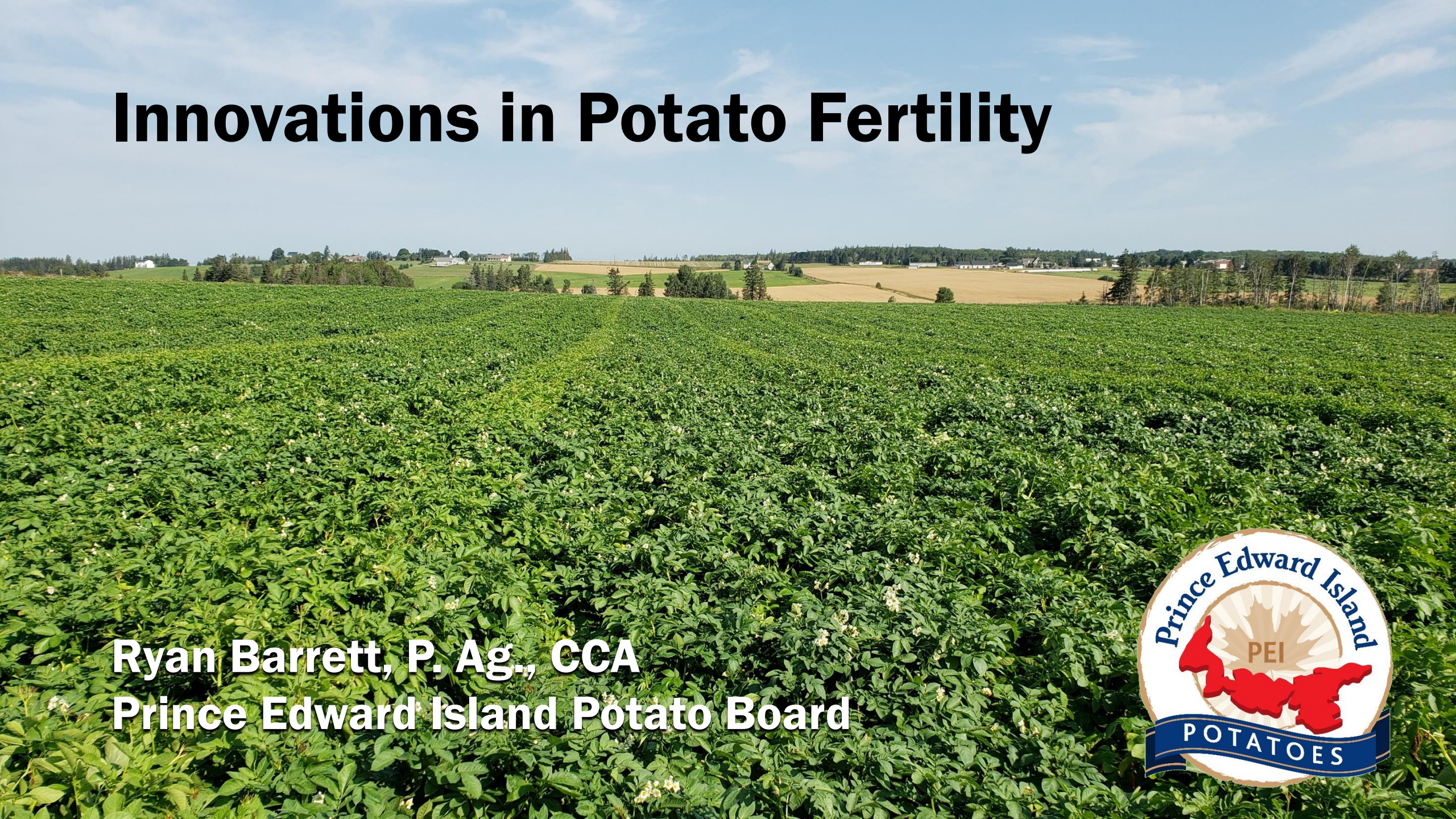
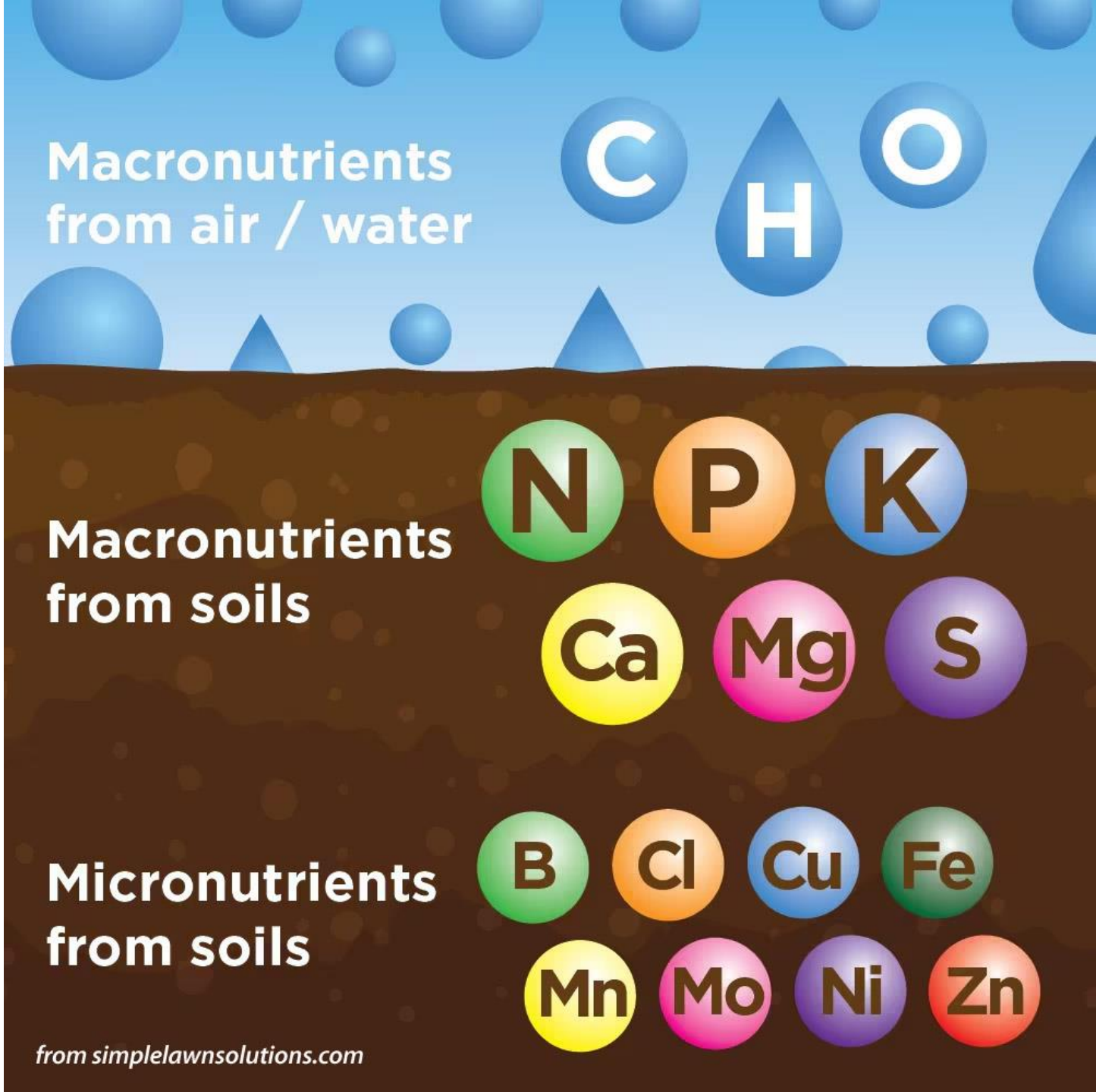
Innovations in Potato Fertility



Ryan Barrett, P. Ag., CCA
Prince Edward Island Potato Board

Macronutrients Needed for Plants

- Nitrogen (N)
- Phosphorus (P)
- Potassium (K)
- Sulfur (S)
- Magnesium (Mg)
- Calcium (Ca)



Nitrogen: What does it do?

