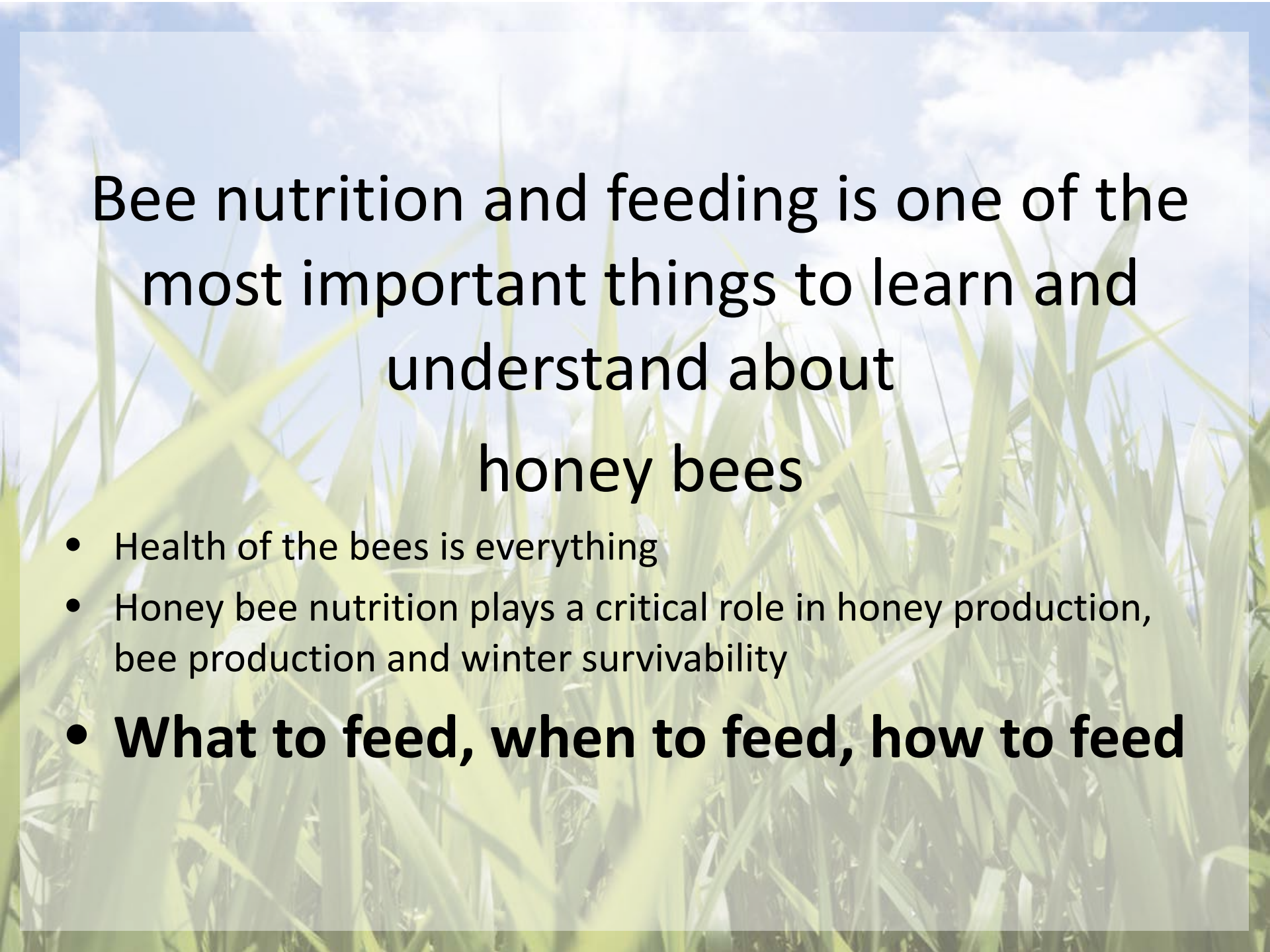




Honey Bee Nutrition and Feeding

Kevin Hale

www.haleshoney.com



Bee nutrition and feeding is one of the most important things to learn and understand about honey bees

- Health of the bees is everything
- Honey bee nutrition plays a critical role in honey production, bee production and winter survivability
- **What to feed, when to feed, how to feed**

Nectar

Natures Energy Source

- Nectar is the source of carbohydrates (sugars) that supply's the energy through the creation of the honey that the honey bees consume
- Natural nectar sources are declining forcing beekeepers to feed more than every
 - Agricultural practices not as diverse
 - Land and homeowners wanting pristine yards and fields
 - State and local governments spraying roadsides, parks, etc.
- Nectar is supplemented be the beekeeper with 1:1 sugar water in the spring and summer and 2:1 sugar water in the fall to build up winter food reserves.

