

# Vegetable Update 2013



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# Agenda

- 1) Foliar Feeding – Is it beneficial?
- 2) WingP – 2012 experiences
- 3) Clubroot update



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## Foliar Feeding – Is it Beneficial?

Why do we foliar feed- deficiencies, improve colour / quality i.e. visual / Shelf life.



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# Foliar Feeding – Is it Beneficial?

## 6 Types of nutrient deficiencies

**Chlorosis** – yellowing due to reduction in chlorophyll – uniform or interveinal.

**Necrosis** – death of plant tissue.

**Lack of new growth or terminal growth resulting in resetting.**

**Anthocyanin accumulation**( when metabolic processes are disrupted) – resulting in reddish colouration.

**Stunting** with normal, dark green or yellowing.

**No visual symptoms** – but superficial deficiencies, which can affect yield, Quality( shelf life), disease and pest susceptibility



# Several factors can affect occurrence of deficiency symptoms

- **Soil test levels - also consider texture, CEC, OM, pH, etc.**
- **Soil conditions, e.g., temperature**
- **compaction**
- **moisture**
- **Salinity**
- **Tillage practices**
- **Root pruning**
- **Nutrient interactions P-Zn**
- **Herbicide, disease, or insect damage**



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# Soil pH and micronutrients

## Soil pH influences

- Solubility of compounds, hence nutrient availability
- Cations on exchange sites

## Common deficiencies on acid soils

- Ca, Mg, S, Mo

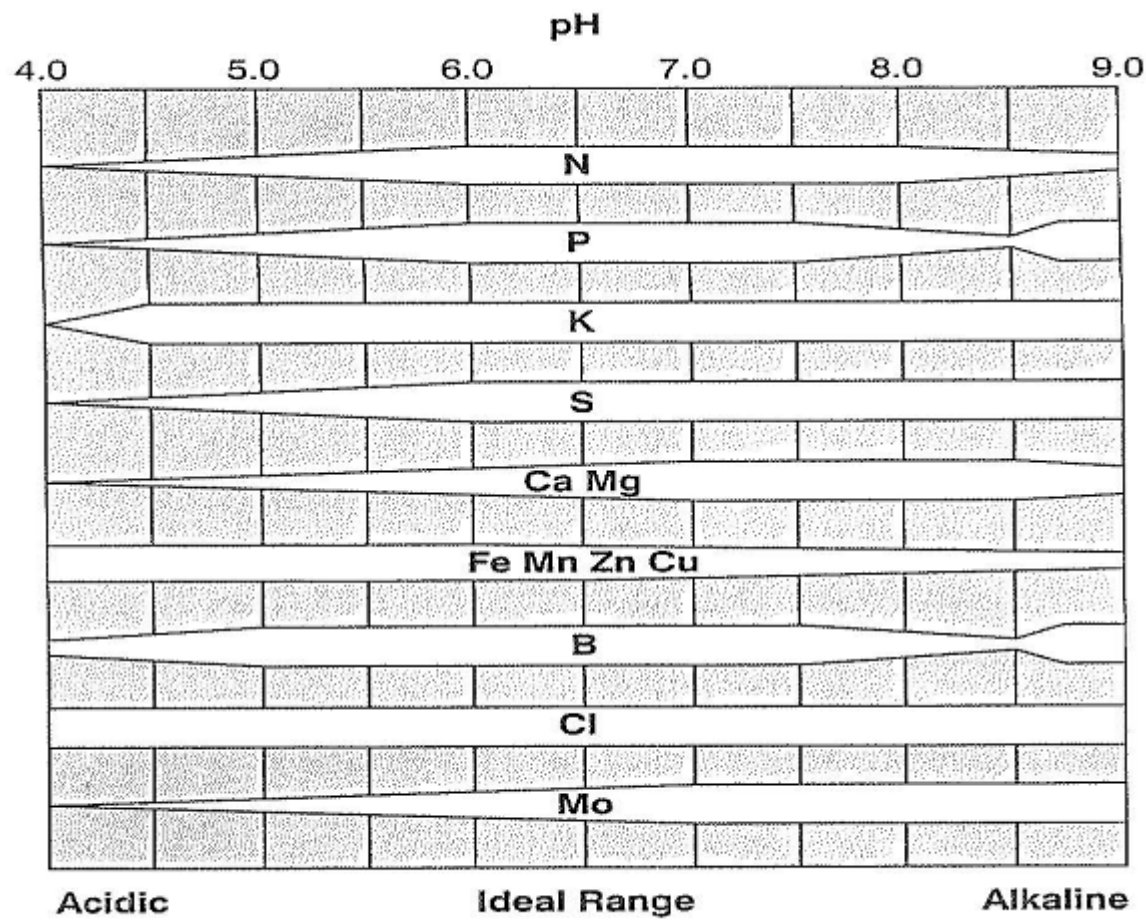
## Common deficiencies on alkaline soils

