Agents of Disease – Nematodes

Characteristics of Nematodes:

- Animal kingdom - eukaryote
- Small, worm-like organisms that are invisible to the naked eye
- Multiplies by laying eggs either in or around the host
- Feeds on/in plant roots and shoots, causing stunting of plant growth, abnormal growth
- Cause 18% of crop losses annually
- Very difficult to control, impossible to eradicate
- Moves from host to host on own power, movement of contaminated soil and tools

Photo from: http://soils.usda.gov/sqi/concepts/soil_biology/images/large_todes_LR.jpg

Agents of Disease – Nematodes

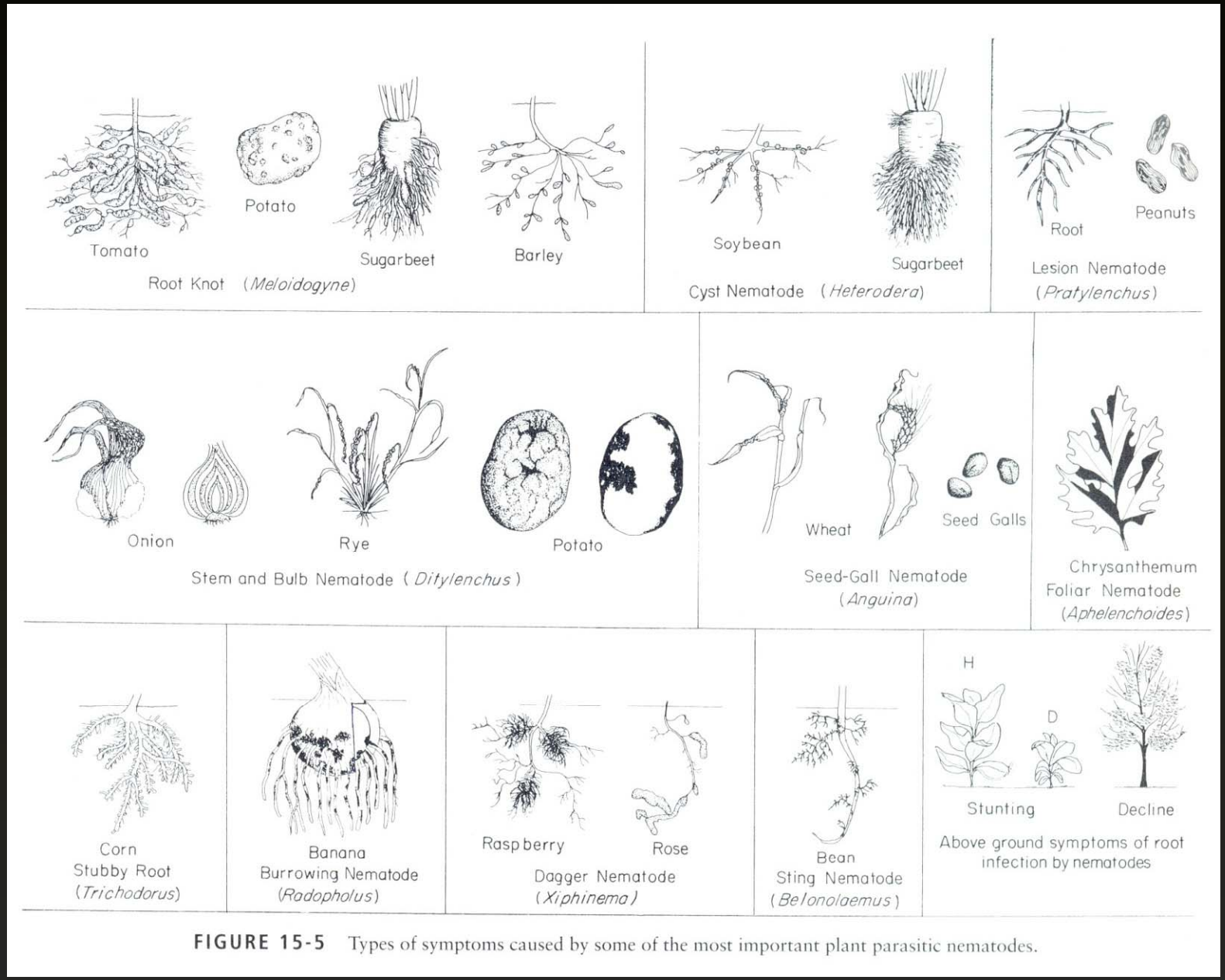


FIGURE 15-5 Types of symptoms caused by some of the most important plant parasitic nematodes.