Pollen

- Pollen is the source of protein, amino acids, vitamins, minerals, fats and Lipids
 - Protein is needed for muscle growth in brood and young adult bees
- **Brood production isn't possible without a quality source of pollen or a appropriate source of protein supplement**
- Many natural pollens are nutritional lacking
- Natural pollen varies from 10%-30% in proteins (avg 24%)
 - The minimum protein percentage needed for honey bees from pollen is 20-25%
 - 15-30% of foragers collect pollen
- Natural pollen sources decrease drastically in summer
- Bees collect many different types of pollens to make up for differences in pollen quality
- Bee will cannibalize brood when pollen is low

Open Feeding of Ultra Bee Protein Supplement



Pollen Substitute

- **Natural pollen varies from 10%-36% in proteins (avg is 24%)**
 - The minimum protein percentage needed for honey bees from pollen is 20-25%
- Not all pollen substitutes is created equal
- Comparison of a few high grade pollen substitutes
 - **Ultra Bee** 58% crude protein Patties 15% protein
 - **AP23** 47% crude protein Patties 15% protein
 - **Bee-Pro** 40% crude protein Patties 10% protein
 - **Mega Bee** 38% crude protein Patties 13% protein
 - **Brood Builder** 26% crude protein Patties 10% protein

 - **Pro-Winter Patties** 4% protein
 - **AP23 Winter Patties** 2.5% protein

Water

Why is water important

- Used to dilute stored honey for consumption
- Control the humidity of the hive
- Provides cooling in the summer
- Used by nurse bees to create royal jelly to feed larva (royal jelly can be 50-70% water)
- It assists in the removal of waste
- Assist is digesting and metabolizing what they eat or turning their food into usable materials

Water



Hives After Honey Supers Removed



Hives a week ago



Feeding

Feed the bees any time the bees need it!!

you can't always depend on mother nature to supply it at the correct time

- Provide high quality food
 - I don't feed HFCS, I only feed sugar water and high grade protein supplement.
- I also use feed additives:
 - Honey Bee Healthy
 - Amino-B Booster
 - Vitamins & Electrolytes Plus
- Also apply SuperDFM (microbial supplement) spring and fall
 - Direct feed microbial supplement that improves the digestive (bee gut) balance in bees

Vitamins & Electrolytes "Plus"

Water Soluble Powder with Vitamins, Electrolytes, Microbes and Acidifiers for Livestock and Poultry

Guaranteed Analysis
(minimum, unless otherwise stated)

	Per 4 oz	Per lb
Salt	11.0% (min) 13.2% (max)	11.0% (min) 13.2% (max)
Sodium	4.70%	4.70%
Potassium	3.80%	3.80%
Magnesium	0.26%	0.26%
Vitamin A	2,500,000 IU	10,000,000 IU
Vitamin D ₃	1,000,000 IU	4,000,000 IU
Vitamin E	2,000 IU	8,000 IU
Riboflavin	750 mg	3,000 mg
Pantothenic Acid	2,000 mg	8,000 mg
Folic Acid	125 mg	500 mg
Thiamine	375 mg	1,500 mg
Niacin	5,000 mg	20,000 mg
Pyridoxine	300 mg	1,200 mg
Ascorbic Acid (Vitamin C)	3,750 mg	15,000 mg
Vitamin B ₁₂	2.5 mg	10 mg
Menadione (Vitamin K)	1,000 mg	4,000 mg

NET CONTENTS: 4 oz PACK

AgriLabs
Making A Healthy Difference

100 APPLICATIONS

SuperDFM-HoneyBee

MICROBIAL SUPPLEMENT FOR HONEY BEES
Contains a source of live (viable) microorganisms.

Guaranteed Analysis: Total Lactic Acid Bacterial Count (minimum)
 1.0×10^8 CFU/g (*L. acidophilus*, *E. faecium*, *L. plantarum*)
Total Yeast Count (minimum) 1.0×10^8 CFU/g (*S. cerevisiae*)

PRODUCT COMPOSITION
Sucrose, Dried *Lactobacillus acidophilus* fermentation product, Dried *Enterococcus faecium* fermentation product, Dried *Bifidobacterium bifidum* fermentation product, Dried *Lactobacillus plantarum* fermentation product, active dry yeast (*Saccharomyces cerevisiae*), Dried *Bacillus subtilis* fermentation product, Dried *Bacillus licheniformis* fermentation product, Dried *Bacillus pumilus* fermentation product, Dried *Bacillus subtilis* fermentation extract.

