Survival of northern requeened packages

SARE funded projects

FNE 09-665, FNE10-694, FNE12-756

Farmer Grant Examples

A comparison of honeybee colony strength and survivability between nucleus and package started colonies

Grant ID Number: FNE09-665

Grant Recipient: Erin MacGregor-Forbes, Overland Apiaries, Portland ME

Beekeepers in Maine have seen high mortality in overwintered bees, and the farmer will test whether locally-sourced replacement bees perform better than packaged bees from the southern and western U.S. The goal is to identify whether small modifications in colony purchasing practices can reduce costs and result in healthier honeybee populations. Outreach will be through the beekeeping network.

Grant Amount: $9,993

Return to: Farmer Grant Examples

About Erin

- Overland Apiaries (100+ honey bee colonies in Portland,and Jefferson,Maine and surrounding towns)
- EAS Certified Master Beekeeper
- Raising Northern Nucs for own use and sale since 2007
- Teaches Beginner, Intermediate, and Advanced Intermediate Bee School in Maine
- Past President, Maine State Beekeepers Association

The Idea

- Erin believes that a vibrant local queen and nucleus colony industry in New England is the key to sustainability in beekeeping in our area.
- Queens and nucs provide an income that can replace pollination and supplement honey sales to make beekeeping a viable vocation which can support a family.

Local Bees for Local Beekeepers

- Queens reared from the survivors prior year colonies are likely to be uniquely well suited to the region in which they were raised.
- Less transportation of colonies and queens = less stress on bees and colonies
- Less movement of bees = less transmission of diseases and pathogens

Overwintered Nucleus colony

- NOT a spring split
- Overwintered Nucleus colonies are made up in the prior summer and wintered over as a single unit (Summer Nucs)
- In spring, an overwintered nuc is an in-tact superorganism family where all of the bees are related

The Question:

- Do overwintered nucleus started colonies actually outperform package started colonies?

- Will a requeened package show any differences in strength and survivability than a standard package with its commercial (southern/western) queen?

Requeening – What does that do?

- The genetic make up of the worker bees in a colony is 100% determined by the (mated) queen.
- Queens mate when they are 5-10 days old, storing all the sperm (male germplasm) that they will ever have in their spermacathaceca
- A significant number of colony traits including hygenic behavior, wintering ability and honey production are known to be at least in part genetic

French Hill Apiaries, St Albans, VT June 2010

Rossman Apiaries
INCORPORATED

2009 BEEKEEPING CATALOG

Re-queening, cont.

- By replacing the one reproductive member of the colony, you are literally changing the DNA of the superorganism.
- Your colony's genetic make-up is determined by the queen alone.

When you transport a mated queen from one yard to the next

- You transport the genetics of the bee yard in which she was conceived and mated.
- Her mother's genetics are represented from the time that she was an egg
- Male bees from the apiary are represented after her mating (with 15-40 drones when she is approx. 5-10 days old)

Five Sources of queens:

- Commercial Italian Queens (Rossman Apiaries, Moultrie GA)
- Northern raised queens from:
  - Gilman Mucaj, Connecticut (overwintered nucs)
  - Overland Apiaries, Maine (overwintered nucs)
  - Mike Palmer, Vermont (queens)
  - Bob Brachman, New York (queens)

Year One (2009-2010)

- 24 Colonies split into two apiaries

  8 Overwintered Nucleus Colonies

  16 Packages

  - 8 Northern Raised Queens to re-queen half of the packages in June, when queens become available in the North

Year Two (2010 – 2011)

- 30 colonies split into three groups
  - 10 Overwintered nucleus colonies
  - 20 Packages
    - 10 Northern Raised Queens in June, 2010

Larry Peiffer, EAS Master Beekeeper - Project Collaborator

The Protocol

- Install all colonies in identical equipment and operate individually “as a beginner would”
- New wired wax foundation for all colonies
- Feed, expand, and super as necessary
- Monitor for mites and diseases
- Measure honey production and colony strength


SARE 24

YARD:
Hive ID:
Date:
Weather Condition Today:
Weather Condition Recently:
Who Worked Hive:
Who Taking Notes:
Next Inspection Due:

Hive Temperment

☐ Calm ☐ Nervous ☐ Aggressive

☐ Time to Requeen

Located Queen ☐ No ☐ Yes

Marked? ☐ No ☐ Yes Color _____

☐ Replace Queen – Date_____

Laying Pattern

☐ Beautiful – Solid and Uniform

☐ Good Describe_____

☐ Hygienic – Spotty due to Hygienic Behavior

Comments:_____

☐ Mediocre – Intermittent or Random

☐ Poor – Spotty

Additional Comments:_____

_____

Eggs Present: ☐ No ☐ Yes

Comments:_____

Food Stores	Honey/Nectar	Pollen
High (everywhere)	☐	☐
Average	☐	☐
Low	☐	☐
Near Brood	☐	☐
Moved/manipulated	☐	☐

