Jack van Batenburg

Chemical Properties of Coir and reuse of Coir

After studying horticulture and working as a consultant and later selling varieties and young plants of cut roses, his coir career started in the year 2000, and currently works for Klasmann-Deilmann.

The use of coir in professional horticulture started in the late 80's. Over the years the knowledge on coir has increased, and products developed with market expectations changing. Based on research and experience, coir reveals more about its chemical properties.

Better understanding of this leads to better results in cultivation.

WELCOME

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- Jack van Batenburg
- Account- and Product Manager Coir Products
- In the coir business from 2000
- Working now for Bol Peat in The Netherlands
- Bol Peat is a full daughter company of Klasmann-Deilmann
- Klasmann-Deilmann started with coir after taking over Shakti Cocos in 2020
- Coir Production facilities in India and Sri Lanka

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SHAKTI COCOS

Corporate Strategy

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2025: 30 % Raw material „Renewable“

- This can be:
  - GreenFibre
  - Compost
  - Composted Bark
  - Coir Products
  - Perlite
- Total estimated volume of substrate produced by Klasmann-Deilmann in 2025 is 5 million m^3
- 30 % is 1,5 million m^3 per year
  - Coir will be a substantial part

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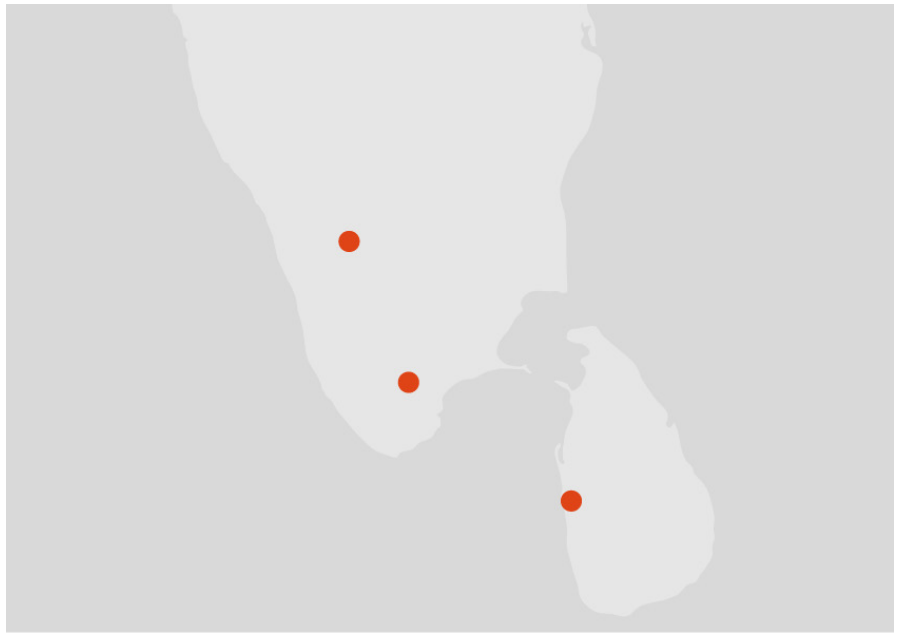
LOCATIONS