- Major component of chlorophyll
- Essential component in amino acids, which form proteins
- Component of energy-transfer compounds ATP/ADP
- Component of DNA and RNA, the building blocks of life

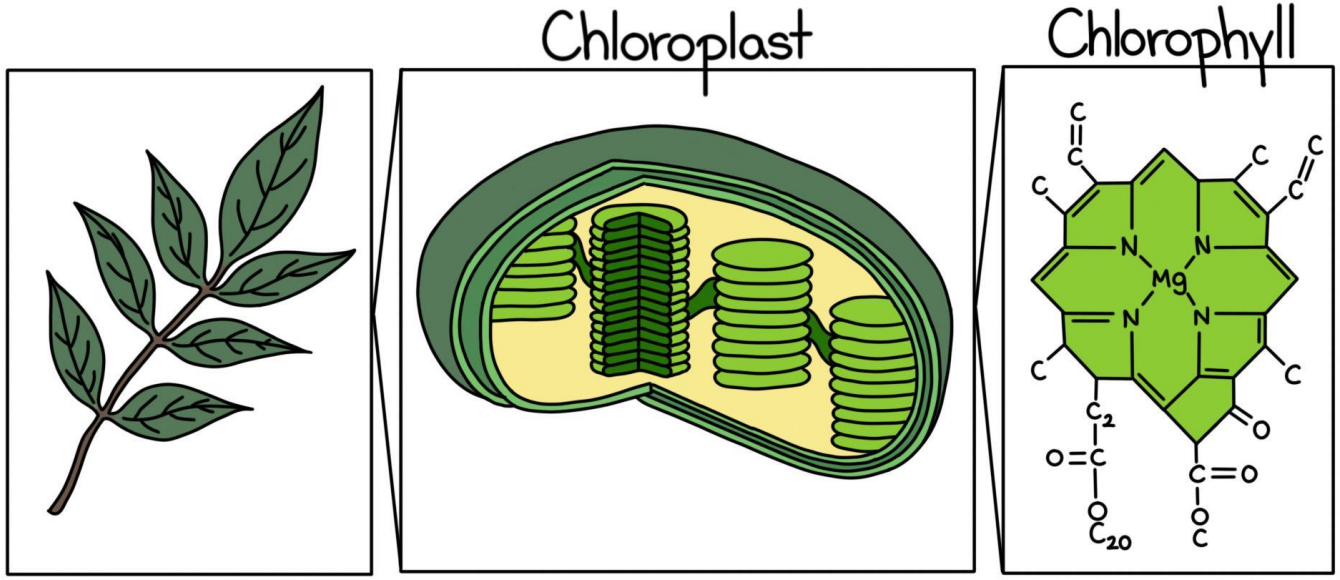
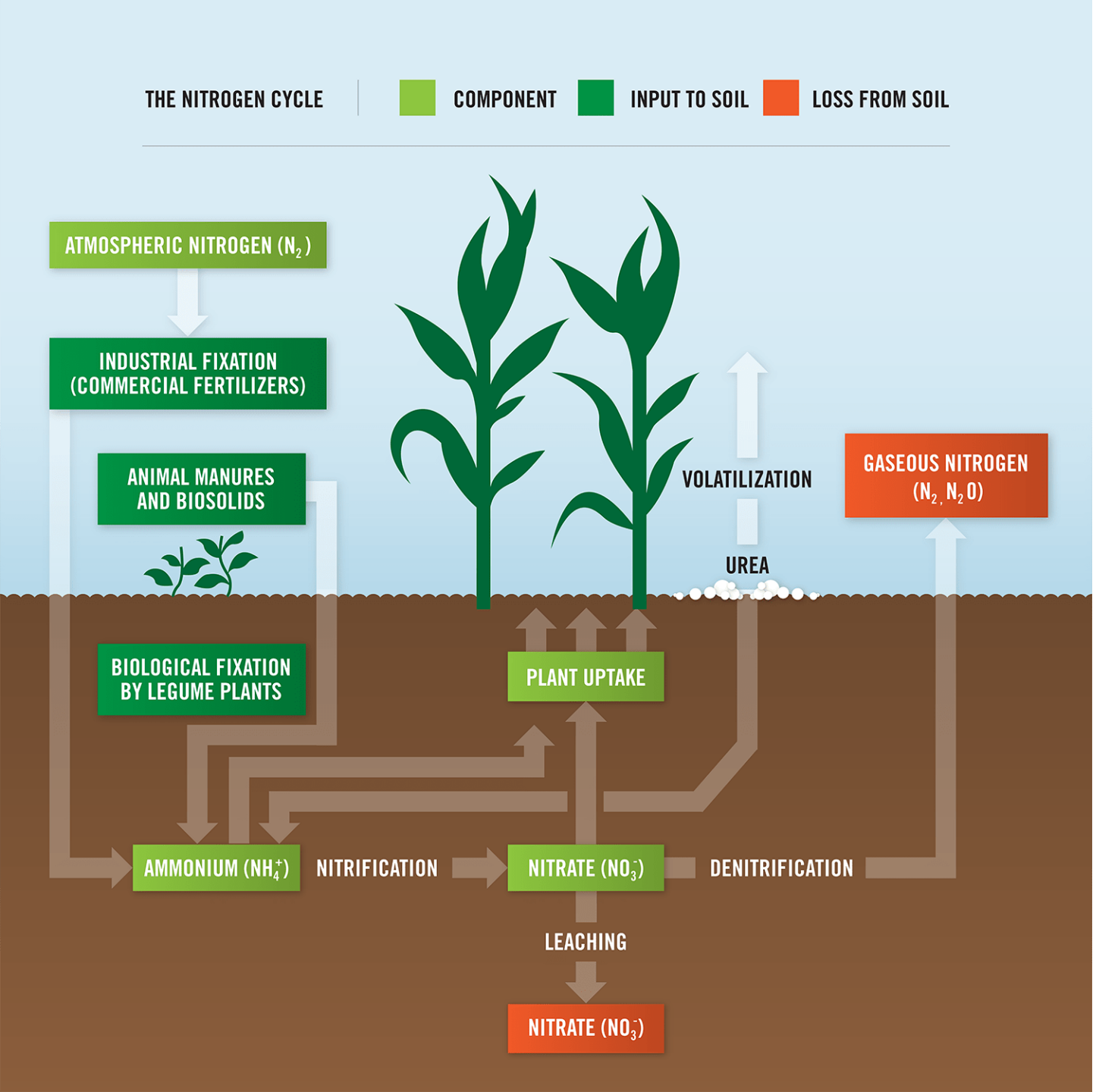


Image from futureengineers.org

Nitrogen in Potatoes…the tricky part…

- In crops like corn and wheat, too much N application doesn't really hurt yield, but is just economically inefficient
- In potatoes, **too much N can delay tuberization, delay maturity, reduce tubers/plant, and lower specific gravity**
- Not enough N = reduced yield, plants with reduced vigour/health
- Managing N in-season is difficult without fertigation, but there are some foliar N products to deliver small amounts at a time.
- Can we use products or time applications to have N available when crop needs it!



Nitrogen

- Nitrogen is possibly the most complex nutrient to understand in plant nutrition, as it comes in many forms, and is the easiest nutrient to be lost from the system
- Accounting for all inputs and outputs is import to arrive at the right N rate!

