Oregon Cranberry School

Feb. 05, 2015

Sprague Community Theater

Bandon, Oregon

Don Kloft

Ag. Scientist/Station Manager

Ocean Spray Cranberries, Inc.

Plant Identification

- **LIST OF CHARACTERS**
- Plant Habit
- 1. Woody plants (excl. suffrutices)
- 2. Herbaceous plants (incl. suffrutices)
- 3. Aquatic plants, leaves floating or submerged
- 4. Climbers, lianas
- 5. Chlorophyll absent (parasites or saprophytes)
- 6. Bulb present (monocots only)
- 7. Milky juice present
- 8. Spiny stems or leaves
- 9. Tendrils present
- 10. Cladodes or phyllodes (modified branches or petioles) Vestiture
- 11. Hairs glandular

Plant Identification

12. Hairs stellate (also 2-armed, branched and tufted)
13. Hairs stellate (not 2-armed, branched and tufted)
14. Hairs 2-armed or t-shaped, non-glandular
15. Hairs branched
16. Hairs tufted, non-glandular
17. Hairs peltate or scale-like
18. Hairs vesicular or bladder-like
19. Hairs distichous onocots on(mstinging
20. Cystoliths present (dicots only) Leaves
21. Leaves opposite or verticillate
22. Leaves alternate (excl. distichous monocots)
23. Leaves ly)
24. Leaves equitant (e.g. Iris)
25. Leaves peltate

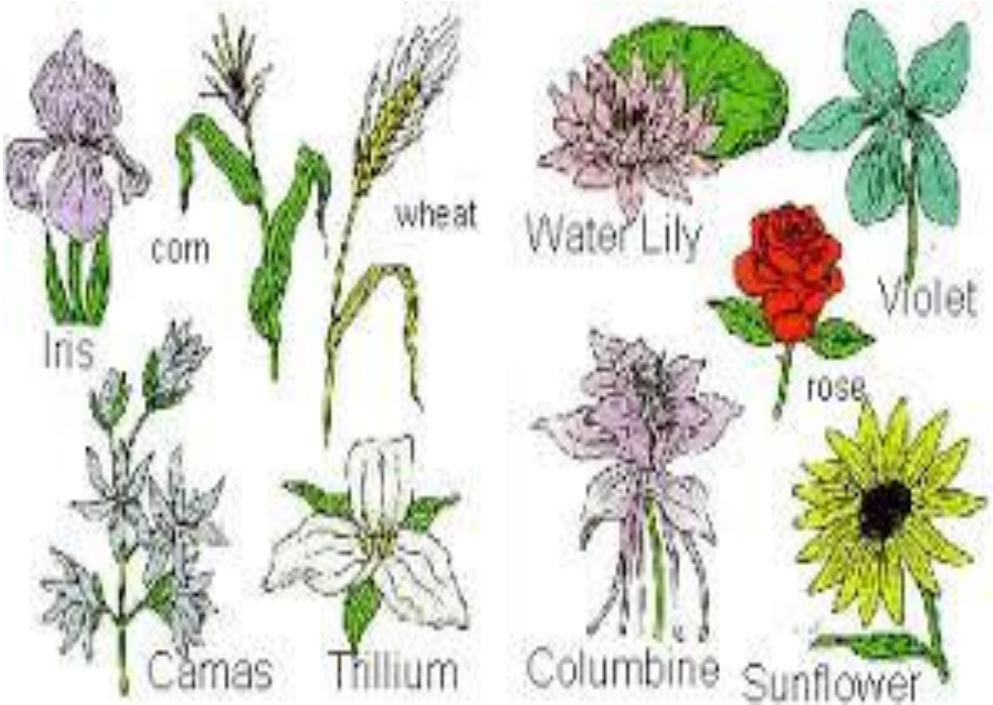
Etc. Etc. Etc…….

Plant Identification

- Monocot versus Dicot
- The angiosperms (the flowering plants) can either be a monocotyledon (monocot) or a dicotyledon (dicot) according to the number of cotyledons in their seeds.

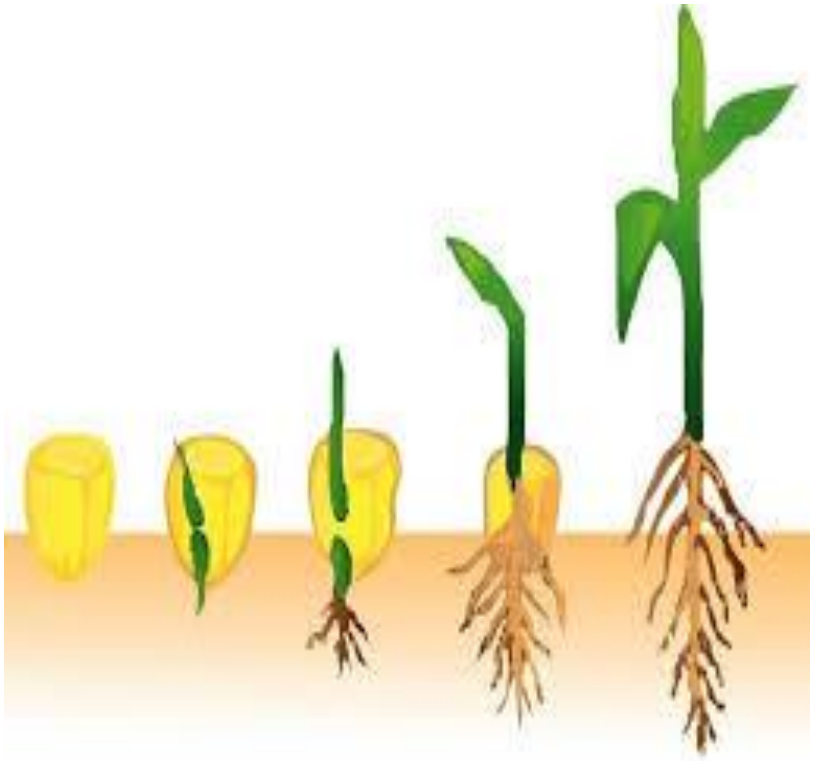
Monocot

- Any of a class or subclass (Liliopsida or Monocotyledoneae) of chiefly herbaceous angiospermous plants having an embryo with a single cotyledon, usually parallel-veined leaves, and floral organs arranged in cycles of three
- From mono- ("one") + cot- abbreviated form of cotyledon ("embryonic leaf").
- Examples of monocotyledonous plants are the grasses, orchids, rushes, sedges, palms, and lilies.



