IRRIGATION AND INSECT PEST MANAGEMENT

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IN GENERAL:

- **The most important post-planting consideration in avoiding insect damage is maintaining proper plant health (=avoiding stress)**
  - **Nutrient**
  - **Water**

WATER STRESS

- **Many different insect groups perform better and are more damaging on water-stressed plants…**

- **But in particular, sucking insects:**
  - **Aphids, Whiteflies, Scales, Leafhoppers, and others (including some mites)**

WATER STRESS

- Though somewhat rare, in some cases too much water can promote insect numbers
  - Greater concern is with pathogens

- Proper irrigation management = avoiding extremes of excess/deficiency
  - Know IR, Know W_d

WATER AND INSECTS

- **Most insects have evolved to conserve water**
  - **(too little water is the problem)**

- **Sucking Insects: excrete excess water**
  - **(too much water is the problem)**
    - **Phloem relatively nutrient-poor: large volume is ingested, nutrients filtered, water and sugars excreted as waste**

WATER DEFICIENCY: PLANT RESPONSES

- **Initially, phloem becomes more concentrated**
- **Secondly, plants may internally redistribute N (via phloem)**
- **Result: increased nutrient availability to phloem-feeding insects**

Example #1: Stressing cotton early to promote root growth

- Economically Sound?
  - Potential loss of yield with delayed 1st irrigation
- Increases vulnerability of crop to early season insect damage (directly through water stress)
  - May require earlier and more frequent control
  - If practiced, be aware of potential for greater insect densities (even after water is turned back on)
- Optimal 1st irrigation timing: PHS - FB

