Haifa

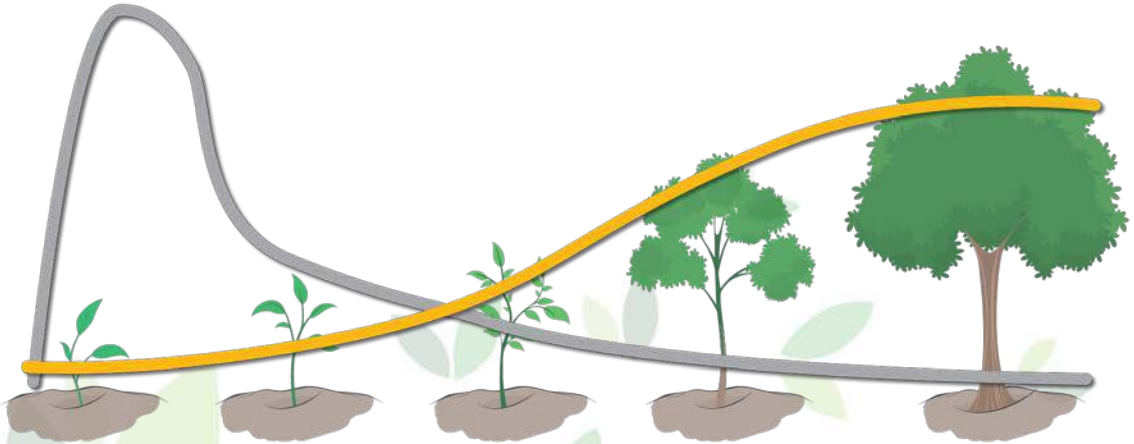
Pioneering the Future

Multicote™ Agri:
Ideal Nutrition for Forest Trees

Multicote™ Agri: Ideal Nutrition for Forest Trees

- The most **efficient** nutrition
- On-demand nutritional composition, and release profile: **ultimate flexibility** for best results
- **Optimal growth** at the nursery
- Outstanding plant establishment, ensuring a **high survival rate**
- **Single application** with up to 16 months of fertilization: significant saving on labor, and application recourses

Multicote™ Agri: Ideal Nutrition for Forest Trees



Multicote™ Agri provides optimal nutritior that follows the plant's growth needs over time.

Conventional fertilizer deliver nutrients in excess at the begining of the season, followed by deficiency towards its end

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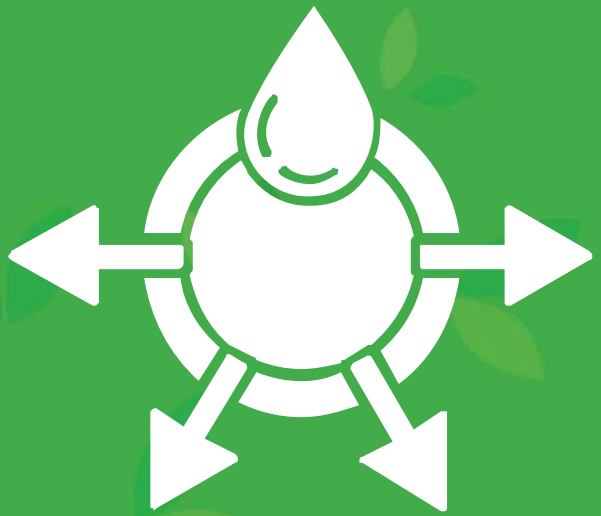
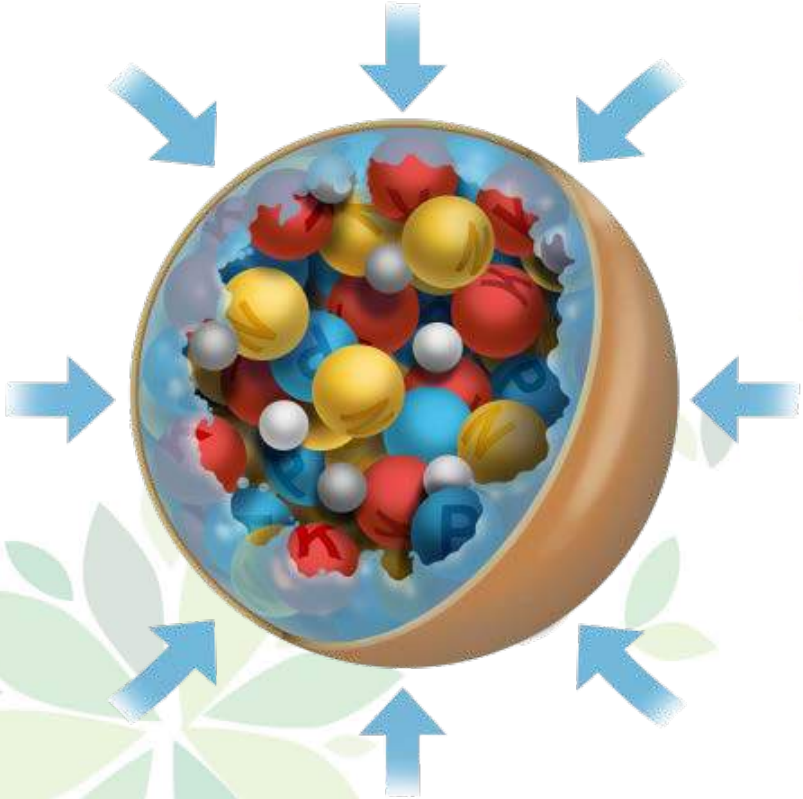