Disease / Pests: ☐ No ☐ Yes

☐ Chalkbrood ☐ Nosema/Dysentery

☐ Varroa Mites Visible ☐ Trachael Mites

☐EFB ☐AFB ☐ Small Hive Beetle

☐ Varroa Associated Virus (Circle)

Deformed Wing Hairless Bee Stunted

Other: _____

Medications: Added Date: _____

Remove Date:_____

☐ Apiguard ☐ Apilife Var ☐ Fumagillin

☐ Mite Away 2 ☐ Terramycin

Varroa Integrated Pest Management (IPM)

Screened Bottom Insert ☐ IN ☐OUT

Screened Bottom Board Check: _____

_____

Powdered Sugar Roll Mite Drop:_____

_____

Drone Brood Check: _____

_____

Alcohol Wash Mite Drop:_____

_____

Spring Feeding / Build Up:

☐ Pollen Substitute dry patties

- RECIPE -

Honey Caramels

by C.C. Miller, contributed by Erin MacGregor-Forbes

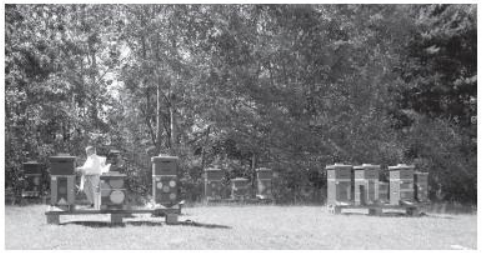
1 cup extracted honey of best flavor, 1 cup granulated sugar, 3 tablespoons sweet cream or milk. Boil to "soft crack," or until it hardens when dropped into cold water, but not too brittle—just so it will form into a soft ball when taken in the fingers. Pour into a greased dish, stirring in a **teaspoon extract of vanilla** just before taking off. Let it be ½- or ¾-inch deep in the dish; and as it cools, cut in squares and wrap each square in paraffine paper, such as grocers wrap butter in. To make chocolate caramels, add to the foregoing **1 tablespoon melted chocolate**, just before taking off the stove, stirring it in well. For chocolate caramels it is not so important that the honey be of best quality.

– *C.C. Miller*

For anyone who doesn't know, C.C. Miller was a great American beekeeper, developer of the "Miller Method" of queen rearing (one of the best-suited methods for sideline beekeepers), and author of *50 Years Among the Bees* which is hands-down my favorite beekeeping book.

For the Caramels: Soft crack is about 275°F. I used plain milk and doubled the recipe. This requires constant stirring while cooking and it takes a long time to get the mixture to temperature at a medium to medium-low setting—it took me over 45 minutes. Heat should not be too high, as high heat will boil over or burn the sugar/honey. Use a large saucepan if doubling the recipe.

These old-fashioned caramels are well worth the work! I made them for a work holiday party and they were a smash hit!



Jack Hildreth helping in the 2010 SARE yard.

SARE Grant Colony Update, 06/05/10

by Erin MacGregor-Forbes, EAS Master Beekeeper

The 2010 SARE project is underway with two new yards of fifteen colonies each. We are again comparing colony strength and survivability between three groups of colonies:

Group 1	Package bees from Georgia.
Group 2	Package bees from Georgia which we will re-queen with northern-raised queens from Vermont in mid-June, when northern-raised queens become available.
Group 3	Over-wintered nucs which were raised in Maine in the summer of 2009 and wintered over.

Our project number is FNE10-694; details can be found on the SARE website: www.nesare.org

Larry Peiffer of the York County Beekeepers Association is managing one yard on Poland Spring property in Hollis; I am managing the other yard in the Westbrook Industrial Park near outer Congress Street in Westbrook.

Our packages arrived one week late on April 24th, due to poor weather in Georgia. Our nucs were delivered two weeks early on May 1st because of the particularly early and mild spring we experienced here in Maine. So this year the colonies started off much closer to each other than one would normally expect.

This is our second year of this project comparing honey bee colony strength and survivability between groups of colonies started in these three ways. Again, all of the colonies are on identical new equipment which is all painted the same color, but the individual hives have identifying paint marks to help the bees orient to their own hive and to hopefully reduce drift between the colonies. Our paint color this year is navy blue, with the dark color again chosen to allow us to forgo wrapping hives for winter. The blue indicates the year (in coordination with the queen marking protocol.)

