

Soil Nutrition

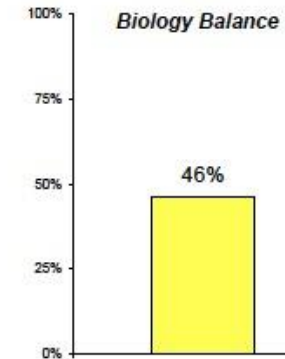
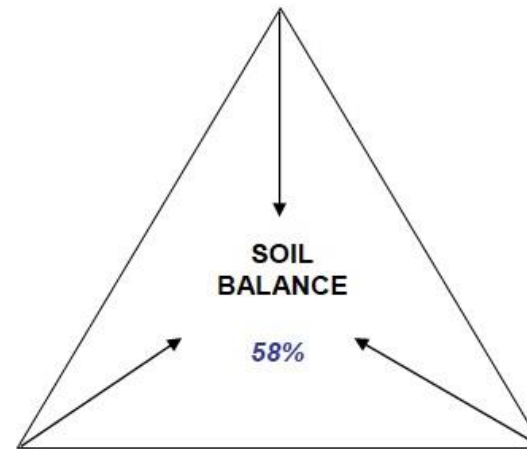
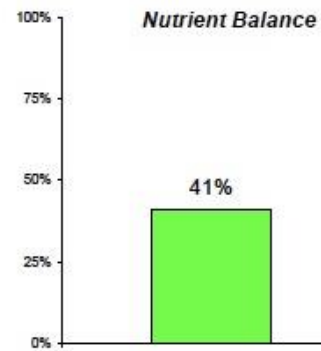
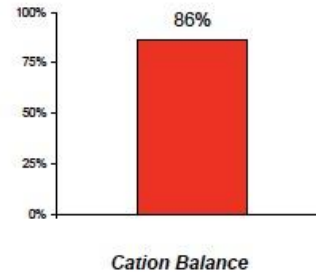
Getting the Basics Right



Summary of Complete Soil Balance Status

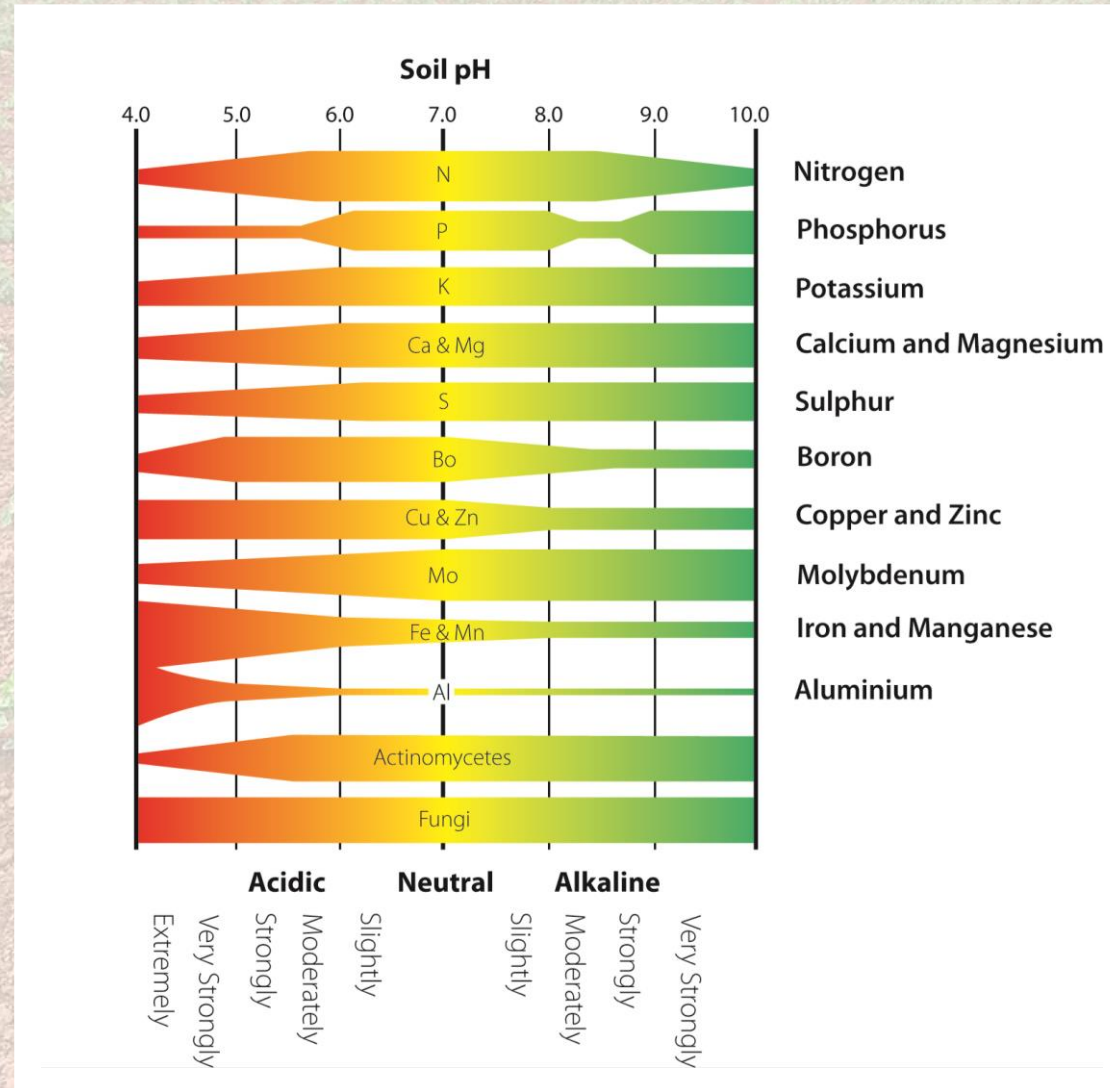
as at 25/03/2019

(Changes over time will indicate likely sustainability of production)



