen in the mother hive (MH) and set her aside so that you do not take her over to the split (at end put her back into the MH)
- 2) Take out 4-5 frames of brood (has nurse bees, who will not leave the brood, they will stay to take care of it, so those nurse bees will stay in the split)
- 3) Take out 3-4 frames honey/pollen
- 4) Put in 2 frames drawn comb
- 5) Leave split queen less for one day (recommended -can be less)
- 6) Introduce new queen
- 7) FEED for 3-4 weeks (can use division board feeder inside split)
- 8) Watch for build up and overcrowding
- 9) Protect by reducing entrance
- 10) If split remains in apiary, turn entrance to side or rear from MH
- 11) Split can be placed on top of Mother Hive (using a double screen board to separate)
- 12) If moving split, move more than 3 miles away from Mother Hive
- 13) Replace frames taken out of Mother Hive with foundation or drawn comb (if foundation, feed if no nectar flow)

*double nucs on right
 *use of nuc shim with hole taped
 *opposite facing entrances



*Nuc with a division board feeder (must always be on side)



- * entrance reduced to small hole
- *disc entrance option
- * nuc screened bottom board on top of
nuc solid bottom board



Prince William Regional Beekeepers Association (PWRBA)
Nuc (Nucleus Hive) Guidelines

What is a Nuc for sale?

A nuc is a miniature hive- pollen and honey, and a queen, larvae and young bees. One benefit of nucs is that the bees and the queen have been together for a period of time and the queen is accepted by the bees and she is already laying eggs.

There is no industry standard on what constitutes a nuc for sale, only general guidelines. Most nucs are sold in 5 frame boxes - deep or medium. When you buy a nuc, you should look for, as an absolute minimum, at least 3 full frames, 2 of which should be brood and at least 1 should be drawn out and contain honey/pollen mix. Most nucs are 4 or 5 frames- one of which is an empty frame. Most nucs will need to be transferred into a full hive body immediately.

- ❖ Try to think of a nuc like a potted seedling that should eventually be transplanted. You do not keep bees in a nuc indefinitely. Nucs are transferred into a normal hive and delaying this transfer into a hive could result in swarming later.
- ❖ The queen in the nuc should be new within the last year and should show evidence of laying eggs in the nuc. Ideally there would already be her capped brood in the nuc.
- ❖ Spend some time talking with nuc suppliers. There is great variety in what suppliers are selling. Be sure you understand what you are purchasing, far enough ahead, so you can plan effectively. Ask about:
 - 1) nuc size (# of frames & frame make up)
 - 2) costs
 - 3) if they require frame exchange,
 - 4) preferred method of transport (container, bring your own box, borrow, etc.)
 - 5) clearly specify deep or medium hive body size so that you know what you are ordering.
- ❖ Most suppliers require pick up at their location. The nuc is your responsibility after you pick up.
- ❖ 2011 Nuc prices are expected to range from \$85 to \$150. State law requires nucs to be inspected within 6 months prior to sale.

Prince William Regional Beekeepers Association (PWRBA)

Nuc (Nucleus Hive) Guidelines

What makes a nuc a "local or regional" nuc?

Many beekeepers have definite opinions about bees bought locally vs. from several states away. There are various definitions about what constitutes a local/regional nuc and if the bees or the queen, or both determine what is a local/regional nuc. Consider where the bees and queen are from and if they are adapted well to produce in your area.

Ask suppliers directly about the make up of their nucs, where the bees come from, where their queens are from, and what traits the queen has (such as hygienic behavior). Nucs are generally made in one of these ways:

- 1) from existing local/regional bees with a new local/regionally reared queens
- 2) from existing local/regional bees using a new Southern, CA or HI queen.
- 3) from "Snow Bird" bees- local/regional bees overwintered in the South; split using a new Southern, CA, or HI queen and brought back up North
- 4) from packaged bees hived in a nuc box
- 5) from existing local/regional bees made up in the summer of the prior year and "Over Wintered" in this area - meaning that a new queen went through the winter in this area either in a nuc or a hive. Queen source varies.
 - ❖ Over Wintered nucs are often described as having "proven" or "tested" queens because queen proved she could survive winters in this area.
 - ❖ Over Wintered nucs usually develop very quickly and because of this, they are also more prone to swarm, especially when put in on new foundation. They do best when hived on some drawn comb.