DIRECTIONS FOR USE | FEED DRY
Use SuperDFM every 30 days.
Supplement in spring, summer dearth periods, fall and during migratory movements. Use 1 tablespoon of SuperDFM per hive per supplementation period.
Dust dry SuperDFM over top bars of the brood nest.
Do NOT use SuperDFM together with antibiotics.
Do not mix with syrup or patties.
No excess heat (130F) or moisture.
Manufactured by Strong Microbials Inc.
3950 N Holton St., Milwaukee, Wisconsin, USA
strongmicrobials.com | 1844 MYMICRO

net weight: 2.2 lbs (1 kg)
One Hundred 10-gm servings

Notes: Strong Microbials, Inc. warrants that the product is free of harmful ingredients as described on the label and is reasonably fit for the purpose stated on such label only when used according to the directions. No other warranties expressed or implied, but not limited to, warranties of merchantability and fitness for a particular purpose, are made or intended in this product.

NEW! AMINO-B BOOSTERTM

WITH 20 AMINO ACIDS
Vital FOR BEE HEALTH!

from the people who make:
HONEY B HEALTHY

Helps Your Hives To Thrive![®]

1 Gallon (3.78 Liters)
Made In USA

1gal.gm.4 7 05105471354

Directions: Shake Well. Use 1 cup (8 ml) along with 1 tsp. (5 ml) lemon juice (as a preservative) in a quart jar of sugar water. Also helps to build up weak colonies, packages, nucs and systems. For larger tanks use 1 quart of Amino-B Boosters and 1 quart of Honey-B-Healthy® per 50 gallons sugar water. Best fed in inverted jar on top of colony.
Best Used Before Expiration.

Important: Use clean feeding containers. If storing feeding mix for a short period of time, keep tightly sealed in a cool dry area. Do not return any mix back into the container. Do not use prior to long water clusters unless preparing colonies for early pollination.
FEED WITH HONEY SUPERS REMOVED. KEEP FROM FREEZING. STORE IN A COOL DRY PLACE.

Ingredients: Water, Hydrolyzed Collagen, Phospor, Propylene Glycol, Citric Acid, Citrus Flavor, Citrus Acid, Potassium Sorbate, Sodium Benzoate, L-Tryptophan (HPLC), Made by a special proprietary process. Product: Nutritionally Darkens With Age.

Supplies 20 Amino Acids: Alanine, Arginine, Aspartic Acid, Cysteine, Glutamic Acid, Glycine, Histidine, Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Proline, Serine, Threonine, Tryptophan, Tyrosine and Valine.

WARNINGS: KEEP OUT OF REACH OF CHILDREN. NOT FOR HUMAN CONSUMPTION. The user assumes full liability of sale. Questions and Comments? Distributed by: Honey-B-Healthy, Inc. Cumberland, MD 21502. Phone: (866) 542-0879 <http://www.honeybhealthy.com>

Helps Promote Healthy Vigorous Hives![®]

HONEY B HEALTHY[®]

The Original
feeding Stimulant
With
Essential Oils![®]

Helps Your Hives to Thrive![®]
1 Gallon (3.78 Liters)
Made In USA

Uses: As a feeding stimulant during early spring, fall or dearths of nectar. Helps when used as a spray in sugar water instead of smoke to calm bees and to combine weak colonies. Also, spraying on new plastic foundation encourages acceptance.

DIRECTIONS: SHAKE WELL BEFORE USING. KEEP FROM FREEZING. FEED WITH HONEY SUPERS REMOVED.

A Gallon full bucket up to 800 drench treatments at 1-gallon Honey-B-Healthy® per 55 gallons sugar syrup or 220 gallons of feeding mix at 1 quart. Honey-B-Healthy® per 55 gallons of sugar syrup or 220 gallons of feeding mix. Use 1/2 cup (120ml) per quart for drenching. As a spray to calm bees, apply twice bees to work plastic foundation, use the drench dose. For drenching, apply 1/2 cup (120ml) or less (depending on the size) of the colony 3-4 times a few days apart to the brood area by spraying or drizzling the mix on the bees and between the brood frames.

Contains: Sucrose, Water, Spearmint Oil, Lemongrass Oil, Lecithin, and Sodium Lauryl Sulfate.

WARNINGS: KEEP OUT OF REACH OF CHILDREN. KEEP TIGHTLY SEALED. IF ACCIDENTALLY INGESTED seek medical help. User assumes full liability of use.

Questions or Comments? Phone: (866) 542-0879
Distributed by:
Honey-B-Healthy, Inc.
Cumberland, MD 21502
Website: <http://www.honeybhealthy.com>

1gal.g 7 0510548055

Feeding right after final honey supers removed

- I remove all supers no later than August 1st, sometimes mid July
- Large honey producing hives can crash because you have removed 80% of their food source once supers are removed
- As soon as last supers pulled I feed all honey hives 4-5 gallon 1:1 syrup in one – two feedings and 2-4 sugar/protein patties
- Continue to feed 1:1 as needed though August and September
 - **August is usually a very poor month for nectar and pollen**
 - August dearth in most of Kentucky
- I switch to sugar/protein patties (9 sugar to 3 protein ratio) and continue to feed them regularly through the fall
- Watch out for Robbing
- Treat for mites (this is when mites are at their worst)
- **Importance of summer feeding 1:1 syrup and protein is to keep brood production going to produce winter bees**
- The bees you see in October and November are the bees you see in March