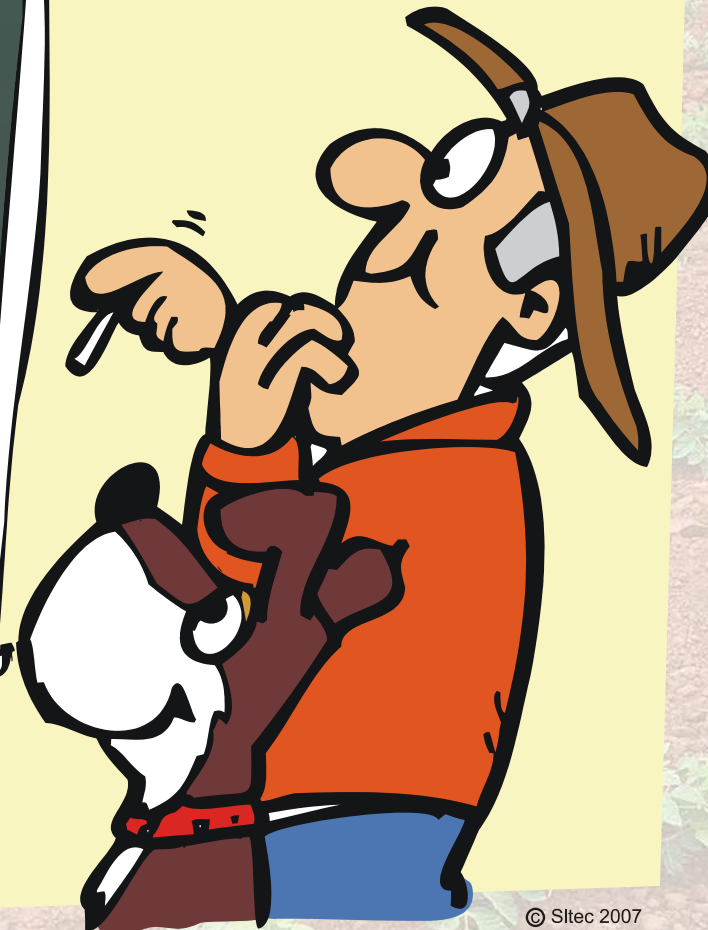
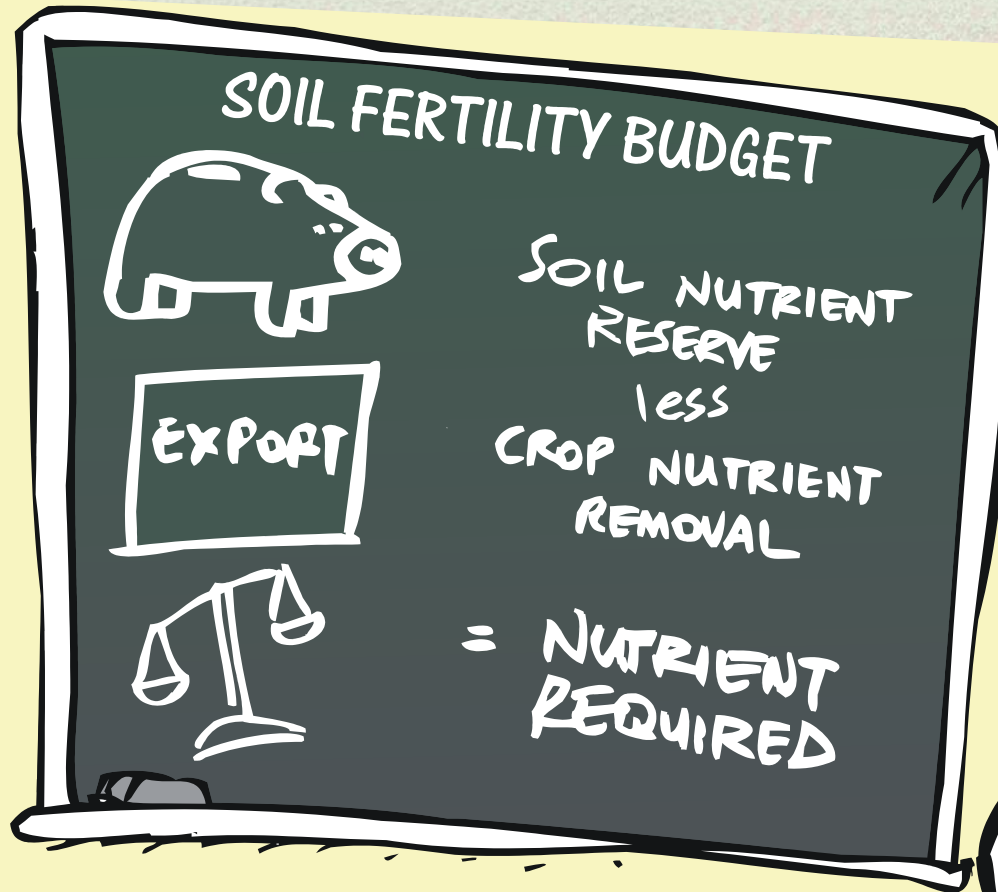
Overall Soil Balance Rating				
Poor	Below average	Average	Above average	Good
<20%	20%-40%	40%-50%	50%-80%	>80%

Soil pH & Nutrient Availability In Organic Soils



Preparing the budget

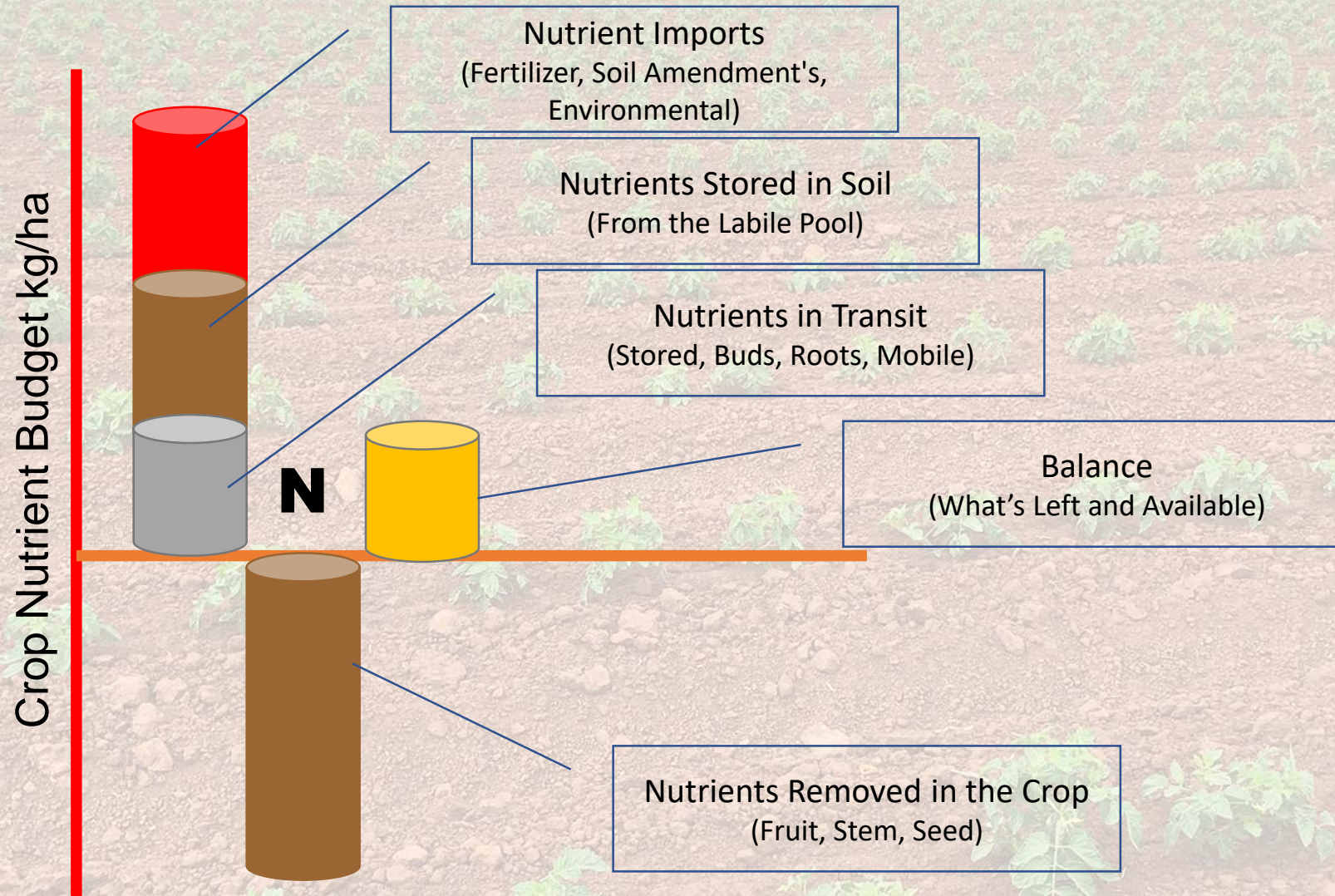
Based on soil tests, crop history, target yields & nutrient export



When you don't feed a young tree with a balanced diet.