All colonies are on screened bottom boards and wired wax foundation. We started feeding 1:1 sugar syrup upon installation

(both packages and nucs) and we will continue feeding the colonies until they have built-out both deep hive bodies that will comprise their "nest" area. Once the two deeps are built out, we will stop feeding and begin honey-supering with medium supers. The first medium super that the bees store will be left with them for winter and any additional supers that they make will be harvested.

My Westbrook Industrial Park SARE yard is off to a great start. The flow in the area has been fantastic and the location is both easily accessible and fairly out of the way, which is great for the bees. It is easy to get to them and convenient from Portland, yet there is little non-local traffic, and they will not attract a lot of attention from strangers. After I had installed the bees, I found out that Joanne Romano (of the Cumberland County Beekeepers association) works just down the street from my bee yard and walks by it most every weekday—an added bonus for me to have an experienced beekeeper with her eye on the colonies during the work week, when I am not nearby.

And so things have started off on great footing with the weather being nearly perfect for the bees' first month in the new yards. Geoff MacLean, Vice President of the Cumberland County Beekeepers association, will be helping me with my colonies this year. Taking detailed notes on each colony definitely slows inspections down considerably, so having a second person to take notes while I run through the colonies really helps. A second pair of eyes and hands also keeps things moving along. At this point, a full inspection of all fifteen colonies takes about three hours if we are moving fast. When you factor in setting-up equipment and getting ready to inspect, that works out to be about ten minutes per colony, which is just about right for a fast inspection.

Geoff and I installed the bees together and took a few short video clips of the installations for use in our Bee School presentations. It was fun and it hopefully will help to show how to correctly install a package or a nuc. Over the course of the project, we plan to make several more clips showing requeening, marking queens, and general inspections. Keep an eye out for these videos on the MSBA YouTube channel: www.youtube.com/user/mainebeekeepers. Links to them will be on the new www.mainebeekeepers.org site as that rolls forward.

Our first full inspection of all of the colonies will be the weekend of June 12th (weather permitting) and we will begin our natural-fall mite counts this week. It is time to start getting a baseline count for mites so we can keep an eye on the Varroa mite population growth.

The 2009 SARE yard is officially retired from the SARE project. Results are compiled and we are working on a presentation date for our results for the first year. The written report will be available on the SARE website, nesare.org, by the end of July.

The 2009 colonies are now incorporated into our beekeeping operations. Unfortunately, two of Larry's colonies did not survive the winter, but the other eight are doing well and making honey. All of my 2009 SARE colonies survived the winter and are doing very well. I moved the queens and two frames of capped brood to 5-frame nucs (and added drawn-comb frames and honey and pollen stores) to prevent them from swarming. I did this on the first weekend of May, just as the bees were beginning to rear queencells in the colonies. This method is essentially "artificial swarming." It satisfies the bees' urge to rear a new queen. It also provides a break in the brood cycle early in the year just as Varroa are starting to get a stronghold in the increasing brood nest. If done at the correct time when the bees are strong and building-up to swarm, it actually increases honey production (as the bees will not be feeding larvae for several weeks while the new queens are hatching, mating, and developing prior to egg-laying. As of last weekend, all but two had successfully requeened themselves. For the two that were still queenless, I re-combined them with their nucs. In the other colonies, I marked the queens and removed the nucs to build-up in my home yard. This approach to swarm prevention is the most certain of all swarm prevention techniques. The only requirement is an extra nuc box and frames, and the ability to find the queen. The advantages are many and this works very well for urban and suburban beekeepers who need to keep their apiaries "under control" (out of the trees and away from neighbors' homes).

If time permits, I hope to rear a few queen daughters from the best of the SARE queens that came home in the nucs. They wintered well, built-up strong, and are easy to work with—just the kind of bees I want to have in my apiary.

QUEEN MARKING PROTOCOL

Years ending in	Color
…0 *or* …5	Blue
…1 *or* …6	White
…2 *or* …7	Yellow
…3 *or* …8	Red
…4 *or* …9	Green

"When you requeen get the best."

2009 former SARE yard making honey — colonies which have been correctly artifically swarmed will often make a large spring honey crop as a result of their high population and reduced need to feed young eggs and larvae while they are requeening.