India
- Partner and production in Tirunelvelli,
- Branche office in Coimbatore,

Sri Lanka
- Partner and production in Madampe
- Production near Embylipithya

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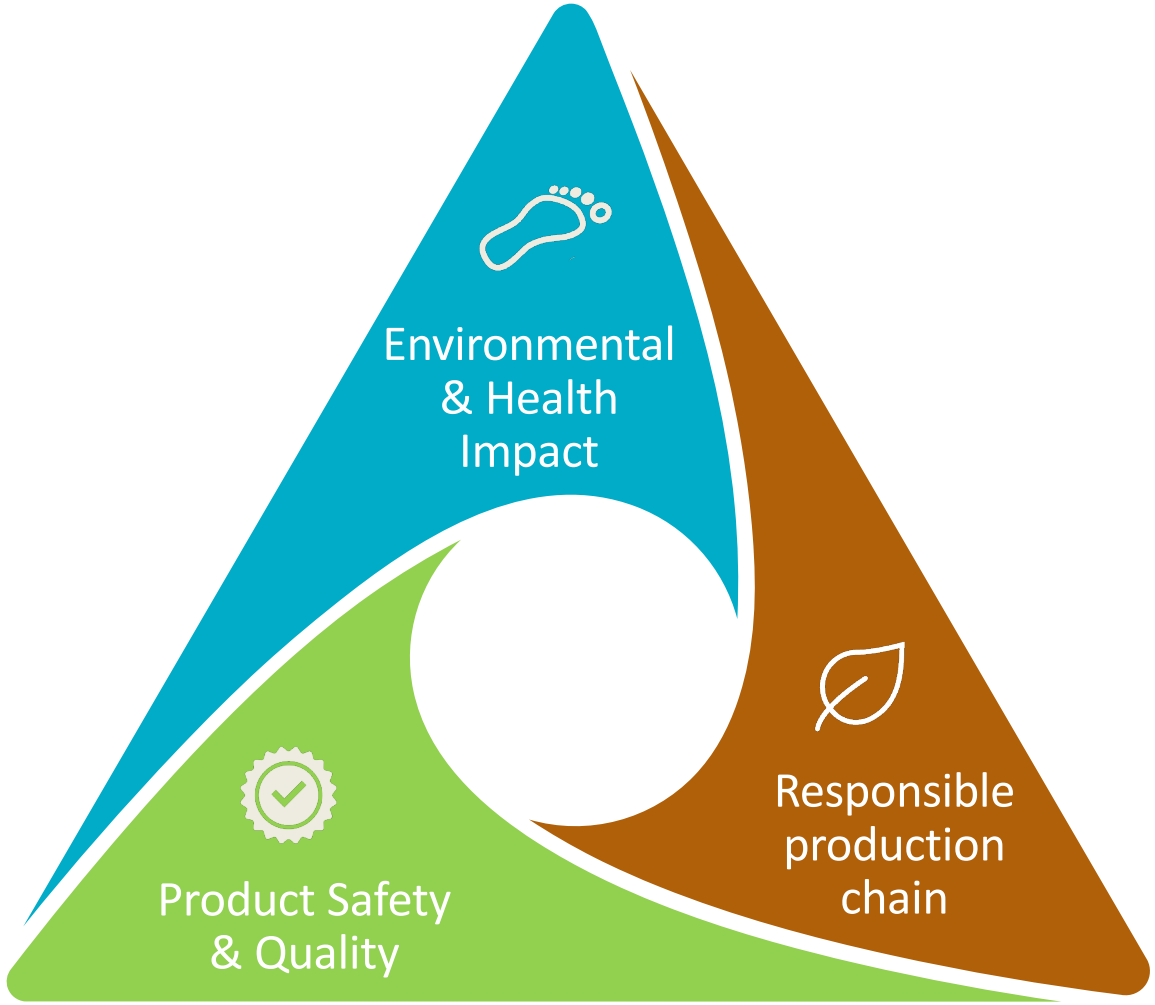
Raw materials transition



Product safety & quality
RHP, RAL

Environmental & health impact
Substrate footprint GME (LCA)

Responsible production chain
RPP, FSC, PEFC, **RPC**

Source: RHP

Product Safety and Quality

- Chemical
  - Unwashed, washed, Buffered, Shakti Amla
  - Heavy metals
  - Residue
- Physical
  - Water- aircontent
  - Rehydration
  - Particle sizes
  - Water Uptake Characteristic (WOK)
- Hygiene
  - Foreign materials
  - Human Pathogens
- Plant Pathogens
  - Fungi
  - Nematodes

Production

- Dehusking, splitting of coco nuts after harvesting
- Handwork
- Into nuts (Endocarp) and husks (Mesocarp)

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Production

‘Tree of Life’