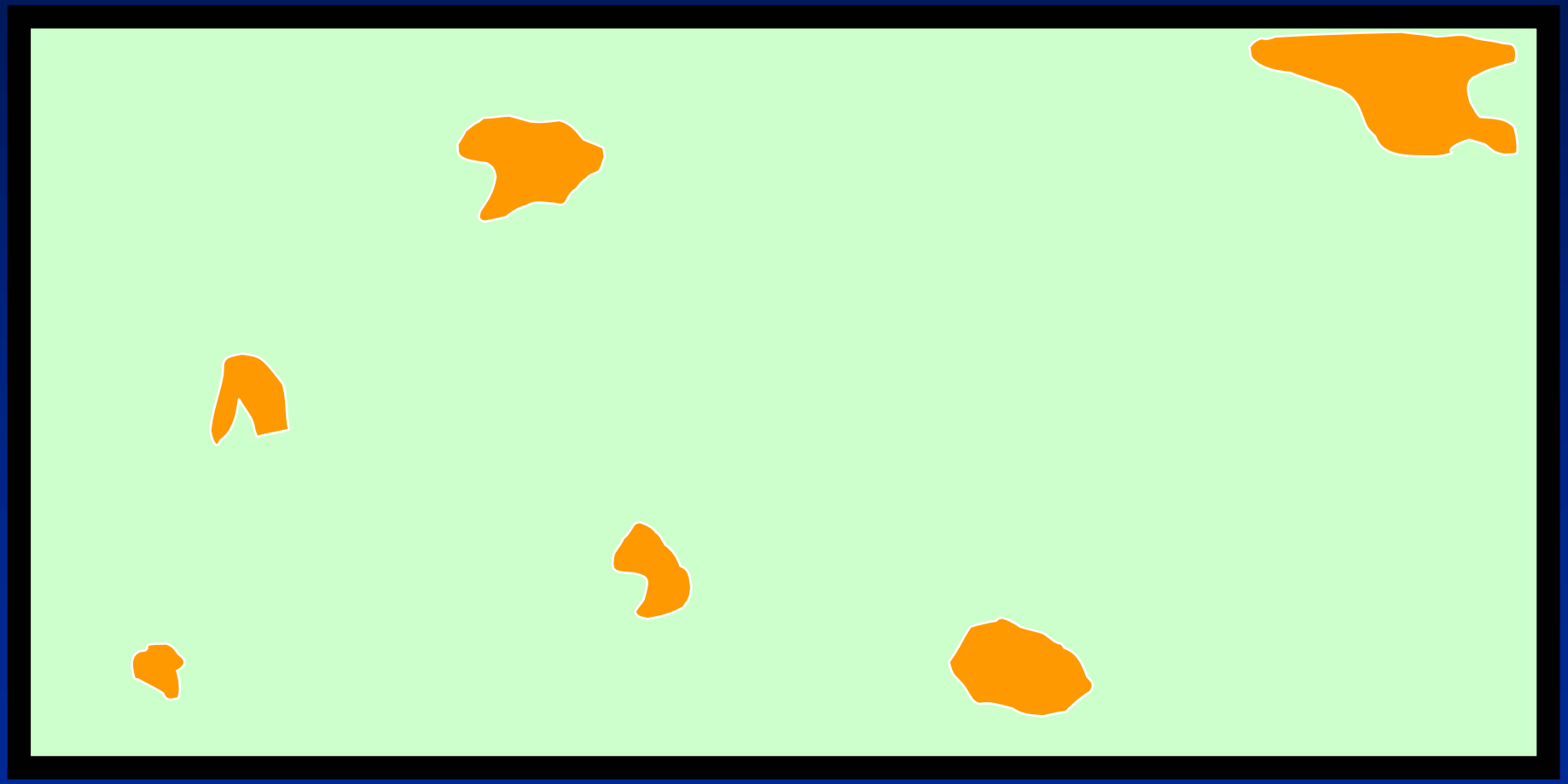
Example #2: "Idling" Melons

- Water turned off or down, usually after 1st harvest in hopes of favorable market
- Melons become a Whitefly nursery
