

PARASITOLOGY PRACTICAL 3 - TICKS, LICE & FLEAS - ANSWERS TO QUESTIONS

Rhipicephalus sanguineus -v- *Ixodes ricinus*, character state matrix:
An example for two the illustrated characters is:

Character	State	<i>Rhipicephalus</i>		<i>Ixodes</i>	
		female	male	female	male
Mouthparts length	short	+	+	-	+
	long	-	-	+	-
Hard ventral plates	protruding	-	+	-	-
	flat	-	-	-	+

What pathogens transmitted? *Rhipicephalus sanguineus* transmits *Babesia canis* and related *Babesia* species of protozoa to dogs, and *Ehrlichia canis* bacteria to dogs. *Ixodes ricinus* transmits *Babesia divergens*, and other *Babesia* species to cattle, *Anaplasma phagocytophilum* bacteria to sheep, and *Borrelia* bacteria between rodents and to other hosts such as humans.

Why different colours for same stages of life cycle? An unengorged or partially engorged (fed) stage of a tick appears pale because it contains little whole blood. When fully engorged the same stage appears dark because of the haemoglobin.

Tick feeding site? Initial reaction is inflammation in response to trauma of tick mouthparts, followed by development of type 4 hypersensitivity followed by type 1 hypersensitivity in animals exposed repeatedly to infestation. The inflammation causes oedema and erythema and infiltration of neutrophils. The type 4 reaction is dominated by macrophage and lymphocyte infiltration. The type 1 reaction is characterised by infiltration of eosinophils. After the tick detaches a granuloma forms with infiltration of fibroblasts in process of wound healing. The combination of oedema and infiltration thickens (an induration) the dermis at the feeding sites.

Leather damage? The granuloma that forms as a response to the inflammatory and hypersensitive reactions resolves as normal scar tissue, with additional fibroblasts and collagen formation. The scars cause visible blemishes, unwanted by leather merchants and customers.

Distinguishing a infestation of *Psoroptes* mites from *Bovicola* lice? *Psoroptes ovis* mites on sheep skin create a raw wet surface to the skin with much serous exudate and superficial scabs. There is much depilation (hair loss) with the mite infestation. Lice such as *Bovicola* and also the sucking lice such as *Linognathus* leave the skin appearing healthy, although in heavy and chronic infestations the skin will become thickened, scaly and dry.

Importance of flea life cycle in control? The larva and pupa of a flea live in the nest of the host, or its bedding, kennel, etc. and can be controlled there directly by hygiene and application of insecticide.