MacKay Ross
Written Reports

Ag strategies for producers
The clubroot infested field in GP county was discovered in a random check (not a canola on canola field).
4 years without host plants per county regulation. Zero tolerance in hopes of delaying as long as possible,
Due to one of the southern counties dropped zero tolerance and had eruptive spread of clubroot.
Pulses that are overwintered are not covered by wildlife damage as of 2017.

Beneficial insects w/Greg Sekulic
International research supports the benefit of uncultivated land to production on cultivated land.
Natural parasite control is far more horrific (fun) than insecticides.
"Shelterbelt yield effect is mirrored in oil production increase and beneficial insect range as well.
Widen field edges to match equipement widths and provide natural beneficial insect habitat.
Take the entrance out of production for habitat and clubroot sanitation, it doesn't produce much yield anyway.

Field Hero's initiative w/Jennifer Otani
Field heroes initiative, think beneficial (and economic threshold) before you spray.
Twitter @FieldHeroes
Www.fieldheroes.ca
Often the cost of spraying is more than the loss due to the pest, not even counting the death of beneficials.
Field heroes on youtube.

Ag tax strategies w/Tracy Leishman
Leases are not as attractive compared to buying due to changes in depreciation rules.
Companies (farm) are subject to 11% tax, however if traded income is between family or $500,000 then tax is 26%, little more complicated than that but watch out.
Have land history written down, who bought it, when, and for how much.

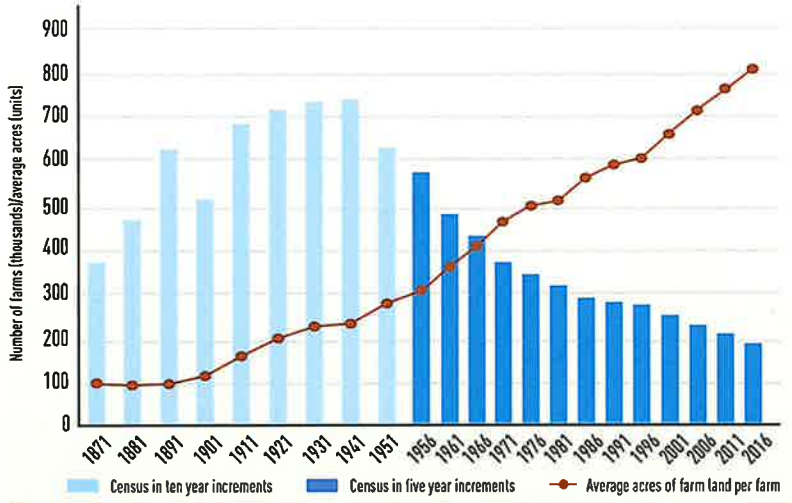
Mental Health in ag w/ Adelle Stewart
Canadian farmers face the highest level of stress of ag producers in the world.
40% of producers won't talk to anyone about mental health due to stigma.
Federal non profit status just approved to Do More Ag.
Industry Barriers; Stigma, Lack of awareness, Isolation
1 in 8 jobs in Canada are ag related. But 1 in 50 is a producer.
Tech can help ag, but comes with significant stress even to the young who are accustomed to it due to resistance on the farm.
Low stress results in low motivation and poor performance.
Take mental health first aid, be able to start people towards care.
Lack of sleep has significant impairment and then influences mental health.
Your work life balance is unique to you. The other people in your life have their own unique work life balance, making them match is challenging.
Pillars of the Do More Ag foundation; talk more (about Mental Health and feelings), ask more (how are you doing with how things are going),
Listen more (pay attention to indications) remember "it's all about them" don't trade stories or "at least" their statements.

CENSUS · RECENSEMENT
2016 AGRICULTURE

150 YEARS OF CANADIAN AGRICULTURE

Since Confederation (1867), the number of agricultural operations in Canada has shrunk, but agricultural operations have grown in acreage and sales.

Total number of farms and average acres per farm, 1871 to 2016 census years



Farm sales - 1900 and 2015

Year	Total farm sales in Canada	Average sales per farm
1900	$364.9 million	$714
	*In 1900, one dozen eggs cost $0.26, and one loaf of bread cost $0.04.	
2015	$69.4 billion	$358,503

An average farm had:

in 1871
4 pigs
7 head of cattle
33 acres of cropland

in 2016
73 pigs
65 head of cattle
483 acres of cropland

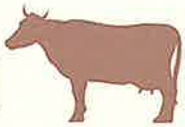
What's changed in 150 years?

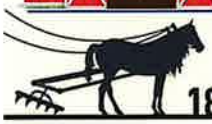
Canada had 14 times as much wheat, 10 times as many pigs and 5 times as many cattle in 2016 as in 1871.