Image: https://kochagronomicservices.com/

Nitrogen Forms:

- **Organic N** = not immediately available, can become available through breakdown by soil bacteria, depending on conditions (temp, moisture)
- **Atmospheric N**: Thunderstorms turn N_2 into NO_2, which then is converted to NO_3 in soil. ~10-20 lbs/ac per year
- **Ammonium (NH_4^+)** = from breakdown of ammonia (NH_3) from fertilizer, organic N breakdown, or N fixation by legumes
- **Nitrate (NO_3^-)** = nitrification from NH_3
- ***Plants only take up NH_4^+ and NO_3^- …mostly the latter.***

Building a Nitrogen Rate/Fertilizer Blend:

- How much does the **crop need**, according to your yield goal?
- How much N will be available from your **soil organic matter**?
- How much N will be available from **previous legume crop**?
- How much N will be available from **manure/compost**?
- What is the **timing of N availability**?

Nitrogen Needs

	300 cwt/ac	350 cwt/ac	400 cwt/ac	450 cwt/ac
Tubers	90	105	120	135
Above Ground	60	70	80	90
Total	**150**	**175**	**200**	**225**

- Every 50 cwt/ac requires additional 25 lb/ac of nitrogen.
- This is what the plant needs…but doesn't account for losses, nitrogen efficiency, variety efficiency at using N

How much N from soil organic matter?

- Historically, we didn't give this a big credit
  - PEI Soil Lab: soils > 3.5% OM = 15 lbs/ac N credit
  - A&L Labs: sandy-loam soils > 1.5% OM = 30 lbs/ac N credit

- Recent research by Dal AC / PEI Dept of Ag and others indicates that potential N supply may be much greater.
  - Biological Nitrogen Availability (BNA) available from soil health testing
  - Depending on BNA level, could be > 60 lbs/ac N credit from N mineralization
  - This continues to be calibrated and refined. Understanding timing of release is important.
  - Factsheet available on Agronomy site

How much N from previous legume crop?

- PEI Soil Lab:
  - Alfalfa: Good Stand = 71 lbs/ac Fair Stand = 36 lbs/ac
  - Red Clover (1st yr): Good Stand = 36 lbs/ac Fair Stand = 18 lbs/ac
  - Red Clover (2nd yr): Good Stand = 18 lbs/ac Fair Stand = 9 lbs/ac
- OMAFRA:
  - Half or more legume in stand: 100 lb/ac
  - One-third to half legume in stand: 49 lb/ac
- Perennia (NS):
  - Depending on amount of biomass: 20-100 lbs/ac

