

# Field Crops 3330

## Chapter 1

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# Types of Classification

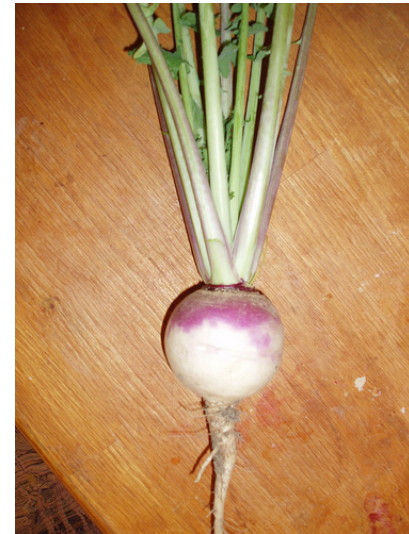
- Agronomic Classification
- Special Purpose Classification
- Scientific Classification

# Agronomic Classification

- Cereal Crops – grasses grown for edible seeds such as wheat, rye, oats, barley, rice, maize, grain sorghum.  
Uses: breakfast cereals, flour, breads, oil, livestock feed
- Forage Crops – vegetable matter, either fresh, dried or preserved; livestock feed  
Hay, pasture, silage, haylage, green manure crops and cover crops

# Agronomic Classification – Root Crops

- Grown for enlarged roots which may be edible or from which a product may be extracted. Sugar beets, sweet potatoes,
- Carrots, turnips, and rutabagas



# Agronomic Classification – Tuber Crops

- Thickened underground stems. White (Irish) potato, Jerusalem artichoke



# Agronomic Classification – Fiber Crops

- There are not many fiber crops in the U.S. Most are of tropical origin. Cotton, flax, kenaf, hemp.



# Agronomic Classification – Sugar Crops

- Sugarcane and sugarbeet grown for sucrose yield; sweet sorghum and sugar cane grown for syrup production, and corn and grain sorghum for dextrose (corn sugar) production.



# Agronomic Classification – Drug Crops

- Grown for chemicals they contain that alter human metabolism in some way.
- Tobacco, tea, coffee, mints (pyrethum), digitalis, wormseed



# Agronomic Classification – Oil Crops

- Soybeans, peanuts, safflower, corn, sunflower, sesame, castor bean, rape, cotton, flax



# Agronomic Classification

- Legumes for seed. All kinds of beans, peas, and peanuts.
- Rubber crops
- Vegetable crops



# Special Purpose Classification



- Cash crops – grown for income derived from the sale of the crops. Corn, soybeans, small grains in the Midwest. Cotton, tobacco, soybeans in the South. Small grains in the great plains.
- Some crops may be cash crops one year but not the next, or for one farmer but not another.

# Special Purpose Classification

- Feed crops - Crops that are marketed through livestock. Any of grains or pasture, hay, or silage are good examples.



# Special Purpose Classification

- Cover crops – Grown for purpose of protecting an otherwise bare soil and preventing erosion. Small grains, clover, vetch.
- Green manure crops – Can be the same crops used for cover crops but when turned under become a green manure crop. Small grain plus clover, vetch, or clover alone.

# Special Purpose Classification

- Catch crops – Substitute crops planted too late for regular crops or after regular crops have failed. Also, emergency crops. Millet, buckwheat, grain sorghum.
- Soiling crops – Cut and fed while green. Also called green crop or zero grazing crop. Sudangrass, small grains (particularly rye), sorghum-sudangrass hybrids, millets.

# Special Purpose Classification

- Companion crops - Also called nurse crops. Usually grown with new seeding of a forage crop like alfalfa in order to get a return for the first year. Usually one of small grains. If small grain fall seeded with a legume, can be harvested in the spring. Also, a companion crop can be a fast growing grass like annual ryegrass in a pasture mixture.

# Special Purpose Classification

- Trap crops – Planted to attack certain insects – plowed under or destroyed once they have served their purpose.
- Silage crops – Preserved in a succulent condition in a tight receptacle – partial fermentation.



# Scientific Classification

- Botanical or scientific names of plants which consist of genus and species and are universally accepted. Carolus Linnaeus, a Swedish botanist, was responsible for the binomial system of classification. Scientific names derived primarily from Latin, with some derived from Greek.



# Scientific Classification

<b>Group</b>	<b>Grass (Wheat)</b>	<b>Legume (Alfalfa)</b>
Kingdom	Plant	Plant
Division	Spermatophyta	Spermatophyta
Subdivision	Angiospermae	Angiospermae
Class	Monocotyledonae	Dicotyledonae
Order	Graminales	Rosales
Family	Gramineae	Leguminosae
Tribe	Hordeae	-----
Genus	<u>Triticum</u>	<u>Medicago</u>
Species	<u>Aestivum</u>	<u>Sativa</u>

# Scientific Classification

- Kingdom: Plant and Animal
- Division:
  - Thallophyta – Simplest and most primitive plants. Includes algae and fungi. No true roots, stems, or leaves and reproduce sexually by spores.
  - Pteridophyta – Ferns and horsetails. True roots, stems, and leaves and well-developed vascular system. Sexual and asexual reproduction.
  - Spermatophyta – Seed bearing plants with highly developed vascular system. Produce seed with embryos.