14x

10x

5x





1871

From horses to horsepower

There were 3 times more horses in **1871** as in **2016**.

Value of equipment and machinery per farm

Source: Census of Agriculture, 1871 to 2016. Bank of Canada, *Purchasing power of the Canadian dollar.*
* The Department of Labour Statistics, 1922, The Labour Gazette, Vol. XXI, for the year 1921, page 96.

Statistics Canada Statistique Canada

www.statcan.gc.ca

Canada

Succession planning w/Cameron Smith

Estate planning helps accomplish your financial goals before and after death.
Springing/enduring Power Of Atourney doesn't take effect till after the donor becomes incapacitated.
Accounts in joint names do not go to the survivor, "will" owns the deceased portion. Land in joint, it goes to survivor.
Sit down every life event (purchasing land, significant purchases, retirement, significant costs, illness, etc) with a lawyer and accountant to update will and look at tax mitigation.
Look up information on "family Trusts" for land to maintain ownership within the family long term.

Cattle day

Energy and protein lower this year on hay (no surprise) but mostly on the energy. Feed test!
Supplement to balance for age, gestation and lactation.
Average cow will be fine on feed till -20'C lower than that 1lb of barley per 5'C drop.
Feeding rolled barley have to increase 15% compared to feeding whole barley easily pay for rolling ($0.50/bushel). Oats to rolled oats is closer, roll after 700lb animal weight, SO1 (Super oats) definetly not worth rolling.
Low protein leads to low intake which further lowers protein, downward spiral.
Any feed can be balanced if a feed test is done.

Ag Safe Alberta
What is your motivation for safety?
Evaluate the types of emergencies.
Identify emergency response.
Have the discussion; communication of hazards and emergency plan.
Emergency equipment plan, what gear, where. Look into Inreach (satellite text system) on amazon.
Implement the plan, include key contact information,go through the plan annually.
(Do a tailgate meeting before every new day or task)

Integrating livestock into a cropping system.
More carbon is sequestered into the soil through roots (exudates) than dead plant matter above ground.
1450lb cow puts 75lb/day of manure on the ground $10 fertilizer per month. 70-80% is captured and used by the system.

Tough enough to talk about it.
Mental health and suicide prevention.
Northern Alberta men are the highest risk.
Over 4000 Canadians per year, die by suicide.
Suicide deaths are almost double those who die in Motor Vehicle Collisions.
50% of suicides in men are aged 40-64.
Ask, listen and get help.
Personal conversation can open the door.
Take care of yourself.

Cattle market update
Beef should jump in price, but mostly political issues in the way.
Packers doing great, feedlots and backgrounders loosing, cow calf ok, as in making a little profit.
First time being a net importer of live cattle from the USA.
Lots of cattle, limited packer space, prices will stay where they are.

Clubroot workshop GP

Currently 16 variants of clubroot in Alberta.
Canadian Canola Council is recommending 2 years (pulse and cereal) between canola crops.
Manual cleaning of visible soil from equipement is the the best investment of time,
If a patch is found remove plants outward until no infested plants are found, then double that area. Burn all plants, (in place would make the most sense). Grass down that "double" area. Grass significant field entrance area to decrease transportation of clubroot and allow cleaning area. Control brassicas weeds within 3 weeks of emergence. Clubroot.ca

Western spread of clubroot. W/Greg Sekulic
Seed clubroot resistant varieties before clubroot is present. Keeps spore load lower and slows resistance from overcoming clubroot resistant varieties.

Farmers perspective. W/John Guelly
Found acre size patches in fall of 2013. 5 stages of grief apply to finding clubroot. We need to be open and talk about clubroot.
Farmers need to talk about clubroot and their plans for prevention and plans once it is found.
2 year break has a 90% reduction in spore load, but only helps in low initial spore loads.
"It's ok if you can't do everything, but it's not ok to do nothing."
Stinkweed, shepherd's purse and volunteer canola (brassicas)must be managed.
Scouting is key.
Designate separate entrance and exit.
Do quantitative PCR test off known areas to monitor spore load in GPS located area.
If i knew then what i know now; extend to a 3 year rotation(minimum), use Clubroot resistant varieties, more scouting in every field (find volunteers and "weeds"), mark contaminated areas and grass, pull and burn patch plus double the area, switch up herbicide tolerance to reduce volunteers and "weeds".

Keisha with U of A
Annual surveys have found increasing numbers of fields where resistance has been overcome. (Losing the battle).
Resistance cases double every year (number of fields).
New pathotype are showing up that can't be classified by old pathotype, (super Cluroot).
36 pathotype of Clubroot characterized to date, only a few are common and spread out across the province.
Get your infestation pathotypes, this will allow you to know which Clubroot Resistant variety to grow. Or show that you need to seed other crops on that field until Clubroot Resistant variety for that pathotype is available.
17 years ago when clubroot was found, Canada decided to establish its own naming system instead of adopting the European naming system.