Agents of Disease – Nematodes

Field plot infested with nematodes

Lettuce damage by Root-knot nematode

Root lesion nematode in roots

Agents of Disease – Nematodes

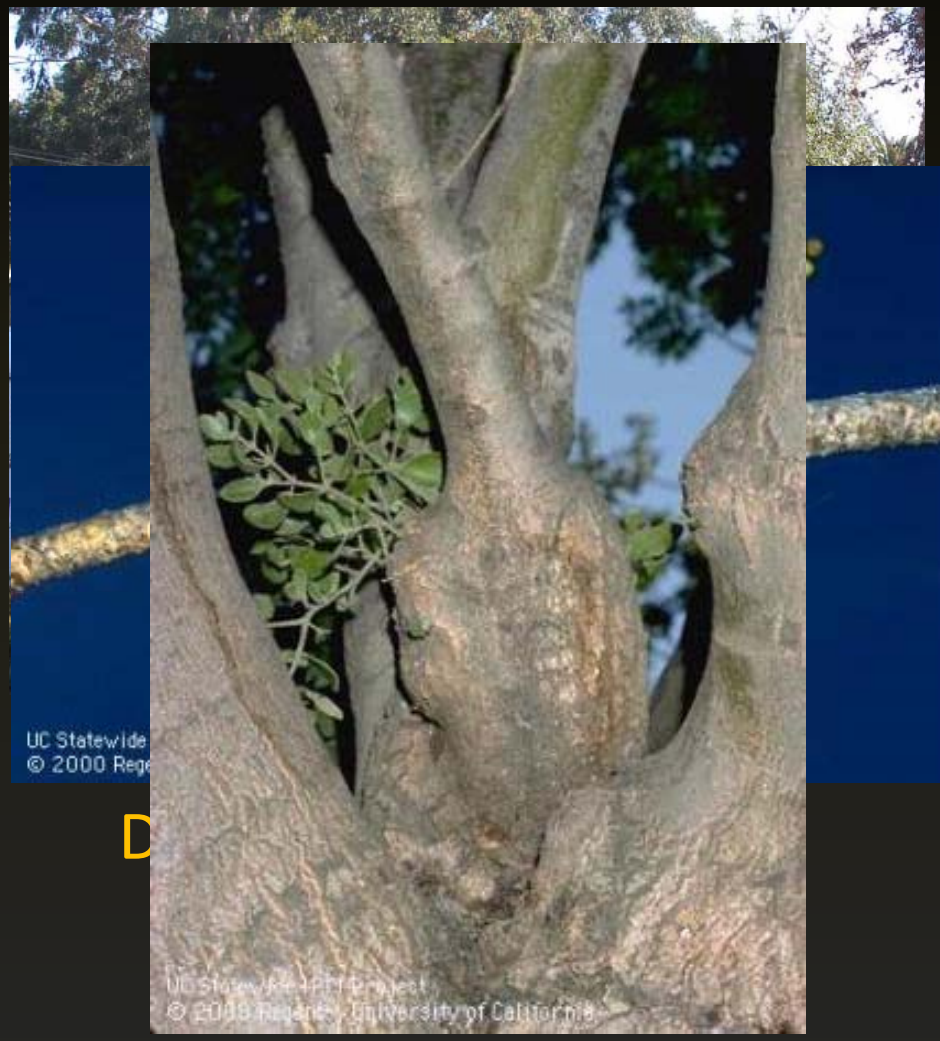
Damage by Root-knot nematode and the fungus *Fusarium*. Disease complexes are often associated with nematodes – the nematode causes the injury on the root and provides easy penetration into the host tissue by a fungus, bacteria.

Damage by Root-knot nematode

Agents of Disease – Parasitic Plants

Characteristics of Parasitic Plants:

- Plant Kingdom- eukaryote
- Stunts plant growth and reduces yield by reducing the amount of photosynthetic sugars for growth
- Have specialized tissues (haustorias) that penetrate the tissues of other plants
- Found on branches, roots, and shoots
- Dependence upon plant varies – some just for water, some for nutrients
- Very difficult to control, impossible to eradicate
- Moves from host to host through seeds, movement of contaminated soil and tools



D

Leafy Mistletoe on Ash

Agents of Disease – Abiotic Disorders

Characteristics of Abiotic Disorders:

- Caused by a lack or excess of something
- Cannot be transmitted to other plants
- Stunting or death of plant may occur, dependant upon the problem
- Some may be controlled by removing excess, providing deficient material, letting the plant grow
- Some can not be controlled due to type of injury
- Sometimes, it is very easy to diagnose, other times very difficult

Causes:

1. Lack/Excessive Moisture
2. Lack/Excessive Light
3. Extremes in Temperature
4. Wind
5. Lack/Excessive nutrition
6. Air pollution
7. Chemical injury
8. Mechanical injury
9. “Act of God” injury

Agents of Disease – Abiotic Disorders

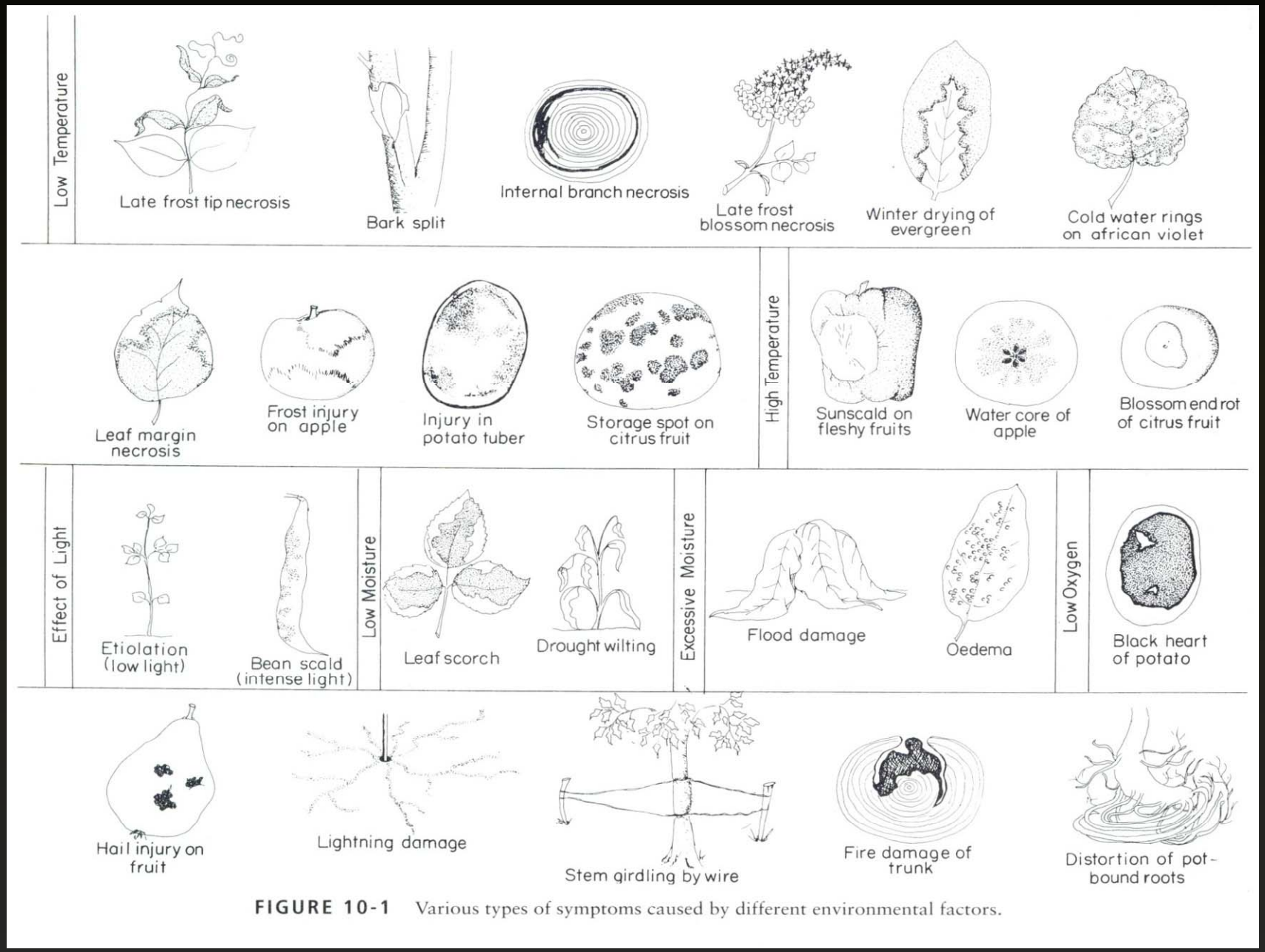


FIGURE 10-1 Various types of symptoms caused by different environmental factors.

