



Most Trusted Learning Platform

Organism
& population

Environment

Kinshuk Sir

Evolution

Adaptation $\xrightarrow{\text{leads to}}$ Evolution

सारणी 13.1 समष्टियों की पारस्परिक क्रिया

जाति अ	जाति ब	पारस्परिक क्रिया का नाम
+	+	सहोपकारिता
-	-	स्पर्धा
+	-	परभक्षण
+	-	परजीविता
+	0	सहभोजिता (कमन्सेलिज्म)
-	0	अंतरजातीय परजीविता (एमेन्सेलिज्म)

Competition
Predation

(A)
(+)

(B)
(-)

परजीविता

Parasitism

Mycobacterium
Tuberculosis

शुक्रजन्त

→ एक जीव को
फायदा होता
है, और दूसरे
को नुकसान

→ परजीवी शरीर के
अंदर या उसके उपर
भी जूद हो सकता
है।

One organism
is benefitted while
other is harmed

⇒ Parasite can be
Inside the body or
on the body

Predation



- Prey species have evolved various defenses to lessen the impact of predation. Some species of insects and frogs are cryptically-coloured (camouflaged) to avoid being detected easily by the predator.
- The Monarch butterfly is highly distasteful to its predator (bird) because of a special chemical present in its body. Interestingly, the butterfly acquires this chemical during its caterpillar stage by feeding on a poisonous weed
- Nearly 25 per cent of all insects are known to be phytophagous (feeding on plant sap and other parts of plants).

Predation

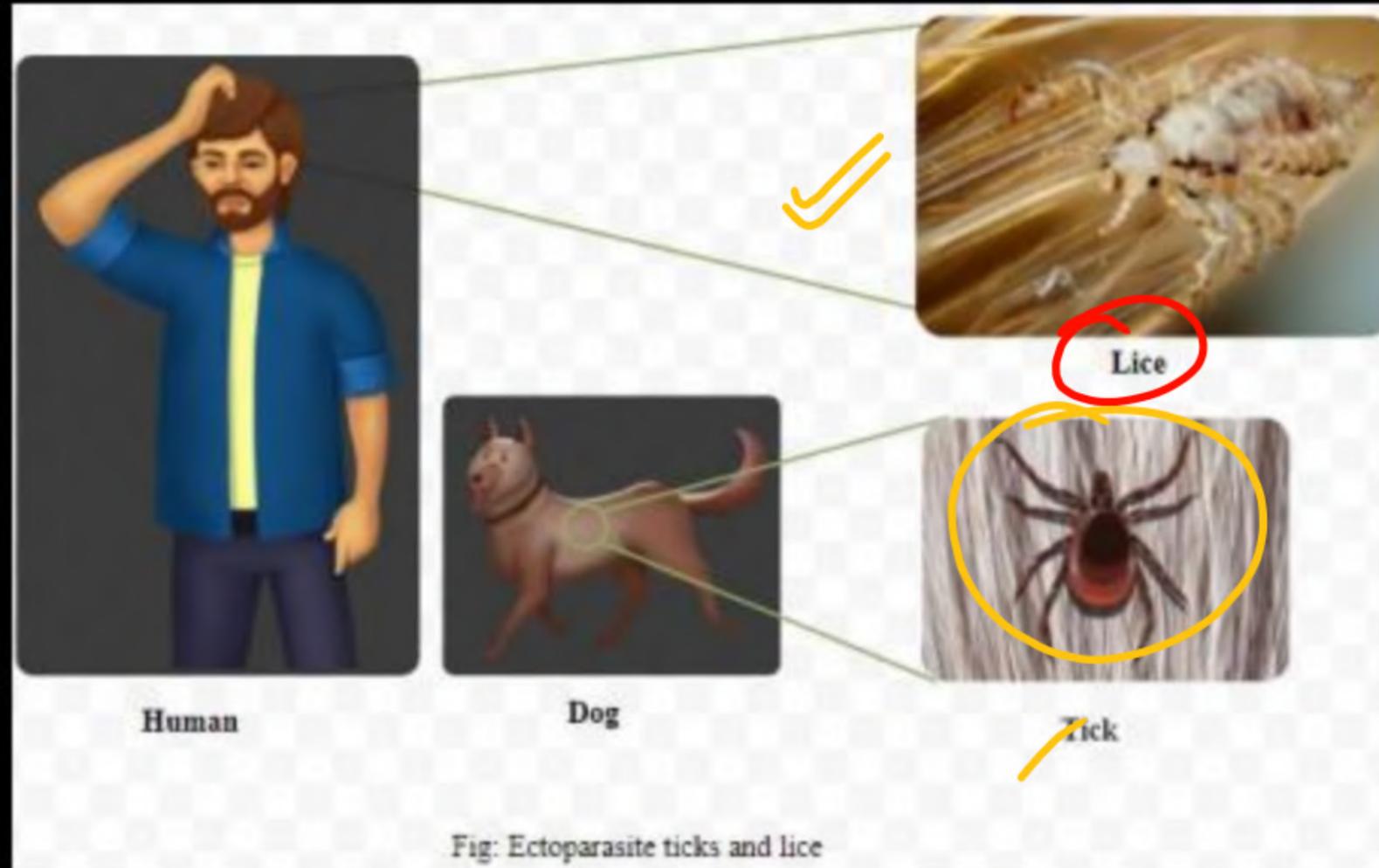
- Calotropis plant produces highly poisonous cardiac glycosides and that is why you never see any cattle or goats browsing on this plant.