Timing

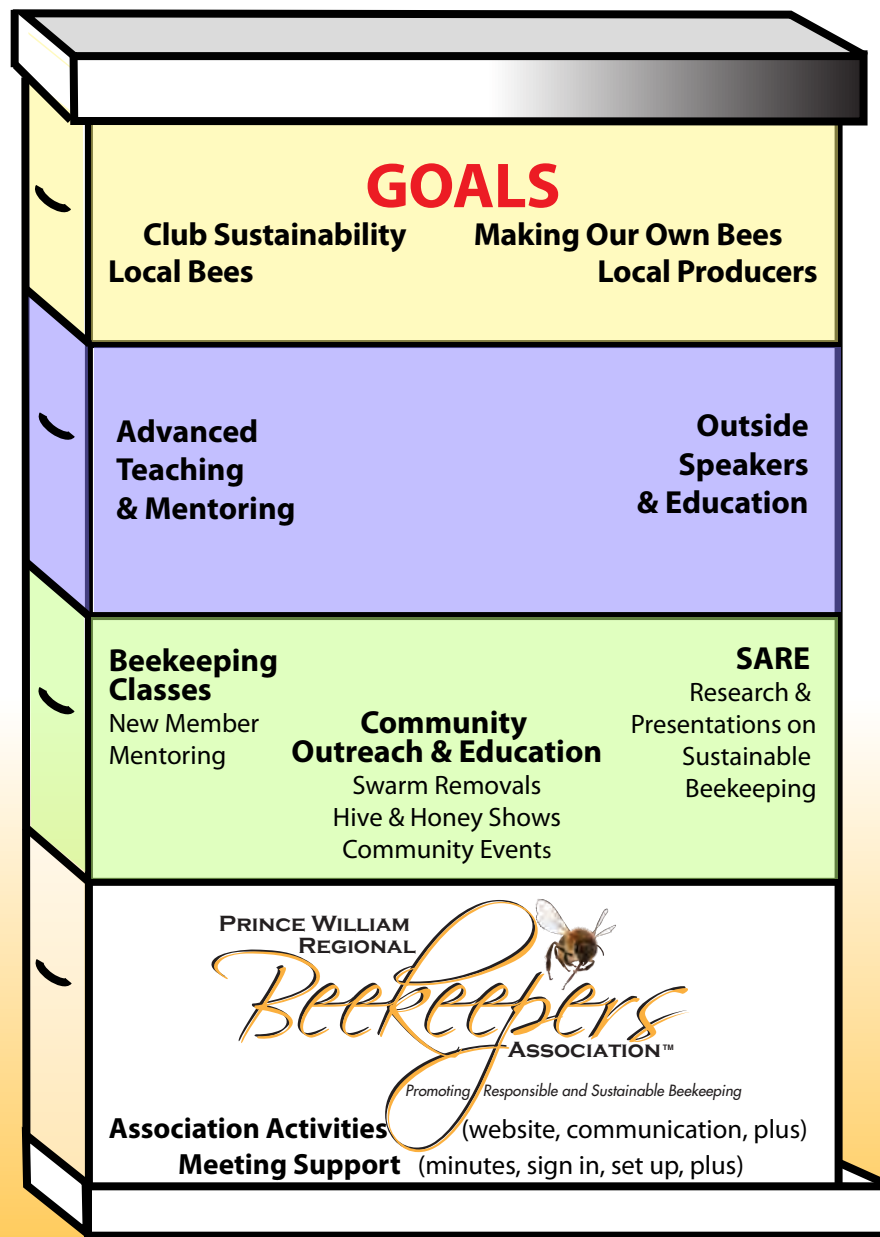
Queen availability affects when nucs can be made and varies depending on the type of nuc. Consider that newly reared local/regionally reared queens in this area are not available before May 15th



Everyone Can Play a Role...

Where Do YOU Fit in Our Colony?