Monocot

- Monocot seedlings typically have one cotyledon (seed-leaf).

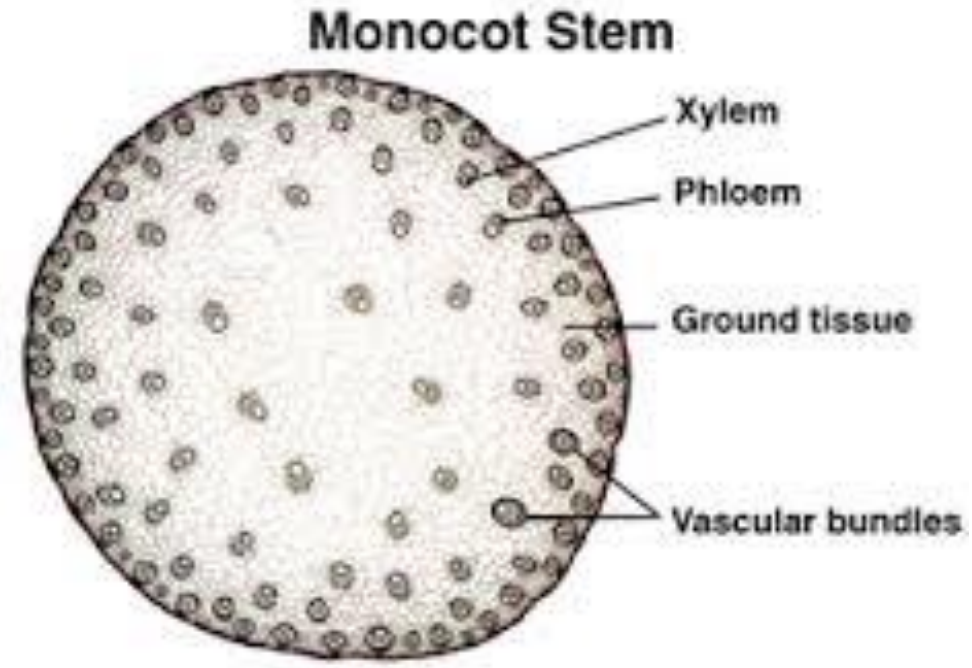


Monocot

- Monocot roots are adventitious, i.e. root growing in an unusual location e.g. from a stem.
- Primary root is short-lived and is replaced within a short time by many roots that form from the stem.
- These roots, which develop from the stem, are equal in size

Monocot

- In monocots, the vascular bundles are scattered.

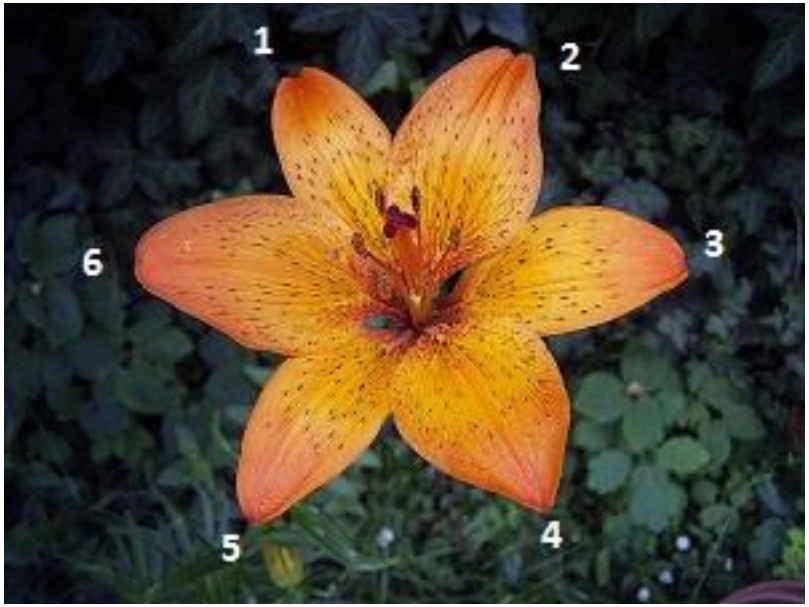


Monocot

- In monocots, the leaves have parallel venation.

Monocot

- The number of flower parts - monocot flowers are trimerous (flower parts in multiples of three)
- You can simply count the petals of a flower, and if you can divide the total number by three, you probably have a monocot.



Grasses - Poaceae

- Poaceae have hollow stems called culms plugged at intervals by solid leaf-bearing *nodes*.
- Grass leaves are nearly always alternate and distichous (in one plane), and have parallel veins.
- Each leaf is differentiated into a lower sheath hugging the stem and a blade with entire (i.e., smooth) margins.
- A membranous appendage or fringe of hairs called the ligule lies at the junction between sheath and blade, preventing water or insects from penetrating into the sheath.

