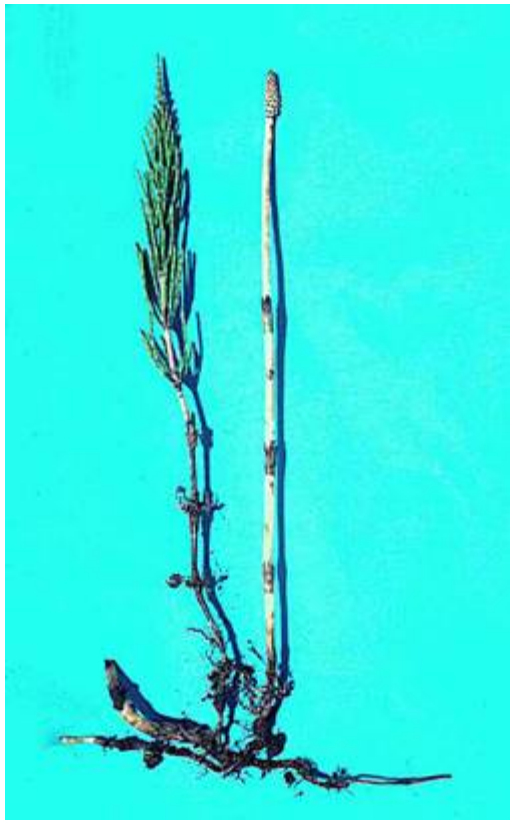

My Old Friends
Weeds

Here's What We'll Cover

- **One without cotyledons**
- **3 monocots**
- **8 dicots**

Field Horsetail

- Easy to ID, tough to suppress
- More all the time
- Grows about anywhere
  - wet, sandy, acid soils most common sites
  - crops, pastures, steam banks, ornamentals, beaches



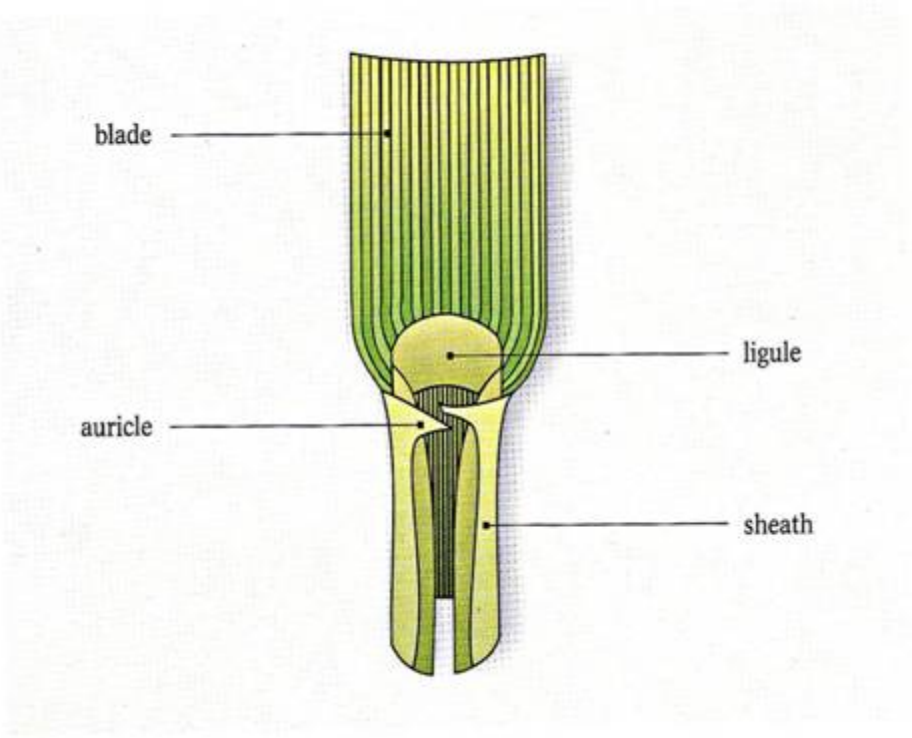
Control options

- **Tillage your best bet**
- **Herbicides**
  - **Between few (corn) and none (soybeans, alfalfa)**
  - **Corn: Beacon plus a growth regulator = some suppression**