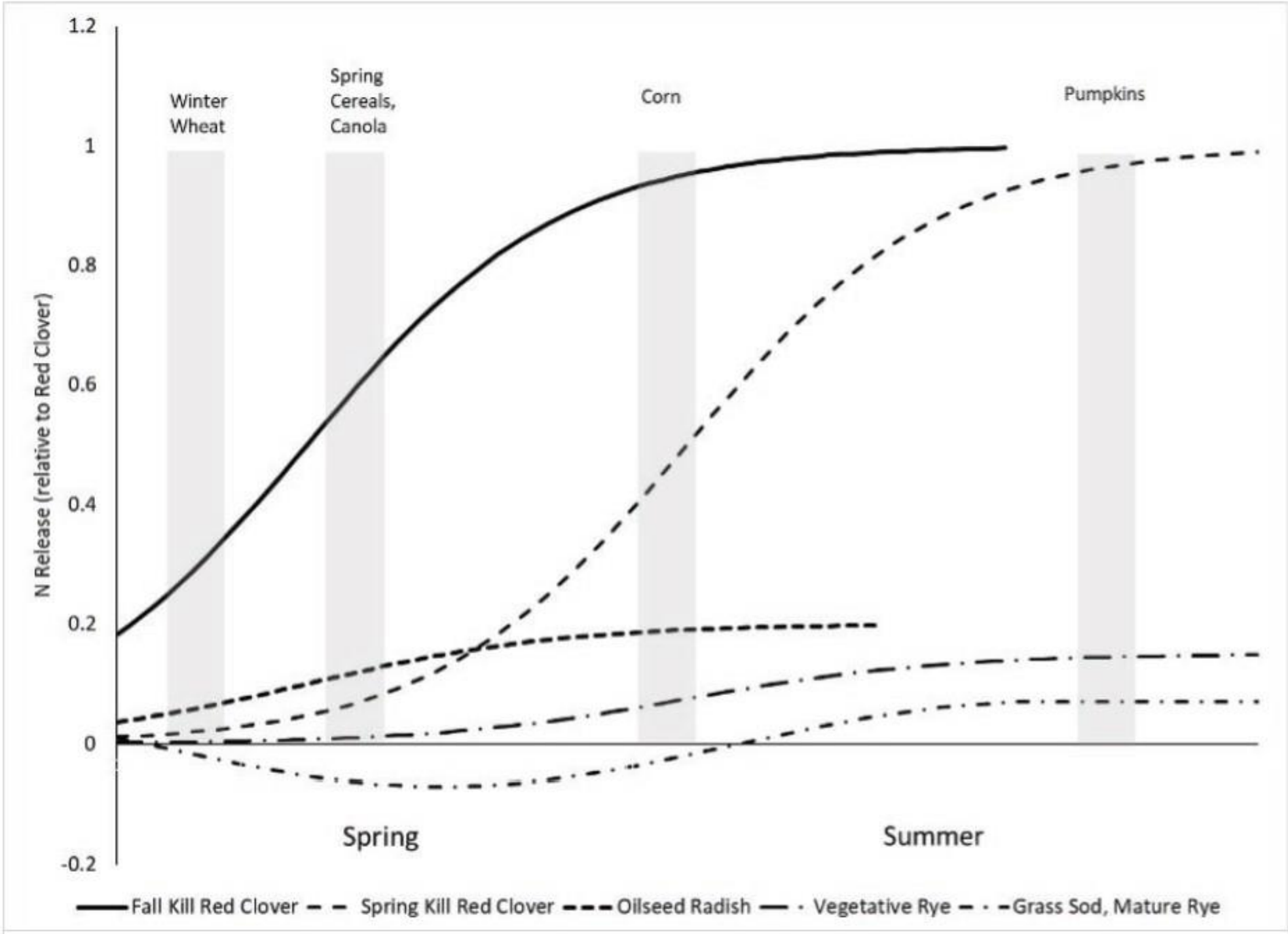


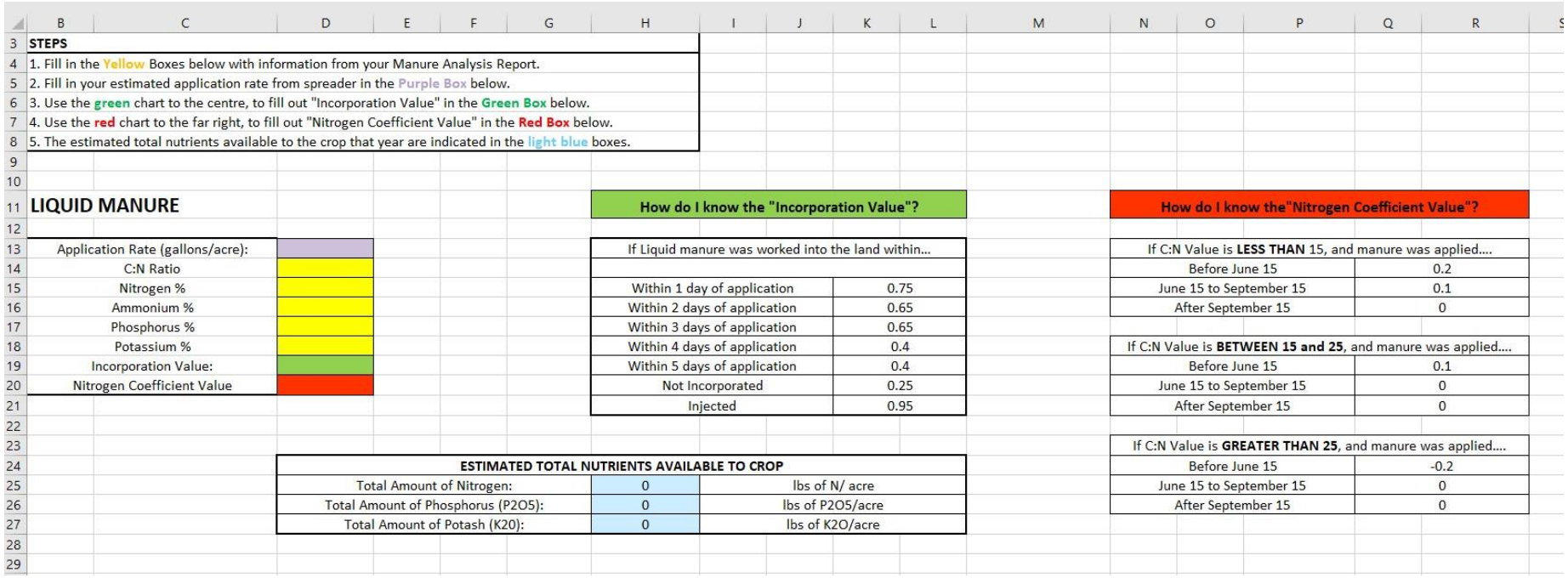
Image: Perennia factsheet

How much N from previous legume crop?

- In new ACS-Living Labs project, looking at dialing-in N credits from legumes based on:
  - Legume species
  - Timing of termination
  - Presence of cover crop
  - Difference N fertilizer rates

- 4 fields in potatoes in 2024. More planned to set up for 2025 and 2026.

How much N from manure/compost?



STEPS

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2. Fill in your estimated application rate from spreader in the Purple Box below.
3. Use the green chart to the centre, to fill out "Incorporation Value" in the Green Box below.
4. Use the red chart to the far right, to fill out "Nitrogen Coefficient Value" in the Red Box below.
5. The estimated total nutrients available to the crop that year are indicated in the light blue boxes.

LIQUID MANURE

Application Rate (gallons/acre):	
C:N Ratio	
Nitrogen %	
Ammonium %	
Phosphorus %	
Potassium %	
Incorporation Value:	
Nitrogen Coefficient Value	

How do I know the "Incorporation Value"?

If Liquid manure was worked into the land within...	
Within 1 day of application	0.75
Within 2 days of application	0.65
Within 3 days of application	0.65
Within 4 days of application	0.4
Within 5 days of application	0.4
Not Incorporated	0.25
Injected	0.95

How do I know the"Nitrogen Coefficient Value"?

If C:N Value is **LESS THAN** 15, and manure was applied....	
Before June 15	0.2
June 15 to September 15	0.1
After September 15	0

If C:N Value is **BETWEEN 15 and 25**, and manure was applied....	
Before June 15	0.1
June 15 to September 15	0
After September 15	0

If C:N Value is **GREATER THAN 25**, and manure was applied....	
Before June 15	-0.2
June 15 to September 15	0
After September 15	0

ESTIMATED TOTAL NUTRIENTS AVAILABLE TO CROP		
Total Amount of Nitrogen:	0	lbs of N/ acre
Total Amount of Phosphorus (P2O5):	0	lbs of P2O5/acre
Total Amount of Potash (K20):	0	lbs of K2O/acre

- Manure Nutrient Calculator available on Agronomy Website
- Limited N from solid manure, significant N from liquid manure

How do we factor in timing of release?

- Protected N sources either inhibit breakdown of N to plant-available forms or have coating to delay release of N to soil solution.
- Biggest value of these products in PEI = protecting against N losses due to volatilization or denitrification/leaching, ensuring plant available N is around when plant actually needs it!
- These products have been intensively trialed locally for 10+ years with positive results.

How do we factor in timing of release?

- Living Labs trial (Genesis Crop Systems/Dal AC)
  - Three treatments:
    - Grower Standard Practice (GSP) - no Super U or slow release N
    - Super U High (SUH) - same lbs/ac as GSP, Super U ~ 30% of total N
    - Super U Low (SUL) - lower lbs/ac N than GSP, Super U ~ 30% of total N
  - GSP and SUL had **same cost per acre**
  - **No significant difference in yield** across 18 site-years of field trials
  - Average **GHG emission reduction of 60%** (less wasted N)
  - Conserves N to be available when N demand is highest with less total N applied.

What are the N fertilizer options?

- Urea (46-0-0) with or without inhibitor (Agrotain)
- AXAN or CAN (27-0-0) – ammonium nitrate stabilized by Ca
- Super U (46-0-0) – urea with dual inhibitors
- ESN/PurYield (45-0-0) urea with coating
- Ammonium Sulphate (21-0-0-24 S)
- Amidas (40-0-0-5.5S) urea/ammonium sulphate
- Calcium Nitrate Tropicote (15.5-0-0-19% Ca)
- Nitrabor (15.4-0-0 with 18% Ca and 0.3% B)
- Foliar N products (Last N (25%), Length N (28%), etc)

Recent N trial results

- Living Labs irrigation trials: Tobin Stetson (PEIDA), Yefang Jiang (AAFC), John Phillips (EPAA)
- **No difference in yield or quality** between 80% and 100% N under irrigation, **44% reduction in nitrates** in the soil after harvest. Same results in 2023 (4 fields)

BMP-5 DEMONSTRATING POTATO PRODUCTIVITY AND NITROGEN USE EFFICIENCY AS AFFECTED BY SUPPLEMENTAL IRRIGATION									
Total Yield (10' hand dug strip)									
PLOT	# of Samples (10' Strips)	Total Yield (CWT/ACRE)	Marketable Yield (CWT/ACRE)	CWT Defects	CWT Smalls	% over 10oz.	Specific Gravity	Residual Nitrate Post Harvest (NO3-N ppm)	Residual Nitrate % Change
Dry (Check)	68	332	278	2.06	42.32	20%	1.0866	24.72	0.0%
Farmer Irrigated	68	406	349	3.08	39.29	17%	1.0883	18.31	-25.9%
Soil Moisture Scheduled 80% Nitrogen	52	417	349	3.21	46.61	16%	1.0880	13.77	-44.3%
Soil Moisture Scheduled 100% Nitrogen	68	402	356	4.12	37.53	17%	1.0890	17.44	-29.5%

Reduced N Rate – Seed

- AIM trials looking at reduced N rates on seed
- We want seed to mature more quickly as it will be top-killed earlier. We also want higher tuber numbers, fewer large tubers (less cutting)
- **No yield penalty by decreasing N on seed.** In some trials, increased tuber numbers and/or increased yield. In 13 trials over 4 years, no average difference in yield with 20-30% reduced total N applied.