Clubroot management w/Dan Orchard
Prevention, follow the recipe; scout, rotation 1:3, Clubroot Resistant varieties, clean (grass entrance, separate exit), control hosts, patch management(after finding).
Grass seems to stimulate spore (awakening) but without host they die which decreases spore load in that soil. Raising pH to 7.5 helps, many ways to do so.
Above ground symptoms are "late", scout to find early by pulling plants.
Weeds are even developing resistance to "hand weeding" barnyard grass that looks like rice seedlings.
Plant pathology w/M Harding

Scouting tips; main entrance to field is where 90% of clubroot is found, below ground shows long before above ground, galls are very small and yet have significant number of spores (like nodules on legumes), Check at swathing (6 weeks after emergence minimum). Clubroot lookalikes, check, and send a duplicate sample to a second lab.
Mark spot with flag or GPS, takes more time than you think, collect at least more than double what the lab requests, store samples in paper not plastic, in a cool dry place, contact lab for what they expect etc, ship ASAP, results may be spores per gram, interpret results cautiously.
Must use a proactive approach, do the preventative work to delay the arrival and then the expansion of the spores after arrival.

Panel; Resistant varieties are 85% hybrid, and can be high 90% so even with growing CR the spores still have hosts to reproduce.
Crop insurance is field specific so a farmer will shoot themselves in the foot if they continue canola after discovering clubroot.

Peace Cattle Days
Feb 12 2020
Grimshaw, Ab
By: Julie Watchorn

Navigating Winter Feeding
Justin Rosadiuk Shur-Gain

Beef ration rules of thumb
2nd trimester-
55% TDN (total digestible nutrients)
7% CP (crude protein)
3rd trimester-
60% TDN
9% CP
Lactation-
65% TDN
11% CP
You want your avg. daily gain around .2-.5 lbs. per day

Crude Protein should not be confused with Energy
Its used in the rumen for fibre digestion

Vital to:
- muscle development and maintance
- gene and enzyme function
- metabolic and immune system

Once hay makes seed, nutritional levels goes way down
You can feed 16-22 lbs. of straw in the cows ration

Get Your Feed Tested!!

Farm Safety
Ellen Jabs-AgSafe Alberta
Emergency Preparedness

Why have an emergency plan??
-Keep family and friends safe
-Manage productivity
-Proactive prevention
-Meet legislative requirements

Always have a plan for your farm. Think about all the hazards that is applicable on your farm
Identify Emergency Response
-What would you do?
-What does your family do?
-What do the farm workers do?
-Go through the processes of deciding what your response will be for each type of emergency

Medical Emergency

- Work alone rescue
- Wild fire
- Grain Engulfment
- Blizzard
- Flooding
- Fall from Heights rescue
- Confined space rescue
- Power line contact

- Missing worker
- Structural fire
- Vehicle theft
- Theft

Key Information
Key contact Numbers
Post in prominent locations
-by landlines
-on safety boards
-in all motorized equipment
-speed dial on cell phones

Make sure someone knows where you are going to work
If you change fields let people know that also

What can AgSafe Alberta do for you?

- on-farm consulting
- build farm safety management systems
- on-farm assessments
- guidance through self-evaluation
- deliver quick start program
- introduce risk assessment
- legislation interpretation
- emergency response plans
- on-farm training and safety orientation

Integrating Livestock Into Cropping System
Daryl Chubb

7 Principals for a Healthy System

- Maximize a living root
- Energize with diversity
- Reduce synthetic inputs
- Insert livestock
- Minimize soil disturbance
- Keep soil covered
- Remain Profitable

Myth- Cows cause compaction and poison the land
Fact- Land management

70-80% of the manure nutrition is used on the land
These nutrients are much more available as compared to synthetics
Studies show that managed grazing will have a greater effect due to distribution and concentration

3 days of grazing 100 head/acre=69N-45P-156K/ac
Land use efficiency
  Extended grazing
  Utilizes non-cropping areas

Considerations when trading land with crop producers

- Who is responsible for what=water, fencing, management
- Land preparation or condition its left in
- Chemical residue
- Nutrient carryover/who benefits
- Predetermine rental/daily grazing/daily grazing rates
- SIGNED AGREEMENT/If any deal goes sideways it's a cow deal!!!!!