Endocarp

Husk / Mesocarp

Production

Active Carbon

Endocarp

Copra

Coconut Oil

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Production

Decortigating

Coir Pith

Coir Fibre

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Production

Crush - Chips

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Production

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Basically 3 products can be produced

Coir Pith

Coir Fibre

Coir Chips / Crush

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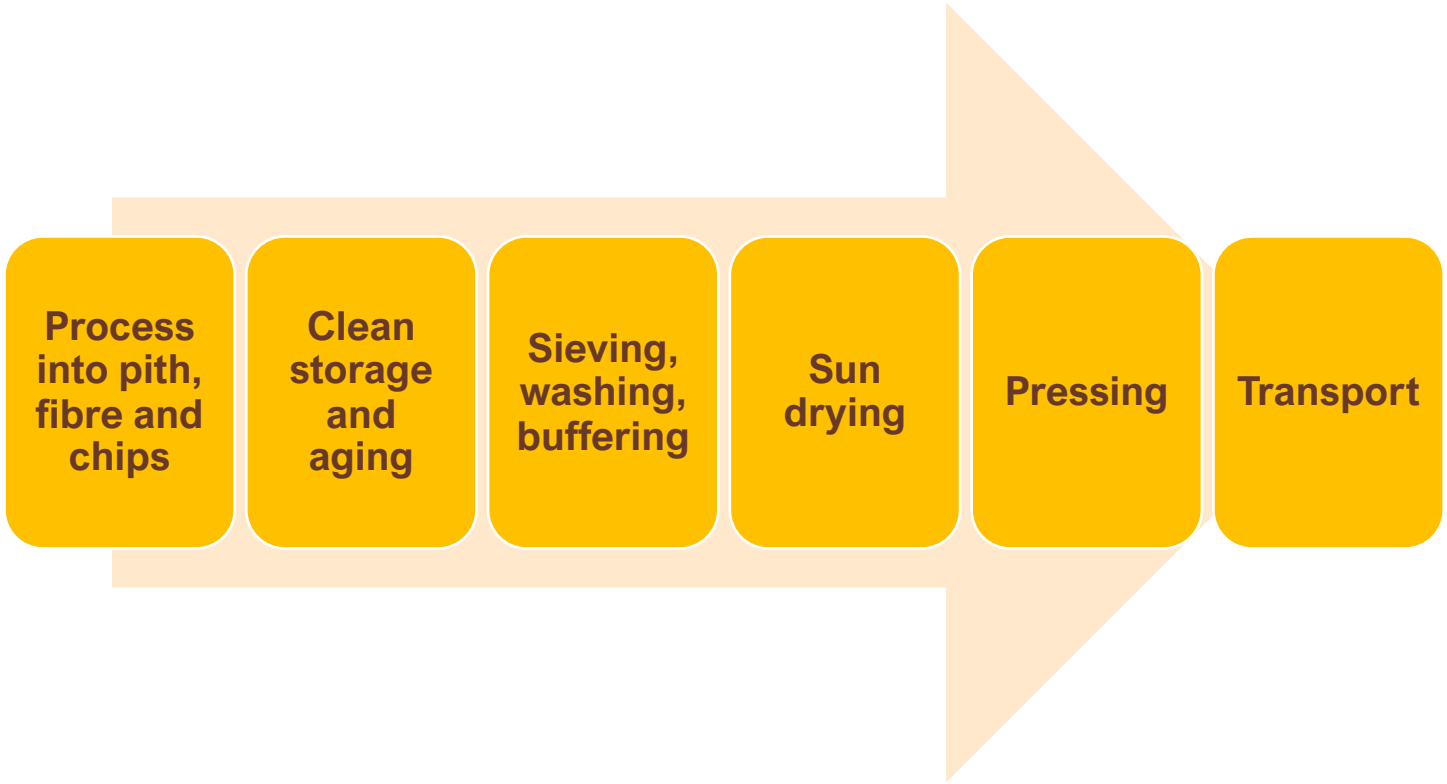
Production



