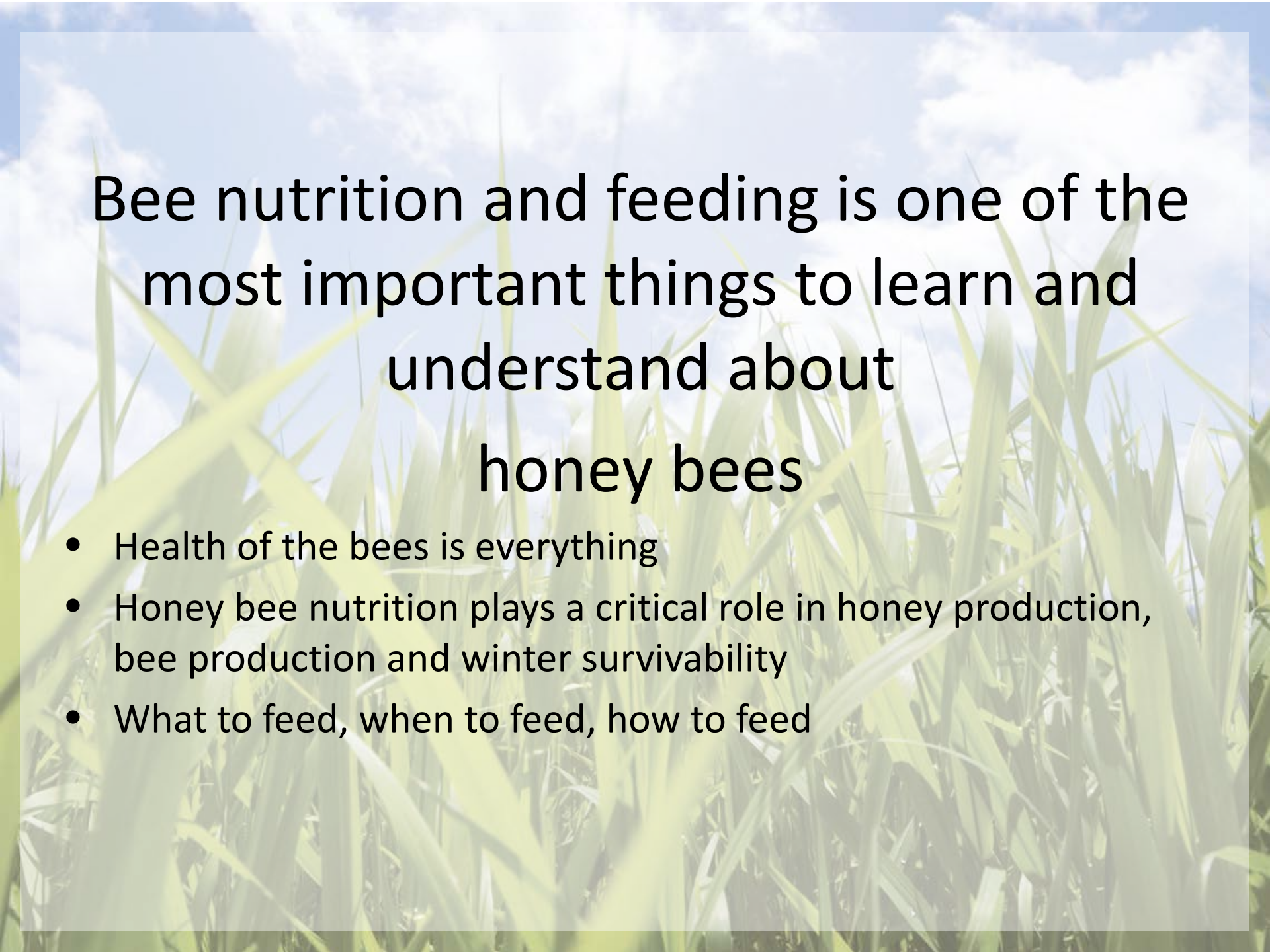




Honey Bee Nutrition and Feeding

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

Three Substances Bee Collect

- **Nectar**

- Source of carbohydrates (sugars) that supply's the energy
- Used to create honey for food supply

- **Pollen**

- Source of protein
- Amino acids
 - » Building materials (separate parts) that make up the protein
 - » 10 essential amino acids bees must have
 - » Used to help digest the protein
- Vitamins and Minerals
 - » Most of both are obtained through the pollen
 - » Vitamin B complex and vitamin C essential for brood rearing and royal jelly production
- Fats and Lipids
 - » lipids (fatty acids, sterols, and phospholipids)
 - » Play significant role in ingestion and absorption of food

- **Water**

- Most overlooked necessity for the honey bee

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
- Natural pollen varies from 10%-36% in proteins
 - The minimum protein percentage needed for honey bees from pollen is 20-25%
- Many natural pollens are nutritional lacking
- Bees collect many different types of pollens to make up for differences in pollen quality
- Brood production isn't possible without a quality source of pollen or a appropriate source of protein supplement
- When natural pollens are not available bees will seek out bird feeders, grain being fed to animals, sawdust, etc.