Reduced N Rate - Seed

Variety	GSP N lbs/ac	GSP Tubers #/10 ft	GSP Yield cwt/ac	Low N lbs/ac	Low N Tubers #/10 ft	Low N Yield cwt/ac
Burbank 2019	150	87	287	120	106	294
Shepody 2019	136	66	283	114	70	262
Burbank 2019	168	99	271	128	98	308
Shepody 2020	135	64	294	100	69	331
Burbank 2020	165	127	407	120	130	413
Payette 2020	165	78	295	120	76	294
M Gem 2020	165	86	310	120	75	311
Dakota 2022	177	92	340	145	91	347
Dakota 2022	100	65	274	80	69	292
Alverstone 2022	100	90	399	80	89	394
M Gem 2023	150	49	246	118	56	260
M Gem 2023	100	71	274	70	67	269
Targhee 2023	100	66	253	70	58	241
AVERAGE		**80**	**303**		**81**	**309**

Summary – Nitrogen

- Multiple years of local trials indicate that **nitrogen is not a limited nutrient** for most fields, and that there may be an opportunity to reduce total N.
- We have seen huge yields in recent years in varieties like Mountain Gem with 120-140 N from fertilizer. Much more efficient than Russet Burbank, earlier maturing.
- **Need to factor in all sources of N** when making fertilizer plans
- **Slow-release N options don't have a yield penalty**, allow for reduction in total N applied. Also, eligible for OFCAF payments
- More work to be done on legume N contribution, but I'm confident that a good stand of **alfalfa plowdown in the fall is worth 50 lbs/ac N or more**. Probably less for red clover, annual clovers in mixes
- Only apply the nitrogen you need! Don't spend money on N that will be lost!

Phosphorus: What does it do?

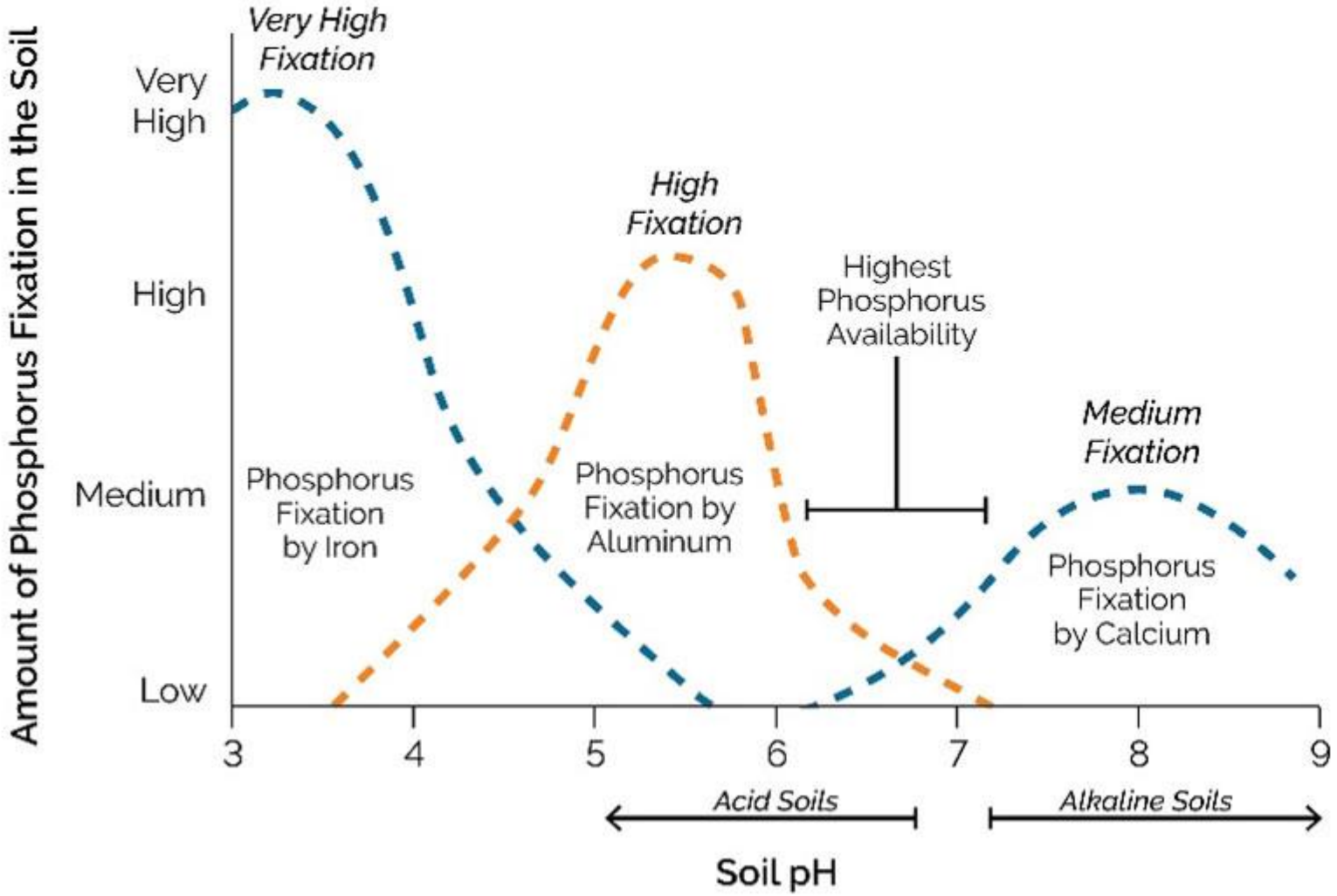
- Key component in DNA and RNA, building blocks of life
- Key component of ATP and ADP (energy transfer system)
- Stimulates root development
- Increased stalk/stem strength
- P deficient plants will have “purpling,” reduced root growth

Phosphorus: Finding the right rate

P_2O_5	300 cwt/ac	350 cwt/ac	400 cwt/ac	450 cwt/ac
Tubers	45	52.5	60	67.5
Above Ground	15	17.5	20	22.5
Total	**60**	**70**	**80**	**90**

- We don't export as much P with the crop as we do with other nutrients.
- Too much P – no impact on yield
- Above ground returns to the soil for all crops except N

Phosphorus: Finding the right rate



- Historically, we went higher with applied P rates because most fields were at pH < 6.0
- P is much more available at pH > 6.0
- Seeing soil tests now with >500 ppm P_2O_5. Building up in soil due to over-application.

Phosphorus: Local Research

- When deciding on need to apply P, key soil test factor is P saturation index (P/Al %)
- Dr. Judith Nyiraneza and team did research at 23 sites in PEI over multiple years, both plot scale and grower fields.
- When P/Al was 10 or higher, the optimum P rate was ZERO
- When P/Al was between 5 and 10, the optimum P rate was 160 lbs/ac
- Recommendations have now been updated

Phosphorus: Local Research

Updated potato P recommendations based on P saturation index for soil with pH > 5.5

Updated P Recommendations (2018 onward, based on P- Saturation Index)