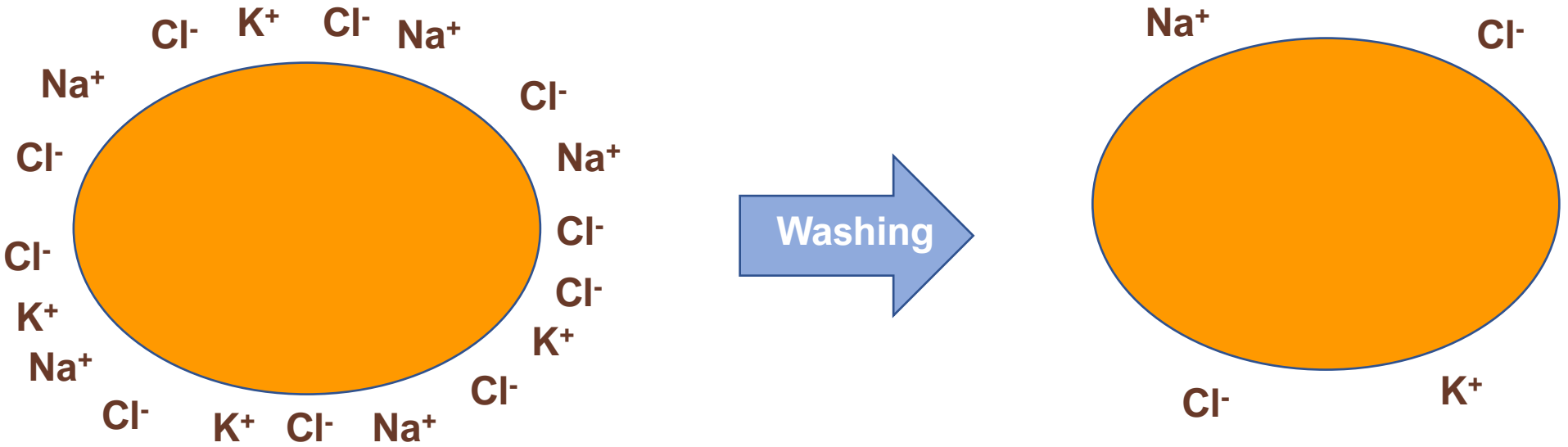
CHEMICAL

Battle to survive…..

… or aiming for succes ?