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

This is what we want in February



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

- Supplemental feeding is a requirement for strong healthy productive hives
- Provide high quality food
 - I don't feed HFCS, only feed sugar water and high grade protein supplement.
- I also use feed additives, Honey Bee Healthy and Amino B Booster
- Also apply Super DFM (microbial supplement) spring and fall
 - Direct feed microbial supplement that improves the digestive (bee gut) balance in bees
- My cost of feeding averages about \$25-\$30 per hive

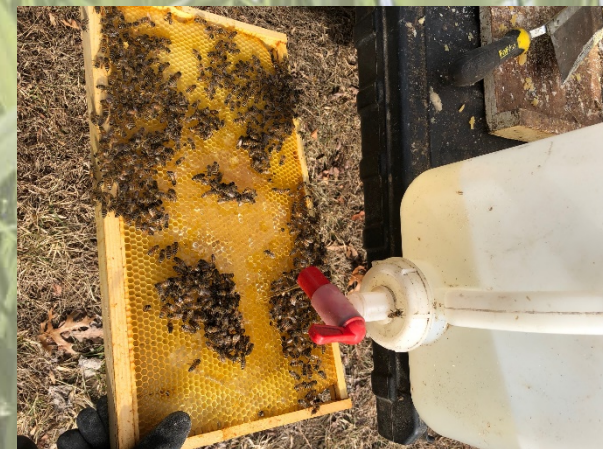
Spring Buildup

- **Number one reason for weak honey crop is the bees build up on the honey flow**
- Start feeding 1:1 syrup 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 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.

Open Feeding of AP23 Protein Supplement



1:1 Syrup and Protein Feeding



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 90% 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 October
- 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

This is the desired results of our work

Strong honey hives headed up by great queens





Hives After Honey Supers Removed



Feeding After Honey Super Removal



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
- 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



Winter Feeding

- Winter is not a survival time, just another phase in beekeeping
- **Winter feeding should never be considered emergency feed**
- In January, February and March I use sugar blocks and sugar/protein blocks on top frames in 3" spacer
 - Place 4-5 on each 10 frame and 2-3 on nuc hives mid to late December
 - Be careful placing to early or bees will move up to them
 - » Make sure bees have clustered a couple times
- 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





Recipes

- **1:1 Sugar Water:**
- 2 gallon syrup
 - 10 lbs. granulated sugar
 - 5 quarts water
 - Heat water to very hot, add sugar and stir
 - Add 4-5 teaspoons of Honey B Healthy per gallon
- 5 gallon syrup
 - 25 lbs. granulated sugar
 - 12.5 quarts water
 - Heat water to very hot, add sugar and stir
 - Add 4-5 teaspoons of Honey B Healthy per gallon
 - Add one cap full of bleach (helps prevent mold)
- **Protein/Sugar Patties:**
 - 9 cups AP 23 protein powder
 - 3 cups sugar
 - 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:**
- 1.5 gallon syrup
 - 10 lbs. granulated sugar
 - 2.5 quarts water
 - Heat water to very hot, add sugar and stir
 - Add 4-5 teaspoons of Honey B Healthy per gallon
- 5 gallon syrup
 - 25 lbs. granulated sugar
 - 6.25 quarts water
 - Heat water to very hot, add sugar and stir
 - Add 4-5 teaspoons of Honey B Healthy per gallon
 - Add one cap full of bleach (helps prevent mold)
- **Sugar/Protein Patties:**
 - 3 cups AP 23 protein powder
 - 9 cups sugar
 - Add enough 1:1 or 2:1 syrup to make consistence of peanut butter and form into patties on wax paper.

Recipes

- **Hard Sugar Blocks:**

- 1 quart water
- 12 lb. sugar (24 cups)
- 6 teaspoons Honey B Healthy
- Five 7"x7"x1.25" cake pans or five 9" pie pans (makes five 2 lb. pans)
- Heat water to boil, add Honey B Healthy, add sugar and mix, heat to 250 deg. mixing occasionally, remove from heat and let cool to 210 deg., stir quickly and pour into pans, let harden (don't let it get too hard while cooling or you can't pour it)

- **Hard Sugar/Protein Blocks:**

- 1 quart water
- 12 lb. sugar (24 cups)
- 3 cups protein powder (I use AP 23 protein powder from Dadant)
- 6 teaspoons Honey B Healthy
- Five 7"x7"x1.25" cake pans or five 9" pie pans (makes five 2 lb. pans)
- Heat water to boil, add Honey B Healthy, add sugar and mix, heat to 250 deg. mixing occasionally, remove from heat add protein powder and mix in quickly. Once mixed, pour into pans, let harden.

Summary

- Bees are livestock
- Nobody has all the answers, just opinions
- Feed anytime and every time it is necessary

Honey Bees survival depends on you, the beekeeper.