- When/if irrigation resumes, production is less efficient
- Neighborhood effect upon other crops

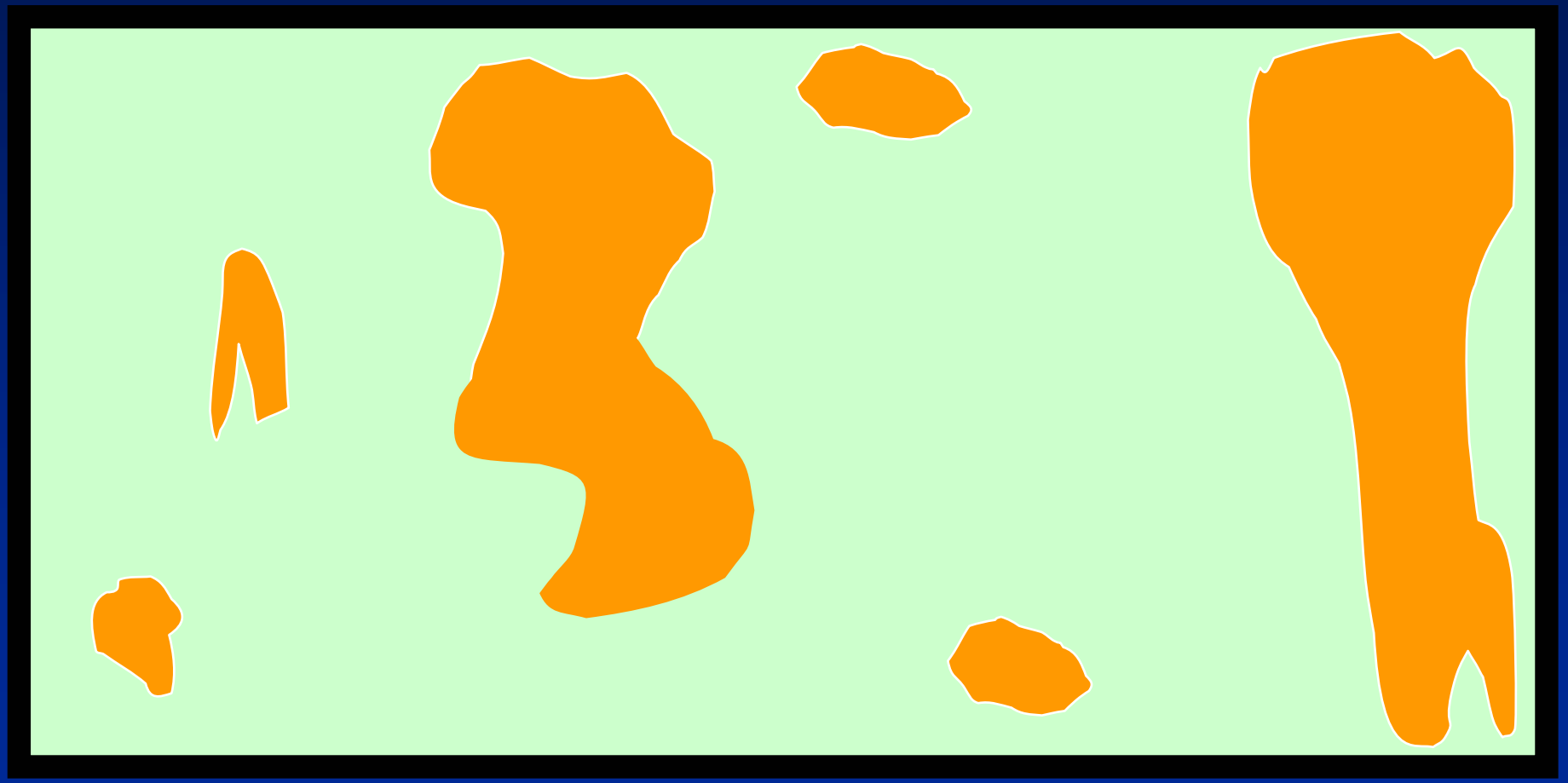
IRRIGATION EFFICIENCY AND INSECT MANAGEMENT