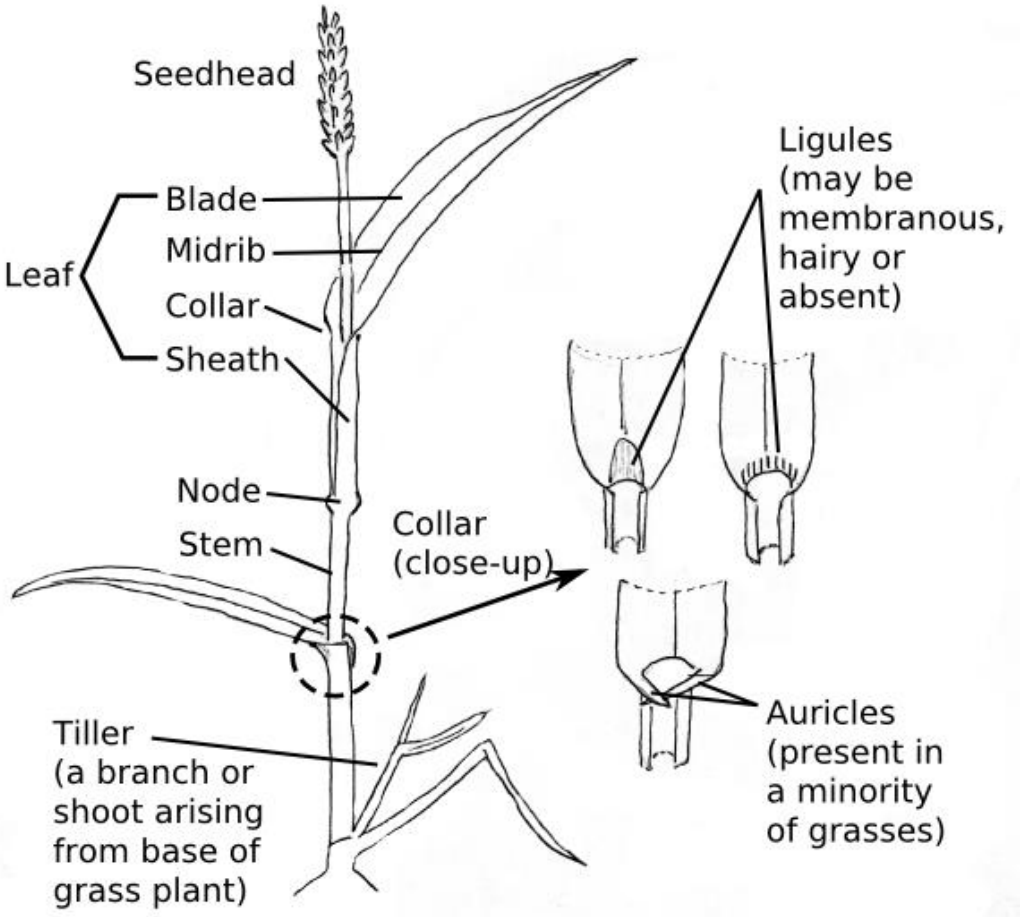


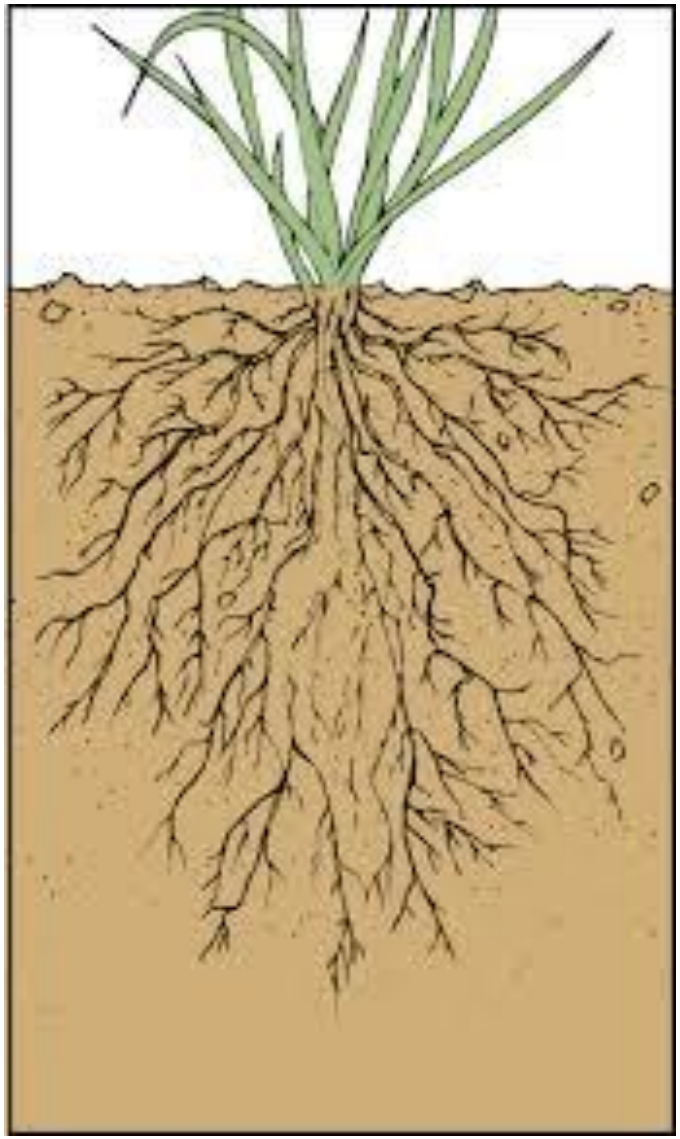
Photo Credit: Mark Schonbeck, Virginia Association for Biological Farming.

Grasses

- Mono-Cotyledon emergence

Grasses

- Adventitious root structure

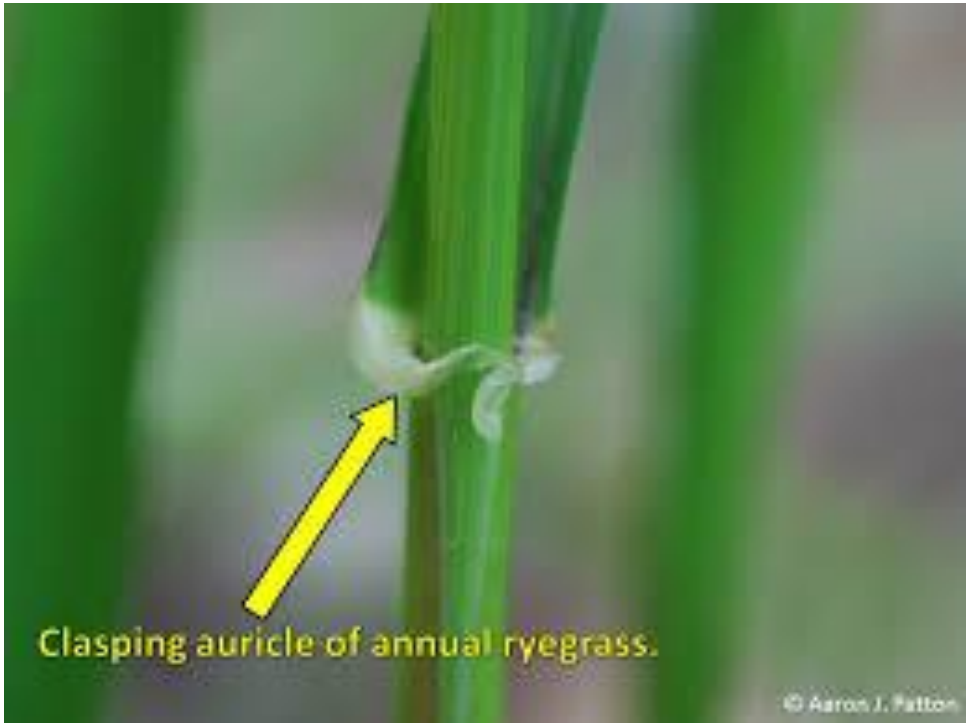


Grasses

- Leaf ligule.