My Monocot Friends

Monocotyledon:

- **Opposite of dicotyledon**
- **Plant with a single seed leaf, e.g. grasses and sedges**
- **Parallel veins**
- **Fibrous root**



Yellow nutsedge

Long- term studies found that:

- May find 30,000,000 tubers/acre
- If uncontrolled, corn and soybean yields cut 50%
- Herbicides can dramatically reduce populations in only 2 year
- No advantage to crop or herbicide rotation (but I still preach rotation!)

Yellow nutsedge

Herbicide alternatives:

- **Halosulfuron the best molecule**
- **Bentazon, chlorimuron v. good**
- **PPI almost a lost art but it makes the “chlors” and difenamid effective**
- **Glyphosate not a good choice but with shade of RR soybeans can work**

Quackgrass

- **A friend**
  - Erosion protection
  - Emergency feed
  - Grazers friend
  - Our state weed?
- **A Foe**
  - Reduced value of harvested forage
  - Little impact in grain crops today

Quackgrass

- It survived atrazine, dalapon, aminotriazol and pronamide

- But the graminicides (the fops and dims) started making gains on grain farms
- and glyphosate in RR crops = a weed of no concern

- Or is quackgrass self destructing???

Computer used to develop a model for impact of quackgrass in no-till crops

nt + nqc = nc

No tillage + no quack control = no corn

Wirestem muhly

- **One of ours**
- **Sensitive to crop competition**
  - Soybean reduced
    - stems density82 to 99%
    - biomass up to 92%
- **Plants starting from seed exceed those from rhizomes!**

Wirestem muhly

- **Atrazine never effective**

- **1st herbicides were the fops and dims for soybean**
  - All effective
  - Almost as effective as glyphosate

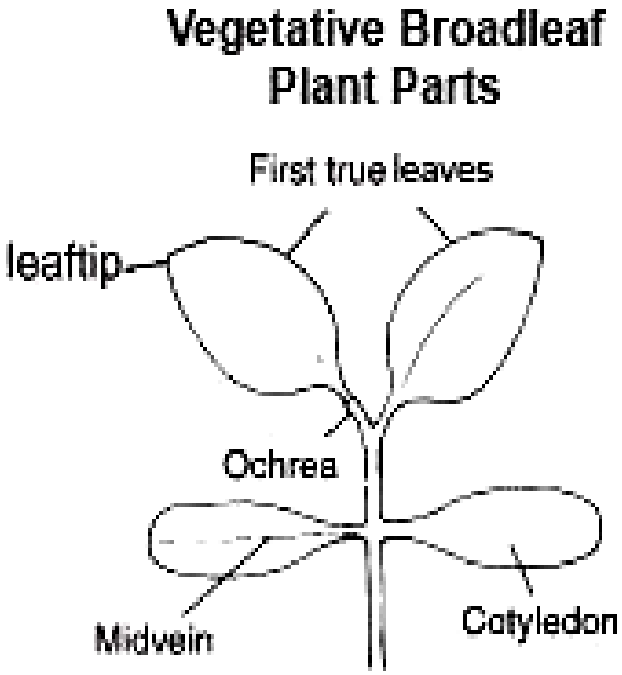
Wirestem muhly

- **ALS herbicides for corn also active on wirestem**
  - Timing tricky: variable height
- **Transgenic crops (RR and LL) offer new avenues**
- **Cultivate if possible**

My Dicot Friends

Dicots:

- **a plant with two seed leaves**
- **Opposite of monocot**
- **Leaves with netted venation**
- **Thickened (not fibrous) roots**



Common dandelion

- **Lots of field studies and more presentations on this species than any other**
- **And still it remains!**
- **What have we learned?**