Stormier Storms and Droughtier Droughts are the new normal ;)

DeNovo Ag
Innovation for Growth
Daryl Chubb
403-836-2202
daryl@denovoag.com

Suicide Prevention
www.sp-rc.ca

Men are affected more than women because women are more likely to talk about their problems. Men don't talk about problems they talk about the weather…

For every 1 suicide death
There are 25-30 attempts
7-10 people who are profoundly impacted by suicide loss

2018 survey of Canadian farmers
43% classified as high levels of stress
58% anxiety
38% high levels of exhaustion
35% classified as depressed

4000 Canadians die each year by suicide
3 out of 4 are male
50% are between the ages of 40-64

Warning signs of Depression
-Deep sadness
-Fatigue
-Irritability
-Isolation
-Anger
-Risk taking
-Increase in self-destructive behaviour

ASK

- Approach with intention
- Be yourself
- Don't be worried about saying the wrong thing
- Start a conversation in a comfortable setting
- Be specific on the things you've noticed

- Use open ended questions
- Don't be afraid to ask the question-"Are you thinking of suicide?"

LISTEN

- Don't be judgemental
- Give them time to answer- what they are about to tell you is incredibly difficult for them to say
- Don't jump in with advice and try to fix things for them. Give them a safe place to vent
- Listen carefully and learn what they are thinking and feeling

GET HELP

- Set up a safety plan
- Offer to help them find local resources with them
- Follow up with them
- Work with them to remove access to things such as drugs or firearms etc.
- Be prepared to advocate for them if they cant get into the resources they need

Remember .... Let them know there is hope!

2nd Annual Soil Health Mini-Conference February 24 2020 DMI Fairview, AB

Science Benefits and Applied Technology of Using Humic Substance In Soil

Dr. Mir M. Seyedbaghier, PHD
Soil Agronomist Professor Emeritus

All fertilizers have very high salts
Stable humic (Clay for years, chemistry, chemistry finally carbon!)
Cover crops do amazing things!
Different microbes
Functional carbon-marry your clay
50-100% of soil organic matter is bound to the mineral matrix of soil

- By 2050 the world population will double
- Crop production needs to double also
- Soil organic matter has declined drastically all around the world
- We need to become smarter at maximizing our resources
- Water quality and quantity are declining
- Soils are becoming salt affected and diseased [we lose 10 million hectares of cropland per year all over the world]

- Cost of production is increasing
- We MUST enhance soil health

In 2017 Drs. Ghabbour and Davies took soil samples from 700 conventional farms from 48 states and found that these samples little to no Humic Substance

1 Lb soil: 45% sand/silt/clay
Roots -micro pore space
Air –macro pore space
Organic matter
Chemicals

A plant is made up of 96.6%of Carbon, Hydrogen and Oxygen

The 5-R's of Nutrient Stewardship

1. Right fertilizer
2. Right rates
3. Right time
4. Right place
5. Right Humic Fulvic or Humin chemistry

Soil is a living tissue

Soil may be defined as a biology entity similar to a *"living tissue with complex biochemical reactions"*

Each gram of soil contains 7 million beneficial microbes

You can tell when your soil has high magnesium when it is sticky and seals off

Dr. Yamily Zavala
CARA Health Lab, Oyen. Ab

Bacteria-

- One celled organism

- Nitrogen fixation
- Chemical detoxification
- Decomposes organic matter
- Nutrient cycling
- Secrete polysaccharide-stick soil partials together

Fungi-

- Grows as long threads called hyphae
- Convert hard to digest OM such as woody material
- Retain nutrients in their biomass preventing leaching
- Builds soil aggregates by binding partials creating stable aggregates
- Traps and digest nematodes
- Serves as a food source for fungal feeding nematodes and microarthropods

Protozoa-

- Live in soil water films on soil and organic particals
- Feed almost exclusively on bacteria excreting the excess of nitrogen and nutrients

Nematodes-

- Very small round non-segmented worms living in the soil water film inside plant roots
- They function at several trophic levels of the soil food web
- Classified as bacteria, fungal, root feeders and predators

- Provides food for other soil fungi, insects and worms

Take home message-

- There is a great diversity of soil microorganisms which need to be taken into consideration when starting new soil management
- Benchmark your soils to monitor changes in soil biology and correlate them with any improvement on specific constraint

Each soil has its own Biosignature
It needs to be fed and nuture by us

Agricultural Strategies
Sexsmith, AB. ,
February 20, 2020
Garry Candy

Sonia Raven – Ag Fieldman for Grande Prairie County

- Opened with a talk about on Clubroot found in a field they have in the County
    - Although there were no visible signs, in a random test it was found, as is typical, on an approach
    - They generally do not publicize these finds as it can affect land values as well as bad feelings
    - They found it in one of 150 tests done randomly
    - There is a zero tolerance policy and recommend grassing all approaches
    - Affected growers cannot grow host crops for 4 years
- There is no Wildlife damage compensation on overwintered pulse crops
- In conversation with us, a producer from the Saddle Hills said elk damage on his peas is extensive and he has been told there is no compensation because they don't have enough people to go out and check damages