Grasses

- Leaf auricle.

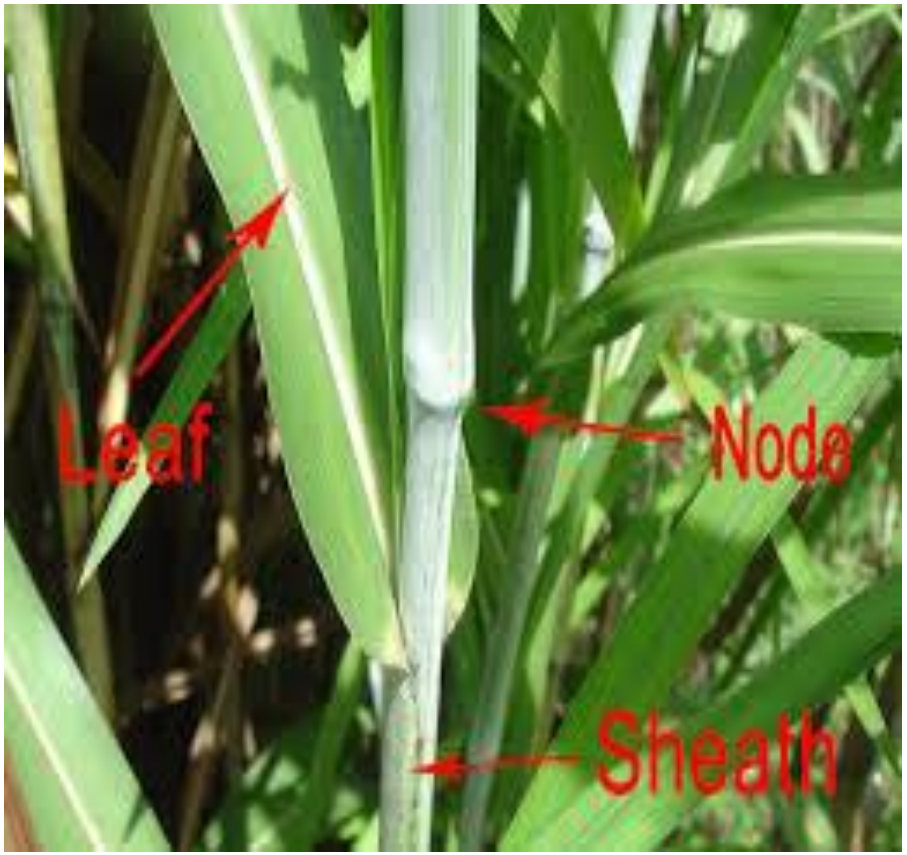


Grasses

- Hollow stem.

Grasses

- Stem node.

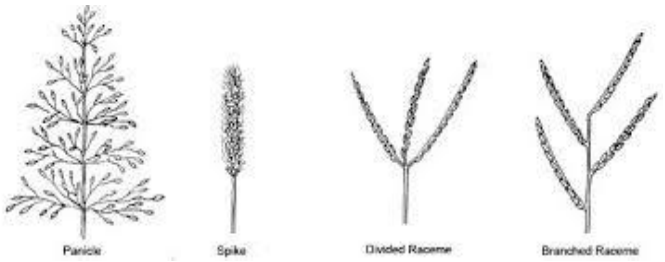


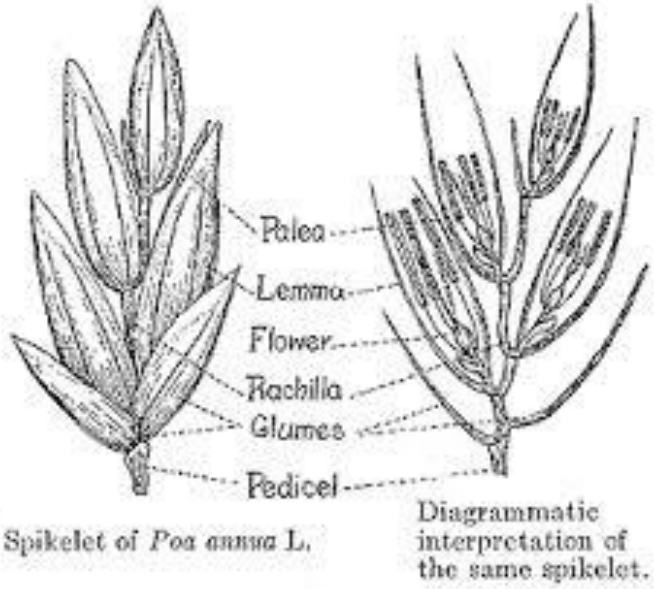
Grasses

- Blade veination

Grasses

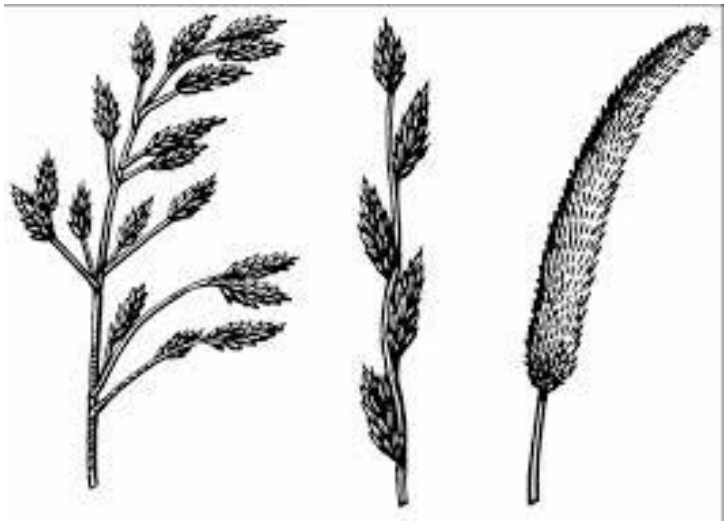
Seed heads





Spikelet of *Poa annua* L.

Diagrammatic interpretation of the same spikelet.



Sedges
Monocot

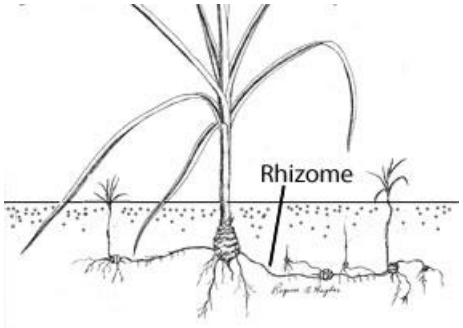
- Cyperaceae, among the 10 largest families of flowering plants, contain about 5,000 species.