आक का पेड़

Parasitism

Lice



- Majority of the parasites harm the host; they may reduce the survival, growth and reproduction of the host and reduce its population density. They might render the host more vulnerable to predation by making it physically weak.
- Parasites that feed on the external surface of the host organism are called ectoparasites. The most familiar examples of this group are the lice on humans and ticks on dogs. Many marine fish are infested with ectoparasitic copepods

Parasitism

- Endoparasites are those that live inside the host body at different sites (liver, kidney, lungs, red blood cells, etc.).

mycobacterium
Tuberculosis

जू
Lice

→ on the body / शरीर के ऊपर

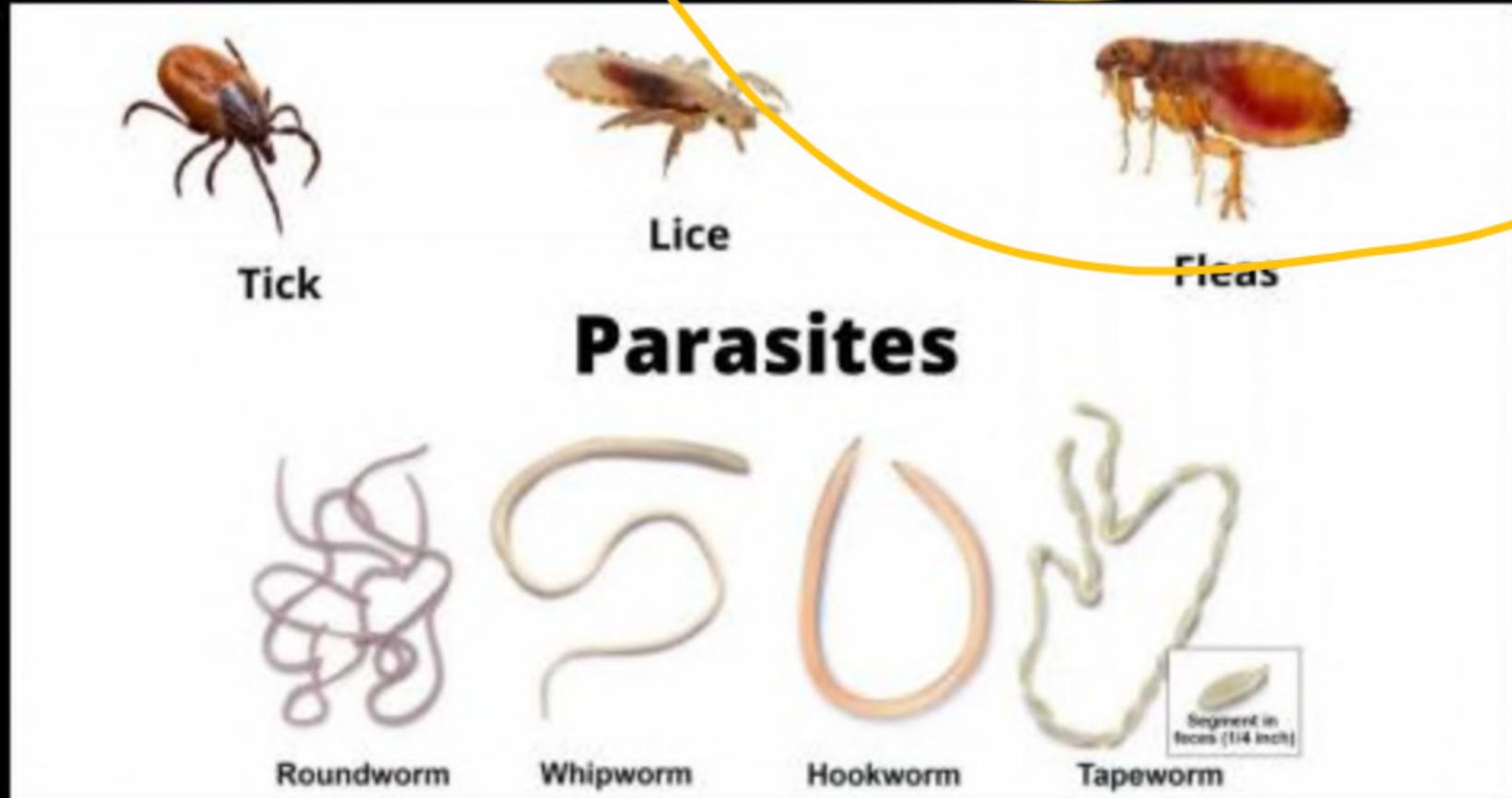
Ectoparasite - बाह्य परजीवी

Endoparasite

→ अंतः परजीवी

Inside body

शरीर के अंदर



Amensalism
अंतरजातीय परजीवित्व

Commensalism
सहजीवित्व



→ One organism is benefited while other is neither harmed nor benefited.

→ एक जीव को फायदा होता है, और दूसरे को ना कोई फायदा ना कोई नुकसान

→ eg ⇒ Shark and Remora fish
शाक और रेमोरा मछली

eg -
गाय और बगुला

Cow and Cattle egret

अंतरजातीय परजीवित्व

Amensalism

One is harmed while

other is neither
benefitted nor
harmed



एक जीव को
नुकसान होता है,
दूसरे जीव को का
को नुकसान, का
ही फायदा.

→ Algae and fish

→ Small plants growing in shade of big tree

→ जीव A को नुकसान होता है B के कारण
→ जीव B को नुकसान होता है C के कारण
→ जीव C को नुकसान होता है D के कारण

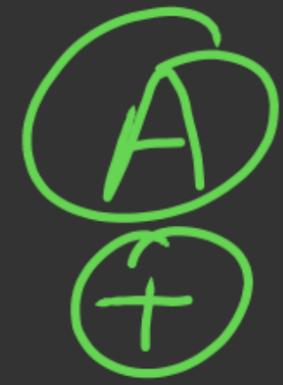
Pollination
परागण

Mutualism

सहयोगिता

honeybee
flower
मधु
परागण

मधुमक्खी



Both organism are benefitted to certain extent.