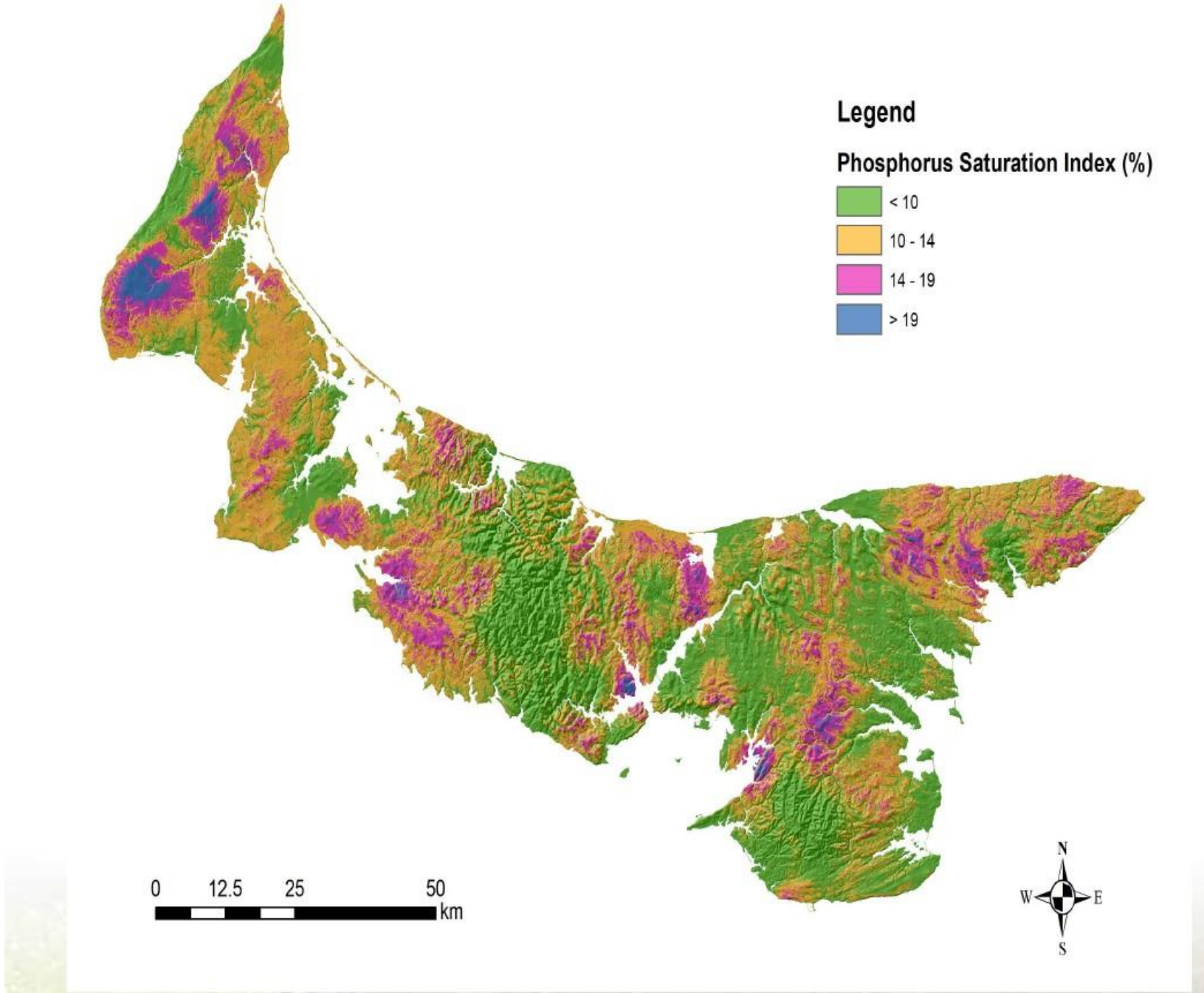
P-Saturation Index (P/Al %)	Recommended Rate (kg P_2O_5 /ha)
0-2.5	240-300
> 2.5- 5	185
> 5-10	160
> 10-14	100
> 14-16	75
> 16-23	50

https://www.princeedwardisland.ca/sites/default/files/publications/af_nmp_p_fertilization_recommendation.pdf

- These rates are still quite conservative
- Majority of PEI potato fields are > 10 for P/Al %
- **Fields with pH > 6.0 may have an opportunity to reduce P even further**

Phosphorus: Local Research

- P Saturation Index from the PEI Dept of Ag's Soil Quality Monitoring Program (SQMP)



Phosphorus: Local Research

Total P2O5 Applied lbs/ac	Total Yield cwt/ac	Market. Yield cwt/ac
40	318	312
80	371	369
160	346	342
GSP (200+)	343	337

- 2017 demo trial by Kyra Stiles, PEI Dept of Ag
- No difference in yield between 80, 160, and 200+ lbs/ac
- Significantly more residual P_2O_5 in the soil after harvest in GSP

Phosphorus: Local Research

	99 lbs P_2O_5	198 lbs P_2O_5
Total Yield (cwt/ac)	324	325
Market. Yield (cwt/ac)	290	291
Spec. Gravity	1.085	1.086
% smalls	10%	10%
% 10 oz	18%	16%

- 2020 grower trial in Prince County. Russet Burbank
- Field had 484 ppm P_2O_5
- P/Al % = 14.4
- No difference in yield with 50% reduction in P
- With 2023 prices, saves $50/acre

What are the P fertilizer options?

- MAP (11-52-0)
- DAP (18-46-0)
- TSP (0-45-0 with 15% Ca)
- ManZinPhos Max in-furrow (6-20-5)
- TruPhos Advanced in-furrow (5-18-5)
- HydroPhos foliar (0-29-5)
- Alpine G24 in-furrow (6-24-6)