Year Three, 2013

- 50 additional colonies to add to the statistical significance of our findings
- ALL package colonies, no overwintered nucs
- All 50 colonies maintained in the same yard
- Erin Forbes and Cindy Bee, apiarists

Equipment:

- Switched from 10 frame Deeps with medium super to all 8 frame mediums
- Continued to use wired frames with wax foundation

Overall Mite Count Results

- Averaged over time, mite counts were statistically equal among all groups
- Nucs, Packages and Requeened packages were equally distributed as having High, Medium, or Low mite counts
- APILIFE VAR was used in all colonies

Overall Honey Production

- Honey Production was a secondary concern in the project.
- In 2009 and 2010 only Erin's yards made honey (urban locations). In 2013 no colonies made extra honey

Three Year Overall Results – Surplus Honey Production

Group	Number of surplus Honey Producing Colonies	Total Surplus Honey Produced	Average per productive colony
Nuc	2	168	84
Package	5	538	108
Requeened Pacakge	6	461	77

As Michael Palmer says:

- Winter is “the great selector”

Colony survival through winter is a primary concern in northern climates. This should be our number one queen selection criteria.

Three Year Overall Results								
	Package Queen		**Northern Queen**		**Northern Nucleus**		**Total**	
Strength	# of colonies	% of total	# of colonies	% of total	# of colonies	% of total	# of colonies	% of total
Strong	3	7%	15	35%	7	39%	25	24%
Average	5	12%	10	23%	4	22%	19	18%
Weak	7	16%	4	9%	2	11%	13	13%
Dead	18	42%	11	26%	3	17%	32	31%
Disqualified	10	23%	3	7%	2	11%	15	14%
Total	**43**	**100%**	**43**	**100%**	**18**	**100%**	**104**	**100%**

	Package Queen		**Northern Queen**		**Northern Nucleus**		**Total**	
Alive	15	35%	29	67%	13	72%	57	55%
Ready for Spring	8	19%	25	58%	11	61%	44	42%

Three Year Overall Results - excluding disqualified colonies						
	Package Queen		**Northern Combined**		**Total**	
Strength	# of colonies	% of total	# of colonies	% of total	# of colonies	% of total
Strong	3	9%	22	39%	25	24%
Average	5	15%	14	25%	19	18%
Weak	7	21%	6	11%	13	13%
Dead	18	55%	14	25%	32	31%
Total	**33**	**100%**	**56**	**100%**	**89**	**100%**

	Package Queen		**Northern Combined**		**Total**	
Alive	15	45%	42	75%	57	64%
Ready for Spring	8	24%	36	64%	44	49%

While our total winter losses were near equal to the national average of 30%, our Northern Queen headed colonies experienced only a 17% percent winter loss rate and 67% of our colonies were ready to produce honey in spring with no additional beekeeper intervention.

Compared to our package colonies, the northern queen headed colonies experienced double the winter survival rate, and were four times more likely to be ready to produce honey in spring.

	Package Queen		Northern Queen		Total	
Alive	7	39%	20	83%	27	64%
Ready for Spring	3	17%	16	67%	19	45%

Our Technical Advisor: Tony Jadczak, Maine State Apiarist

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Search string: honey bee

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More Information…

- Final reports for all three project years are available on the SARE website: sare.org

  Search the database by project number or key word.

- Our project numbers: FNE09-665, FNE10-694, FNE12-756

Thank you for your support

- Northeast SARE
- Cumberland County Beekeepers Association
- Maine State Beekeepers Association
- **Special thanks to Cindy Bee, Larry Peiffer and Jack Hildreth**

Additonal Hive Sponsors, 2013

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What have you been up to?

OverlandHoney

July 20

The nectar flow has been nearly ideal for the last month, and the bees are doing fantastic.

THIS WEEK

0 Page Likes

14 Post Reach

UNREAD

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2 Messages

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2013

2012

2011

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Overland Apiaries

pure honey and wax products

About Overland Apiaries

Overland Apiaries is a small, sustainable, non-migratory beekeeping operation based in Jefferson and Portland, Maine. We are also much more. We are dedicated to raising bees in a natural and healthy way.

We offer 100% pure honey—just how the bees made it. Nothing added. Nothing taken away. Our wax products, such as our beeswax lotion bar and lip balm, contain only the finest ingredients.

We raise our own nucleus colonies and in the summer sell northern raised queens to other beekeepers.

And we are always willing to educate. Take a look around our site for information about beekeeping and photos of our apiaries. We love our honey bees and we love sharing information about our beekeeping methods.

Also, please feel free to contact us for information about our other products and about sustainable beekeeping.

Thank you for thinking of the bees.

Recent News

Package Pickup Delayed 24-36 hours

2014 Packages – sold out

Spring is finally coming

Packages Still Available – March 30, 2014

3lb Packages for Sale. Pick up in Portland or Jefferson, May 3, 2014

Links

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