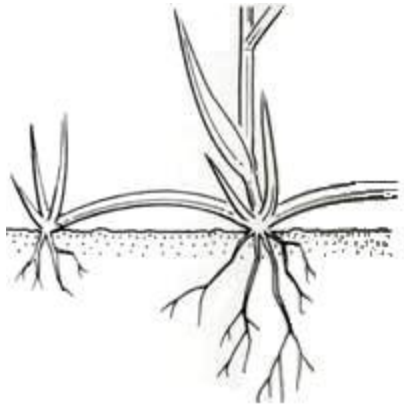
Sedges

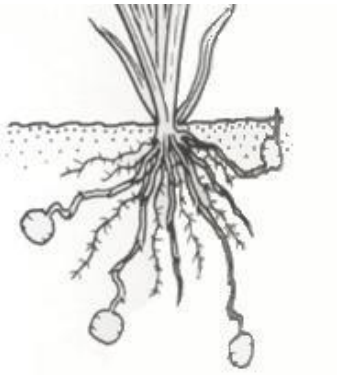
- Monocot seedling

Sedges

- **Roots -** fibrous, branched, spreading via rhizomes, stolons and tubers.







Sedges

- **Stem** - slender, smooth, pithy and 3-angled (triangular in cross section), arising from rhizomes, tubers or basal bulbs

Hilton Pond Center

Sedges

- **Leaf blade -** yellowish green, prominent midvein, flat or slightly corrugated, 0.2 to 0.5 inch wide, waxy or shiny appearance, 3-ranked and growing from basal bulb. Leaves usually as long or longer than flowering stem, blade tapering to long thin tip

Sedges

- **Seed head -** short, subtending leaf-like bracts, flattened, yellowish-brown spikelets, clustered around the ends of a few to 10 branches of unequal length.
- Sedges' fruit contain only one seed

Sedges

- Cut Grass?

Sedges

- Creeping Sedge?

Do We Have a Problem?

Rushes (Juncaceae)

- Solid round stem (generally)
- Fruit is a capsule with many seeds
- A few rushes are annuals, but most are perennials.
- About 400 species.

Rush

- Monocot seedling.

Rush

•**Roots -** fibrous, branched, spreading via rhizomes.

Rush

- Rushes have round, solid stems and hold their leaves in 3 ranks when leaves are present.

Rush

- Seed head.
- The fruit contain three seeds.
- There are three *sepals and three petals* that look pretty much alike. Collectively we call them *tepals*
- Each flower has 6 tepals, 6 stamens (occasionally 3), and three carpels fused into a superior ovary.

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Dicot

- A group of flowering plants belonging to the class Magnoliopsida of Angiospermae (angiosperms), characterized by having two photosynthetic cotyledons in the seed that may emerge from the ground when the seed germinates.
- From di- ("two") + cot- from the abbreviation of cotyledon ("embryonic leaf").

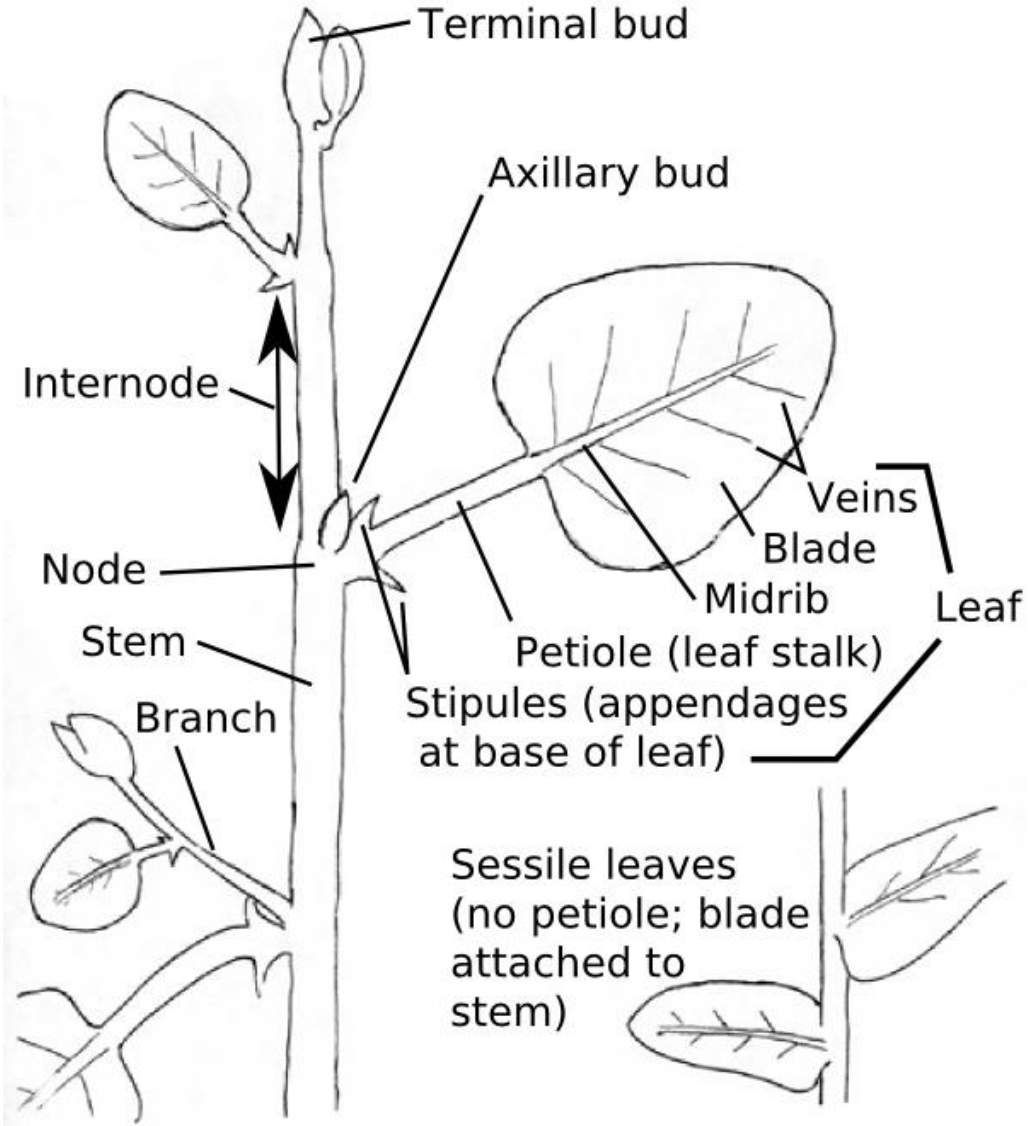


Photo Credit: Mark Schonbeck, Virginia Association for Biological Farming.