Chemical

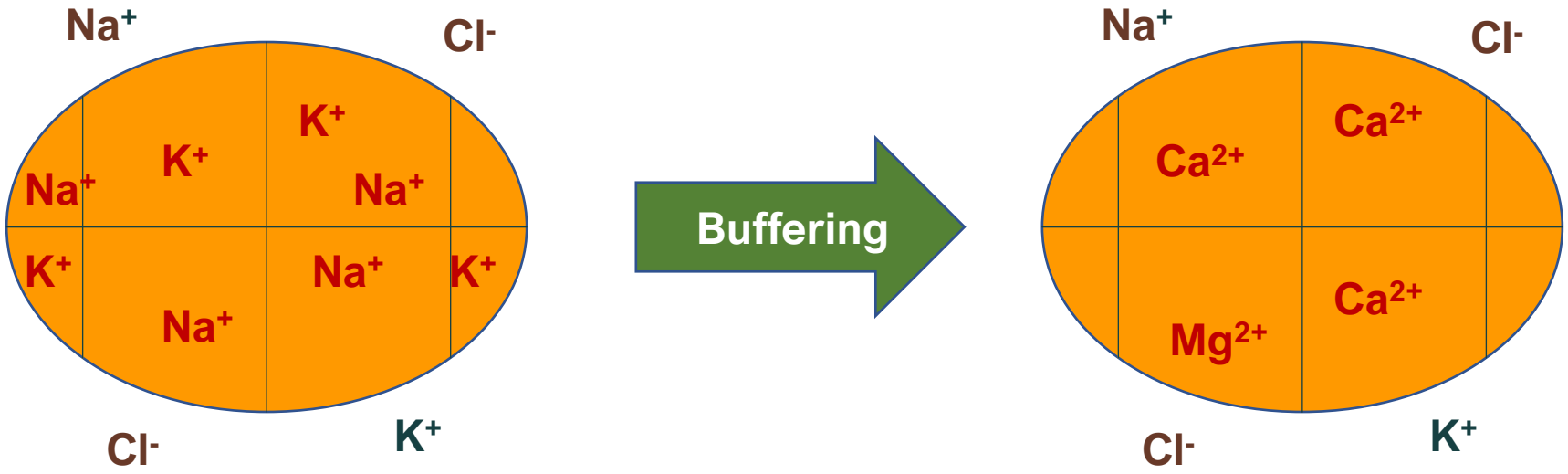
Chemical



High E.C. Coir

Low E.C. Coir

Chemical



Not Buffered

Buffered

Chemical

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Water extract 1:1,5 (v/v) Q	mS/cm		mmol/l waterextract											
Description	EC	pH	N	NH_4	K	Na	Ca	Mg	Si	NO_3	Cl	SO_4	HCO_3^*	PO_4
BOE23010-P-A	< 0.1	7.0		< 0.1	0.1	0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	0.3	< 0.05
$BaCl_2$ extract					0.5	0.3	12.6	1.3						

- In water only dissolved elements
- In $BaCl_2$ dissolved elements and fixed elements
- Difference are the elements fixed to the complex

RHP standards for buffering with E.C. < 0,6 mS/cm:

- Na in $BaCl_2$: < 1,7 mmol/l
- K in $BaCl_2$: < 6 mmol/l
- Δ Na: $\leq$ 1,0
- Δ K: < 2,0

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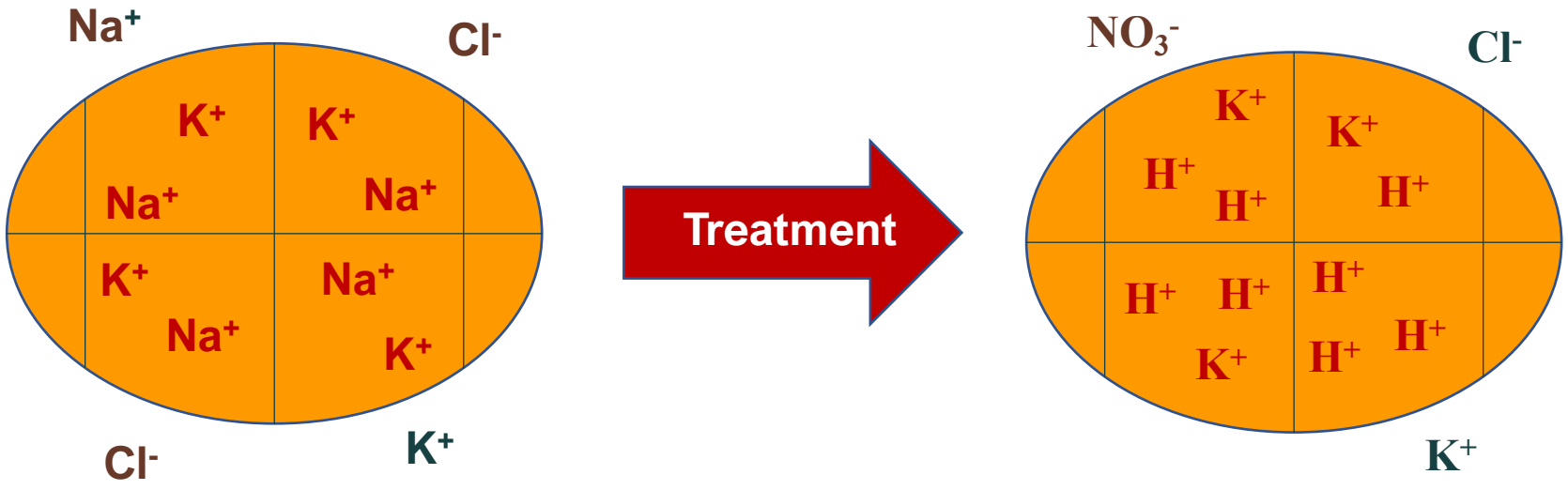
Chemical