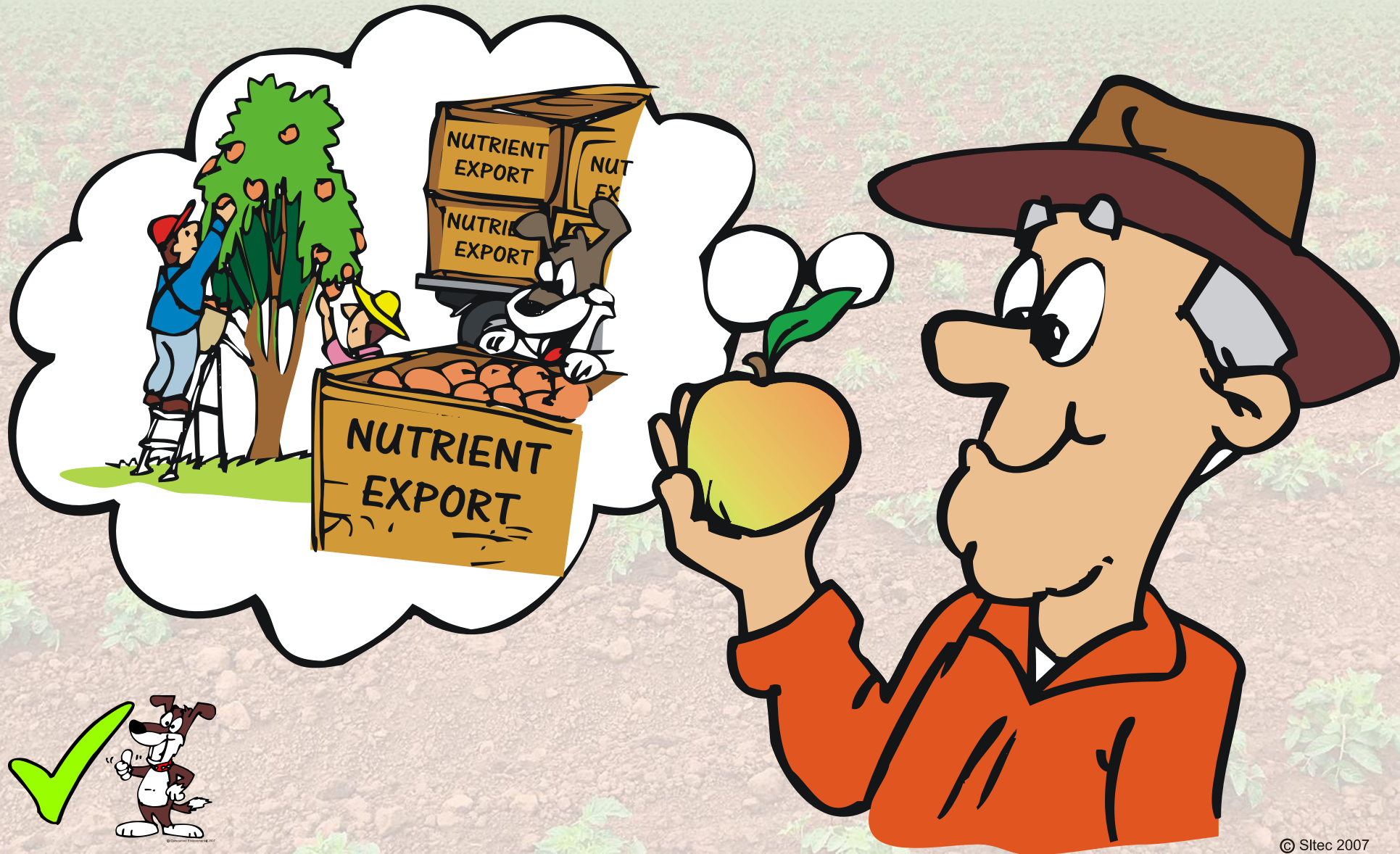


Getting the Balance Right



Estimating Nutrient Removal

Based on published removal rates, crop history & target yields



Crop Removal Data

			Kg per ton of Fruit removed						Grams per ton of Fruit removed				
			N	P	K	S	Ca	Mg	Zn	Cu	Fe	Mn	B
			2.6	0.5	3.6	0.6	2	0.6	0.004	0.0008	0.008	0.004	0.004
Kg of Nutrients removed on a 120 ton Crop		120	312	60	432	72	240	72	480	96	960	480	480

CRAFT

Hazard or Risk Identified:

Too many fertilizer recommendations made by agronomists lack the basic elements of CRAFT presenting risks to the grower, the crop and the wider environment

Key Message:

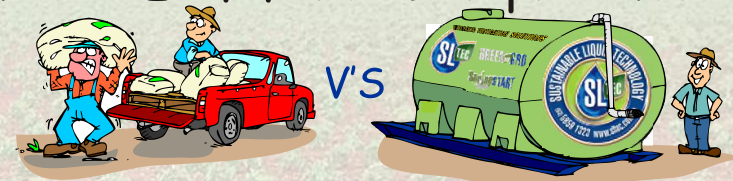
- Getting the 5 elements of craft correct is a BASIC fundamental for all nutrient related decisions

Sustainable Alternatives:

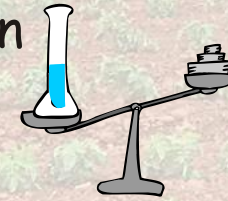
- Participate in a SLTEC Sustainable Nutrient Management Training Course and learn about how to practically apply CRAFT to nutrient decisions



