Weed Control and Organic Field Rotations Roger Henry

Potatoes

- weed control without herbicide is entirely possible for potatoes, just over them with soil, hill, flame, inter-row cultivation
- prep field, plant, 3 week to raise out of ground, cultivate, finger weed, or flame tops of rows, then cultivate 10 days later, then hill,
- can lame after ground crack but only have a week or will burn plant too much
- propane cots 50$/ac
- alfalfa: controls wire worm for potatoes

Cereals

- finger weed, flex tine harrow
- rotary hoe – heavier soils
- spike tooth or light harrow
- pre-emerge: go when weeds are white root stage
- post-emerge: when weeds most susceptible, do not worry much about the grain
- false seed bed technique: prep soil but leave bare, 5 days later cultivate, then plant, then flame 5 days later just before seeds germinate
- winter cereals need no weeding (rye and wheat)
- frost seeding of double cut red clover into winter rye is great system, can spray on with broadcast seeder
- winter rye blocks everything, no weeds
- plant winter rye before Oct 1, broadcast clover seed in April or May 1, use a 4 wheeler with broadcaster
- winter cereals won't grow in wet spots, sow around or use different area
- for wet spots, drill plant barley first thing in spring with barley
- don't want winter cereal too high ~6-8 in, or will mold
- spring cereals following a spring cereal, need to add fertility. Use sweep of top 4 inches after harvest
- incorporates combine losses, false seed bed that will frost kill, no erosion, fertility available slowly in spring

Soy beans

- plant soybeans after May long weekend
- when at unifoliate stage, use tine weeder harrows 2 times, takes out some beans but also lots of lambs quarters
- let them grow because lambsquarters die before combining, will have weed seeds
- can plant in rows and cultivate in between
- they are slow to germinate, right lazy! (7-10 days)
- plant more than _ in, less than 2 in
- don't fix N much
- try not to till or will have erosion
- plant in 20th of may, harvest in sept, challenge is to get soybean off in time, may take it off moist and dry after (works in ON because they have 3 more weeks of season than us)

Carrots

- can be profitable but tricky

- formed rows, waited to weeks, cultivated tops of rows, planted
- come up in 9 days, so on day 7, flame or use clove oil (more effective than flaming)
- make sure no carrots are not up when flame because will kill them
- cultivate in between rows,
- use side knives to cut between rows
- carrots are very susceptible to weed pressure, cuts yield in 1/2, take care until July

Canola
- plant when soil warm
- false bed 7 days prior
- cultivate before planting

Weed control
- exhausting weeds, buckwheat and oil radish work well
- buckwheat: 6 weeks nothing will compete with it for summer growth, allopathic (nothing wants to grow around it), makes P more readily available
- oil radish: takes longer to get going but handles frost well so good for fall, absorbs N, isothious, nematode suppression, disease suppression
- can clean up weedy fields (even cooch grass) with buckwheat in spring, disc once seeds come up (right after flower first time because flowers successionally and rains seeds below) to re-seed in July, then plant with winter rye in fall
- lobster shells about 10 T/ac provides lots of N
- white clover does not grow as high but more extensive, double cut red grow the highest if winter is hard on wheat and lots of rain in July then clover takes over
- here we have sandy loan acidic soils with iron and Al, lucky for 3% organic matter. No P, no K (P bound up with Fe and Al so need to raise ph to 6-7 to free it. Can release P for 2-300 yrs in Prairies without having to add more, not sure here), N from legumes

Rotation Options: for fertile soil
- alfalfa: grows well here, need potassium sulfate (boron), makes 50 units of N available for wheat next year, manure after first cut, plow, winter wheat
- frost seed wheat, red clover
- corn, 2T/ac manure pre-plant
- barley/oats/peas: 10T/ac in Sept
- winter cereal
- note: alfalfa in rotation sucks P and K out of field so careful if low P + K soil, must add manure and boron with it.
- Rarely used to deplete P levels, high P can cause soil erosion but if this is not an issue, may just change weed balance and nutrients in crops. Hardest to get organically so hard to get too much. Supply may be depleted in 60 years, need to figure out how to recycle biosolids