- B, Cu, Fe, Mn, Zn



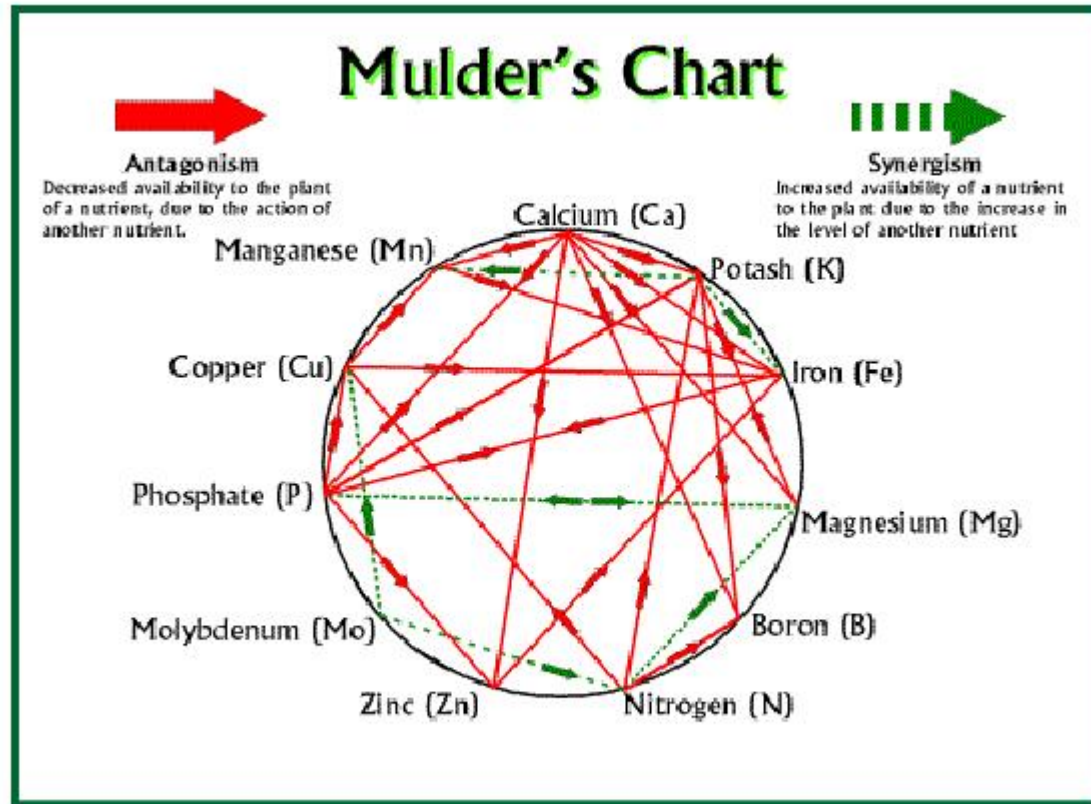
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**High phosphorus** applications will reduce the availability of Fe, Ca, K, Cu and Zn.

**High Calcium** will reduce Availability of P, Zn, Mg, Fe, K and Mn.

**High Nitrogen** will reduce Availability of Boron, K and Cu.

Increased levels of Boron will increase Nitrogen availability and thus increase Chlorophyll, Protein and amino acid production (Larocque 2010)



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# **Nutrient deficiency symptoms and mobility within plants**

**Mobility-The ease with which an element is transported to new plant parts.**

**The extent of mobility affects the appearance of deficiency symptoms.**



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# Nutrient Mobility in the Plant