CHOICE of fertilizer product



RATE of application



APPPLICATION method



FREQUENCY of application



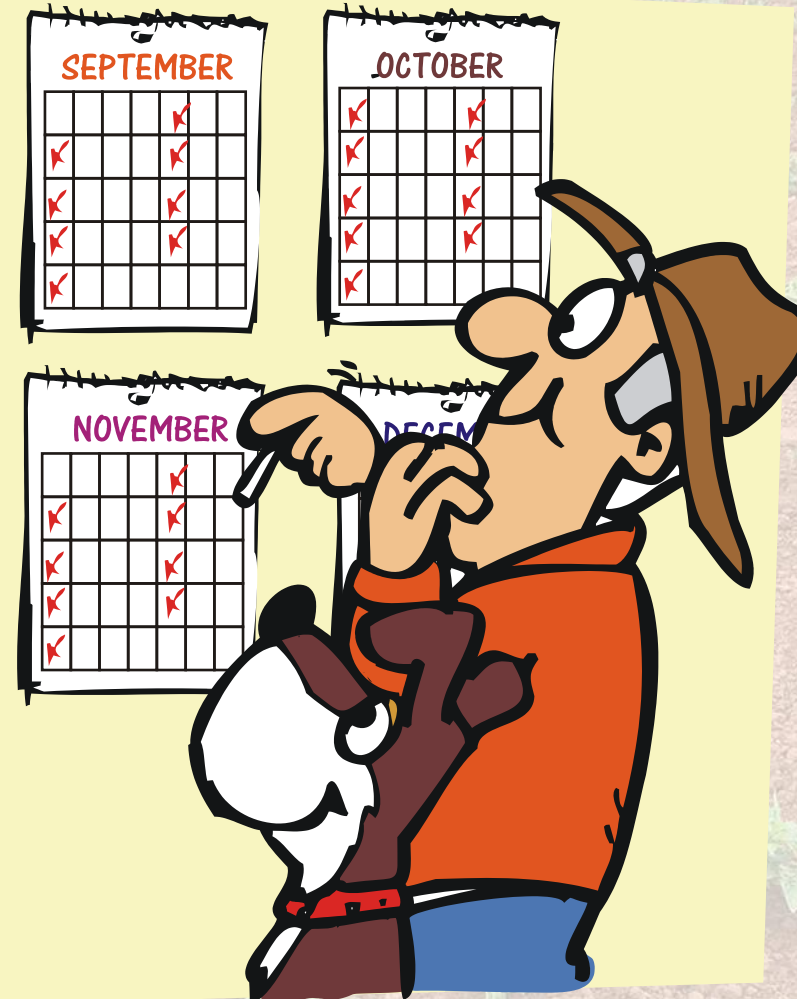
TIMING of application



Developing the plan

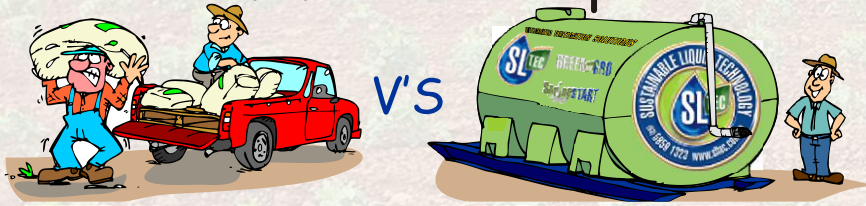
Balancing the demand, implementing CRAFT

FERTILISER PLAN	
WEEK	
1	SLTEC PRODUCT X@10L per /ha
3	SLTEC PRODUCT Y@30L per /ha
10	SLTEC PRODUCT W@10L per /ha
20	SLTEC PRODUCT Z@40L per /ha



CRAFT - C

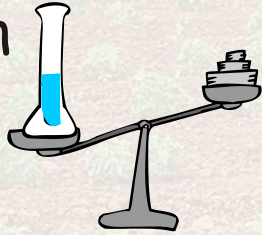
CHOICE of fertilizer product



- Selecting the right type and form of nutrients
 - Chelated Trace Elements?
 - What form best suits your soil and crop situation – soil pH dependent
 - Solid blended products versus liquid nutrition
 - How the property is set up and the key agronomic issues we are trying to address

CRAFT - R

RATE of application



- What's the overall rate of each nutrients required over the season given the current soil balance, estimated crop demand and climatic factors

CRAFT - A

A APPLICATION method



- The application method will impact the efficiency in which the nutrients actually reach the crop and give the desired response/outcome
- Crops don't eat fertilizer or nutrients, they adsorb nutrients via water uptake through their root systems.
- Foliar applications also need to be considered and integrated with fungicide sprays etc



This compatibility chart represents physical compatibility of IPEC products. All testing is completed under laboratory conditions. Compatibility is indicated as immediate and/or over the period of application. As there are many variables in each application situation such as water volume, quality and pH, interpretations and the recommendations given here are a guide only, we recommend completing a bucket test prior to application. These recommendations are made in good faith, based on the best technical information we have available. Additionally, environmental and managerial factors influence crop production, therefore Sustainable Liquid Technology Pty Ltd does not accept any liability arising out of these interpretations and recommendations for any damage loss or injury of any nature and the user considers these interpretations and recommendations on these terms.

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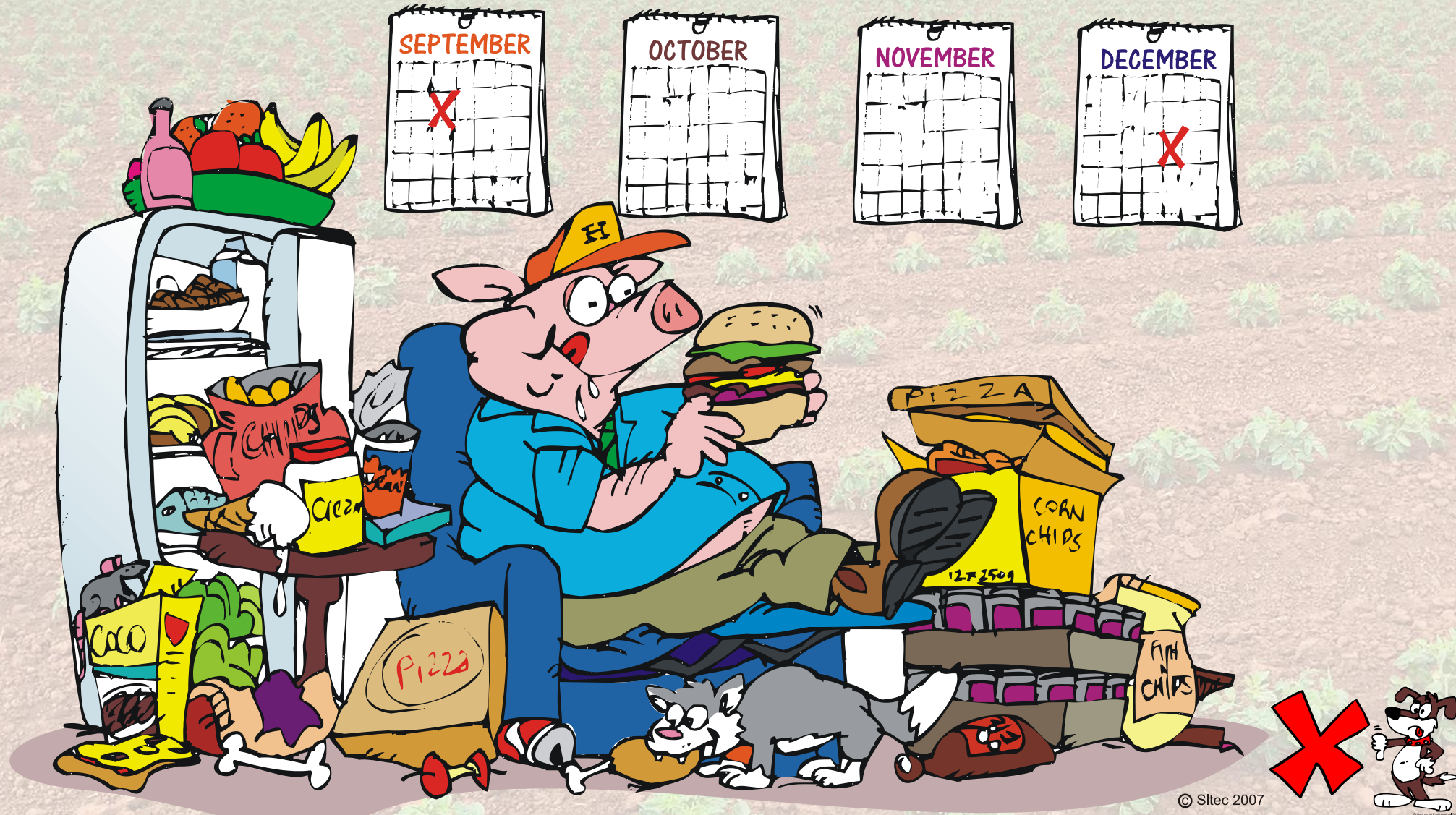
CRAFT - F