# Scientific Classification

- Subdivision:
  - Gymnospermae – Cone bearing trees. Seeds not enclosed but borne on surface of scale leaves.
  - Angiospermae – Includes crop plants. Covered seed (with seed coats).



# Scientific Classification

- Class:
  - Dicotyledonae – 2 embryonic leaves or seed leaves. Includes legumes like soybeans.
  - Monocotyledonae – 1 embryonic leaf. Includes grasses like corn.



# Scientific Classification

- Order:
  - Rosales – includes all legumes
  - Graminales – Includes all grasses and cereal crops
- Family:
  - Leguminosae – All legumes (clovers, alfalfa, soybeans)
  - Gramineae – All grasses and cereals (corn, wheat, oats, barley, rice)

# Scientific Classification

- Genus:
  - First word of classification. When the scientific name is given, such as *Zea mays* for corn, this name consists of the genus and species. The genus name is always capitalized and italicized if written in a book or underlined if written. Ex: *Zea*, *Triticum*, *Hordeum*, *Glycine*
- Species:
  - Second word of a scientific name. Always written with small letter and underlined. Ex: mays, aestivum, vulgare, rubra, alba.
- Variety:
  - A sub-division of a species.

# Crop Groups and Classification

- In this classification study, pay particularly close attention to the characteristics of the following families which are important to crop production:
  - Gramineae – (Grass family) Corn, wheat, oats, rye, barley, millet, grain sorghum, rice, forage grasses. Annuals or perennials with round, hollow stem and 2-ranked leaves. Flowers in spikelets, with petals and sepals absent. One-seeded fruit is a grain (caryopsis).
  - Leguminosae – (Pea family) Soybeans, alfalfa, all true clovers. Annuals or perennials, herbs, vines, shrubs, or trees with mostly compound leaves. Flowers irregular with petals and sepals. All legumes form pod fruits and most nodulate and fix atmospheric nitrogen.

# Other Families of Importance to Agronomists:

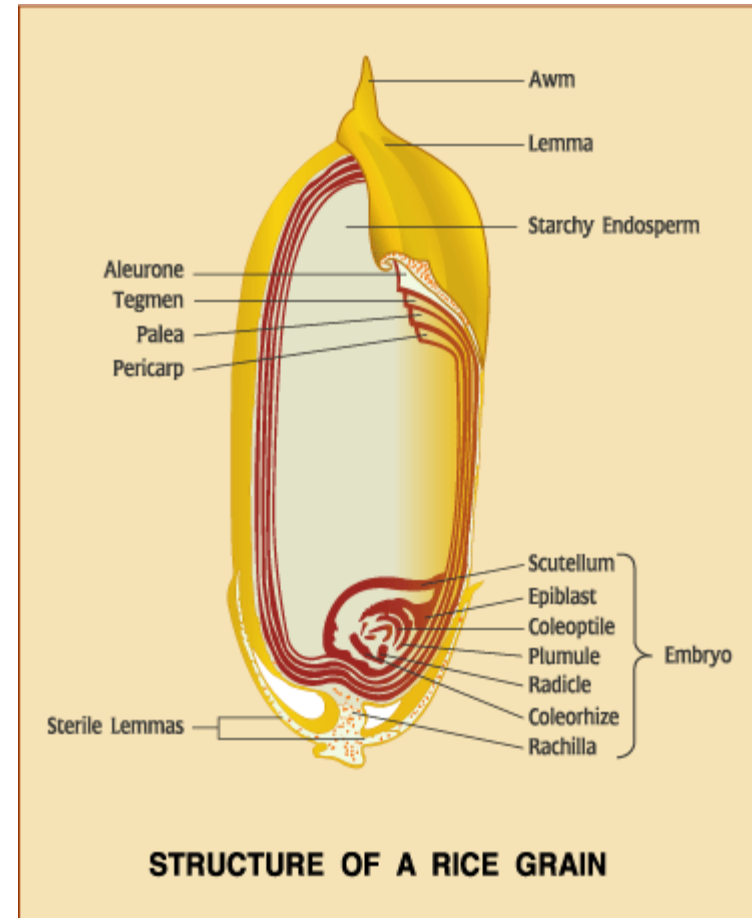
- Cyperaceae – (sedge family) contains triangular-stemmed nutsedge or nutgrass, serious weed pest
- Polygonaceae – (buckwheat family) buckwheat
- Cruciferae – (mustard family) mustard, kale, rape
- Malvaceae – (mallow family) cotton
- Umbelliferae – (carrot family) carrot

# Other Families of Some Importance to Agronomists:

- Labiateae – (mint family) peppermint, spearmint
- Euphorbiaceae – (spurge family) castorbean
- Linaceae – flax
- Solanaceae – (potato family) potato, tobacco, tomato
- Compositae – sunflower, safflower, artichoke, pyrethrum
- Many additional families are important to agronomists in that they include certain weeds that we must learn to control in our field crops.