Greg Sekulic – Agronomy Specialist, Canola Council

- Passionate about insects and birds. Had results of field tests where there are shelter belts and other areas (old farmsteads, sloughs, roadways, etc.). Yields were down close to these areas because of competition for moisture but he gave examples of increased yields at particular distances from these areas
- Particularly interested in pollinators and gave examples of bugs and beetles that kill things like lygus bugs
- His comments and concerns were attributed to farms and equipment getting larger, old homesteads cleared and more land being cleared.
- With large equipment sloughs can be worked and dried out because you can stick a wing in them without getting stuck
- He is promoting more shelter belts as studies have shown that up to 8% of arable land put back to shelterbelts and special areas results in an increase in profit
- Showed pictures of carabid beetles (can be up to 50 species per hectare) eating cutworms, lygus bugs and root maggots
- Studies in Germany have proven that if you kill beetles, you increase root maggots. As well, cotesia wasps kill alfalfa worms (loopers)
- Many pollinators – bees, wasps, butterflies, moths, flies and more
- Asked if we knew what the largest cause of bee numbers being down. Answers included chemicals. His reply was the largest cause was bears
- Bees and honey production went down after the second world war because the sugar ration was lifted.

- There are about 400 species of bees in Canada
- Recommended 2 websites:
    - Awes-ab.ca (Agroforestry and Woodlot Extension Society)
    - soilcc.ca/pollinators (Soil Conservation Council of Canada)
- For persons interested, the shelterbelt program is coming up and it is strongly recommended to look at their site
- Ducks Unlimited also has help for seed purchases

Jennifer Otani – beneficial insects

- Website: www.fieldheros.ca (Think beneficial before you spray)
- Showed some of this website and talked about the amount of chemicals that are put on fields needlessly. I think this site might be a good tip to provide to farmers. Could save them time and money
- Cutworms are best controlled through diseases. The benefits of no overspray can be many including less fuel, chemical and man power costs plus providing stronger pollinator numbers and promoting a healthy eco system
- Advice is to scout and spray only when the thresholds are exceeded. Rotate crops and maintain habitat for insects, etc. she suggested checking out YouTube "Sweep Net" videos

Tracy Leishman – CPA – CA – MNP

- Gave a lot of tax information that would be applicable in different circumstances for each operation
- Words of caution to be sure all invoices have the correct name on them as in a company name vs. a personal name - apparently if incorrect sends up flags. Most of what she said would affect different operations
- Changes have been made to TOSI (tax on split income)
- Capital Gains Exemption of $1,000,000 can be passed on to kids even if they don't farm the land and it applies even if the land is rented out

Adelle Stewart – DoMore out of Saskatchewan

- Talk was about mental health – farmers are in the highest risk group for mental health issues because of the stresses they live under:
    - 35% suffer from depression
    - 45% from high stress
    - 58% suffer anxiety
- Of those canvased, 40% said they would be very uncomfortable asking for help (cowboy thinking, "Man up", etc.)
- DoMore has reached charitable status and is working to reduce the stigma and lack of awareness by making help available

- Besides weather, prices, etc. technology is causing more stress – even in learning to use new apps, new equipment, GPS, controlled equipment, etc.
- There is a Mental Health First Aid course available and a few people at the meeting had taken it
- Family meals use to mean sitting together, discussing the day and spent an average 1 hour, 16 minutes. Now this has gone to 16 minutes and a lot of time, that is in a vehicle
- Her closing words: "Talk more, Ask more, Listen more".

-30-

Peace Country Beef Farmers Association
Annual Meeting
February 22, 2020
Dunvegan Motor Inn
Fairview, AB

Garry Candy

Conducted by Jordon Bernfield and Chelsey Hostettler (replacement for Lisa – maternity leave)

Normal Annual Meeting

- 3 new directors elected to replace 3 at their 7 year period
- Outgoing directors – Jordon Bernfield, Thomas Claydon, John Prinse
- New directors - Michael Strepchuck, Dan Martin and Mackay Ross
- MNP presented financial report – looks great and on target for a non profit
- PCBFA has leased land from Fairview MP to enlarge their farming operation
- Member of the year was awarded to Rick Basnett and scholarships awarded to two students

Akim gave results on test plots involving fertilizers and cover crops

- Showed great financial and yield advantages from manure used as fertilizer
- All test reports are available in their annual report

Todd Loewen gave brief address prior to supper

- Government has conducted 17 meetings with farmers across Alberta with about 650 attending and over 1400 participating in the online survey
- Gathering information about agriculture in the province
- Results will be published in the next months
- One of the objectives is to reduce red tape
- Congratulated PCBRFA for their exemplary work in the Peace