Dicot

- Dicot roots are a taproot system.

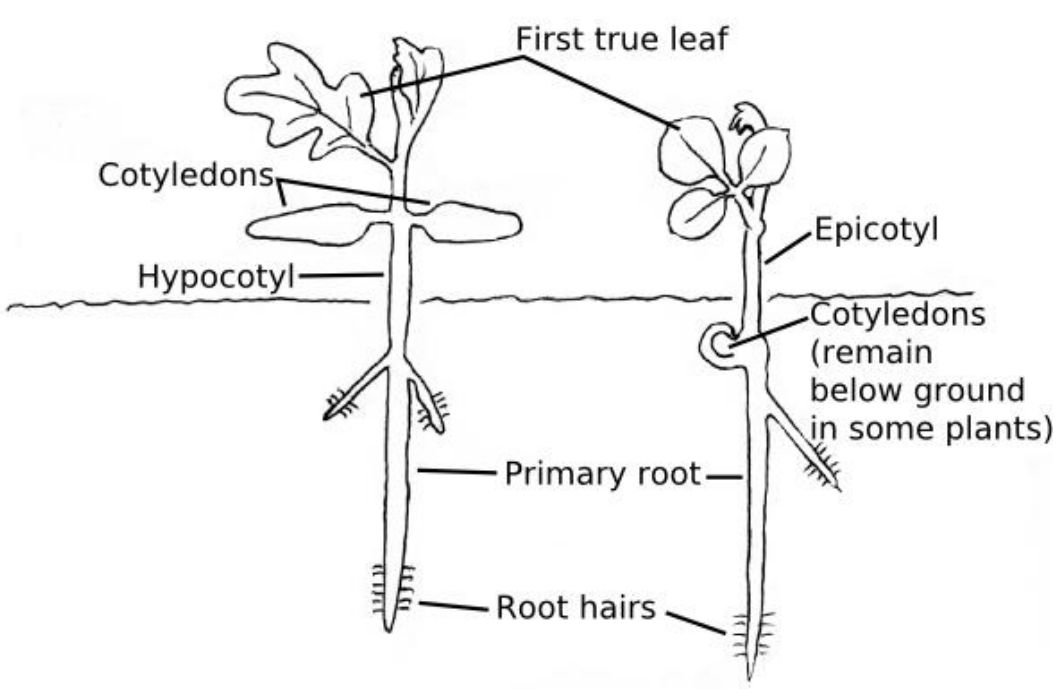


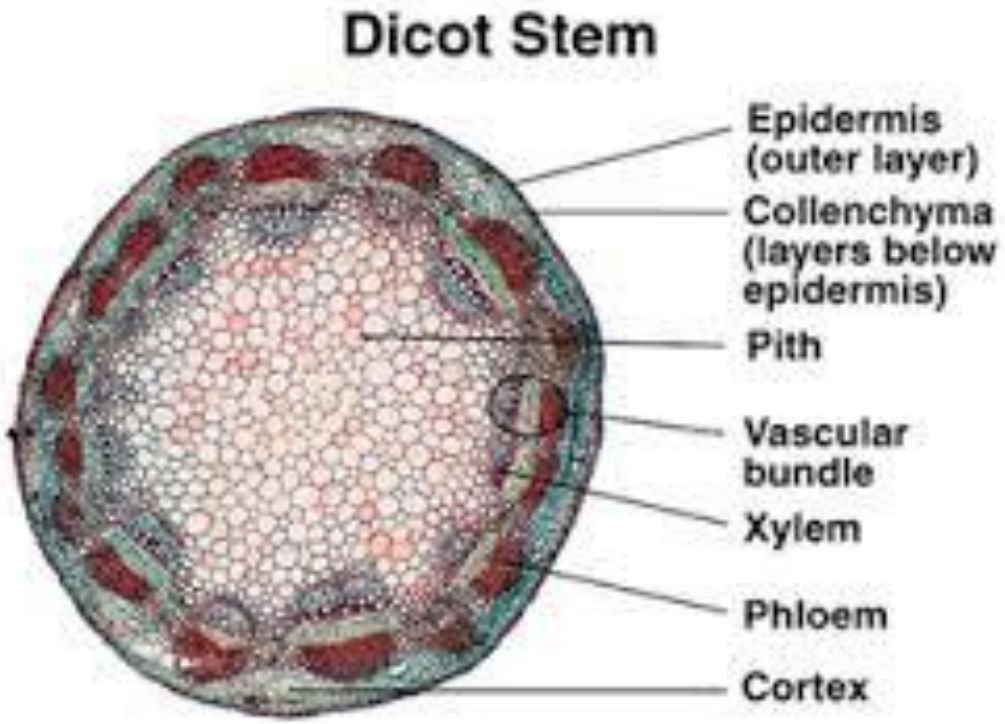
Photo Credit: Mark Schonbeck, Virginia Association for Biological Farming.

Dicot

- Dicot roots develop from the radicle. The main or primary root is known as the tap root. The primary root system (tap root) grows vertically down into the soil. Later lateral or secondary roots grow from this at an acute angle outwards and downwards, and from these other branches may arise. Together with its many branch roots it forms a tap root system

Dicot

- Arrangement of vascular bundles in the stem - the vascular bundles are in concentric circles.