दोनों जीवों को कुछ हद तक फायदा पहुँचता है।

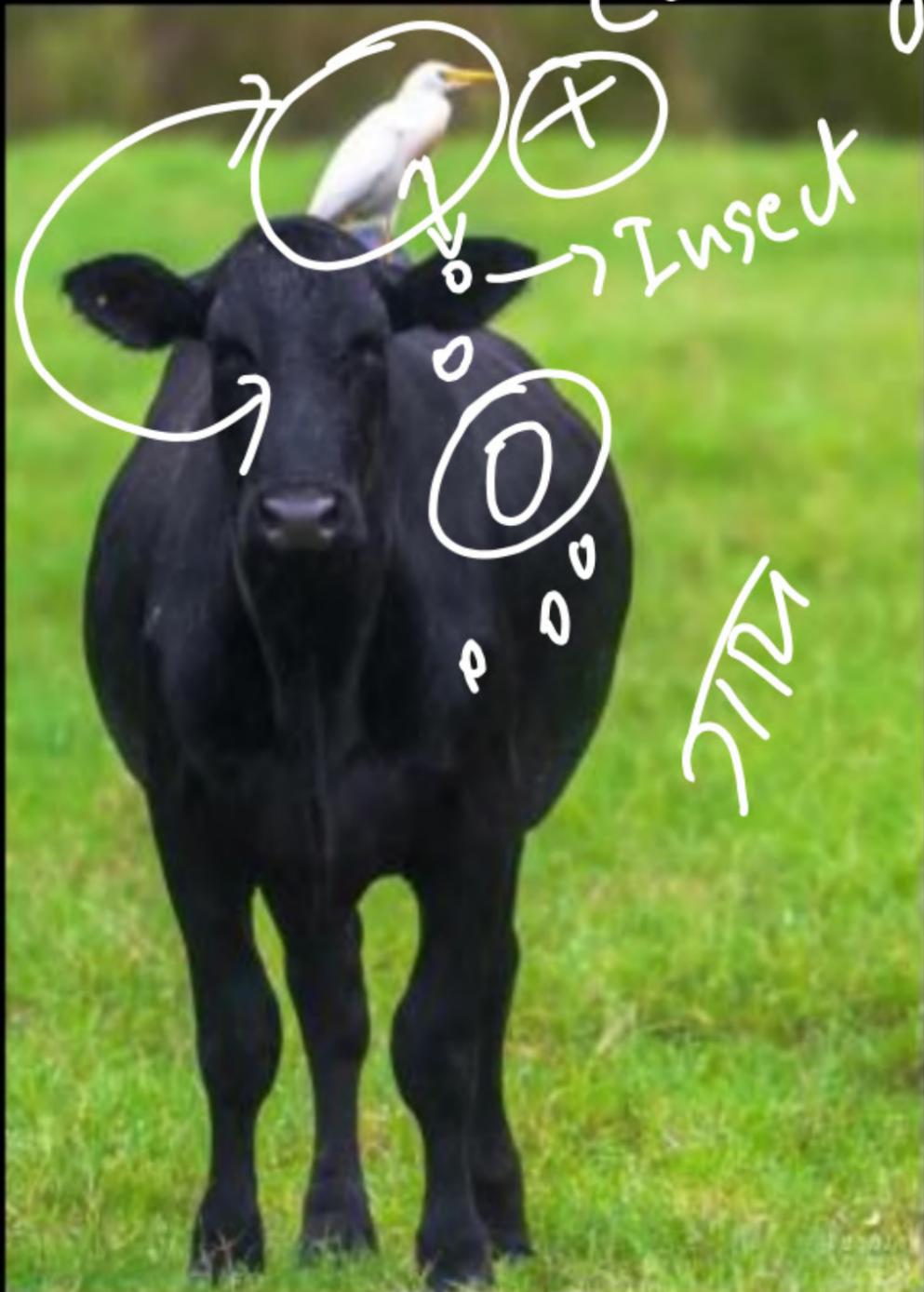
Commensalism



- This is the interaction in which one species benefits and the other is neither harmed nor benefited.
- An orchid growing as an epiphyte on a mango branch, and barnacles growing on the back of a whale benefit while neither the mango tree nor the whale derives any apparent benefit.
- The cattle egret and grazing cattle in close association, a sight you are most likely to catch if you live in farmed rural areas, is a classic example of commensalism