The release mechanism

The release mechanism

During the production process, fertilizer granules consist of soluble nutrients,
are encapsulated in a polymeric shell coating.

The release mechanism



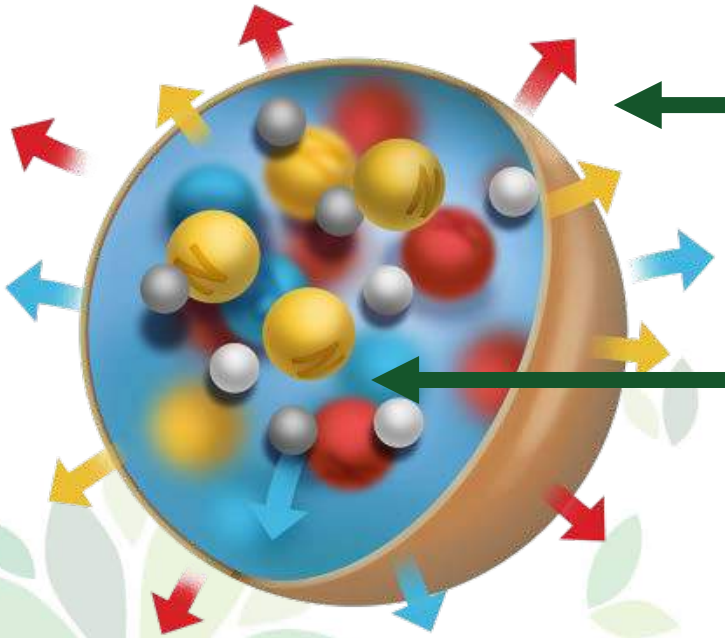
After application in the soil:

1

- Water penetration
- Gradual dissolution of the nutrients

This ***lag period*** takes 7-10 days, depending on the thickness of the coating.

The release mechanism



2

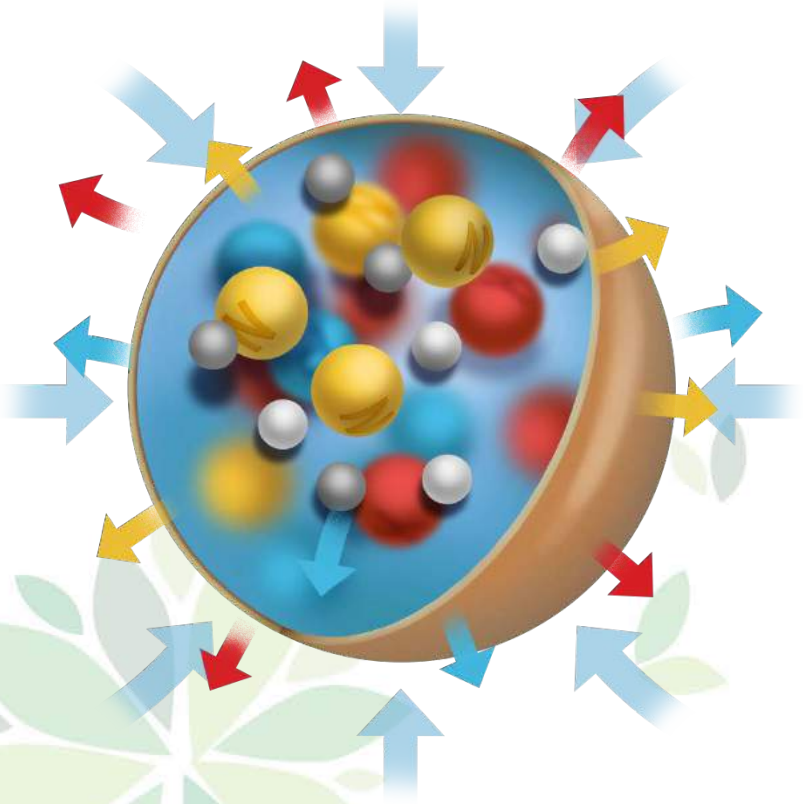
Water penetration

Diffusion of nutrients through the coating to the soil

Further dissolution of nutrients

At this stage, the release rate is constant.