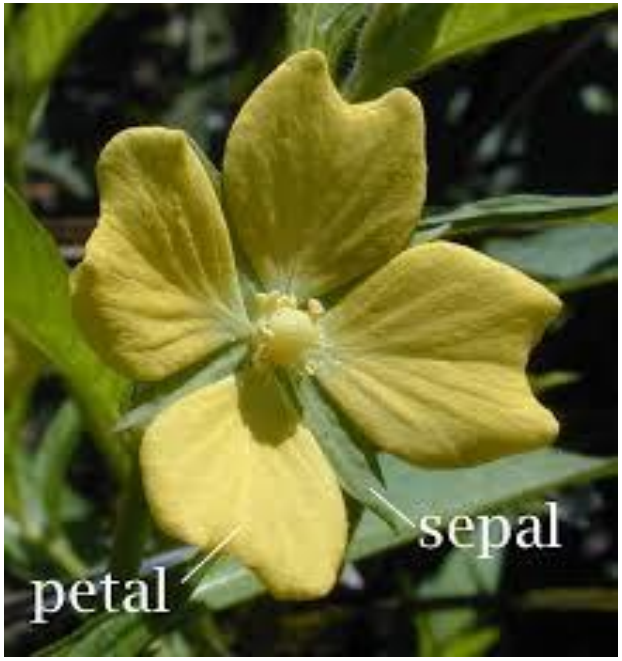
Dicot

- The arrangements of major leaf veins - in dicots, the leaves have reticulate venation: the veins branch and unite forming a complicated network. All the veins are interconnected, like the strands of the net.

Backyard Nature

Dicot

- the number of flower parts - dicot flowers are tetramerous or pentamerous (in multiples of four or five)



Timing of Fungicide Applications

Rosebloom
Application Timing

- Cause Exobasidium oxycocci, a fungus. It has a 1-year life cycle- infections in spring do not develop symptoms until the next spring.
- Spores are forcibly discharged, and wind carries them about the bed.

• Make two (2) to three (3) applications (at 10- to 14-day intervals) starting as soon as rose blooms begin to take on a whitish cast (indicating basidiospore formation).

Reference: PNW Handbook

Photos by Peter Bristow, WSU-Puyallup

Cottonball
Application Timing

- Monilinia oxycocci, a fungus that overwinters in mummified berries from the previous season. Apothecia (spore cups) arise from these berries. Spores (ascospores) released from the cups infect new shoot growth in early spring, causing tip blight.
- Spray when buds break dormancy and again 1 to 2 weeks later and again during bloom. Under low disease pressure bloom sprays may be sufficient alone.

Reference: PNW Handbook

Photos by Peter Bristow, WSU-Puyallup

Photo by Dale Borders

Fruit Rot
Application Timing

- Several fungi including Godronia cassandrae (asexual: Fusicoccum putrefaciens), end rot; Phomopsis vaccinii, viscid rot; Botrytis sp., yellow rot; Allantophomopsis cytisporea, black rot; Gomerella cingulata, bitter rot; Coleophoma empetri, ripe rot; Botryosphaeria vaccinii, berry speckle; and other genera. Fungi that cause fruit rots are in the beds and can be troublesome especially when rainy conditions persist during bloom. The two types of rot are field rots that develop before harvest, and postharvest rots that form after harvest in fresh fruit in refrigerated storage.
- Make two (2) to three (3) fungicide applications (at 10- to 14-day intervals) starting when 5-15% of blooms are open.
- Continue through fruit set.

Reference: PNW Handbook

Photo From The American Phytopathological Society

Twig Blight (Lophodermium) Application Timing

- Lophodermium oxycocci (the more common species) and L. hypophyllum, fungi. They overwinter as mycelium in last season's leaves. The spores are ejected forcibly into the air, where wind disperses them. New growth is infected between late June and mid-August, but exactly when varies from year to year.

•Apply fungicide(s) during late bloom, July and early August. Control is based on protecting new growth. Research indicates the first spray should be applied 28 days after 50% of the fruiting bodies contain spores.

Photo by Peter Bristow, WSU-Puyallup

OSU Extension Plant Pathology Collection

Reference: PNW Handbook

Root Rot (Phytophthora) Application Timing

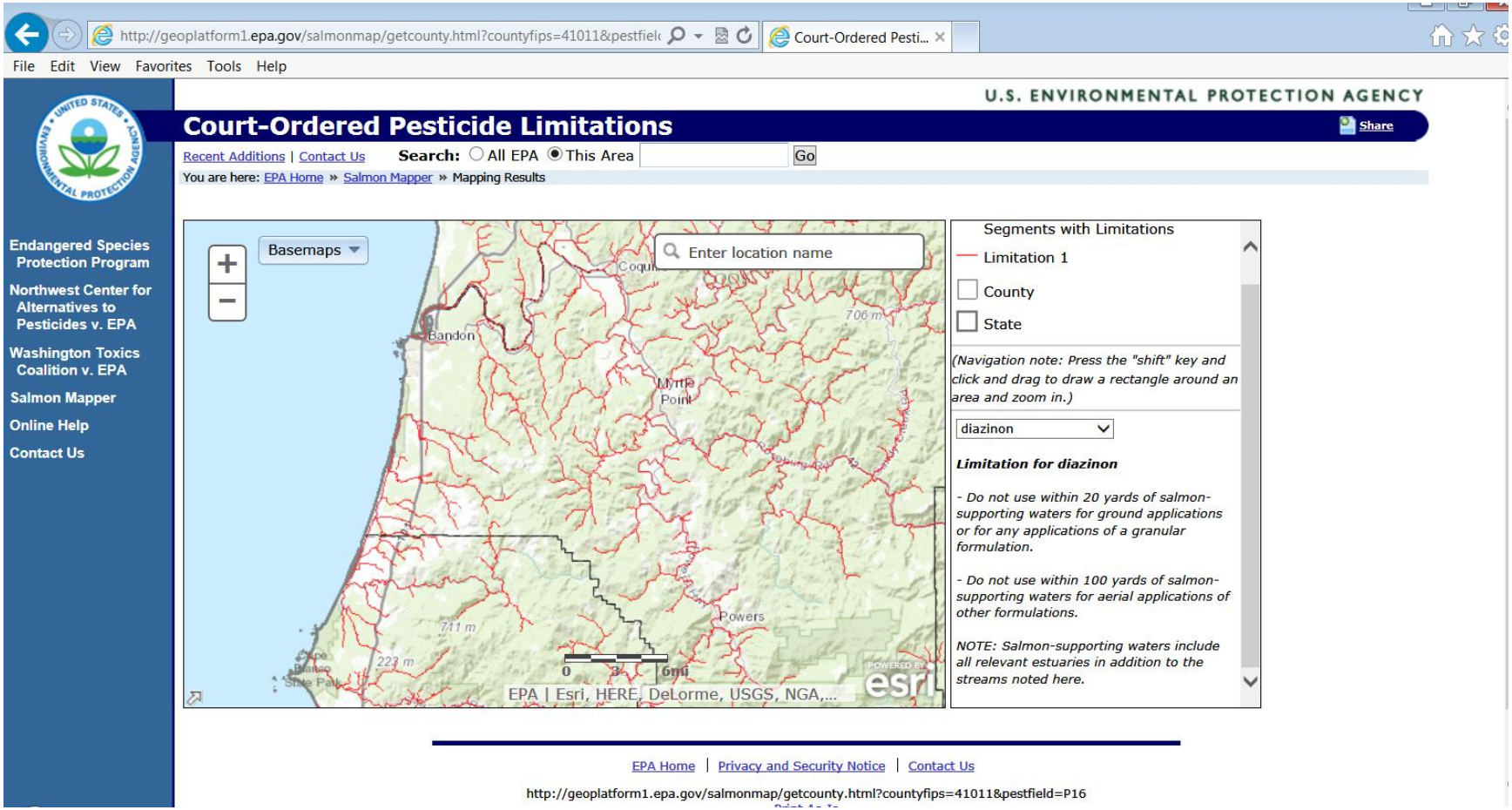
- Three Phytophthora spp. have been found in Oregon and Washington beds.
- These fungus-like microorganisms have spores that swim to healthy plants, enter them, and destroy roots and runners under flooded conditions.
- Dead spots in the bed occur first in poorly drained areas. Dead spots continue to expand to healthy areas. Plants at the margin may be stunted and exhibit unthrifty growth. Lower (underground) runners have a red to olive-brown discoloration and lack feeder roots. Newly planted vines also die.
- Ridomil Gold: Make the first application in the fall after harvest. Make the second application in the spring, followed by a third application 45 days before harvest.

