

Strategies and possibilities to diagnose and control bee diseases in traditional and local beehives



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Traditional bee hives in Africa

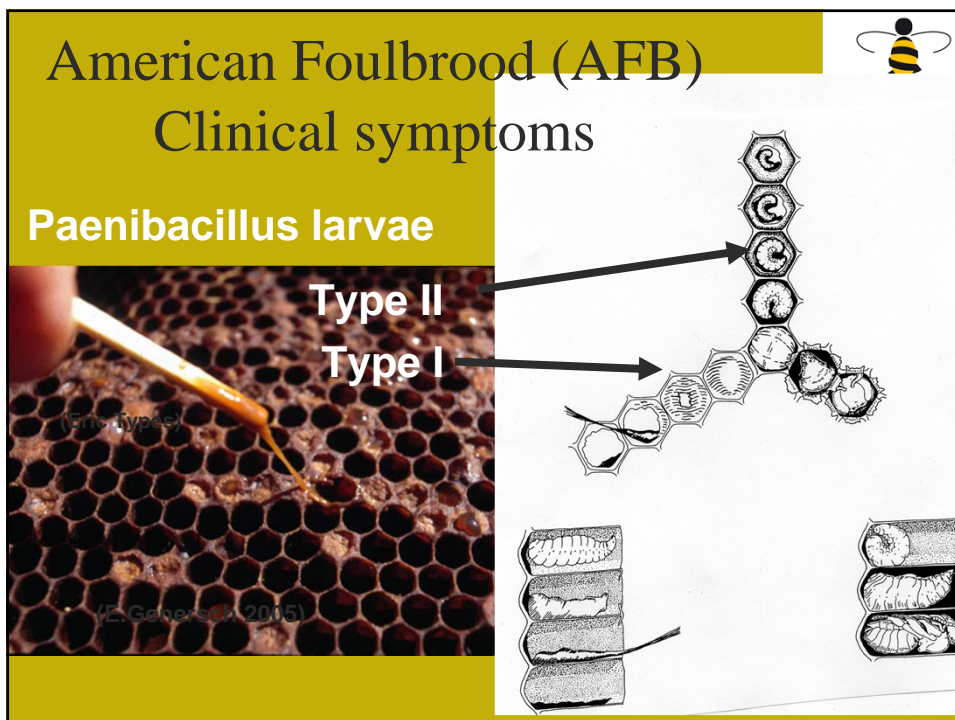
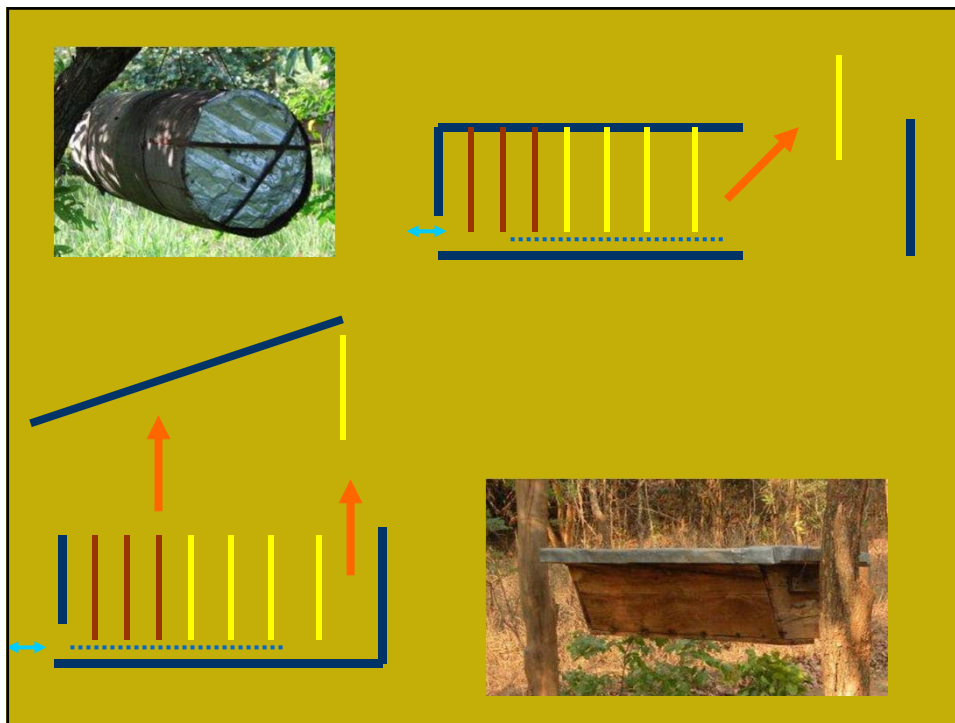




