* ~~Changing climate 🡪 increased temps~~
  + ~~Increased temps 🡪 increased seasonal temps~~
  + ~~Increased seasonal temps 🡪 increased growing seasons~~
  + ~~Increased growing seasons 🡪 increased insect generations~~
  + ~~Increased insect generations~~ ***~~can lead to~~*** ~~pest pressure~~
  + ~~Increased pest pressure 🡪 increased damage~~
  + ~~Increased damage 🡪 increased management~~
  + ~~Increasing management~~ ***~~requires an understanding how insects will respond~~***
* ~~Responding to climate 🡪 winners and losers~~
  + ~~Losers 🡪 less genetic variability and extinction~~
  + ~~Winners 🡪 through~~ *~~redistribution and adaptation~~*
    - ~~Redistribution 🡪 range expansion or shifting~~
      * ~~Range expansion 🡪 pest insects in novel habitats~~
      * ~~Pest insects in novel habitats 🡪 effects food security~~
    - Adaptation 🡪 mechanisms: colonization, growth rate, fitness
      * Colonization vs extinction
      * Growth rate vs temp response
      * Mean of fitness vs variance of fitness
  + Mechanisms 🡪 evolution
  + Evolution 🡪 starts with plasticity in phenos
  + Phenotypic Plasticity 🡪 shifts in dormancy; ***could be a way insects mitigate the effects of a changing climate***
  + Pests coping with reduced resources 🡪 effects food security
* Plasticity in Dormancy 🡪 response to environment
  + Response to environment 🡪 shifts in dormancy 🡪 changes in seasonal light/temp relationship
  + Seasonal Light/temp relationship 🡪 changes in environment when diapause is initiated
  + Environmental changes 🡪 plasticity (shifts) in dormancy initiation
  + Shifts in dormancy 🡪 pest coping with reduced resources
  + degrees of dormancy
  + Degrees of Dormancy 🡪 immediate/preparative responses
    - Immediate response 🡪 quiescence
* Quiescence
  + Briefly explain how this works
  + Preparative 🡪 genetically determined diapause
    - Diapause
      * Generally describe what diapauses is
      * Ultimately speaking and reiterate why insects use it briefly
      * Explain the cues and the stages
      * Sensitive photoperiod, initiation, maintenance, termination, facultative and obligate
  + Genetically determined diapause 🡪 behavior and physiological events
    - Accumulation of resources 🡪 survival during diapause
      * Survival 🡪 protection from environment
        + When diapause is initiated
        + Length of diapause
        + Suspension of development
        + Suppressed metabolism
      * Survival 🡪 accumulated resources
        + Fats 🡪 reservoir of energy and water
        + Proteins 🡪 reservoir of energy, amino acids, enzymes, chaperone proteins
* European corn borer
  + Pest
  + Genetic Facultative diapause
  + Clinal distribution of facultative diapause