- Water retention is affected by soil type
  - Plant vigor and yield may be effected in patches of poor soil
  - Insect densities are often greater in these patches, AND can spread outward
- Irrigation adjustments may be warranted
  - Example: field with areas of poor soil / sand streaks

DO NOTHING?



EXPECT GREATER INSECT PRESSURE



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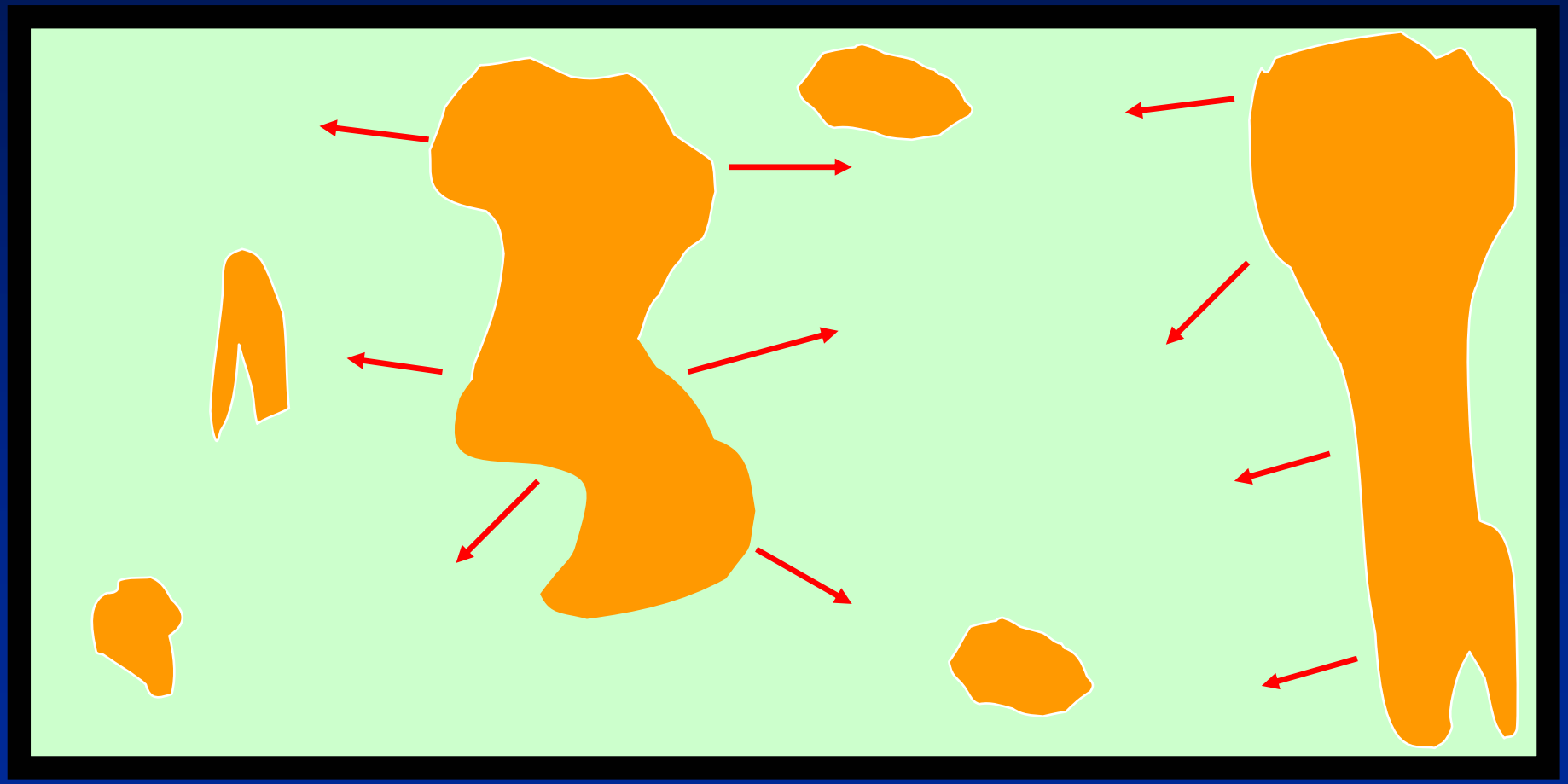
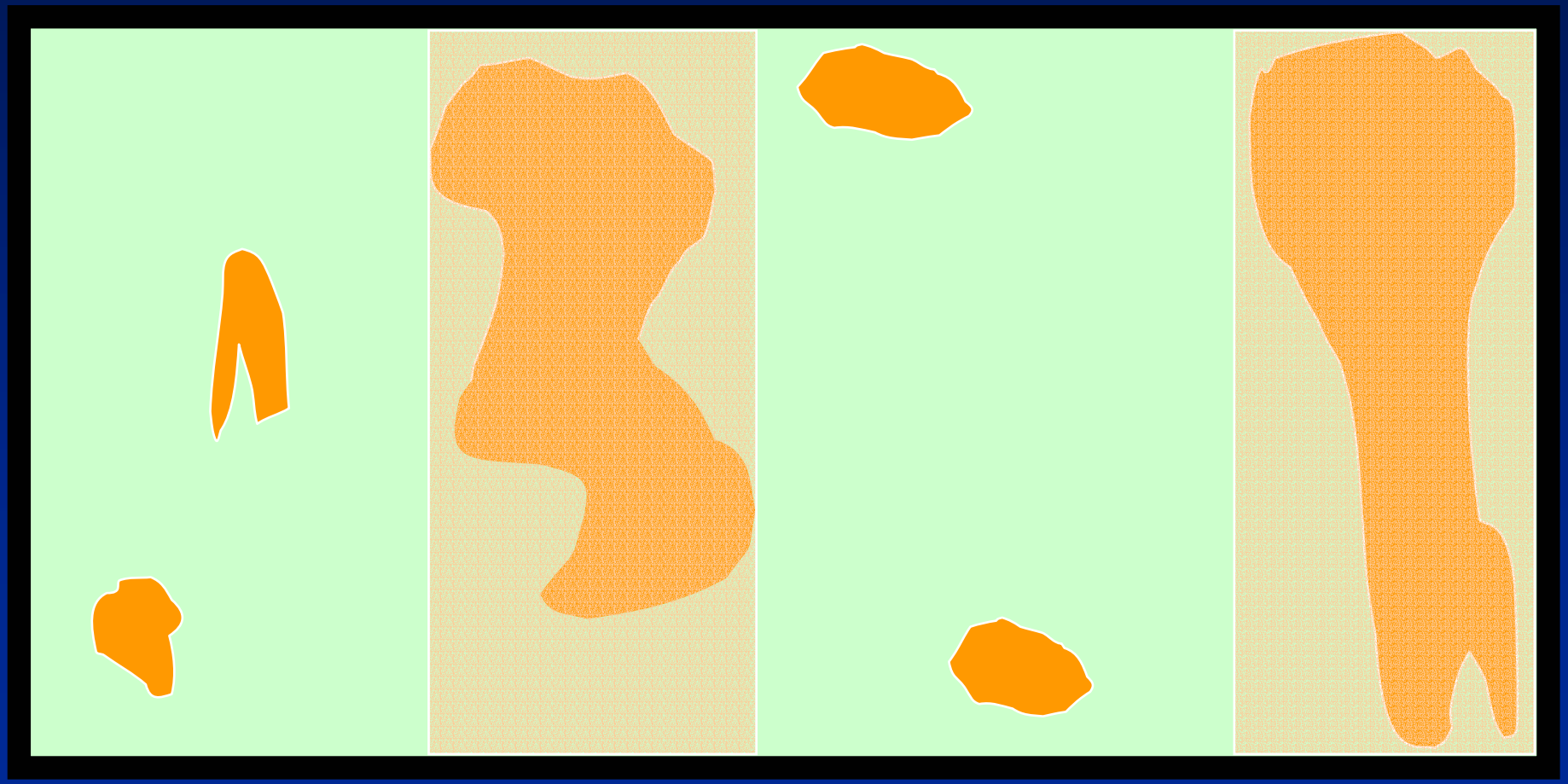
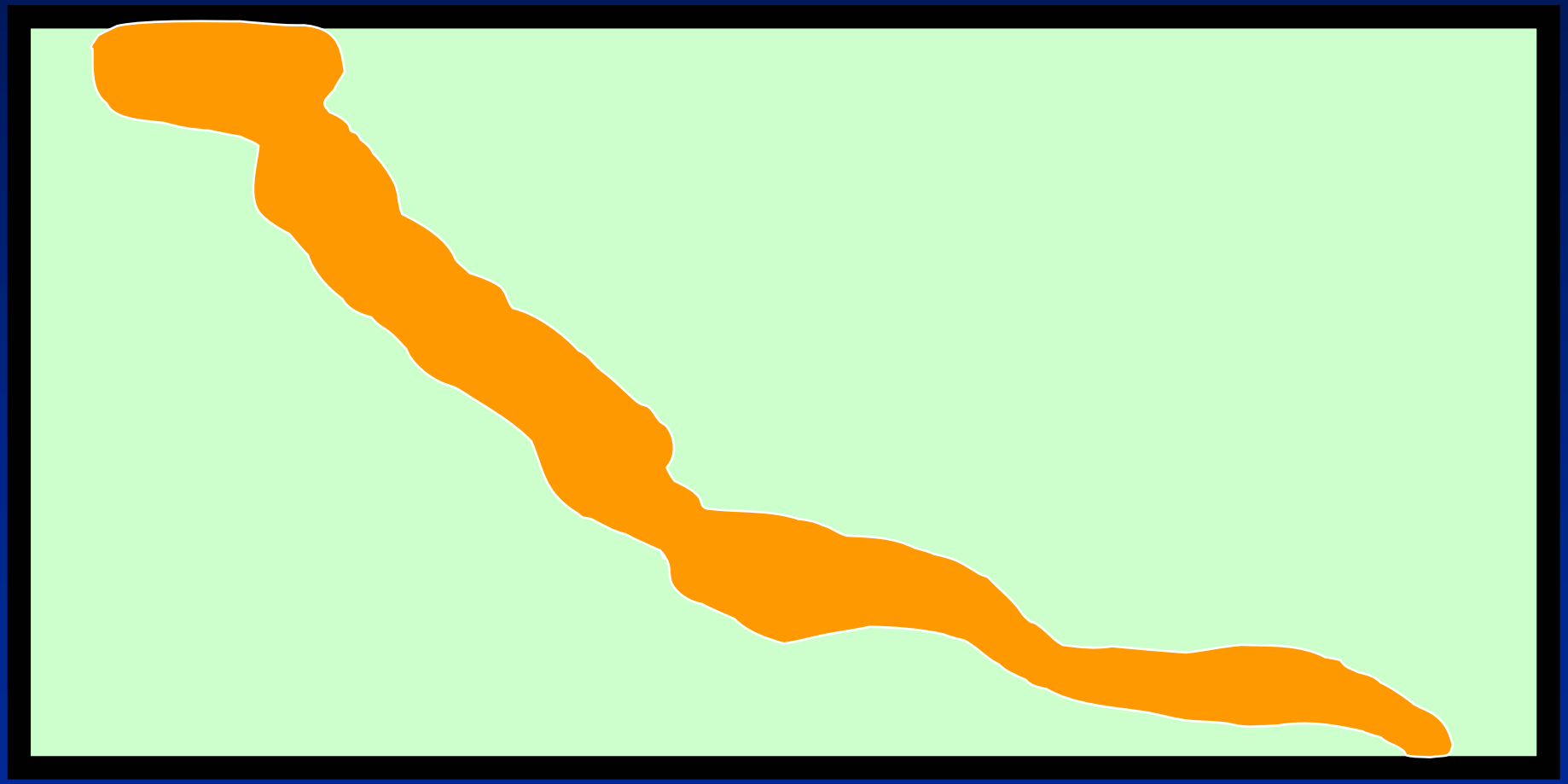