## Translocated

Symptoms appear in older leaves first

**Nitrogen**

**Phosphorous**

**Potassium**

**Magnesium**

## Not translocated

Symptoms appear in younger leaves first

**Sulphur**

**Calcium**

**Boron, Iron, Manganese, Zinc, Copper,**

**Molybdenum, Chloride**



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# Foliar Nutrition Types

Elemental forms e.g. sulphur pellets

Sulphates, nitrates, carbonates – powders/fertilisers/ solutions

Chelates – EDTA, other forms chelates humates, lignin etc

Availability efficiency of uptake, when too best apply, under what conditions



# Calcium Deficiency Symptoms



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# Other Deficiencies



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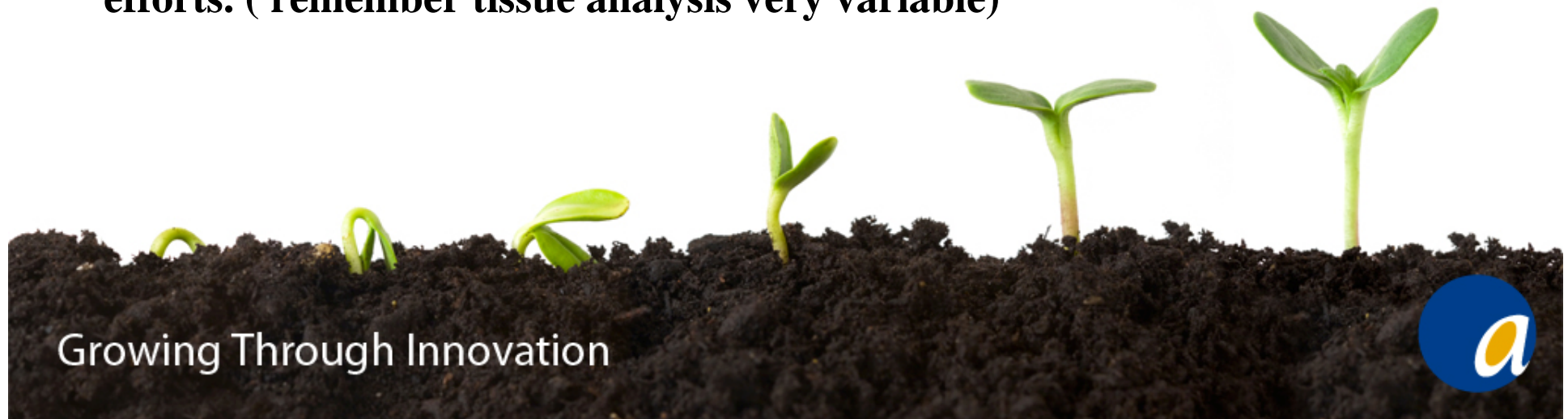
# Summary

**The ability to accurately diagnose nutrient deficiencies is an important skill.**

**Deficiency symptoms are often not clearly defined. Masking effects can hinder diagnosis.**

**The entire system should be evaluated before making a diagnosis and recommendation.**

**Use soil, irrigation water, and plant analyses to aid in diagnostic efforts. ( remember tissue analysis very variable)**



## Summary

**Visual symptoms indicate severe starvation. Most crops start losing yields well before deficiency symptoms occur. In most cases in-season corrective applications can avoid further yield loss.**

**A well-planned, complete and balanced fertility program can prevent in-season yield robbing nutrient deficiencies. Fertiliser, and Foliar requirements is a complicated balance which is affected by quantities of Nutrients , how they interact with other nutrients, Ph, water status and weather conditions, crop growth stage etc. Improving soil quality improves crop quality**



Product	Rate	Cauliflower	Cabbage	Sprouts	Collards	Calabrese	Tenderstem	Kale	Swede
<i>Stomp Aqua</i>	3.3l (2.9l/ha)	yes	yes	yes	yes	yes	yes	yes	No
<i>Wing P</i>	4l/ha/yr	No	Yes	No	No	No	No	No	No
<i>Springbok</i>	2.5l/ha	No	No	No	No	No	No	No	Yes/No *
<i>Butisan S</i>	1.5l/ha/yr 2l/ha in 3 yrs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
<i>Gamit</i>	0.25l/ha/yr	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