**How Do You See the Path
Forward To Our Goals
of Sustainability?**



Ways to Get Bees



Acknowledgements

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- Most photos are credited to Karla except for some great shots from the Swarm and Cut Out slides which were taken by Bob Reikowski, Mike Kestner, Keith Fletcher, and Dave Wright
- Feel free to use any or all of this presentation, but it would be nice to credit the source.

Ways to get bees

- Packaged Bees
- Nucs (Nucleus Colonies)
- Swarms
- Cut Outs and Trap Outs

Packaged Bees

- Packaged Bees come in a 3 pound box
- Feed is provided in a sugar syrup can
- Queen is in a separate cage
- Bees are shaken into the hive
- Queen is placed into new hive in cage and the bees release her



Packaged Bees: Pros and Cons

- Available early in season
- Usually arrive close to schedule
- Moderate cost (+/- \$75)
- Do well started on new foundation
- Gentle beginnings... ability to watch hive build up from scratch
- Fun to install
- Not locally produced
- Produced in areas with higher incidence of small hive beetle
- Queens produced significantly closer to Africanized bee genetics
- Queens are commercially produced, early season mated, and untested
- Queen and bees are not acquainted
- Higher supercedure rates
- Higher incidence of laying workers

Nucs (Nucleus Hives) in a nutshell

- One box nucs are “mini hives” consisting usually of 3 frames of brood and larvae, 1-2 frames of pollen & honey, & 1 frame of drawn comb or foundation, bees and a laying queen
- Most nucs are produced in the Spring by pulling frames out of existing hives (“Splits”) & putting in a new queen
- Some nucs are “Over Wintered” – produced in the Summer & overwintered –the next year they have a “tested” queen
- Some nucs are “Snow Birds”- spend the winter in the South, then moved back up North
- State law requires inspection before sale
- Must physically pick up nuc (no shipping)
- Cost varies (\$100- \$150)

Nucleus Hives



Nucs: Pros and Cons

- Organic unit- bees and laying queen are functioning together
- Expand rapidly- Nucs catch up and often out produce packaged bees
- Less chance of early supercedure, laying workers or drone laying queen
- Available regionally- ability to know producer
- No standards (# of frames, quality, etc.)
- Many Spring splits/nucs use commercial queens (not regional, untested queens)
- Overwintered nucs more prone to swarm especially when put in on foundation
- Possibility of spreading disease

Understand what you are getting when you buy a nuc

- Be clear DEEP or MEDIUM size
- How many frames of brood, honey/pollen, etc.?
- Frame exchange required?
- Transport (cardboard box, hive body, etc.)
- Laying Queen (recommend that newly made up nucs not sold until evidence of new queen laying)
- Queen Source (regionally produced, commercially produced, traits such as VSH, etc., overwintered)
- Nucs expand rapidly- need to have hive equipment ready
- Be Knowledgeable of what you are buying (some nucs are really just packaged bees put into a nuc box).

Swarms

- Swarms are the naturally occurring way that honeybees reproduce
- Hive raises a new queen- and then half of the hive leaves usually with the old queen
- “After swarms” occur with mated and unmated queens

Swarms



Swarms: Pros and Cons

- Free
- Usually develop (and draw out comb) fast
- Usually very gentle
- Fun and exciting to see and catch
- Unknown queen genetics
- May have unmated/ virgin queen
- Potential to abscond
- Can be risky to catch
- Unknown Availability

Cut Outs and Trap Outs

- Existing bee hives that exist in homes, walls, trees, and other structures
- Must be physically cut out or trapped out-
Removed from their home and placed into frames and hives

Cut Outs and Trap Outs



Cut Outs & Trap Outs: Pros and Cons

- Free
- Established hive, organic unit of bees, brood and queen
- Unknown queen genetics
- May not get queen
- Potential to abscond
- Bees can be defensive
- Can be difficult to obtain, time consuming, and require special tools and carpentry skills
- Unknown Availability

QUESTIONS????