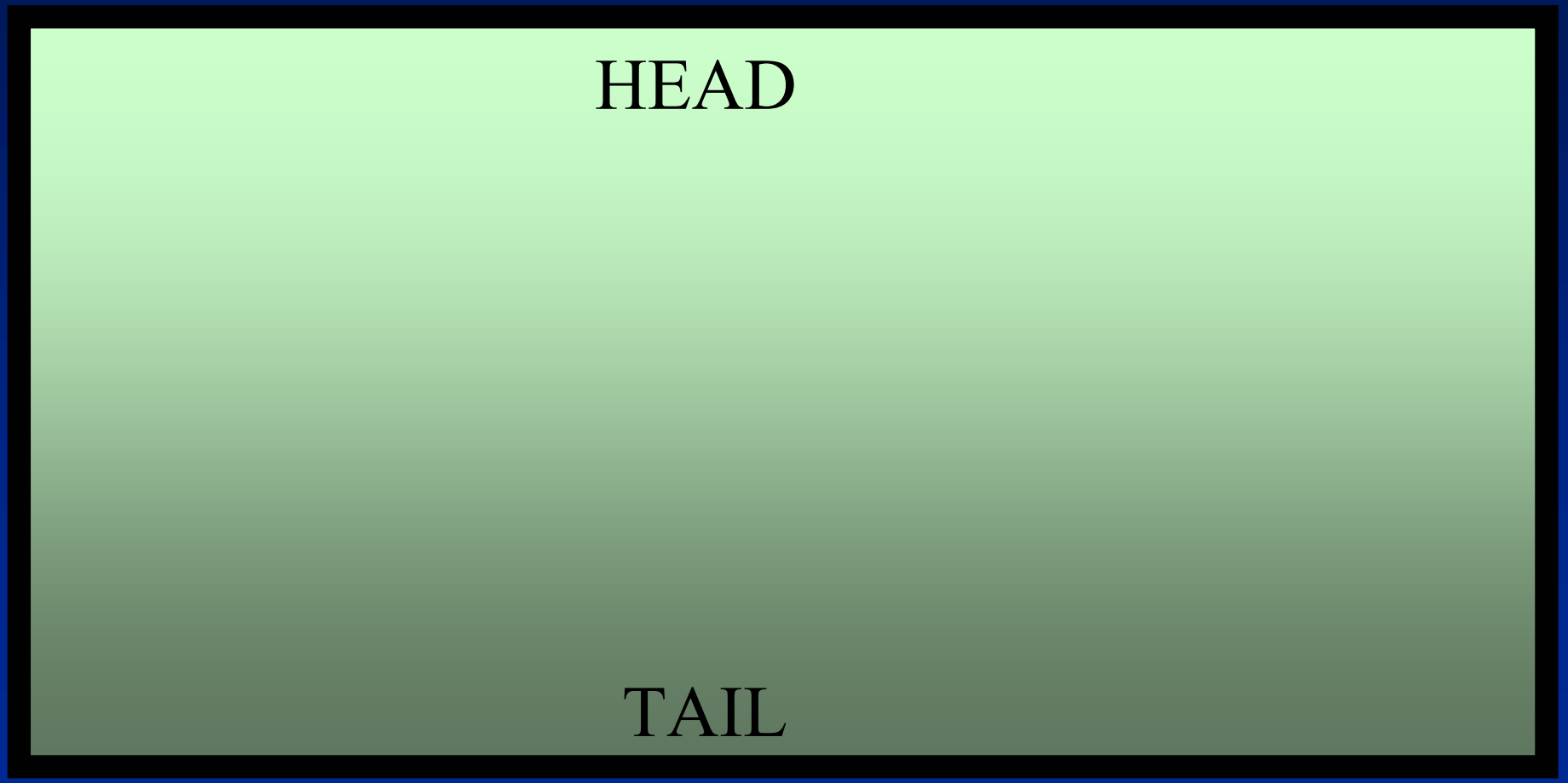
SUPPLEMENTAL IRRIGATION



NO EASY SOLUTION



SCOUT FIELDS REPRESENTATIVELY



HOME / ORNAMENTAL

- Maintain plant health
  - Drip systems, properly designed and maintained, are best
  - Chronic, severe insect problems may be indicators of system faults

Structural Pests

- Termites
  - Benefit from moist soils
  - Non-irrigated buffer zones around structures will reduce likelihood of infestations
  - Easily incorporated into landscape design

Health / Nuisance Pests

- **Scorpions**
  - **Avoid over watering – especially container plants, or use no catch trays**
  - **Standing water, wet soil attract scorpion prey items**

However, even landscape irrigation done properly will not eliminate arthropods. In fact, the more plants that are maintained, the more arthropods one will have. The price of having a landscaped yard!