Commensalism



Remora fish

Sucker fish

Sucker fish

+

Shark

0



Protection / सुरक्षा
Food / भोजन

Remora

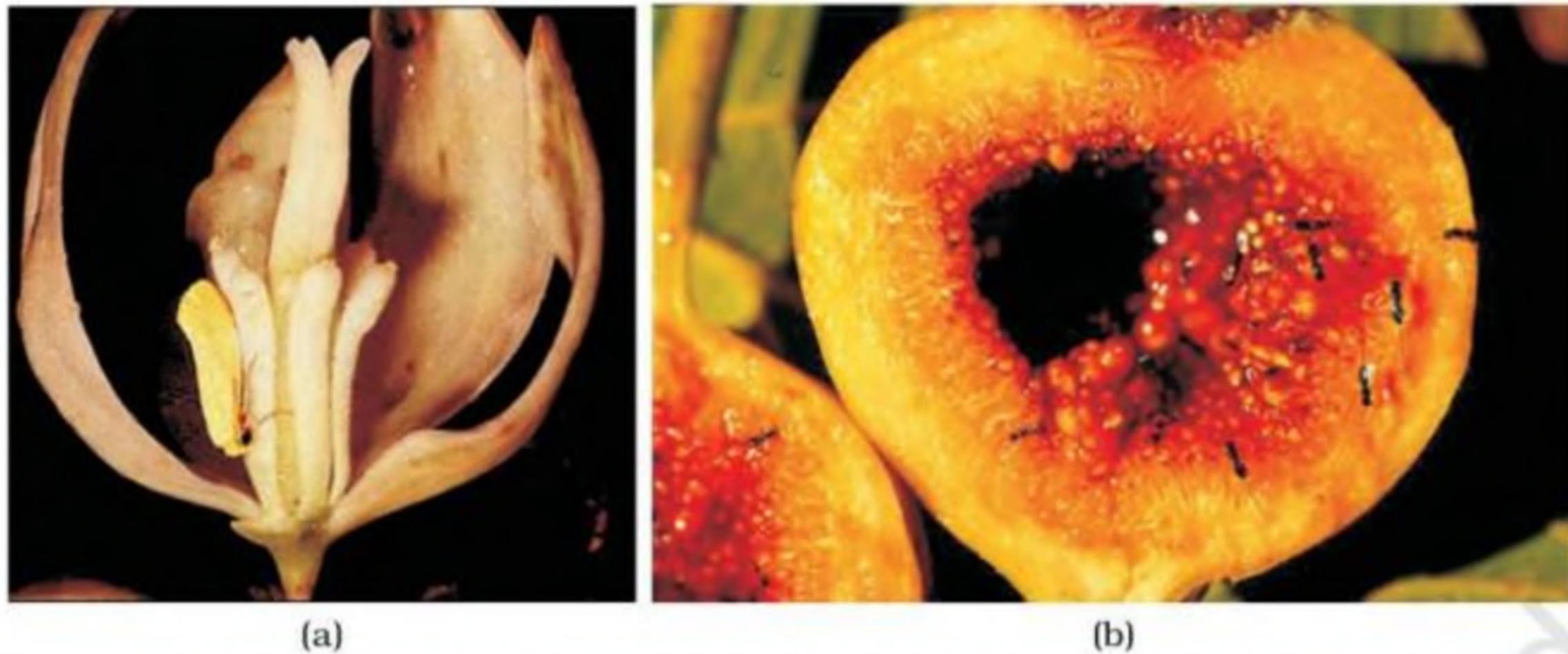
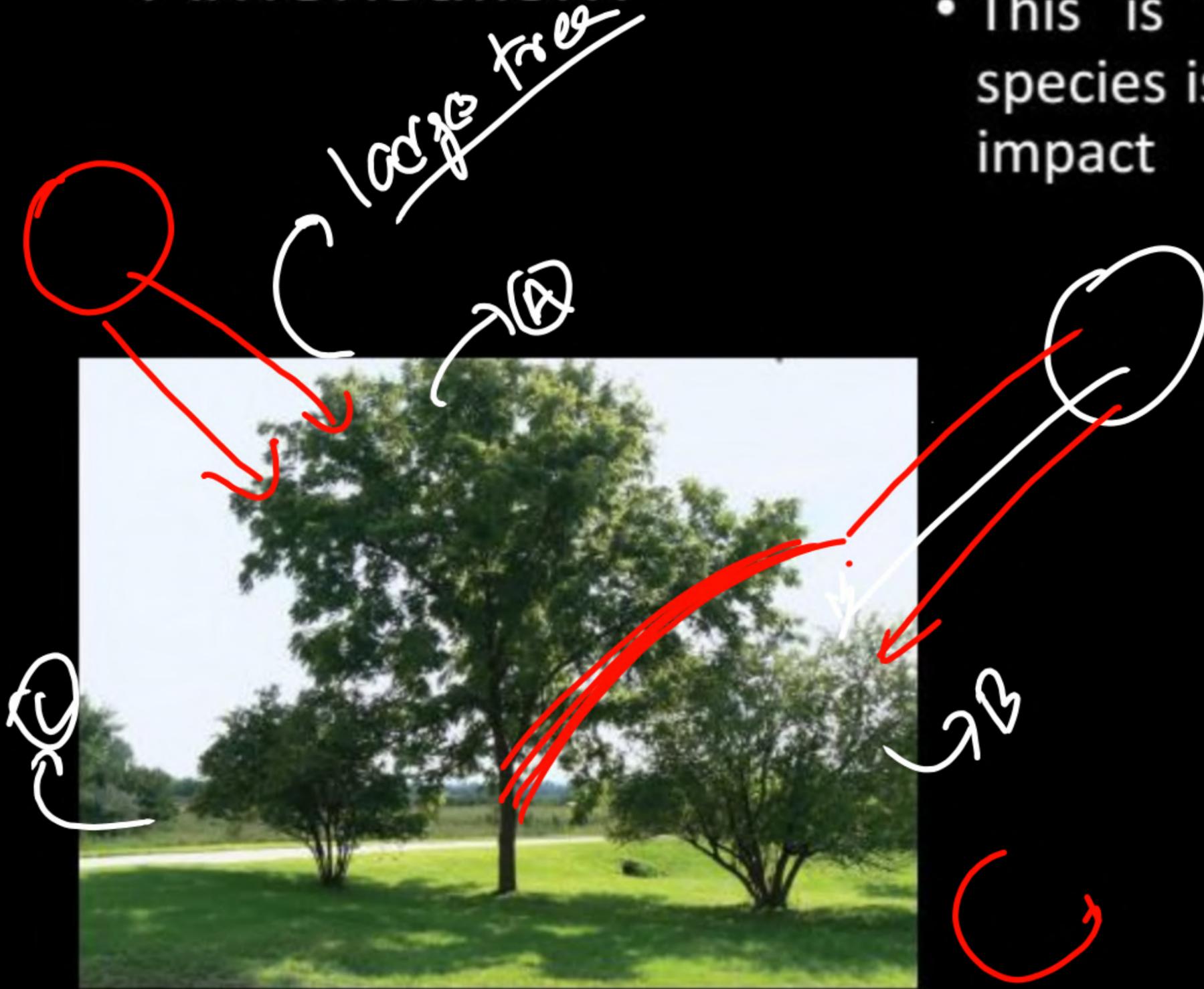