Sustainable Beekeeping : Overview for Non Beekeepers



Sustainable Beekeeping in Context: Plight of Virginia Beekeepers Study

- State Senate Joint Resolution requested VDACS to study Virginia Beekeepers, report on problems and suggest initiatives to stimulate recovery of beekeeping industry
- Selected Findings (SD #20 2006):
 - Managed beehives decreased 50% since mid 1980's
 - Average colony loss 30% (past 5 years)
 - Honeybee colony health major reason for loss (mites, nutrition, nosema, etc.)
 - Replacement queen bees are purchased out of state and most often from states with AHB
- Result of Study: Funded Cooperative Extension four initiatives
 - Promote Integrated Pest Management (IPM)
 - Support Regional Queen Rearing
 - Promote use of honeybees by farmers for pollination
 - Implement risk management programs for AHB

Sustainable Agriculture?

- ▣ Sustainable agriculture seeks to provide more profitable farm income, promote environmental stewardship, and enhance quality of life for farm families and communities. (Cooperative State Research, Education, and Extension Service -CSREES)
- ▣ Sustainable agriculture refers to farming methods that conserve the environment by minimizing damage to soil, water sources, species habitat and other natural resources. (www.america.gov)

Sustainable Agriculture Research and Education (SARE) Vision and Mission

- ▣ SARE's **vision** is an enduring American agriculture of the highest quality. This agriculture is profitable, protects the nation's land and water and is a force for a rewarding way of life for farmers and ranchers whose quality products and operations sustain their communities and society.
- ▣ SARE's **mission** is to advance – to the whole of American agriculture – innovations that improve profitability, stewardship and quality of life by investing in groundbreaking research and education.

Sustainable Beekeeping?

- ❑ Utilize a Integrated Pest Management (IMP) approach of organically based methods (such as powdered sugar, thymol, formic acid, screened bottom boards, etc.)
- ❑ Increase hives by making nucleus colonies (nucs) out of existing hives instead of importing local packages from out of State
- ❑ Use locally reared queen bees from existing well performing honeybee stock
- ❑ Provide ongoing education, training and mentoring of new and existing beekeepers
- ❑ Outreach and educate community about honeybees and beekeepers.

PWRBA SARE PRODUCER GRANT

**“Promoting Sustainable Beekeeping Practices
through local production of nucs (nucleus colonies)
and local queen honeybees”**



SARE Producer Grant: Grants between \$1,000 and \$15,000 to conduct research, marketing and demonstration projects and share the results with other farmers and ranchers.

What is the SARE “experiment”?

- ❑ To test the viability of hives
 - made from locally produced nucsCompared to
 - those made from “packaged bees”
- ❑ How?
 - Take some bees from existing apiary and start a new hive
 - ❑ Make a nuc or a split with a NEW Queen --- then grow that nuc or split into a full hive
 - ❑ Compare the hive made from nuc or split to the hive started from a Southern package of bees

What is a Nucleus Colony (nuc)

- ❑ A “mini hive” with an already established organization that allows for rapid build up
- ❑ Made up of honeybees in all stages of development as well as food (honey) a laying queen bee that has “proven” her acceptance by the hive and enough bees to cover the nuc frames.
- ❑ Made by taking frames of bees, bee brood and honey out of existing hives and introducing a new queen bee. In Spring, the “mother” hive is able to replace this loss within 2-3 weeks.

Nuc Photos



Packaged Honeybees



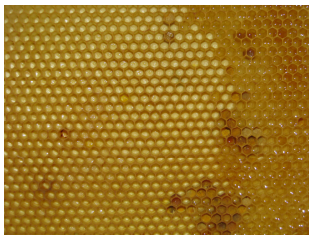
WHY NUCS? WHY NOW?

- ❑ Made from local bees
- ❑ More sustainable supply of bees
- ❑ Local return on investment and/or small business opportunity
- ❑ Less threat of importing AHB
- ❑ Less risk of initial hive failure
- ❑ Local Bees = Better Adapted Bees for Winter
 - This year's winter survivors = next year's breeding stock
 - A local supply of honeybees directly contributes to sustainable beekeeping and increases the potential to develop "survivor stock" (bees that are better adapted for the local conditions).

Benefit of Nucs cont.

- ❑ Learning Tool
- ❑ Swarm Control
- ❑ Colony Increase
- ❑ Brood Generator
- ❑ Queen Replacement
- ❑ Over Wintering

Other SARE Activities: Queen Rearing



Local queens better adapted to local conditions

PWRBA: Promoting Responsible and Sustainable Beekeeping

Questions?