Advantage of traditional bee hives

- Well adapted and known technique
- Easy transport by man or animal
- Good protection against predators
- Optimal size of colonies (food supply)
- Traditional or available construction material
- No or less additional equipment necessary (Honey extractor etc.)
- No or low financial input necessary
- No credits, no debt, no risk







Diagnosis of Bee diseases

Disease	Sample	Location	Mobile	Immobile
AFB EFB	bees	entrance	+	+
		Brood combs	+	-
	brood	combs	+	-
	wax (combs)	brood	+	-
		honey	±	±
	debris	bottom	+	±
	food	combs	+	+

Early Diagnosis of American Foulbrood

- Bulk Honey
- Food (Broodcombs)
- Wax
- Bees
- Debris

Early Diagnosis of American/European Foulbrood

- Bulk Honey
- Food (Broodcombs)
- Wax
- Bees
- Debris

Microbiological Analysis



**Low number of spores
Outbreak of AFB?**



**High number of spores
Outbreak of AFB!**

Early Diagnosis of American Foulbrood

- Bulk Honey
- Food (Broodcombs)
- Wax
- Bees
- Debris

American Foulbrood

Wax from:

- old combs
- Former brood combs



Early Diagnosis of American/European Foulbrood

- Bulk Honey
- Food (Broodcombs)

- Wax
- Bees
- Debris



Early Diagnosis of American Foulbrood

- Bulk Honey
- Food (Broodcombs)
- Wax
- Bees
- Debris

Diagnosis of debris



Diagnosis of Bee diseases

Disease	Sample	Location	Mobile	Immobile
AFB EFB	bees	entrance	+	+
		Brood combs	+	-
	brood	combs	+	-
	wax (combs)	brood	+	-
		honey	±	±
	debris	bottom	+	±
	food	combs	+	+

Control of AFB/EFB with Antibiotics

- Kills the vegetative form only not the spores
- Provokes repeated relapses
- **Repeated treatment with antibiotics necessary**
- **Leads to more residues and resistance**
- Provokes resistance against pathogen
- Clinical symptoms masked
- High amount of spores in honey
- High re-infection

Control of AFB/EFB

- **Shaking method (artificial swarms)**
- **Disinfection of beehive and equipment**
- **Burning of combs**
- **Observe the colonies for clinical symptoms they may disappear**



Diagnosis of Bee diseases

Disease	Sample	Location	Mobile	Immobile
Varroa	bees	hive entrance	+	+
		combs	+	-
	brood	combs	+	-
	debris	bottom board	+	±



Varroosis

(Varroa destructor)

- Treatment in colonies without brood
 - Spraying
 - Trickling (only bees in cluster)
 - Dusting



Varroosis

(Varroa destructor)

- Treatment in colonies with brood
 - Long lasting evaporation
 - A.i. present for more than 3 weeks



Treatment of Bee diseases

Disease	Application	Hive	Mobile	Im- mobile
Varroa	contact	entrance	+	+
		inside	+	+
	spray	combs	+	-
	evaporate	inside	+	+
	dust	inside	+	±

Tropilaelaps Milbe



Diagnosis of Bee diseases

Disease	Sample	Location	Mobile	Immobile
Tropi- laelaps spp.	debris	bottom board	+	±
	brood	combs	+	-





Tropilaelaps mite

(Tropilaelaps spp.)

- **Difference to Varroa:**
 - Infest brood only not adults (mites die after three weeks without brood)
- **Varroazids distributed on combs are effective:**
 - Evaporation, Dusting, ..
- **Varroazids acting via body contact have no or low effect:**
 - Contact (Trickling...)