F FREQUENCY of application

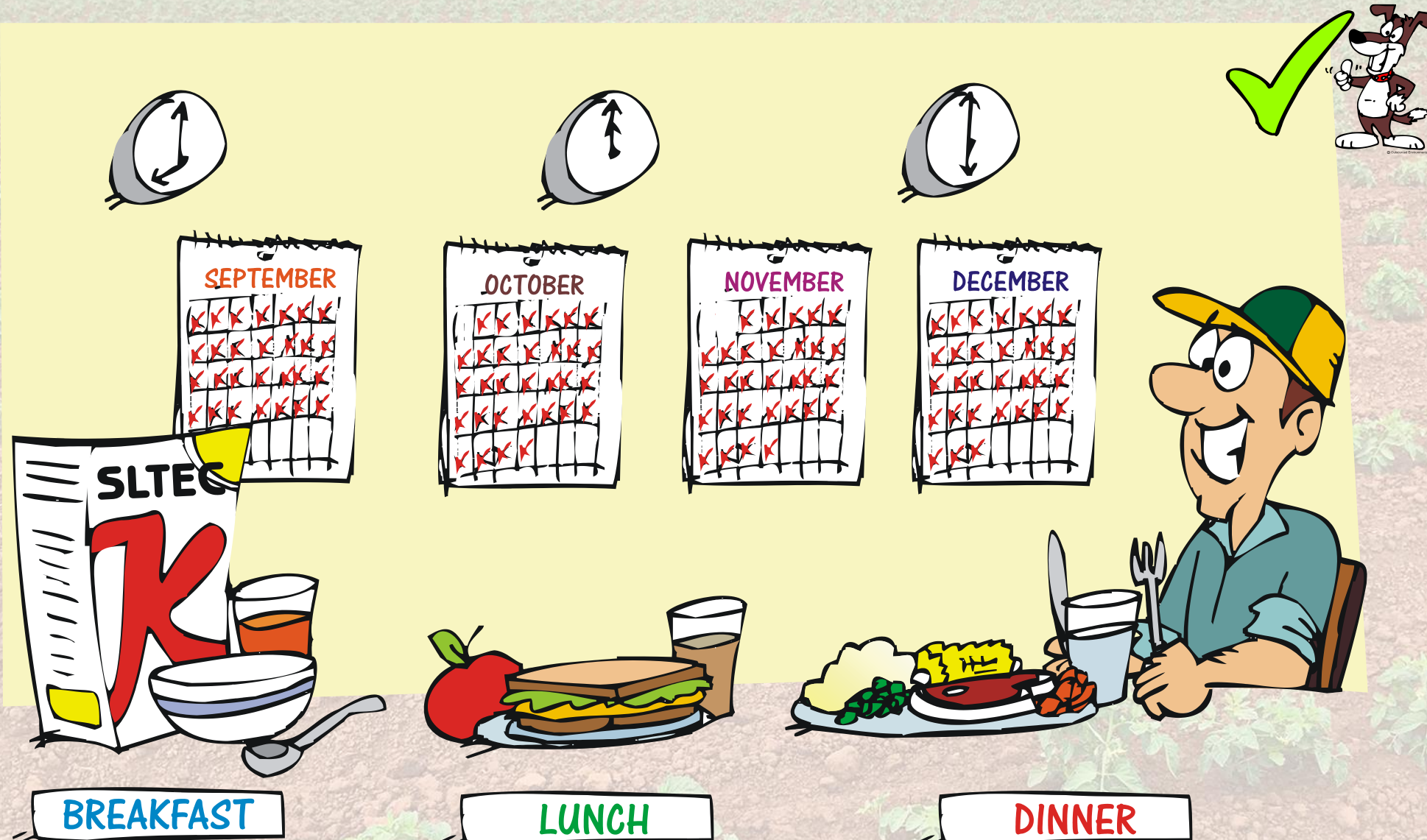


- Given the overall rate or amount required of key nutrients or biostimulants for the coming season or growth period, what's the frequency of application to give the most efficient crop response possible?

Humans feeding in large amounts infrequently, waste food - inefficient



A little more often keeps us healthy, fit – now that's sustainable!



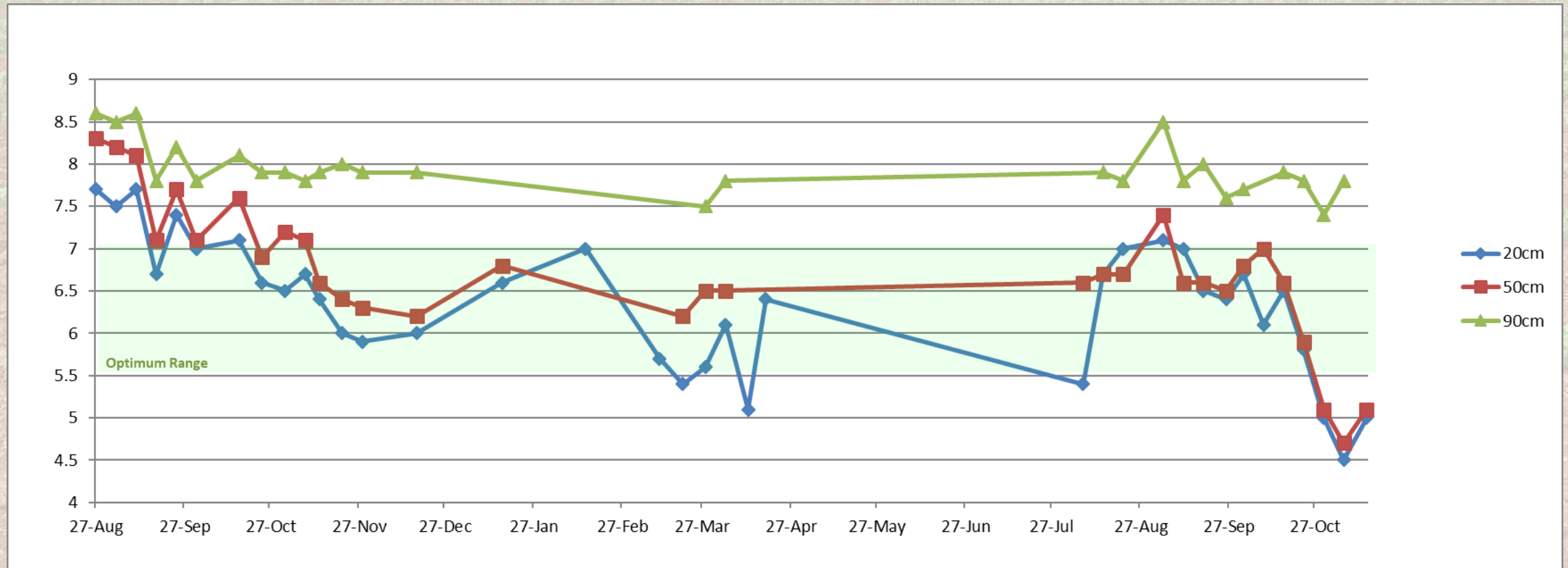
Background

Soil Solution Extraction (SSE)