The release mechanism



The diffusion equation (Fick's 2nd law):

$$\frac{dC}{dt} = D\frac{d^2C}{dX^2}$$

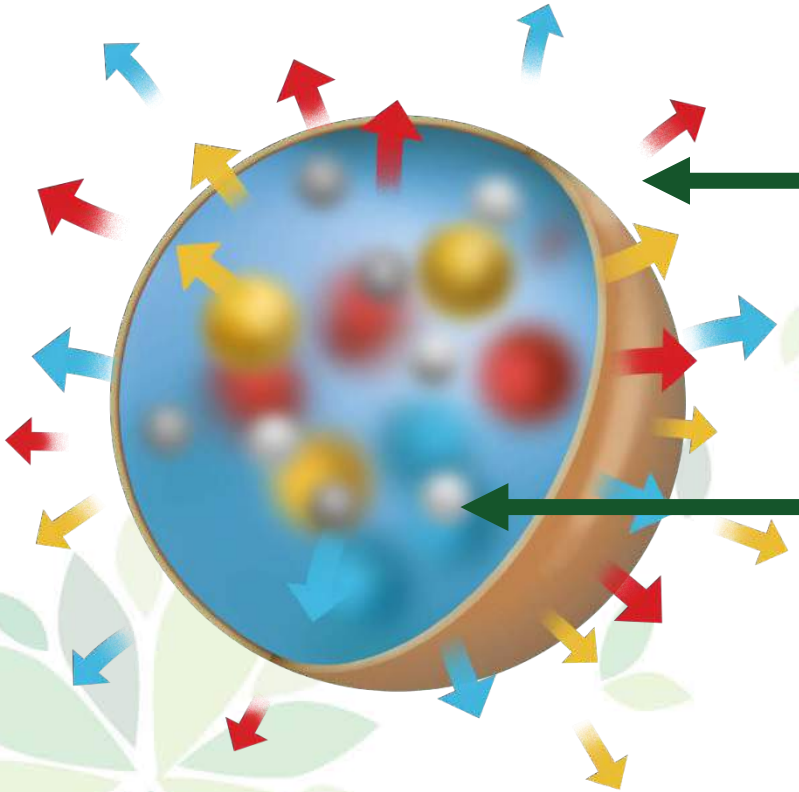
C = concentration

t = time

D = diffusion coefficient

$$D = D_0 e^{-\frac{Q}{RT}}$$

The release mechanism



3

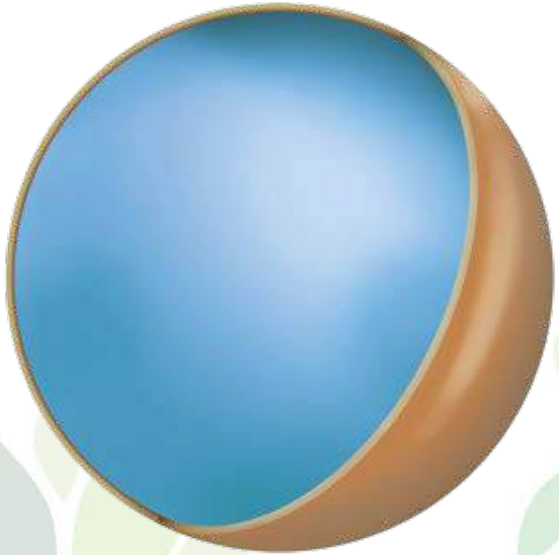
Water penetration

Diffusion of nutrients through the coating to the soil

Complete dissolution of nutrients

At this stage the release rate decays.

