CONCEPT OF ECONOMIC INJURY

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Economic entomology is the scientific study of pests and pest control strategies.

- Pest populations develop, their impact always results in monetary loss.

  - High density pest pop. → increases severity of damage → need for control more critical.
TERMS

**INJURY**: the physical harm or destruction to a valued commodity caused by the presence or activities of a pest (e.g., consuming leaves, tunneling in wood, feeding on blood, etc.)

**DAMAGE**: the monetary value lost to the commodity as a result of injury by the pest (e.g., spoilage, reduction in yield, loss of quality, etc.).
Any level of pest infestation causes injury, but not all levels of injury cause damage.

A low level of injury may not cause enough damage to justify the time or expense of pest control operations.

At some point in the growth phase of a pest population it reaches a point where it begins to cause enough damage to justify the time and expense of control measures.
BUT WHEN TO START CONTROL?

A. How much financial loss (DAMAGE) is the pest causing?

B. How much will it cost to control the pest?

A pest outbreak occurs whenever the value of "A" is greater than the value of "B".

When A=B → ECONOMIC INJURY LEVEL (EIL)
The cost to control the pest equals the amount of damage it inflicts.

It is not cost effective to control the pest population below EIL because the cost of treatment would exceed the amount of damage.
The economic injury level (EIL) is often expressed mathematically by the formula (number of insects per unit area or per sampling unit):

\[ EIL = \frac{C \times N}{V \times I} \]

- "C" is the unit cost of controlling the pest (e.g., $20/acre)
- "N" is the number of pests injuring the commodity unit (e.g., 800/acre)
- "V" is the unit value of the commodity (e.g., $500/acre)
- "I" is the percentage of the commodity unit injured (e.g., 10% loss)

**SO EIL: 320 INSECTS PER ACRE**
ECONOMIC THRESHOLDS

A point below the EIL at which a decision is made to treat or not treat.

ET Always lower than EIL

Expressed in insects density (number of pest per area)
THANK YOU