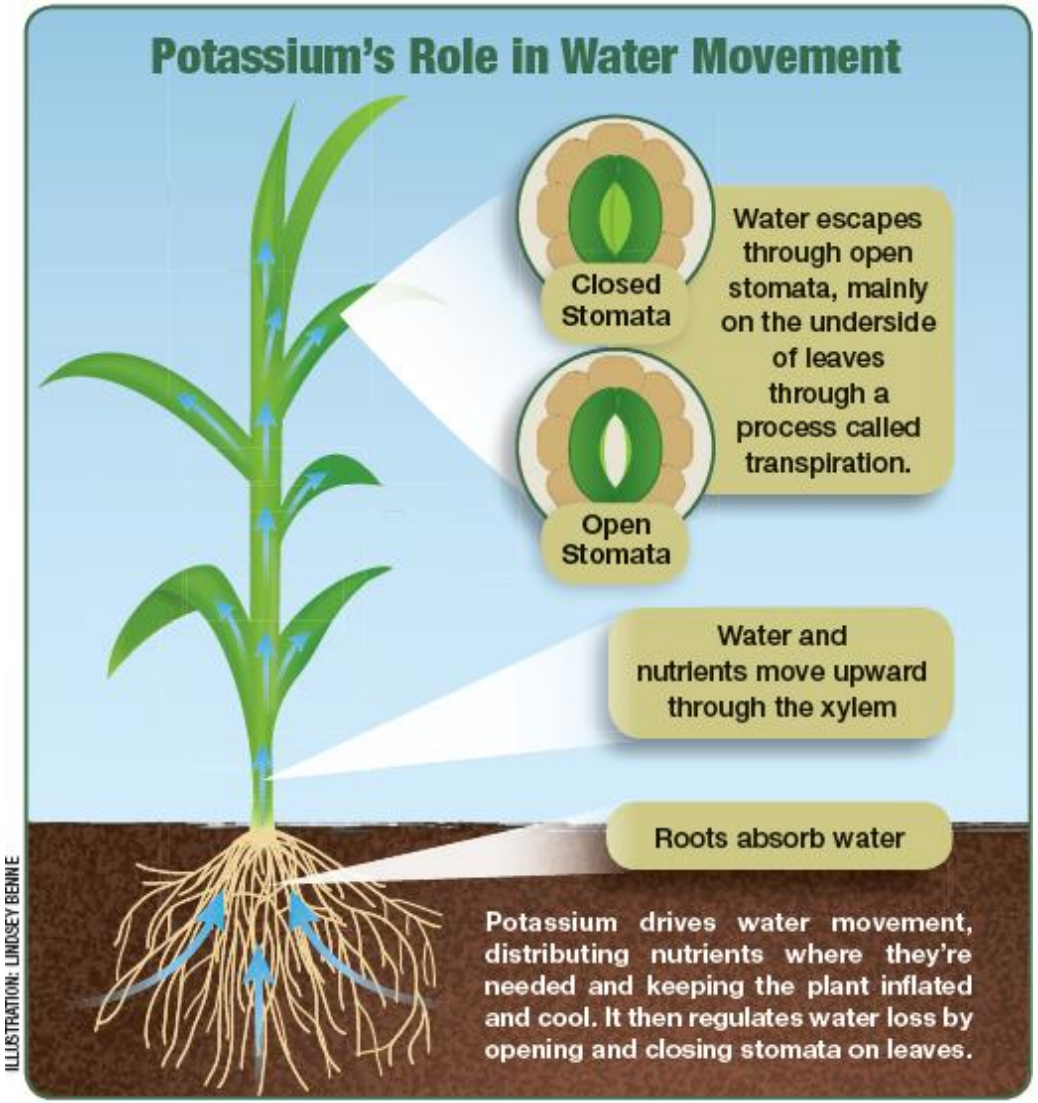
Summary – Phosphorus

- There is a lot of local evidence that **growers can significantly reduce P rates** from what has previously been applied without harming the crop.
- **Pay attention to pH and P/Al %** when making decisions on P rate
- If particularly interested in early-season P and making it available, **liquid in-furrow starter P** products are widely used in both PEI and elsewhere. Many other provinces only use starter P
- **Broadcast P is a waste of money**…needs to be concentrated near the seed piece for maximum uptake.
- Try your own trial with reduced P blend on good candidate fields. I can assist with data collection if interested.

Potassium: What does it do?

Image: AgWeb

- Potassium (K) is essential for nearly all processes needed to sustain plant growth and reproduction
- Helps fortify plants, making them more resistant to pests, diseases, drought, etc.
- Highly correlated with "quality" parameters
- Key in structural components like cellulose for building cell walls.
- Key in starch synthesis and deposition



Potassium: Removal/Uptake

K_2O	300 cwt/ac	350 cwt/ac	400 cwt/ac	450 cwt/ac
Tubers	195	228	260	293
Above Ground	90	105	120	135
Total	**285**	**333**	**380**	**428**

- You need a lot of K to grow potatoes. Need to have access to almost 1 lb of K per cwt of potatoes.
- K from above ground plant goes back in the ground. So fertilizer rate should at minimum keep up with the removal rate.

Potassium: Rate and Application

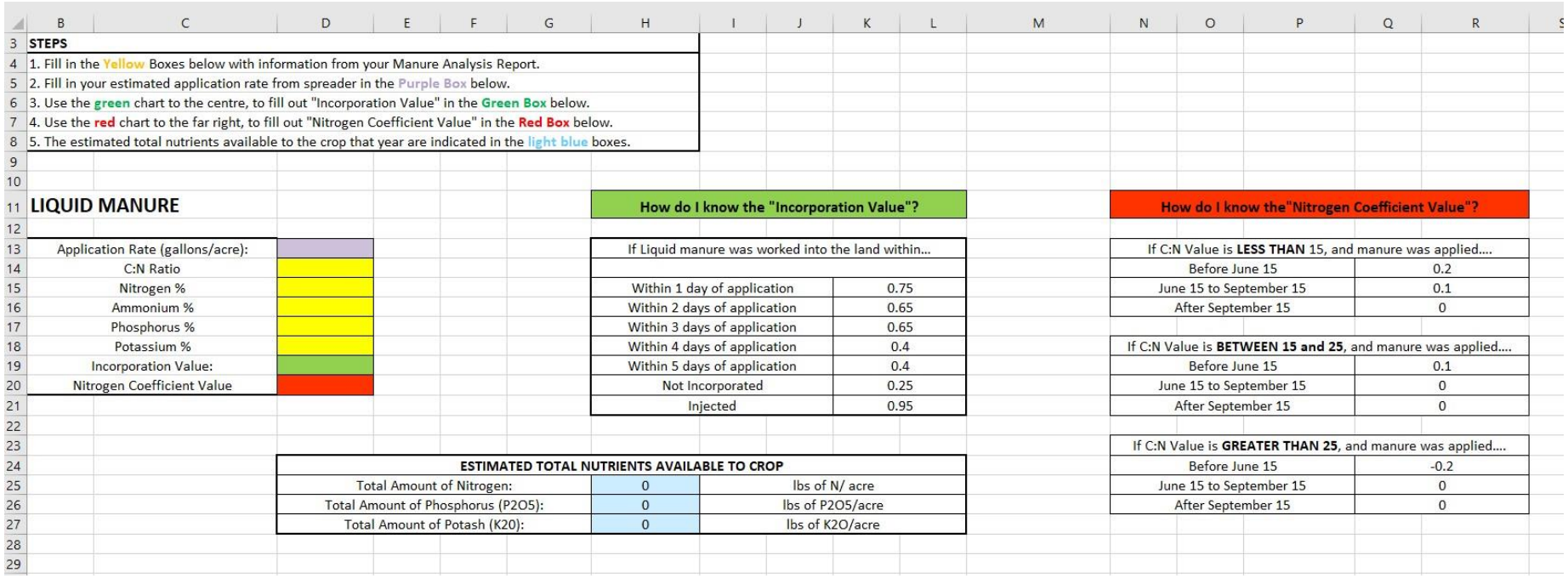
- Thankfully, K is not easily leached or lost, so most of the K you apply will be available to the crop.
- In many trials over many years and regions, **K deficiency is highly correlated with reduced yields**.
- Frequent soil testing important to know what your starting level of K is in your field. **If K_2O is less than 100 ppm**, you may need to up your fertilizer application. One of the easier nutrients to build.
- **Minimize KCl (MOP) in the planter blend**. Excess salt in the fertilizer blend restricts root growth and lowers specific gravity.
- Prime candidate for VR application, fall or spring broadcast

What are the K fertilizer options?

- KCl/MOP (0-0-60)
- Potassium sulphate/SOP (0-0-50 18S)
- Polysulphate (0-0-14 with 18S 6Mg 17Ca)
- K-Mag (0-0-22 with 11Mg 22S
- AgriPotash liquid (0-5-32)
- K Max liquid (0-0-24)
- Manure!

Image: Nutrien eKonomics

K from Manure



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LIQUID MANURE

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C:N Ratio	
Nitrogen %	
Ammonium %	
Phosphorus %	
Potassium %	
Incorporation Value:	
Nitrogen Coefficient Value	

How do I know the "Incorporation Value"?

If Liquid manure was worked into the land within...	
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How do I know the"Nitrogen Coefficient Value"?

If C:N Value is **LESS THAN** 15, and manure was applied....	
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June 15 to September 15	0
After September 15	0

If C:N Value is **GREATER THAN 25**, and manure was applied....	
Before June 15	-0.2
June 15 to September 15	0
After September 15	0

ESTIMATED TOTAL NUTRIENTS AVAILABLE TO CROP

Total Amount of Nitrogen:	0	lbs of N/ acre
Total Amount of Phosphorus (P2O5):	0	lbs of P2O5/acre
Total Amount of Potash (K20):	0	lbs of K2O/acre

- Manure Nutrient Calculator from PEI Dept of Ag
- 10 tonnes/ac of beef manure = 35 lbs/ac of K_20
- 6000 gal/acre of liquid manure = >100 lb/ac of K_20

K export with straw/hay

Nutrient Removal Calculator		developed by Ryan Barrett, Prince Edwar		
		ton/bale	$ N+P+K/ton	$ P+K/ton
Crop Choice	Barley straw	0.375	$50.44	$37.84
	Bales/Acre (4 x 5 ft)	# of tons	$ N+P+K/ac	$ P+K/ac
	5	1.875	$94.58	$70.95
			$ N+P+K/bale	$ P+K/bale
			$18.92	$14.19
Value of Urea (46-0-0)	1165	May'23		
Value of DAP (18-46-0)	1200	May'23		
Value of KCl (0-0-60)	1075	May'23		
$/lb of N from Urea	1.149			
$/lb of P2O5	1.183			
$/lb of K20	0.813			

- Available on Agronomy site
- Calculates value of nutrients removed by different hay and straw crops and their value
- 5 bales/ac of barley straw removes ~ 70 lbs/ac K
- 4 bales/ac of alfalfa removes 83 lbs/ac K
- It's fine to sell hay/straw, but just know that you need to replace that K.