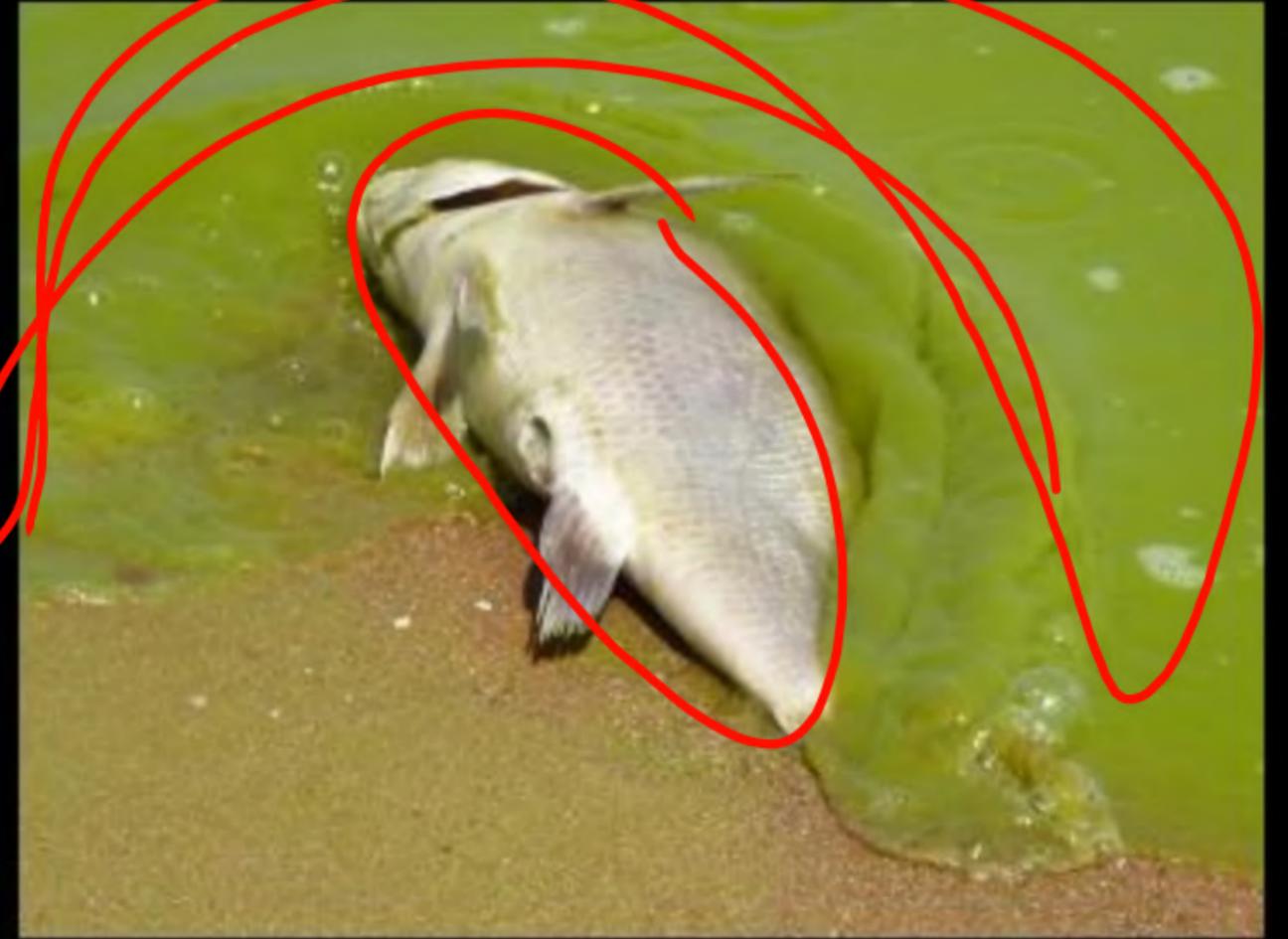
Figure 13.6 Mutual relationship between fig tree and wasp: (a) Fig flower is pollinated by wasp; (b) Wasp laying eggs in a fig fruit