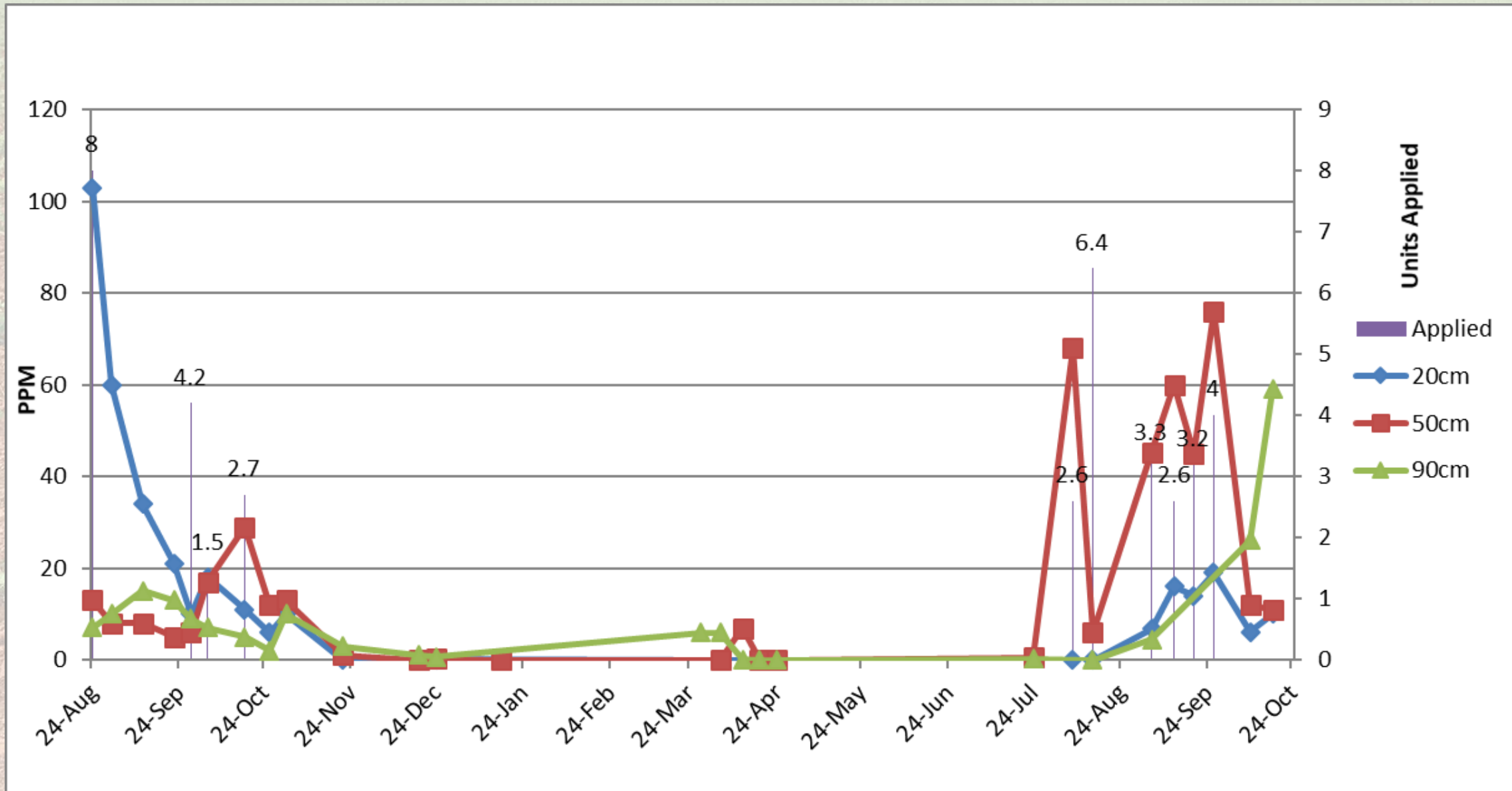
- A vacuum is applied to tube
- Soil solution is collected via a porous ceramic tip
- Sampling time varies depending on soil texture and conditions