Summary – Potassium

- **Don’t skimp on K** if you have high yield targets.
- If soil test levels are good, **K from fertilizer + manure should equal removal rate**
- There are lots of times in the year to apply K. Do what makes sense for your farm and keeps cost down.
- If selling hay/straw crops, supplement more K
- **Insufficient K can make potatoes more vulnerable to drought stress** (Wilmer et. al., 2022)

Sulfur: What does it do?

- Formation of 2 essential amino acids, which make proteins
- Necessary for chlorophyll formation
- Nodulation in legumes
- Glucosinalates in brassicas (mustard)
- Develop/activate certain enzymes/vitamins
- Highly linked with nitrogen

Sulfur: Why do we have to pay more attention?

- Major source of S is breakdown of organic matter. Low OM soils or those without manure addition = less available S
- Used to free deposits of S from acid rain…not anymore.
- Used to be more S in bulk fertilizers as "impurities"…not now
- Used to be more S in some of the pesticides used
- Crops like mustard and canola in rotation have higher S requirements
- S more likely to be deficient in sandy, low OM soils with high rainfall…..PEI to be sure

Sulfur: Removal

S	300 cwt/ac	350 cwt/ac	400 cwt/ac	450 cwt/ac
Tubers	9	11	12	14
Above Ground	6	7	8	9
Total	**15**	**18**	**20**	**23**

- Crop doesn't need nearly as much S as other nutrients, but still important!
- Sulfur often comes with other N or K fertilizers, but do the math to ensure you're getting enough.

What are the S fertilizer options?

- SOP (0-0-50 18S)
- Polysulphate (0-0-14 with 18S 6Mg 17Ca)
- K-Mag (0-0-22 with 11Mg 22S
- Ammonium Sulphate (21-0-0-24 S)
- Amidas (40-0-0-5.5S) urea/ammonium sulphate
- Gypsum (18.6% S, 23.3% Ca)

Sulfur: Recommendations

- There hasn’t been much local research on sulfur response in potatoes, as historically it hasn’t been as limiting.
- Manitoba study showed a 40-50 cwt improvement by addition of S (regardless of source) compared with no S. (MHPEC, 2020)
- If you use manure, you will have less need for S in your fertilizer blends

Magnesium: What does it do?

- Every molecule of chlorophyll has an atom of Mg
- Carrier of P, key for root development
- Deficiencies show first in the lower leaves
- Associated with K. Excess K can impact Mg uptake

Mg	300 cwt/ac	350 cwt/ac	400 cwt/ac	450 cwt/ac
Tubers	8	9	10	11
Above Ground	15	18	20	23
Total	**23**	**27**	**30**	**34**

What are the Mg fertilizer options?

- Polysulphate (0-0-14 with 18S 6Mg 17Ca)
- K-Mag (0-0-22 with 11Mg 22S
- Lime (High Mg, Dolomitic)
- Foliar Mg products

Summary: Magnesium

- Depending on soil test and additions via lime, **target lbs/ac for Mg at 10% of K rate**
- Magnesium is not naturally high in PEI soils but there are multiple sources to ensure adequate Mg.
- **Deficiency more of an issue on low OM, low pH soils**
- If you suspect deficiency, foliar applications and full bloom and 2-3 weeks later is an option.

Calcium: What does it do?

- Essential structural component in building cell walls.
  - Key for healthy plants
  - Associated with tubers that are more resistant to bruise and soft-rot
- Regulates many growth and development processes

Ca	300 cwt/ac	350 cwt/ac	400 cwt/ac	450 cwt/ac
Tubers	2	3	3	4
Above Ground	26	30	34	39
Total	**28**	**33**	**37**	**43**

What are the Ca fertilizer options?

- Polysulphate (0-0-14 with 18S 6Mg 17Ca)
- Lime (calcitic) – slow breakdown and availability
- AXAN/CAN
- Calcium Nitrate/Nitrabor
- Gypsum

Calcium: Response and Recommendations

- Work by Dr. Jiwan Palta and others had gone a long way to furthering our understanding of calcium.
- Fortification of tubers with calcium is more effective with fertigation of Ca in irrigation water or addition of Ca at hilling (ie. calcium nitrate, polysulphate)
- **Tubers uptake Ca from tuber roots**, not larger plant roots…so available **Ca needs to be shallower in the hill**.
- https://peipotatoagronomy.com/wp-content/uploads/2018/04/Palta-Calcium-Factsheet-Apr18.pdf

Calcium: Response and Recommendations

- Increased soil Ca associated with reduced stem numbers, fewer tubers, larger tuber size.
- **Majority of soil Ca is not available to the crop**, but very low Ca soil tests are indicative of chance for Ca deficiency.
- Multiple studies in PEI have shown that addition of **gypsum is not associated with higher Ca in tubers**
- Certain varieties may be more responsive to additional Ca (ie. Prospect)
- Most of the Ca uptake from the plant will return to the soil. Very little export from the field in potatoes. More in forage crops (ie. alfalfa)

Micronutrients:

- **Pay attention to your soil test results**. If soil test amounts are adequate, need for much supplementary micros will be minor.
- **Boron (B) and Zinc (Zn) are notoriously lacking in PEI soils**, both essential in potatoes.
- **Use of coatings to add B and Zn** is an excellent way to ensure that these nutrients are available throughout the fertilizer band, not just one particle here and there
- B, Zn, Mn are often used as foliar products. Other micros generally not lacking in PEI

Overall Recommendations:

- **We don't live in a world anymore where "insurance fertilizer" makes sense**…either economically or environmentally.
- Different varieties respond slightly different in nutrient uptake. It takes time to dial in nutrient recommendations by variety.
- **On-farm nutrient trials** are great ways to understand what works for your farm, your rotation, your soils.
- **Soil sampling is fundamental to understanding what you need**. Track your results over years to see if individual nutrients are increasing or decreasing to help dial in fertilization
- Consider doing **post harvest nitrate sampling** to assess left-over N

Overall Recommendations:

- Pay attention to local research.
- More local work is needed, particularly dialing in N rates on new varieties, optimizing P rates, optimum S rates, use of biostimulants to improve nutrient uptake/plant resiliency
- Higher organic matter will deliver/cycle more nutrients besides improving water holding capacity, buffering against stresses. Nutrient deficiencies are often most acute on low OM, sandy soils.
- **Ensure that your agronomist is following a 4R approach** when helping you with fertilizer recommendations! Right Source, Right Rate, Right Time, Right Place.

Fertilizer Use Survey

Fertilizer Canada Survey

$40 for completing

Good for understanding what products are being used, how much. Happening in other provinces, other commodities.

CEU QR code

2.0 CEUs –
Nutrient Management

or, send your CCA number
to ryan@peipotato.org

Upcoming Workshops:

- Feb 6th/7th: Seed Production in the United Kingdom with Sophie Bambridge
  - Feb 6th: Emerald AM, Montague PM
  - Feb 7th: Fox Island AM

- Feb 27th/28th: Reduced Tillage/Precision Ag with Chad Berry, Manitoba
  - Feb 27th: Emerald AM, Fox Island PM
  - Feb 28th: Montague AM

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East Prince Agri-Environment Association Inc.

Kensington North Watersheds Association

Souris and Area Branch PEI Wildlife Federation

Dalhousie University Faculty of Agriculture

Thank You!

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