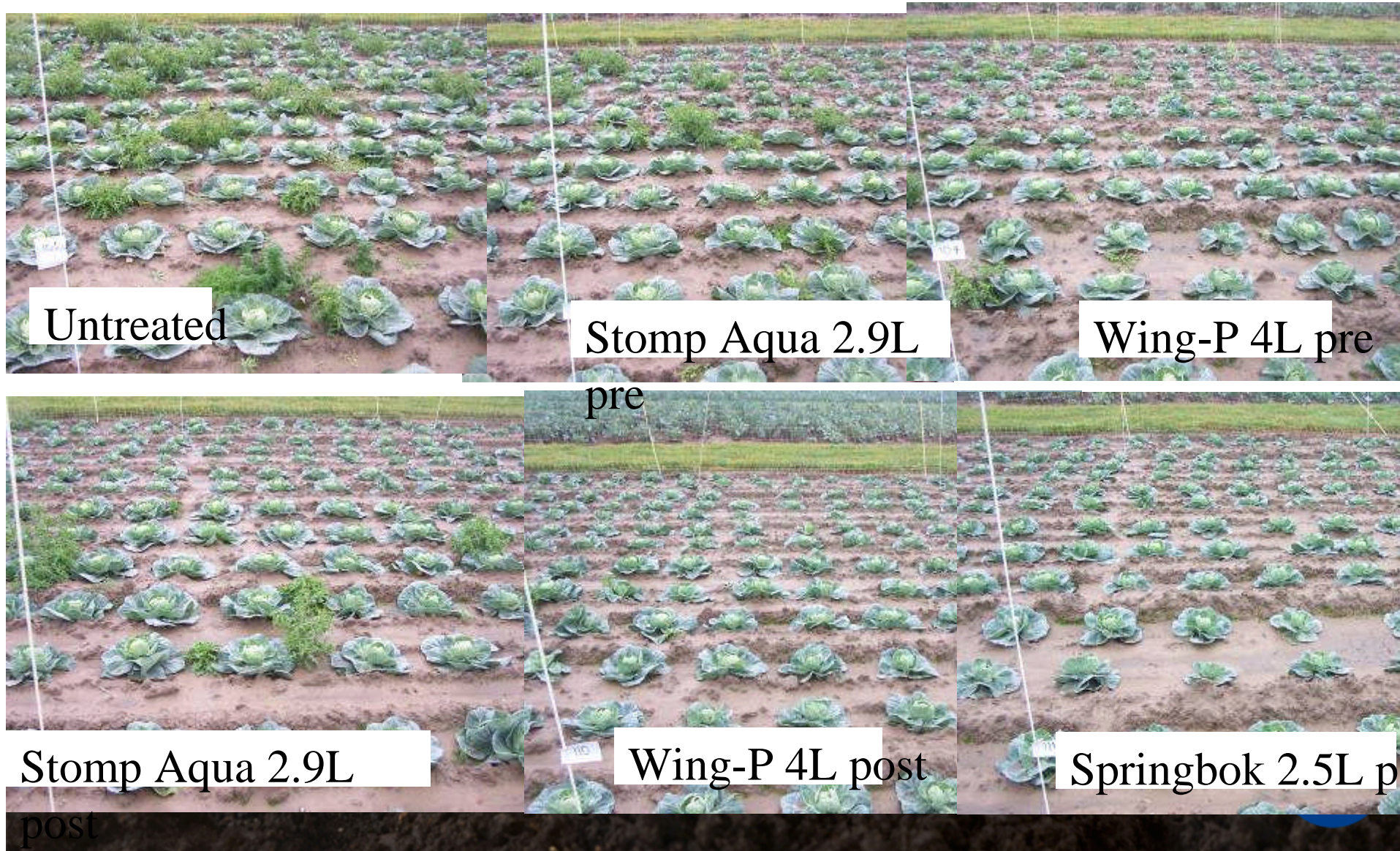


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BASF Demonstration at Rijk Zwaan Vegetable days and other trials have shown post planting safety of Wing-P applied immediately after application, however this is not recommended as we have seen some issues of crop safety in commercial situations.





**STOMP**<sup>®</sup>  
AQUA

... **No crop effects !**

**STOMP**<sup>®</sup> SC

Brassica trial in Germany. SOLA application in UK.  
Timing immediately post planting

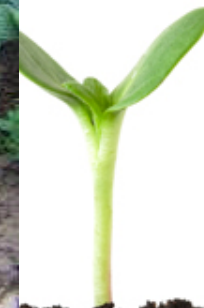
# Untreated



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Wing P 4l/ha + Grounded 0.2l/ha  
At Planting



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# Stomp Aqua 2.9l/ha + Grounded 0.2l/ha At Planting



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Springbok 2.5l/ha  
2DAP



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# Stomp Aqua 2.9l/ha + Gamit 0.2l/ha



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# Wing P 4l/ha- Collards in Notts



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**Dual Gold 1.4**



**Untreated**



**Dual Gold 1.0  
+ Stomp Aqua 2.9**



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# Club – Root update

Agrovista Clubroot trial – cauliflower 2012

Treatment	Clubroot severity 0-5
Untreated	4.2
Shirlan incorporated 3l/ha	1.5
Ranman Incorporated	1.4
Bacillus ( coded)	0.9
Serenade	1.8
Perlka	1.9
Trichoderma ( coded)	1.2
Rigel G	1.6

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## Club – Root Update

- Increase Ph- maybe using calcifert more rapid
- Resistant varieties for cauliflower ( Clapton, Clarify), White Cabbage ( Kilaton) and Brussel sprouts ( Crispus and Cronus)
- Increase soil and plant calcium and Boron
- Use Bacillus species
- Use Perlka



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