Common dandelion

- **Little impact of forage quality**
  - 4 to 5% less protein in 1st harvest
  - Adds a day to hay drying time
  - Expensive to control now
  - This will change with RR alfalfa
- **Seeds germinate anytime soil is moist and light present**
- **Seedlings with 3 to 4 leaves survive winter**

Common dandelion

In no-till systems:

- **An increasing problem**
- **Reduces grain yield more than expected**
- **Fall herbicide programs the best**
- **Suppressed in spring with 2,4-D if:**
  - **Air temps 60F or more**
  - **Dandelions in early to mid bloom**
- **Diflufenzopyr synergizes dicamba and other herbicides**
- **Sensitive to glufosinate**

Synchrony + Express + 2,4-D

Check

Hemp dogbane

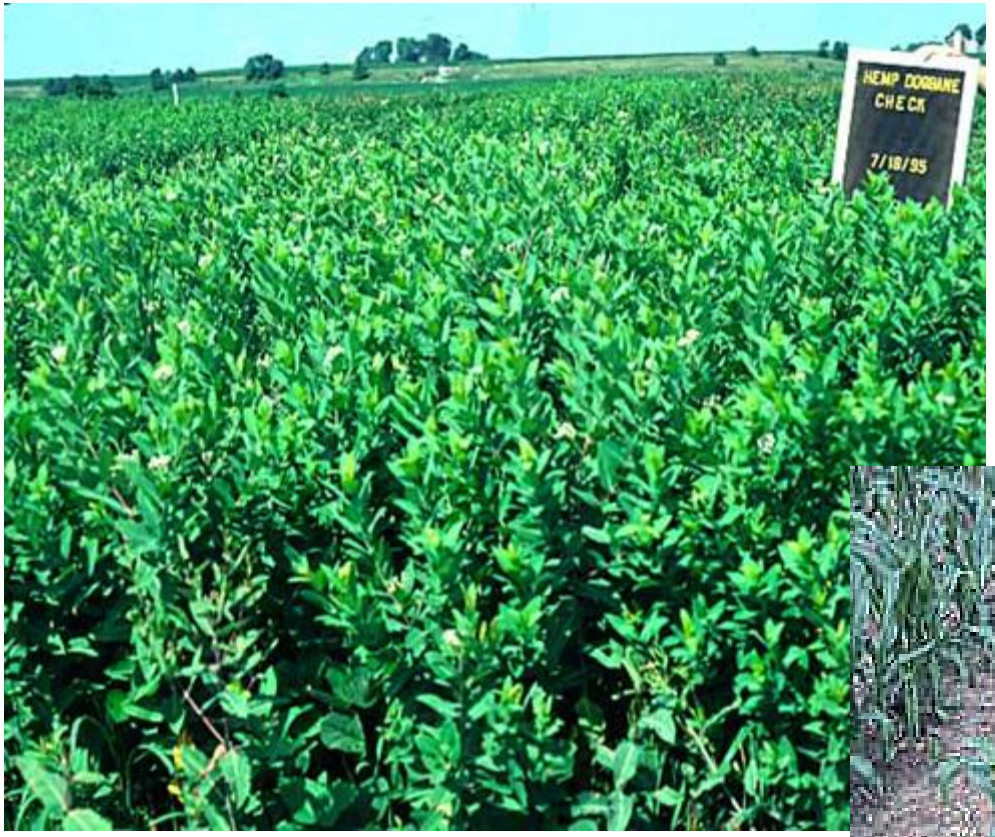
- **Native to North America**
- **Common in reduced tillage systems**
- **Not common in forages**
- **Very sensitive to 2,4-D and fluroxypyr (Starane)**

Hemp dogbane

- **First weed I tackled in RR soybean (1995)**
- **Started the development of the “three-step system for perennial broadleaf control” in glyphosate resistant crops**

Hemp dogbane

- **In the “BG” days, producers targeted dogbane in corn**
- **Now it’s in RR soybean**
  - **Easier to go no-till**
  - **More faster and longer canopy cover**


HEMP DOGBANE
CHECK
7/18/95

Hemp dogbane

What are the three steps?