Keynote speaker – Andrea Stroeve-Sawa

- Spoke of life journey to take over her dad's feedlot and farming operation at Taber in Southern Alberta called Shipwheel Feeders
- She gave some background of the family with her great grandfather coming from Norway at the age of 12
- Her dad, Blake Holtman, who I knew personally because I farmed about 1 ½ miles from his operation and sold him silage was always working to be a good steward of land and animals
- Andrea married a Stoeve from Picture Butte – a family I was also acquainted with. She was widowed by an accident when she was 27 and had 2 children. A couple of years later she took over the feedlot
- She made a comment she owed a lot to a cattleman from the US named Bud Williams who taught the no stress method of moving and working with livestock. We also attended his seminars and that knowledge in cattle handling helped us immensely
- She certainly gave a good talk about animals and land and works with soil and insect people all the time

An excellent and informative evening

-30-

Soil Health Mini Conference
February 24, 2020
Dunvegan Motor Inn
Fairview, AB

Garry Candy

Dr. Mir M Sayedbagheri started the day off by introducing himself

- Born near the Caspian Sea on a farm of 4000 acres with diverse crops in Iran – formerly Persia which he identifies with
- Currently working with the University of Idaho Research Farm at Parma Idaho
- Gained international recognition for his work with the effect of Humic Substances (functional carbon) on soil and plant metabolism
- Started with the information:
    - Soil is a living system
    - About 1,000,000 acres of crop land is lost yearly because of city expansion, roads, etc.
    - World population will double by 2050 and crop production must also double using less land
- Soil organic matter has decreased worldwide and we need to be smarter at maximizing resources
- Along with the soil degradation the water quality and quantity are declining and soils are becoming salty and diseased
- All commercial fertilizers have a salt content but no carbon
- Because the cost of production is rising we must enhance soil health and its sustainability
- Checking 700 farms in 48 states in the US showed little to no Humic Substances – no carbon. Humic Substances are not the only depot of carbon and energy but possess a large biological potential that makes them an analog of ATP for the biosphere
- When 100 kg of phosphorous is put on per hectare, only about 18 kg. is used, the balance of 82 kg. converts to "phates" – calcium phosphate, magnesium, phosphate, etc.
- Quoted
    - Clarks Law – any sufficiently advanced science is indistinguishable from magic

- Sturgeons Law – 90% of everything is crap
- Combine Clarks and Sturgeons Laws – 90% of advanced science is magical crap
- Add in – 1st law of teaching – Be Incomprehensible – if they cannot understand, they cannot disagree

- **Clarks Law + Sturgeons Law + 1st Law of Teaching = 90% of Science is incomprehensible magical crap that no one can disagree with**.
- Humeric Substances: process over time
  - Take peat, compress by burying, add pressure from burial, add heat (from compression) – becomes sub bituminous
  - Add time and it becomes bituminous
  - After more time it becomes anthracite which breaks down to Humic and Fulvic Acid
- Nutrients in raw Humic Ore – in molecules
  - Carboxyl – CO_2H
  - Phenol – OH_P
  - Hydroxyl – OH_A
  - Ketone – C=O
  - Ester – O=COR
  - Ether – -C-O-C
  - Amino – $-NH_2$ -NH-N
- Although he did not mention this, of interest is that Luscar had mines at Forestburg, AB. and Estevan, SK. that was in production to get Humic Substances from coal to be used in drilling fluids.
- Spoke about polydispersion and solubility index
  - Ionized function groups will help physical, chemical and biological dynamics
  - Makes more micro pores where roots, water and nutrients reside
  - Soil has micro pores and macro pines
  - Micro pores hold oxygen to help keep diseases away
- 5 R's of Nutrient Stewardship

    - Right fertilizerSoil
    - Right rate
    - Right time
    - Right place
    - Right Humic/Fulvic or Humin Chemistry
- Interactions of soil, minerals, humic and microbes – physical, chemical, biological
- Plant stimulant properties
    - Humin chemistry 1C-27 Algal and C29 plant steroids
    - Carbon (aromatic)
    - Carbon (alphatic)
    - Oxygen
    - Nitrogen
    - Hydrogen
- "Soil is a living tissue with complex biochemical reactions –God has given us everything we need – we need to use it"
- One gram of soil can contain up to 7 million beneficial microbes
- Understanding soil mineralogy is a must for calculating H.S. rate per acre
- The dynamics of soil health – carbon content etc. first steps to utilize H.S. is to have soil samples done but he said clay soils and H.S. gives healthy soil and hard clay could require 6-8 gallons/acre. He claims compaction is one of the largest problems and H.S. is the cure
- Soil tests can be done at CARA in Oyen for biological results and A&L Labs in London, On. for chemical
- Spring and fall soil testing is recommended – first to be done in the fall