# Seed Identification

- Characteristics used to identify seed:
  - Color
  - Size
  - Shape
  - Structure



# Small Grains

1. Wheat – 15,000 seed/lb

- Wheat – plump

1. Rye – 18,000 seed/lb

- Rye – longer and more slender

2. Oats – 13,000 seed/lb

3. Barley – 14,000 seed/lb

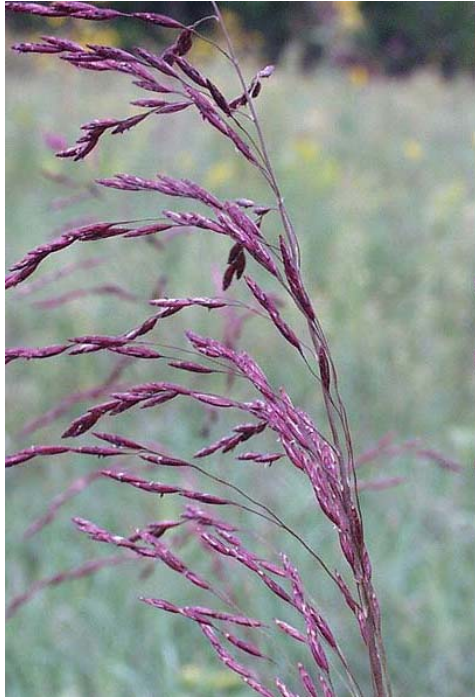
- Triticale wheat X rye
- Rye – *Secale cereale*
- Wheat – *Triticum vulgare*



# Grasses

- Tall fescue – 227,000 seed/lb
  - Rachilla – round and slender
- Ryegrass
  - Rachilla – flattened and wedged shape
    1. Perennial ryegrass – no awns – 227,000 s/lb
    2. Italian ryegrass – awns – 227,000 seed/lb
- Orchardgrass – 654,000 seed/lb
  - Lighter in color – awn – short and curved
- Kentucky Bluegrass – 2,177,000 seed/lb
  - Seed boat shaped, smaller than ryegrasses, T.F., very small rachilla





# Grasses

- Timothy – 1,230,000 seed/lb
  - Round full seed – mixture of hulled and unhulled seed
- Redtop – 4,990,000 seed/lb
  - Smaller than KY bluegrass,
  - Hulls are shiny and translucent
- Corn – 1,200 s/lb (dent)/  
3,000 s/lb (pop)
- Milo (g.s.) – 15,000 seed/lb
- Tobacco – 5,000 seed/lb
- Cotton – 4,000 seed/lb



# Legumes



- **Alfalfa – 200,000 seed/lb**
  - Kidney shaped – slightly flattened
  - Greenish yellow color
- **Red Clover – 275,000 seed/lb**
  - Much variation in seed both in color (dark & yellow) and in shape (somewhat flattened, heart, or mitten shaped)
- **White Clover (Ladino) – 800,000 seed/lb**
  - Heart or mitten shaped (small seed)
  - Heart or mitten shaped



# Legumes

- **Crimson clover** – 140,000 seed/lb
  - Light in color (creamy color)
  - Seed glossy
- **Sericea lespedeza** – 350,000 seed/lb
  - Seed glossy (green and brown)
- **Korean lespedeza** – 225,000 seed/lb (unhulled)
  - Seed is black
- **Vetch (size and color)** – 7,000 seed/lb
- **Soybeans (size)** – 5,000 seed/lb



Learn the scientific names and be able to identify the seed of the following crops:



1. Soybeans – *Glycine max*
2. Vetch – *Vicia sativa*
3. Korean lespedeza – *Lespedeza stipulacea*
4. Alfalfa – *Medicago sativa*
5. Crimson clover – *Trifolium incarnatum*
6. Sericea lespedeza – *Lespedeza cuneata*
7. Red clover – *Trifolium pratense*
8. White clover – *Trifolium repens*
9. Orchardgrass – *Dactylis glomerata*
10. Tall fescue – *Festuca arundinacea*
11. Italian ryegrass – *Lolium multiflorum*
12. Perennial ryegrass – *Lolium perenne*

Learn the scientific names and be able to identify the seed of the following crops:

13. Kentucky bluegrass – *Poa pratensis*
14. Redtop – *Agrstis alba*
15. Timothy – *Phleum pratense*
16. Corn – *Zea mays*
17. Wheat – *Triticum aestivum*
18. Oats – *Avena sativa*
19. Barley – *Hordeum vulgare*
20. Rye – *Secale cereale*
21. Grain sorghum – *Sorghum vulgare*
22. Cotton – *Gossypium hirsutum*
23. Tobacco – *Nicotiana tobacum*

