PRACTICAL 17

FAMILIARIZATION WITH DISEASES OF HONEY BEES AND THEIR CONTROL

Aim: To familiarize with honey bee diseases, their symptoms and management.

Honey bees are attacked by a large number of diseases which are caused by different organisms including virus, bacteria, microsporidian parasites and mites both ectoparasitic and endoparasitic. The extent of damage varies from death of some brood or adults to complete loss of colonies. The disease spreads from one colony to other through different manipulations done in the apiary as well as through robber bees, swarms and drifting bees. Brief account of symptoms and control measures is given in the tabular form below which can also help in differentiating one disease from the other.



Figure 17.1 Healthy worker brood of A. mellifera (Photograph by Dr B S Rana)



Figure 17.2 European foul brood disease in A. mellifera (Photograph by Dr B S Rana)

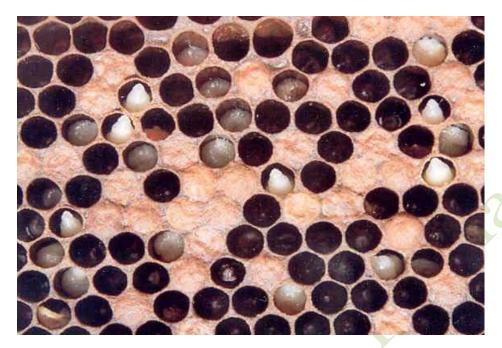


Figure 17.3 Sac brood disease in A. mellifera (Photograph by Dr B S Rana)



Figure 17.4 Symptoms of nosema disease in A. cerana (Photograph by Dr B S Rana)

BEE DISEASES:

Brood diseases:

	American Foul Brood	European Foul Brood	Sac Brood/Thai sac brood
Causative	Paenibacillus larvae	Melissococcus pluton	Virus (sac brood in A.
Organism	(bacteria)	(bacteria)	mellifera and Thai sac brood
TD: 0.1 .1			in A. cerana
Time of death	Late larval or early pupal	Coiled larvae in unsealed	Late larval stage; (usually older sealed larvae sometimes
	stage	cell (usually young unsealed larvae sometime	young unsealed larvae)
		older sealed larvae)	young unscared far vac)
Cappings	Sunken and punctured	Dead brood in uncapped	Capping removed or
		stage	punctured often with two
			holes.
Colour of	Off white to light cream	Yellowish white to grey	Straw coloured, starts
dead brood	to brown; coffee brown	or dark brown, dark	darkening from head
	to dark brown or almost	brown or almost black	
	black	(Fig. 17.2) as compared	
		to glittering white in	
		case of normal brood	
D ::: C	T : CI . 111	(Fig. 17.1)	
Position of	Lying flat on cell base	Coiled, twisted or	Extended with head curled
dead brood	~	collapsed	upright in cells (Fig. 17.3)
Consistency	Sticky to ropy	Soft and gummy; rarely	Sac like with watery content
of dead brood		sticky or ropy, granular	
Odour of	Glue pot, putrid faint	Slightly sour to penetratingly	None to slightly sour;
dead brood		sour, Putrid fish	faint sour
Type of brood	Worker, rarely drone or	Worker, drone and queen	Worker only
affected	queen	1	,,,
Control	Terramycin @ 0.250 –	Feed Terramycin @ 0.2g in	No effective cure
	0.400g in 5lt sugar syrup feeding	500ml conc. sugar syrup	

Adult diseases:

	Nosema disease	Acarine disease
Causative organism	Nosema apis and Nosema ceranae	Acarapis woodi (Endoparasitic
	microsporidian parasites (earlier under	mite)
	Protozoa; now under cluster of fungi)	
Symptoms	Infected bees collect in front of hive,	Bees gather in front of hive as
	sluggish, crawlers on leaf blades,	crawler bees and unable to fly;
	distended abdomen, dysenteric (Fig.	disjointed wings having typical
	17.4)	'k' wing condition
Control	Feed fumigillin 200 mg in sugar syrup to	Fumigate using folbex strips at
	each colony or 0.5-3.0 mg in 100ml	weekly intervals or with formic
	sugar syrup.	acid (85%) @ 10ml/colony and
	or	replenish the quantity after every
	Two feedings at weekly interval	24 h for 21 days
	of Dependel-M @0.5g/litre/colony	

Practical things to do:

- i. Check the colonies and see bacterial/virus infested brood and record your observations. Note down the symptom of bee disease you have observed
- ii. Treat the infected colony with required dose of antibiotics and note down the procedures followed
- iii. Fumigate the colony with required dose of formic acid to control acarine disease and draw a diagram of the process.