Case Study 4 - pH

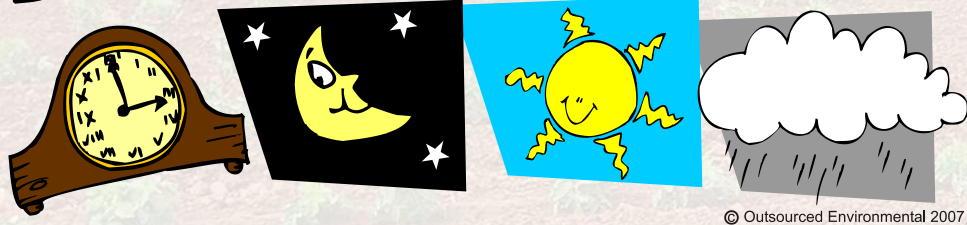


Case Study 2 – Phosphorus



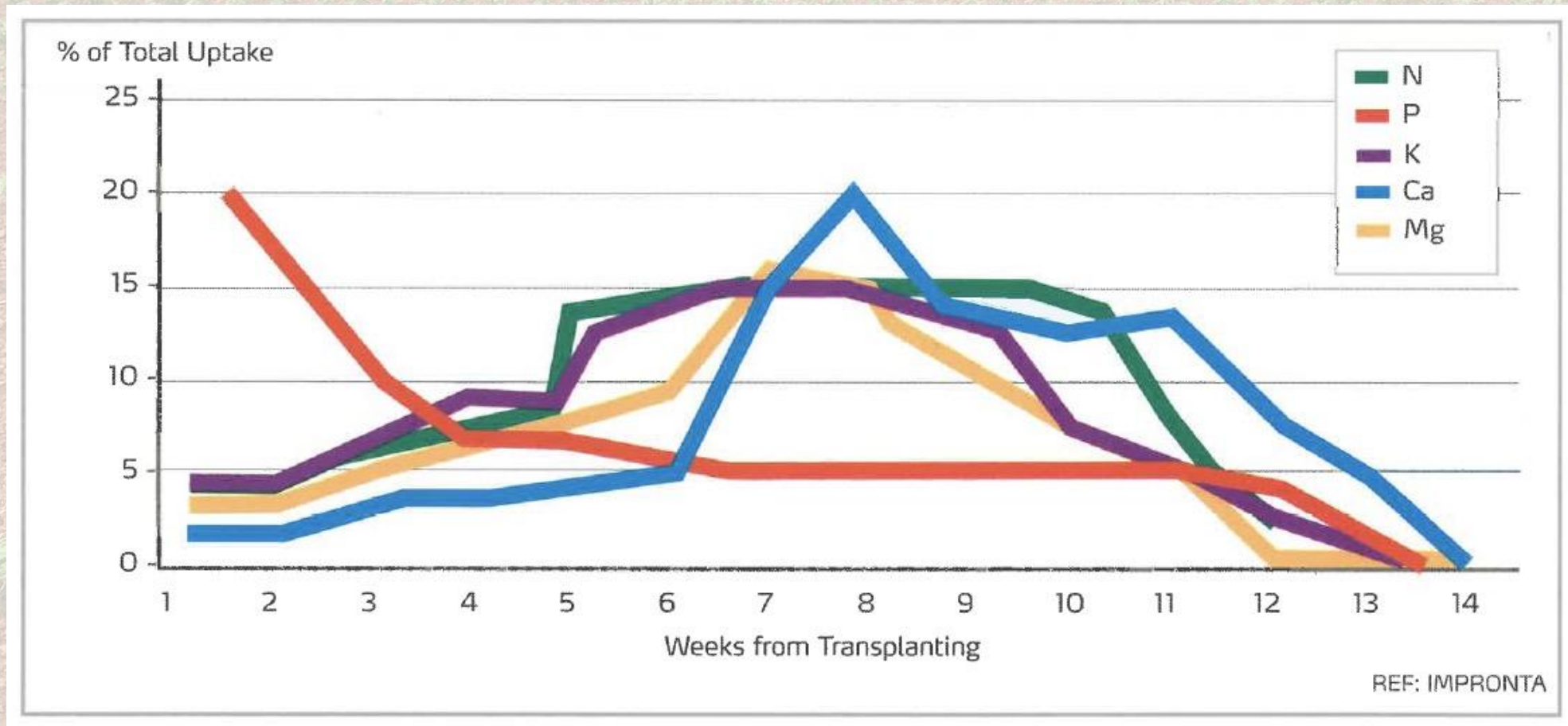
CRAFT - T

TIMING of application

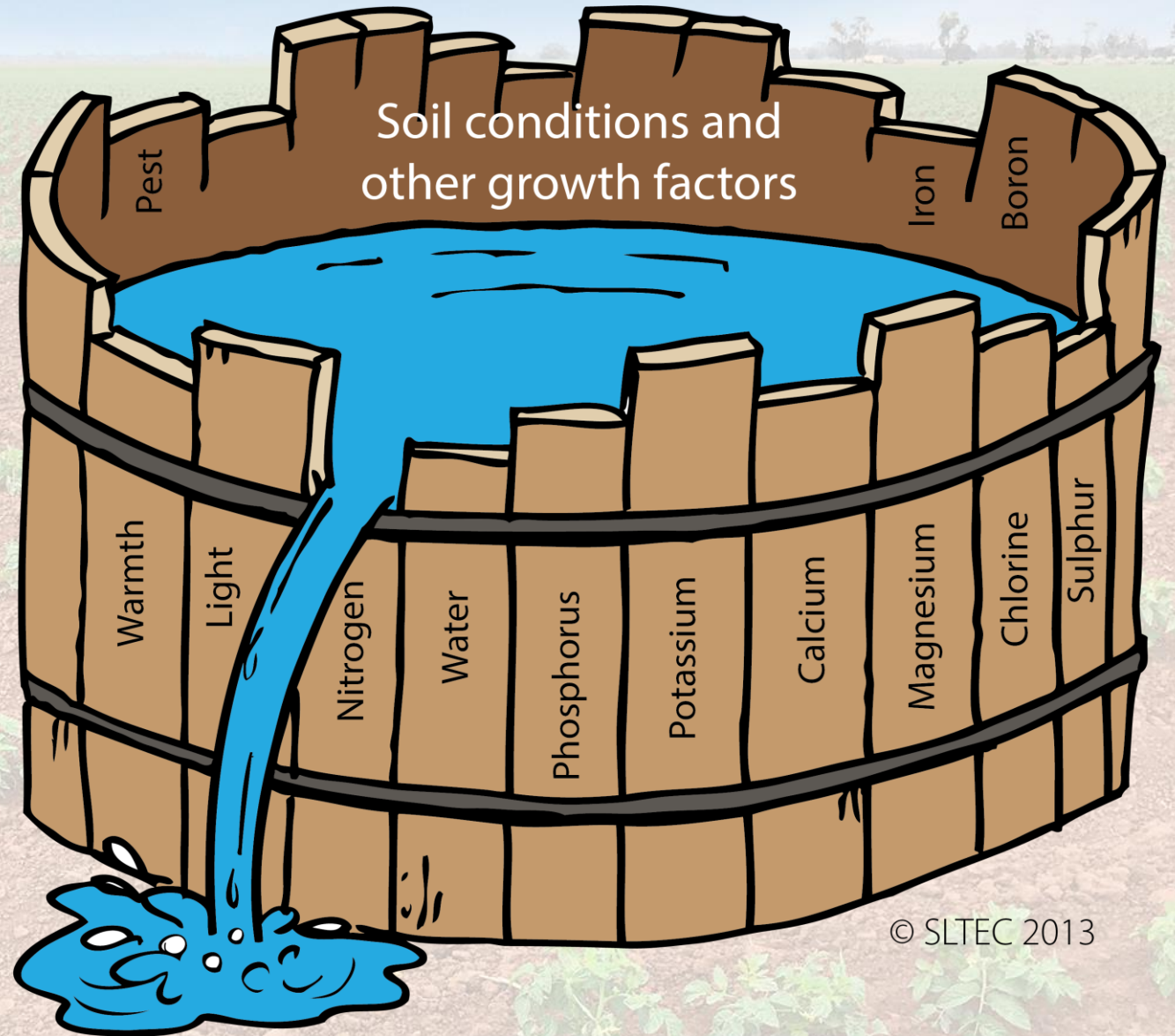


- Given the growth periods for the crop, and the nutrient demand for each growth period, what's the best timing strategy for the key nutrients required?