Treatment of Bee diseases

Disease	Application	Hive	Mobile	Im- mobile
Tropi- laelaps spp.	spray	combs	+	-
	evaporate	inside	+	+
	dust	inside	+	±

Acarapiosis

- *Acarapis woodi*
- Tracheal mite
- Dissection of bees
- Unable to fly
- Crawling bees



Diagnosis of Bee diseases

Disease	Sample	Location	Mobile	Immobile
Acarapi- sosis	bees	Hive- entrance	+	+
		combs	+	-



Acarapisosis

(Acarapis woodi)

- **Difference to Varroa:**
 - Infest only trachea of adults not brood
- **Varroazids evaporating are effective:**
 - Evaporation..
- **Varroazids acting via body contact have no or low effect:**
 - Contact (Trickling...)

Treatment of Bee diseases

Disease	Application	Hive	Mobile	Im- mobile
Acarapi- sosis	spray	combs	+	-
	evaporate	inside	+	+



Diagnosis of Bee diseases

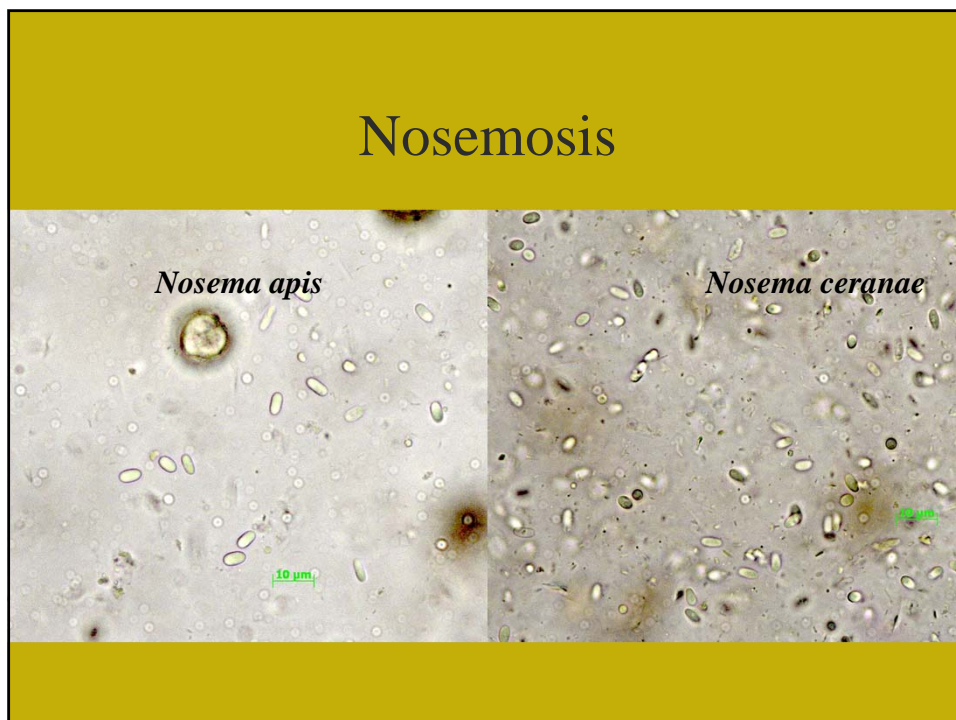
Disease	Sample	Location	Mobile	Immobile
SHB	debris	bottom board	±	±
	traps	bottom board	+	+
	brood	combs	±	-



Treatment of Bee diseases

Disease	Application	Hive	Mobile	Im- mobile
SHB	contact/	entrance	+	+
		inside	+	+
	trap	inside	+	+





Diagnosis of Bee diseases

Disease	Sample	Location	Mobile	Immobile
Nosema	bees	hive entrance	+	+
		combs	+	-
		bottom board	+	±

Treatment of Nosemosis

- **No medical treatment of colonies**
- **No healing of adult bees**
- **Good Bee keeping practice:**
replacement of old bees by young ones
- **Renewal of combs**
- **Disinfection of stored combs:**
e.g. by 60% acetic acid