Buffered Not Buffered

Chemical



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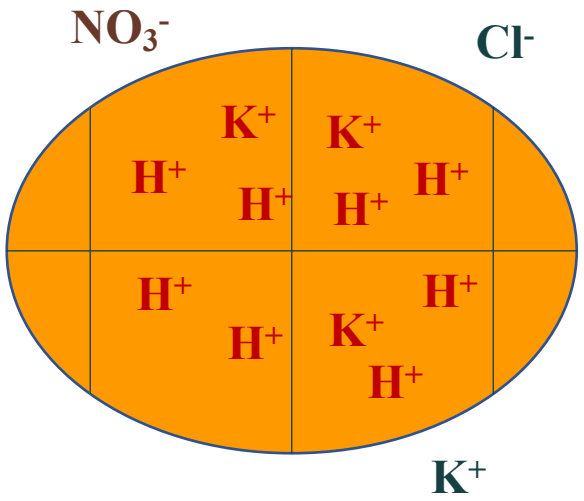
Shakti Amla®

Chemical



Shakti Amla®

pH-effect

- Peat has a low pH, the complex is filled with H^+
- The complex of coir is filled with mainly K^+ and Na^+
- Less H^+ means more space for other elements by adding fertilizers while the complex seeks for balance
- H^+ is bound stronger than Ca^{2+} and Mg^{2+}
- Lowering pH during cultivation means adding more H^+ to the complex and stronger bound elements such as Mn^{2+} and Zn^{2+} might be released which may cause an overdose
- In traditional buffered coir the complex is filled with Ca^{2+} which still gives room for H^+ when the pH drops
- In *Shakti Amla®* buffered coir, the complex is filled with H^+ which brings the properties closer to peat

SHAKTI AMLA®

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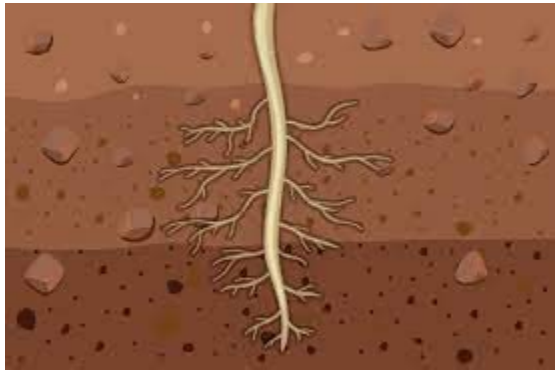
Growing effect on pH in the rootzone

Vegetative growing
- More uptake of elements like NO_3^-
- For every -, plantroots release HCO_3^-
- pH goes up



Generative growing
- More uptake of elements like Ca^{2+}, Mg^{2+} and K^+
- For every +, plantroots release H^+
- pH goes down

The acid-buffer in *Shakti Amla*® helps to minimize pH fluctuations

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SHAKTI AMLA®

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Unique product invented by Shakti Cocos

- Coir with an adjusted pH
- Acting as a ‘weak acid’
- Suitable for a lot of different of crops
- pH buffer comparable to peatmoss
- Better root development
- Better uptake of trace elements
- Stronger plants
- Better yield
- Patented production process

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Reuse of Coir

- Coir can be reused as long as:
    - The physical structure is still good

Coir pith has an aircontent of approx. 20%
Over irrigation can have an effect on the physical structure
This can lead to a muddy material with no aircontent anymore

Reuse of Coir

- Coir can be reused as long as:
    - The material is free from root diseases

During culitvation plant might be effected by root diseases
This root diseases can effect young plants of a new crop
(Steam) sterilization can have an effect on the physical structure

Coir is an elastic material, like a sponge that can hold water and air
Elasticity may be lost by sterilization

THANK YOU !

QUESTIONS

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