Major Nutrient Uptake of **Tomatoes**



Law of the Most Limiting Impacting Yield



Mulders Nutrient Chart

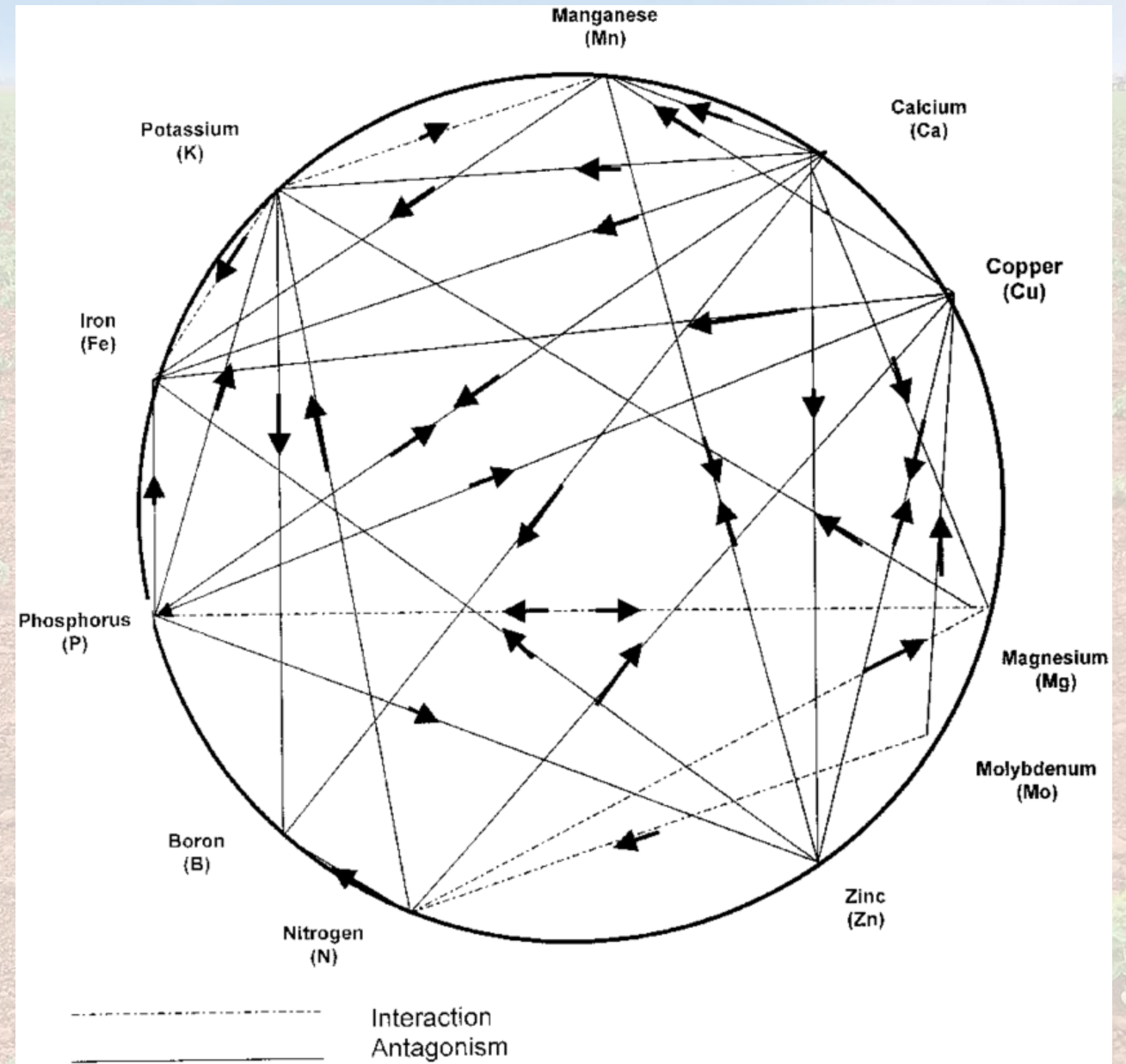
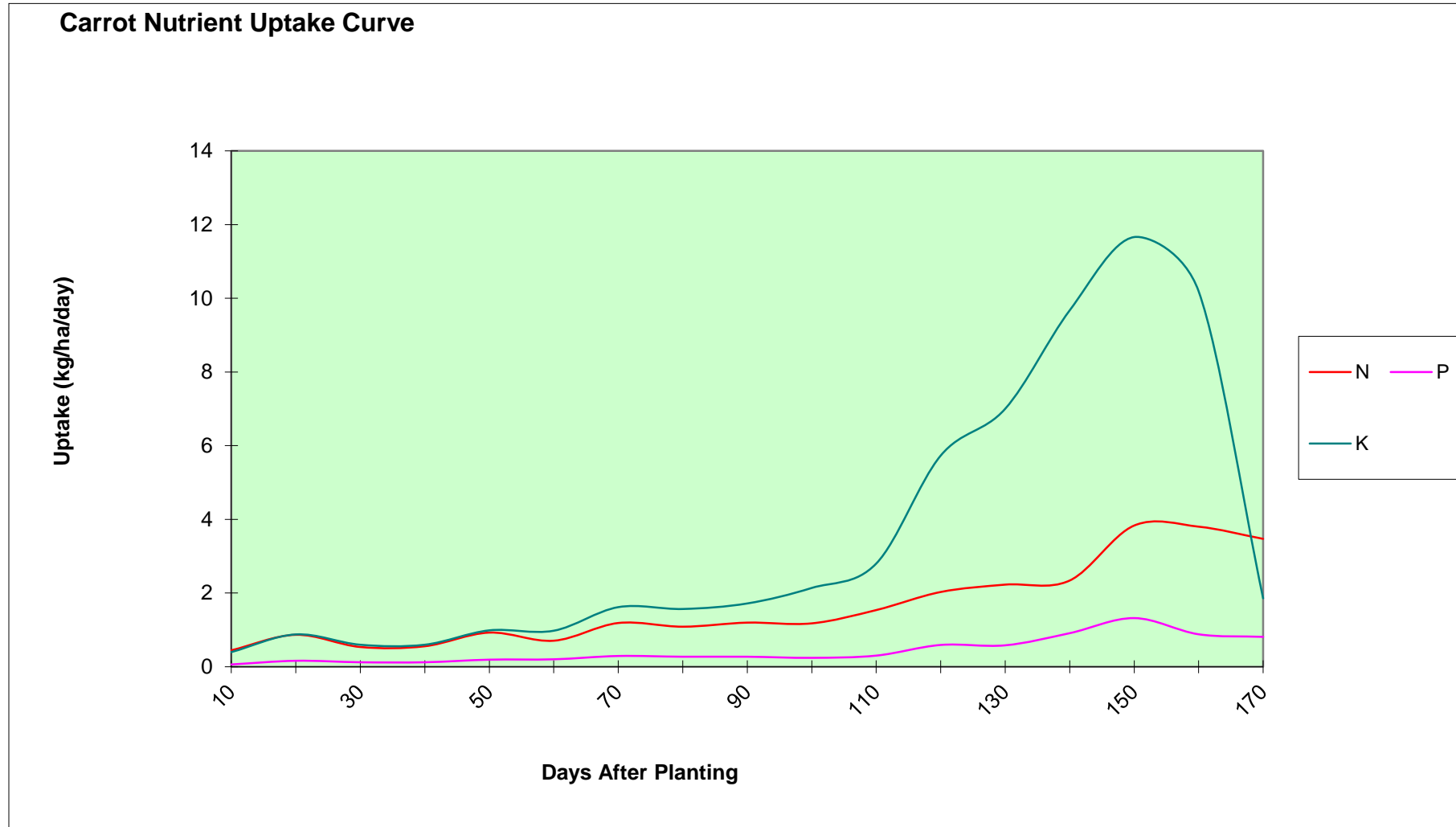




Diagramm zur Bestimmung der Bodenart nach pH-Wert und Kationengehalt. Die vertikale Achse zeigt den pH-Wert von 3 bis 10. Die horizontale Achse zeigt die Kationen in mg/kg: Na, K, Ca, Mg, NH₄, Fe, Al, Mn, Zn, Cu, Pb, Cd, Ni, Cr, Co, Mo, B, Cl, S, P, N. Die Bodenarten sind in drei Hauptgruppen unterteilt: Sande, Schluffe und Tonen. Die Legende rechts listet die Kationen auf: Natrium, Kalium, Calcium und Magnesium, Ammonium, Eisen, Zink, Kupfer, Blei, Cadmium, Nickel, Chrom, Kobalt, Molybdän, Bor, Chlor, Schwefel, Phosphor, Stickstoff.



Carrot Nutrient Uptake kg/ha/day



Putting a plan together


Phosphorus					
Recommended			Actual		
Per Day	Per Week	% Usage / Week	per week Kg	% usage/ Week	Difference
0.1	0.7	0.86%	2	2.90%	2.04%
0.2	1.4	1.72%	1	1.45%	-0.27%
0.25	1.75	2.16%	1.0	1.45%	-0.70%
0.25	1.75	2.16%	1.0	1.45%	-0.70%
0.25	1.75	2.16%	1.0	1.45%	-0.70%
0.25	1.75	2.16%	1.0	1.45%	-0.70%
0.3	2.1	2.59%	1.0	1.45%	-1.13%
0.35	2.45	3.02%	1.0	1.45%	-1.57%
0.35	2.45	3.02%	4.1	5.97%	2.95%
0.35	2.45	3.02%	2.9	4.15%	1.13%
0.4	2.8	3.45%	2.9	4.15%	0.70%
0.4	2.8	3.45%	2.9	4.15%	0.70%
0.4	2.8	3.45%	2.9	4.15%	0.70%
0.4	2.8	3.45%	4.3	6.23%	2.78%
0.4	2.8	3.45%	4.3	6.23%	2.78%
0.5	3.5	4.31%	4.3	6.23%	1.92%
0.5	3.5	4.31%	8.6	12.46%	8.15%
0.5	3.5	4.31%	8.6	12.46%	8.15%
0.75	5.25	6.47%	4.3	6.23%	-0.24%
1	7	8.62%	5.7	8.30%	-0.32%
1.2	8.4	10.34%	0.0	0.00%	-10.34%
1	7	8.62%	4.3	6.23%	-2.39%
0.75	5.25	6.47%			
0.75	5.25	6.47%			

Lessons from the carrot Example

- Sometimes less is more – give the plant the energy to search, but not so much it becomes lazy.
- Treat your nutrition budget like any other business decision on the farm.
- Have something left in your back pocket to react to seasonal challenges. **Don't put it all up front.**

Take Home Message

- Ensure your soil is in the best possible Health and structure to realise the best possible efficiencies of your nutrient inputs.
- Ask the question of your nutrition program (not budget), am I getting return on my investment?
- Understand what you are starting with, What do you require!
- How do I best deliver nutrition to my plant when they want it.
- The ratio of nutrients being delivered is just as important as the amount of nutrients.

A wide-angle photograph of a large agricultural field. The foreground and middle ground are filled with rows of young green plants, likely seedlings, spaced out in the soil. The soil is a reddish-brown color. The field extends to a flat horizon under a clear blue sky. In the far distance, some trees and possibly a small building are visible on the right side.

Thanks you for your
Attention.