Fall Feeding

- From August through October we feed 1:1 syrup depending on strength of goldenrod flow
 - Our goal is to keep queens laying heavy to produce large amounts of winter bees
 - This can be modified if supers pulled early or hives that don't have supers.
- Normally we feed 2:1 syrup in November and December if needed once goldenrod is gone
- Will feed 2:1 in September and October if the bees are really low on food stores (Once stores are built up switch back to 1:1)
- If you have to feed 2:1 don't trickle feed, determine how much that hive needs and feed it in one or two feedings
- Continue to feed sugar/protein patties through December

Fall Feeding

You must have very strong hives headed into December



Fall Feeding



Winter Feeding

- Winter is not a survival time, just another phase in beekeeping
- **Winter feeding should never be considered emergency feed**
- In December, January, February and March I use sugar/protein blocks on top frames in 3" spacer
 - Place 4-5 on each 10 frame and 2-3 on nuc hives
 - Replenish as needed
 - Typical consumption 8-12 blocks per hive
- Winter patties, or candy boards also good options
- **I am a firm believer of providing protein all winter**
- My sugar/protein blocks contain about 15% protein, most purchased winter patties contain about 4% protein
- Winter feeding blocks are consumed not store. This allows the bees to have ample supplies of stored food to start their spring buildup on

Winter Feeding



This is what we want in February



This is what we want in February



Spring Buildup

- **Number one reason for weak honey crop is the bees build up on the honey flow**
- **Start feeding 1:1 syrup 1st to mid February until honey flow begins**
 - 1:1 Stimulates queen to start laying, once you start feeding you should continue until natural nectar is available
 - Depends on temperature, need 3-4 days a week in high 40's to low 50's
 - If feeding winter food, leave it in until last of March
- **Start Feeding Protein Patties 1st to mid February until honey flow begins**
 - Queen requires protein to lay eggs
 - Feed only what bees will take (Small Hive Beetles love protein patties)
 - Continue to feed protein patties even after bees start bringing in pollen from Maples in early March
- **Have drawn honey supers on by April 1st, stop any syrup feeding but continue with protein feeding for couple weeks.**

1:1 Syrup and Protein Feeding



Recipes

- **1:1 Sugar Syrup:**
- 5 gallon syrup
 - 25 lbs. granulated sugar
 - 12.5 quarts water
 - Tablespoon vitamins & electrolytes plus
 - 4 oz (24 tsp) of Honey B Healthy per 5 gallon (**I don't use HBH during summer and fall feeding**)
 - 4 oz (24 tsp) of Amino-B-Booster per 5 gallon (**I use this year round**)
 - Three caps full of bleach (helps prevent mold)
- **Protein/Sugar Patties: (Spring Buildup)**
 - 9 cups Ultra Bee protein powder
 - 3 cups sugar
 - 1 cup corn oil (helps keep patties soft while adding lipids that help in stimulating pheromone production and the development of immature bees)
 - Teaspoon vitamins & electrolytes plus
 - Add enough 1:1 or 2:1 syrup to make consistence of peanut butter and form into patties on wax paper.

Recipes

- **2:1 Sugar Syrup:**
- 5 gallon syrup
 - 25 lbs. granulated sugar
 - 6.25 quarts water
 - 4 oz (24 tsp) of Honey B Healthy per 5 gallon (**I don't use HBH during summer and fall feeding**)
 - 4 oz (24 tsp) of Amino-B-Booster per 5 gallon
 - Three caps full of bleach (helps prevent mold)
- **Sugar/Protein Patties: (Summer and Fall Feeding)**
 - 9 cups sugar
 - 3 cups Ultra Bee protein powder
 - 1 cup corn oil (helps keep patties soft while adding lipids that help in stimulating pheromone production and the development of immature bees)
 - Teaspoon vitamins & electrolytes plus
 - Add enough 1:1 or 2:1 syrup to make consistence of peanut butter and form into patties on wax paper.

Recipes

- **Hard Sugar/Protein Blocks:**

- 1 quart water
- 12 lb. sugar (24 cups)
- 3 cups protein powder (I use Ultra Bee)
- 6 teaspoons Honey B Healthy
- 1 teaspoon vitamins & electrolytes plus
- 2 tablespoon white vinegar (helps make sugar more digestible for bees)
- Five 7"x7"x1.25" cake pans or five 9" pie pans (makes five 2 lb. pans)
- Add water, sugar, HBH, vinegar, vitamins & electrolytes, heat to 250 deg. mixing occasionally, remove from heat add protein powder and mix in quickly. Once mixed, pour into pans, let harden.