Dr. Mir continued his presentation in the afternoon

- Ways to **reduce** crop yields and **cause** disease
    - Over supply of nitrogen (such as happens when you have lots of tomato leaves and vines but no tomatoes)
    - Short supply of potassium and calcium

    - Restrict the supply of micro nutrients (6 – 8 ounces of micro nutrients can increase a potato crop by up to 5 tons plus)
- Potassium – insect and disease suppression affects crop stresses such as cold temps and water
    - Increases mobilization of plant defence systems
    - Increases cuticle thickness
    - Increases grain weights, sugar production, fruit quality and shelf life
- Zinc
    - Needed by 2800 plant proteins
    - Needed by plant enzymes
    - Increased plant membrane
    - Reduces infection
- Boron
    - Increases uptake of cations (positively charged ions)
    - Involved in the metabolism of phenolies
- Manganese
    - Increased production of lignin
    - Overcomes disease – stem rot and root rot
    - Difficult to degrade
- Copper
    - Increases cuticle thickness
    - Necessary for polyphenol oxidise
- Calcium
    - Fortifies the middle lamella (holds cells together)
    - Pectolic acids
    - Stops hollow heart in potatoes
    - Stops stem rot

    - Helps with clubroot
    - Reduces crusting and compaction
    - Stops blossom end rot tomatoes and strawberries
- Ratio of the above stay the same world wide
    - Do not apply lime in a bunch – build up a little at a time
    - Anhydrous Ammonia – a definite NO-NO – kills microbes

Dr. Mir M Sayedbagheri presentation was extremely informative and interesting. He kept us all attentive. He has forgotten more about soil health than any of us will ever know.

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Cover Crops
March 5, 2020
St. Isadore, AB

Garry Candy

Info session organized by PCBFA and ALUS

Main speaker – Akim, began with a brief explanation of the benefits of using cover crops

- Prevent soil erosion
- Add organic matter
- Suppress weeds (by definition a weed is something I didn't plant)
- Increase soil nutrients such as N and P
- Improve diversity
- Enhance mycorrhizae
- Attract insects
- Increase yields

Four categories of plants for cover crop – each has different traits

- Cool season grasses
    - High biomass
    - Fibrous roots
    - Hosts fungi
- Cool season legumes
    - Nitrogen fixers
    - Do not require P or L to grow
- Broad leaf
    - Residue builders
    - Break up soil
    - Smother weeds
- Forbs

    - Attract pollinators
    - Adds diversity to the soil

He then spoke about intercropping – seeding 2 or 3 plants together

- Peas and barley
- Peas and oats
- Peas and triticale
- Seeding rates – 75% for peas, 50% for cereals
- Triple cropping – peas, barley and triticale with seeding rates of 33% each
- Cocktail mixes can be up to 12 or more different plants

Examples of varieties that do well in the Peace Country

- Oats – Haymaker
- Barley – murphy, cowboy, maverick – 2 row, advantage and cattlelac – both 6 row
- Triticale – tyndol, pronghorn
- Soft wheat – paramount, sadesh
- Rye – fall hazlot, mustafeer

Harvest timing for green feed

- Barley – soft dough
- Oats – milk
- Wheat – milk to soft dough
- Rye – boot to starting into head

Annual rye grass varieties – 2N or 4N – 2N means 2 sets of the same chromosome and 4N means 4 sets. Both are well adapted to the Peace Country

Festulolium

- Hybrid of Farage grass, such as a cross between meadow fescue and Italian rye grass. Some varieties available are hykor, perum, barfest and foitan
- Germination for warm season grasses needs soil temp of 7-10 degrees and will shut down growth when it reaches 10 degrees

Akim

- Cautioned against feeding foxtail millet to horses because it acts as a laxative and can cause kidney damage as well as accumulate nitrates
- Japanese millet can yield up to 600 lbs. per acre with protein levels to 16% and TDN of 65
- Forage sorghum and sudan grass are hard to establish in the Peace; there are some hybrids that are suitable but they are susceptible to prussic acid, nitrates and silo gas. One hybrid variety is grazex
- Crimson clover gives fast germination and fixes N quickly but can cause bloat. Variety – it.o common
- Berseem clover – nitrogen fixer. No bloat variety – frosty berseem
- Persien clover – fixes N, can cause bloat. Variety – laser
- Subterranean clover – low crop – dense cover, high fixation of N, can cause bloat
- Woolypad vetch – N fixation starts within 1 week, can be poisonous at times to cattle
- Chickling vetch – dense cover, high N fixation. Graze before flowering because seeds can cause paralysis – cautioned to watch amounts of each in cocktail mixes
- Hairy vetch – top N provider – will not set seed in the first year – seeds can cause death to horses and cattle
- Forage peas – varieties – horizon meadow, leroy, tucker and jasper, goldeye is a new variety what grows tall and is resistant to lodging
- Maple peas – good forage pea variety – liscard
- Lupine peas – can be toxic to cattle – can be used in salads, stir fries and can help blood pressure and heart disease in humans
- Forage basilicas – kale, rape, radish and turnip
- Forbs – referred to as herbs – low growth, short lived, high geed value, includes phacelia (test growing can recycle nitrates and calcium)
- Buckwheat – supresses weeds, protects soil from erosion, attracts insects and has fine roots that loosen soil
- Some poor performers tested were
    - Cow peas