- Use a no-till system
- Apply a reduced rate of soil-active herbicide with burndown
- Apply glyphosate (0.75 lbae/acre) when perennial starts to flower or is 24” tall

Common milkweed

- Native to N. America
- Seldom an economic concern
- If it is:
  - use the three-stem method
  - In conventional corn, dicamba plus halosulfuron suppresses milkweed

Wild four O'clock

- Another native
- Thrives in shallow, gravelly soils
- Taproots can become large
- Survives in reduced tillage

Wild Four O’Clock

Wild Four O’Clock

Wild Four O’Clock

Wild Four O’Clock

Wild four O'clock

- Plants arise from buds on taproot and seed
- Survives in alfalfa and winter wheat
- Dicamba holds it back
- 3-step system in RR soybean is the way to go

Leafy spurge

- **One of our noxious weeds**
- **Infestations increasing**
  - Roadsides and other non-crop
  - CRP fields and prairies

Leafy spurge

Few control options

- Mowing greatly reduces seed production
- Fire stimulates germination/regrowth
- Several insects impact spurge

Leafy spurge

- **Out west, picloram is the work horse**
- **Our better choice is imazapic (Plateau)**
  - Safe to grasses and many forbs
  - Gives 2 to 3 years suppression
  - Wide window of application in early fall
- **On-going trial with mowing, insects and Plateau at Ft. McCoy**

Multiflora rose

- **Full circle on this one**
  - Trials early in career
  - More at the end
- **One new and effective herbicide: metsulfuron**

  (Ally, Cimarron, Escort)
- **Glyphosate and Crossbow also effective**

Multiflora rose

Widespread interest in control

- At epidemic levels in SW Wis.
- People see it only getting worse
- EQIP funds helping
- Crowds come when this is the topic

Multiflora rose

Biocontrol feasible

- Goats can do it
- Sheep and Scottish Higland cattle much less effective

  (they’re smarter!)

- Mother nature helping with a free disease

Canada thistle

- Many hours on this one
- In the noxious weed law
- C. thistle is approaching "endangered" status on cash grain farms
  - RR crops
  - Low seedbank

Canada thistle

Several option in conventional crops

- **Clopyralid the best molecule**
- **Dicamba useful**

Canada thistle

Still a major issue in non-crop sites

- **“Permission” given to control it in CRP fields**
- **Roadsides of special concern**
- **A complex situation**

Canada Thistle and PST

- **PST = *Pseudomonas syringae* pv. *tagetis: a* natural disease (bacterium) of some composites**
- **Only seen in non-disturbed settings**
- **Can we do it ourselves?**

Canada thistle

Who hasn't seen sick Canada thistles?

- **A natural occurrence**
- **Commercial venture to develop bioherbicide failed**
- **But Mother nature keep it there!**

Can we make them sick?

Can we make them sick?

Canada Thistle and PST

Ryan Tichich masters research found:

- Apply in July
- Repeated applications help
- Rainfall seems to be the key to infection

PST and C. Thistle Leaf Interactions

- **Volume**
- **Concentration**
- **Timing**
- **Multiple Apps**

→ [redacted] →

- **Disease Incidence**
- **Disease Severity**
- **Growth Inhibition**
- **Seed Production**
- **Others**

Comfrey

The least common perennial broadleaf

- Planted as medicinal or forage plant
- Should look for genes that give it:
  - Total pest protection
  - Perfect winter survival
  - Apparent paraquat resistance

Comfrey

Comfrey

Comfrey: The root of the problem is the root!