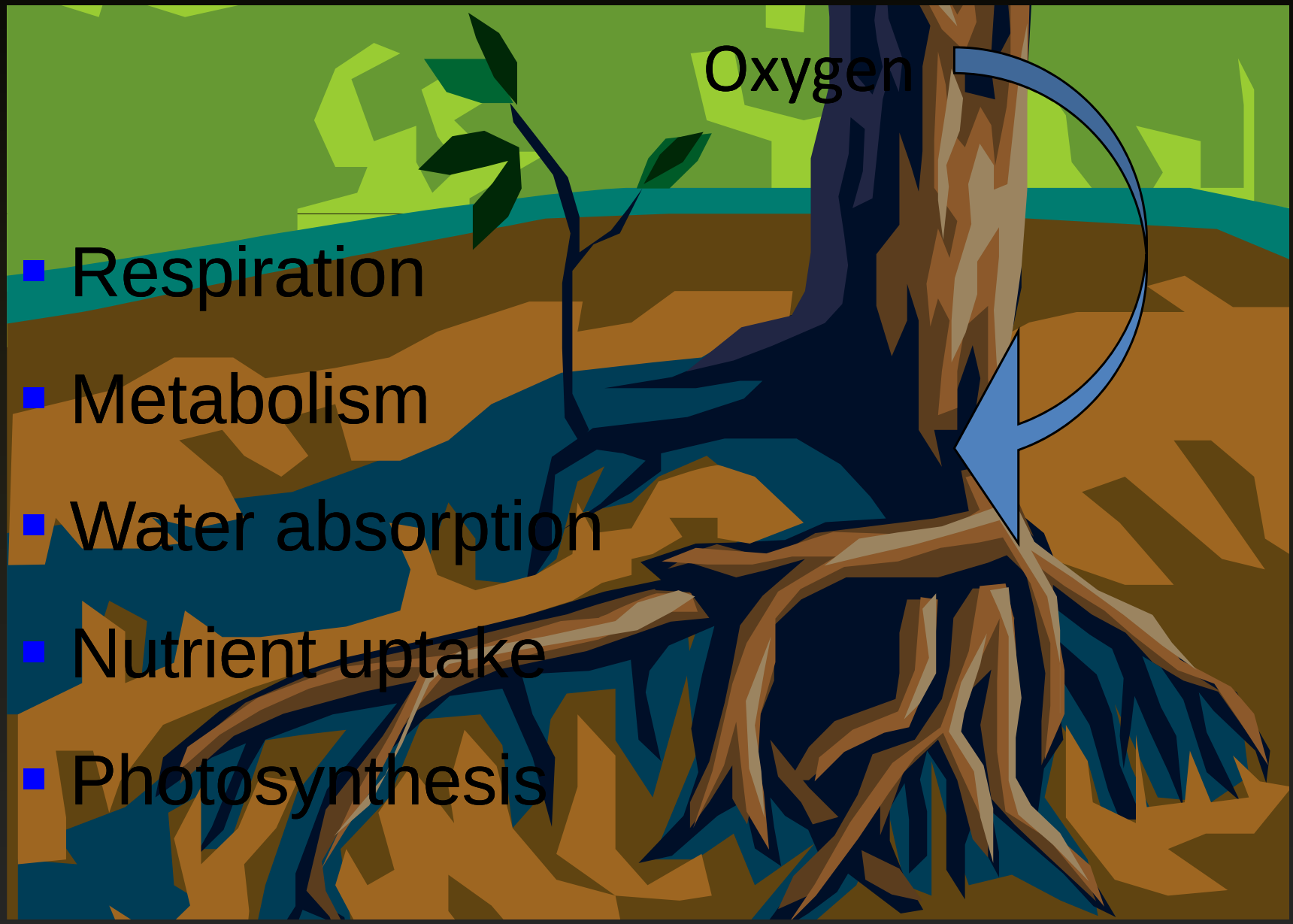
Agents of Disease – Abiotic Disorders

Excessive Moisture

Monterrey Pine

Agents of Disease – Abiotic Disorders

Excessive Moisture



- Respiration
- Metabolism
- Water absorption
- Nutrient uptake
- Photosynthesis

Agents of Disease – Abiotic Disorders

Deficient Moisture

Gingko

Tulip

Ash