Rotation Option: not great soil (non-corn or alfalfa)
- Frost-seed Winter rye is good, no weeds, plow down for spring cereal
- Red clover, hay early, plow with cover or late fall (Nov) plow
- Cereal or spring plow, oats if wet, can take off as silage, fall cover
- Spring or winter cereal (re, wheat, spelt)

- Note: if cultivate in red clover, need to use it right away or will lose it and pollute ground water

Best Frost-seeders:

- legumes, red clover, white clover, timothy (better than planting in Sept, Aug not bad but frost seed better)
- frost changes heave soil and covers small seeds
- not grasses
- adding P to fields sometimes makes red clover seeds there already come up
- can broadcast onto sticky snow when sunny and not windy, dark seeds melt into snow
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- Chisel plow right after combine spring cereal, then plant oats or buckwheat to hold nutrients
- Don't bother after that because annual weed will not go to seed
- For cooch grass, want to keep rhizomes close to surface, use chisel plow after first frost to expose rhizomes to frost
- Shallow cultivation many times in Aug to deplete reserves of energy in leaves

Rotation Options: Cash Crops with winter cereals:

- Milling wheat, fall sweep add 75 lbs rye/ac
- Soybeans,
- Barley/peas, fall sweep plant winter cereal, and fertility
- Winter cereal frost-seed red clover, mow 1t cut add compost
- Red clover, mow first cut (adds N to soil), add compost
- Soil builder, heavy feeder, medium crop,
- Expect 100,000lbs/ac
- Strip cropping for cereal beside forage crop, blow mowed forage crop onto cereal crop mid season
- Mixed Grain considerations:
- Need to select one that ripen together
- Peas at 20%, protein content of grain 15-16% (dairy ration), 16% ideal
    - Pure peas 30% protein
- Hard to market unless prearranged or own use
- Late maturing barley, early maturing oats
- Barley wheat harbour same diseases
- Reduces incidence of disease in each variety
- Forage peas are indeterminate, grain peas determinant (usually), want determinant especially if wet summer
- Mozart is indeterminate and not sure to be 20%, not recommended
- Walton wheat (~30%), nova oats (~30%), golden peas (20%) = 15.8% protein feed with 80% total digestible nutrients, competitive with weeds
    - Too much peas will pull cereal down,
- Encore barley good too (tall)
- Can green manure from lambs quarters if don't let it go to seed
- Disking in straw will rob nitrogen from your soil but will add long term fertility
- Bulletins on mixed crops and kooch grass on website OACC
- Grasses like high N, legumes like low N, therefore diversify mix for resilience

- Good brochure from QB, “Mechanical equipment for field crops”
- Hulless oats = 19% protein vs. 9% in regular oats, will reduce yield because drop early, hard to mature at same time
- Lupins, white sweet type, protein 40% +, great potential, not yet registered in Canada
- Anthracnose is disease they are susceptible to, disease seed has no yield
- Grows in low ph, especially white
- Corn for silage or high moisture, likely to have failure first year organically, needs nutrients over season (July and Aug), weed control trick, need to be able to cultivate so plant in rows of wheel tracks, only have short time to get weeds in between plants by throwing clay on them, tyne weed and inter-row cultivate, cold and wet kills germination
- Wheat and corn are soy beans, stay with them! There is money in organic corn
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Speerville (Tony)

- Yields down last year, red fife, berry, spelt, but more disease resistance, less fusarium (because wet weather more when spring cereals flowering than winter cereals), red fife is variable (acclimatizing still)
- Aleana and Walton (higher yield) not milling grade last ear but higher
- spelt had winter kill and low wet spots iced
- winter triticale and winter rye better off in wet weather
- can’t use Walton straight, need some berry, but can use berry straight, so paying more for berry than Walton now
- deal 60% berry, 40% Walton and will result in 50/50 yield
- buying prices: Walton (6), berry (4.50), wheat (3.5), red fife (7.5), spelt 5.5), Hulless oats (500), rye (350 milling, 300 cereal)

Co-op Atlantic (in Sussex)

- first mill in Atlantic for feed grade, had 30% growth in first year, couldn’t find enough barley and corn in Atlantic, most business in winter is poultry feed, warehouse in Moncton

- grains network has newsletter 3-4x/yr, contact Andy to sign up