    - Some clovers
    - Ethiopian cabbage
    - Forage sorghum
    - Sugar beets
- Selection of cover crops
    - Have soil tests done to select compatible crops
    - Seeding rates can be up to 1.75 million seeds / acre or 36 – 38 plants per square feet
    - Seeding cereals with others – rate should not be more than 50% or it will choke the others out. There are chars available as to how many seeds are in a pound of seed – standard seeding depth is ¾ inch
- Akim did an excellent presentation of findings and all the information is available at PCBFA

Next speaker was a local producer – Garry These

- Showed slides of his cover crop for grazing
- Plants were about 5 feet tall and thick to the ground
- Said when the cows were turned in they immediately bulked up from the feed value
- Had 200 cow calves and 12 yearlings on 48 acres for a month plus a few days
- Took it to the ground but he feels he will be able to run them over it again in early spring
- Balance (he did not specify number of acres) was cut and baled and wrapped. Feed tested at 13.5% protein, TPN was 57%
    - Mix was 35 lbs. oats, 40 lbs. barley, 30 lbs. peas, 6 lbs. Hairy vetch, 1 lb. red turnip, 1 lb. sunflower – just mixed together and the drill was set at about 100 lbs. Not fertilizer because of the dry spring.
    - It did not germinate until the 1st week of July even being seeded on the last week in May.
    - Fantastic results in dollar savings and animal condition

Final speaker was Dewey Hodgeson from Falher

- Grew a similar mix (could not hear the breakdown due to talkers at next table)
- Cut the crop and it was as thick as a mat and needed a disc bine to cut it
- Swath grazed under the snow
- Put 280 cows in Dec 14. Took out in early March
- Snow was about 3 ft. deep and at times had quite a crust but they worked it down and got it all.
- He also mentioned that the mix they used had 8 to 10 different plants in the mix, more of hairy vetch and the plants did better in different spots in the field, probably because of soil and nutrient differences. This was all done on 290 acres of rented lands.
- He provided figures for all inputs including rent, machinery, seed, fuel and factored in costs for a dugout and water system and fencing over five years.

These two producers had excellent results both for the soil and for the pocket by using cocktail mixes.

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Soil Health Mini Conference
By: Chair Harcourt

Speaker..Dr. Mia Gezedbagheri..Soil Agronomist..Professor Emeritus.
Comments and Quotes.
Soil--A living system with tissue.
North America is loosing 24million acres of soil every year.
His Product, HS..Humic Substances = Energy, could be part of the solution.
By year 2050, the population could double....maybe.
Our food supply needs to double.
Water quality and quantity is declining.
Too much salt in our soil. We all must enhance our soil.
In 700 soil samples from 48 states had little to no HS--energy.
Humic Substances-are not the only unusual deposit of carbon and energy
but possess a biological potential that makes them an analog of ATP..
ATP=Alternative Transients Program..The furnace of the plant.
90% of everything is "crap", poop, soil food.
Soil..=sand, silt,clay, air, roots, minerals, micro spores, macro spores
organic matter and chemicals.Oxygen resides in macro spore roots.
H2O and nutrients in micro spore roots. Plant food, C, H, and O,=93% volume of soil.
1 gram of soil contains up to 7million beneficial microbs.
Do Not Sell Your Straw!!!
Harcourt.

Speaker..Yamily Zavala..
Quotes and Comments..
Bacteria--one cell organism that aides in nitrogen fixation, chemical detox
decomposition of organic matter, nutrient cycling, beneficial and pathogenic
food for plants. Fungi grows as long threads or strands called hyphae,
you can see them move in the under a microscope.
Protozoa, Ameaebo, Flagellates,Celeates, live on soil water films
and organic particles feed on bacteria.Fungi, Bacteria, and Protozoa
interact together. Nematds=very small worms in the soil.
Parasites on Nematodes control their population.
Each soil has its own biosignature. It needs to be fed by us.
Find each feilds signature, soil sample, to be able to justify changes and
treatments. Soil testing and GPSing if you can, are a definite must.
If you don't know your soil, how will you care for it?