Comfrey

- **Seed production rare**
- **Root survival amazing**
- **Prolonged emergence**
- **Tolerant to many herbicides**
  - 2,4-D, paraquat, dicamba, clopyralid and corn SUs and imis

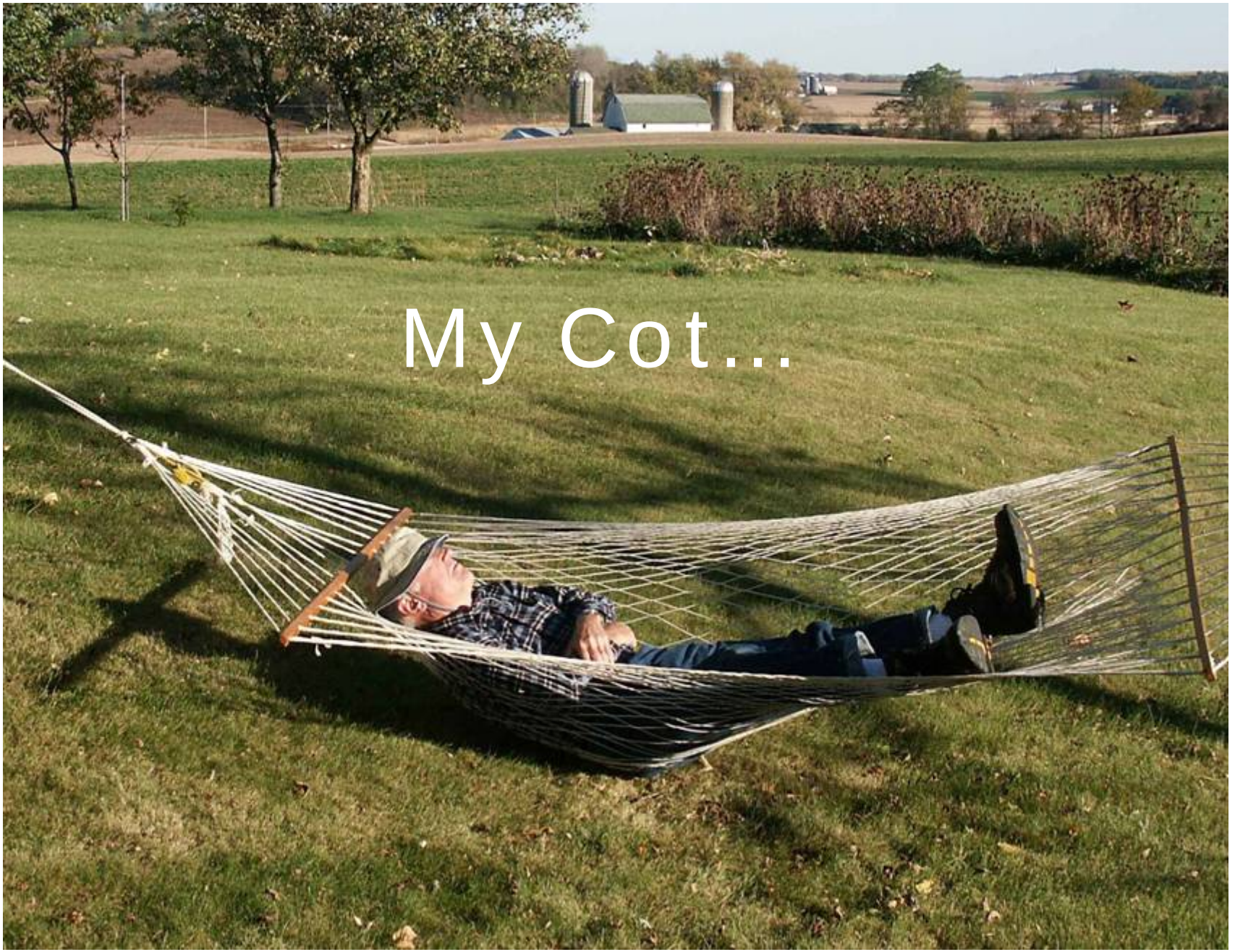
Comfrey

- **Glyphosate the best molecule and a RR crop the best system**

- **Preharvest glyphosate the most effective strategy**

Friendships of 28 Years

- With no cots
- With monocots
- With dicots
- Now it's time for ….


My Cot...