Photo From The American Phytopathological Society

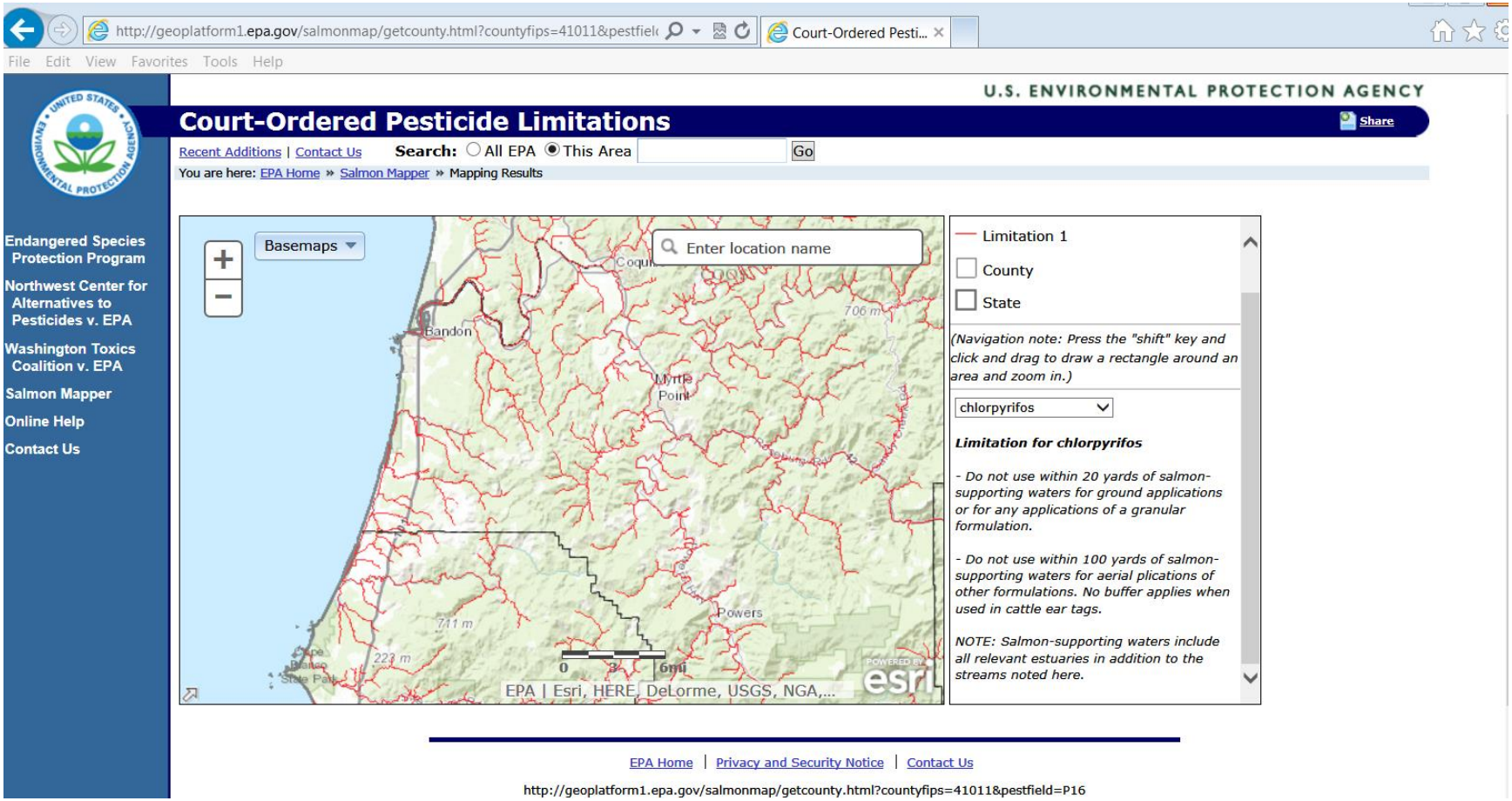
Reference: PNW Handbook

No-Spray Buffer Zones to Protect Salmon

No-Spray Buffer Zones to Protect Salmon



No-Spray Buffer Zones to Protect Salmon



No-Spray Buffer Zones to Protect Salmon

- 1,3 – dichloropropene = Telone - Soil fumigant
- Bromoxynil = Buctril – Broad leaf herbicide
- Carbaryl = Sevin – Insecticide
- Chlorpyrifos = Lorsban – Insecticide
- Diazinon = Diazinon – Insecticide
- Diflubenzuron = Dimilin – Insecticide
- Fenbutatin Oxide = Vendex - Miticide
- Malathion = Malathion - Insecticide

No-Spray Buffer Zones to Protect Salmon

- Methomyl = Lannate - Insecticide
- Metalachlor = Dual - Herbicide
- Propargite = Omite/Comite - Miticide


Questions?