Amensalism

- This is the interaction in which one species is harmed and other is having no impact



Algae = शैवाल



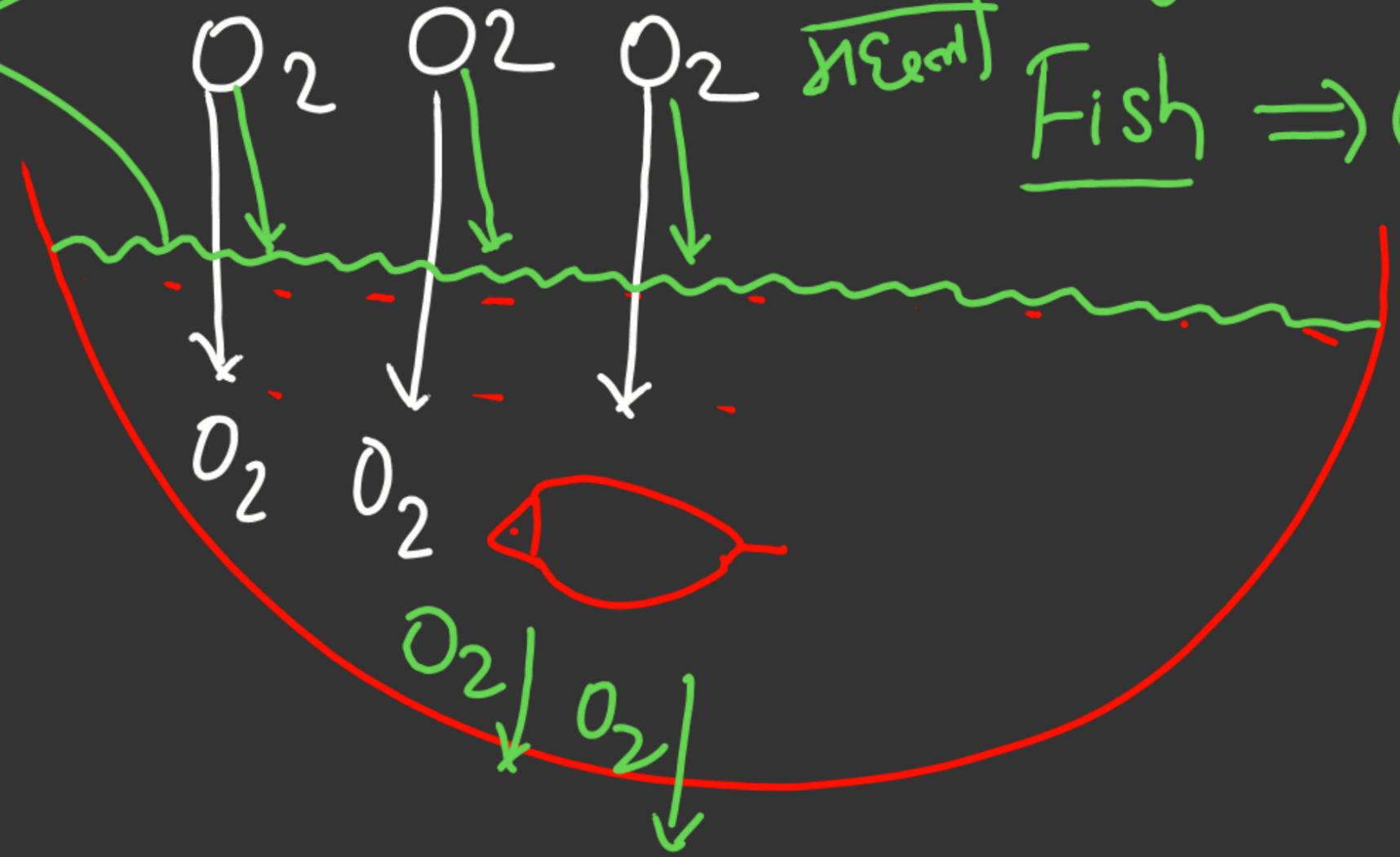
Algae ³⁰ 2191m

$H_2O =$

2191m

Algae = 0

Fish $\Rightarrow (-)$

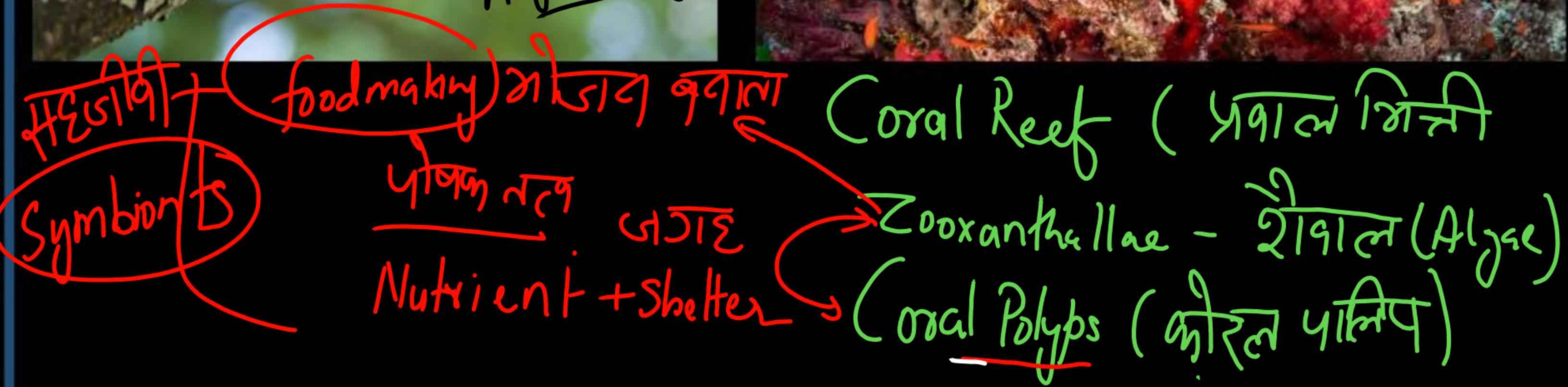


Mutualism



Figure 13.7 Showing bee-a pollinator on orchid flower

- This interaction confers benefits on both the interacting species.
- Lichens represent an intimate mutualistic relationship between a fungus and photosynthesizing algae or cyanobacteria.
- Similarly, the mycorrhizae are associations between fungi and the roots of higher plants.
- The fungi help the plant in the absorption of essential nutrients from the soil while the plant in turn provides the fungi with energy-yielding carbohydrates.



Chans-10

Ch-13

Ch-13

Bio class
12

10 qstn

Chapter 14

Ecosystem (यतिरक्षित)

→ Class 12
Biology

→ Concept
→ Example

Symbiosis

A relation in
which two organisms
become interdependent
on each other for
Survival

← एजीविता

एक ऐसा संबंध जिसमें
दो अलग-अलग
जीव एक दूसरे पर
जीवन रहने के लिए
निर्भर हो जाते हैं।

UPSC



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THANKS FOR WATCHING

