

# Transferring the technology of varroa sensitive hygiene (VSH) to beekeepers

1. We are defining the limits of the VSH trait. This information comes from testing VSH bees in various beekeeping applications, and from feedback from users.

## VSH attributes:

- It is the most effective known mechanism of resistance to varroa . It markedly decreases the need for mite treatments (see graph below).
- Useful resistance is retained when VSH queens are outcrossed. This is a simple way to incorporate VSH into a variety of stocks, and thus encourages diversity and sustainability of honey bees.
- Hygiene from VSH is also expected to protect against AFB and chalkbrood.

## VSH limitations:

- The trait is difficult to measure.
- Spotty brood can occur in highly selected colonies.
- Selection has largely been for varroa resistance , not for honey production etc.

### What you can expect regarding varroa resistance.

These data show varroa infestation in the late summer in individual colonies of VSH and non-VSH bees. Highly infested colonies (>10 mites per 100 adult bees) should be treated; colonies with low infestations (<5 mites per 100 bees) do not need treatment.



2. The information and VSH germplasm is being transferred to beekeepers



- Breeding material is transferred from USDA to VP Queen Bees
- VP Queen Bees distributes breeder queens (only)

**Commercial beekeepers** obtain breeder queens from VP Queen Bees, then graft cells and allow the queens to open mate

**Hobbyist beekeepers** obtain open-mated production queens from commercial queen producers

**Breeders** are encouraged to select for the trait in their own bees

### Sources of naturally mated queens produced from VP breeder queens or with other VSH genetics:

**7 Stands Bee Farm, NC**  
 A-Bee Honey, NM  
 Big Island Queens, HI  
 Bjorn Apiaries, PA  
**Brad Fosland, SD**  
 Bz Bee Pollination, CA  
 Richard Callahan, MA  
 Carney Queens, VA  
**Full Bloom Apiaries, CT**  
 Harris Honey Bees, CA

Hewy's Honey Bee Co., GA  
**Johnny Thompson, MS**  
**Johnston's Honey Farm, GA**  
 Kauai Honey Co., HI  
 Lamb's Honey Farm, TX  
**Log Cabin Bee Farm, PA**  
 Long Creek Apiaries, TN  
 Lucas Apiaries, CA  
 Maui Queen Co., HI  
**Mike Palmer, VT**

Miksa Honey Farms, FL  
**M&N Apiary, GA**  
**Nature's Hand Apiary, MD**  
 Northwest Queens, WA  
 Old Sol Apiaries, OR  
 Olivarez Honey Bees, CA  
 Olympic Wilderness Apiaries, WA  
 Pendell Apiaries, CA  
 Powell Apiaries, CA  
 Queen Haven, CA

Red Dog Expressions, CO  
**Ridge Top Apiaries, TN**  
**Sourwood Farm, VA**  
 Strachan Apiaries, CA  
 VP Queen Bees, MD  
 WG Bee Farm, NC  
**Wildflower Meadows, CA**  
**Williams Honey Bees, OH**  
 Zia Queenbee Co, NM