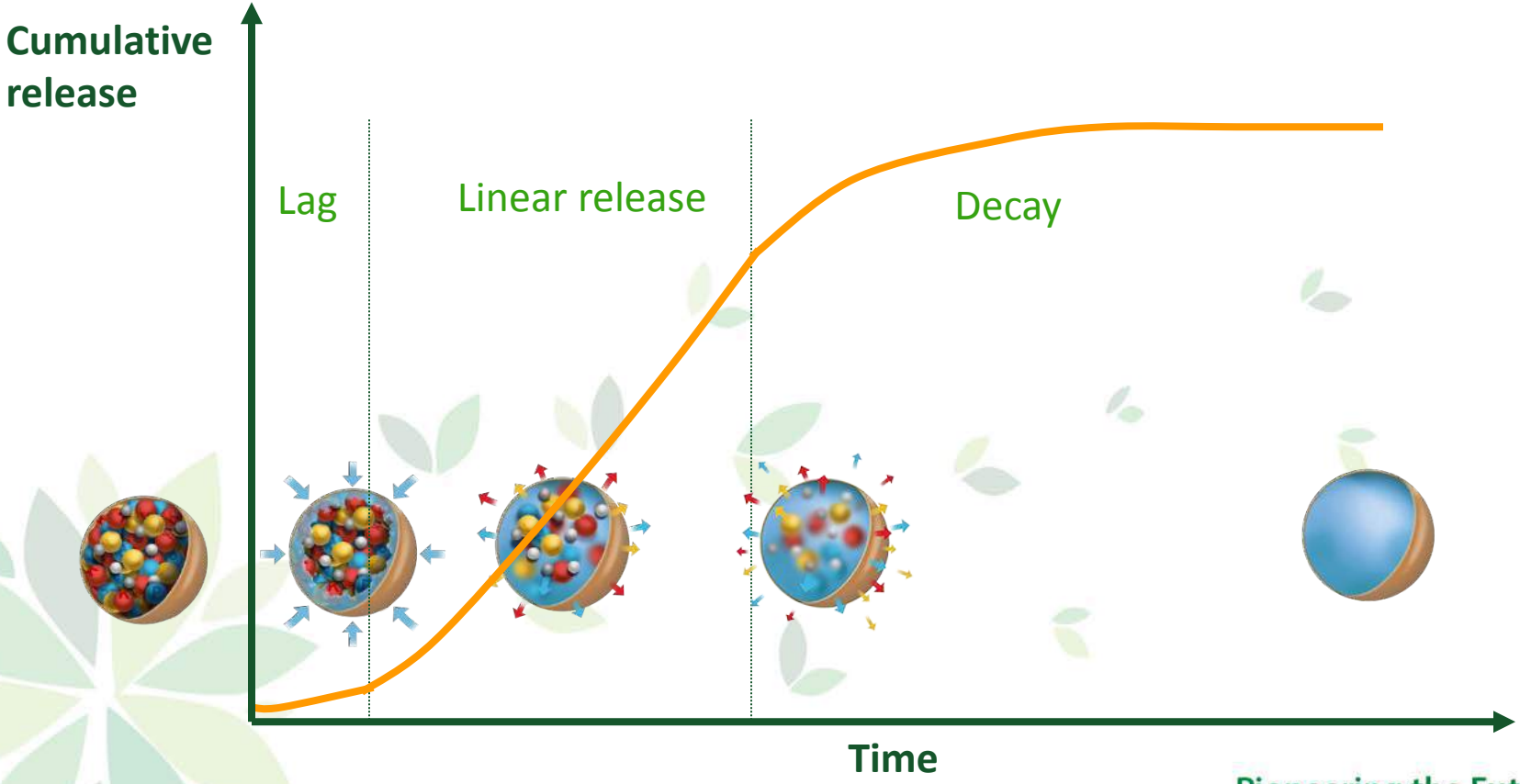
The release mechanism

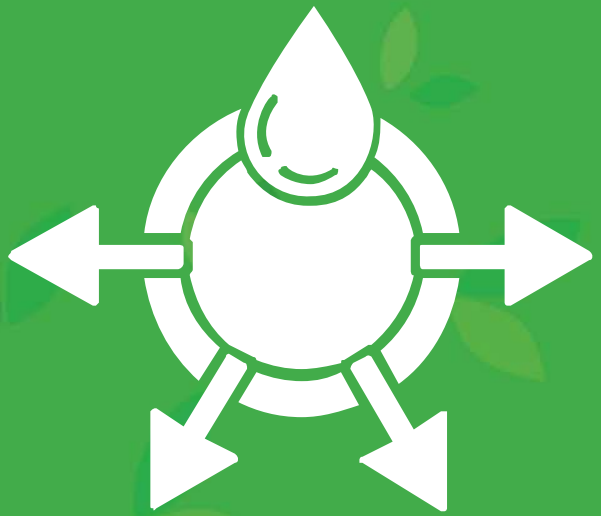


After the release is complete,
the coating will degrade gradually,
leaving no residues in the soil.

4

Overall release course





The special benefits

Highly efficient nutrition

Nutrients are released according to **plant needs**

Efficient consumption

Minimized losses

Reduced application rates

No contamination

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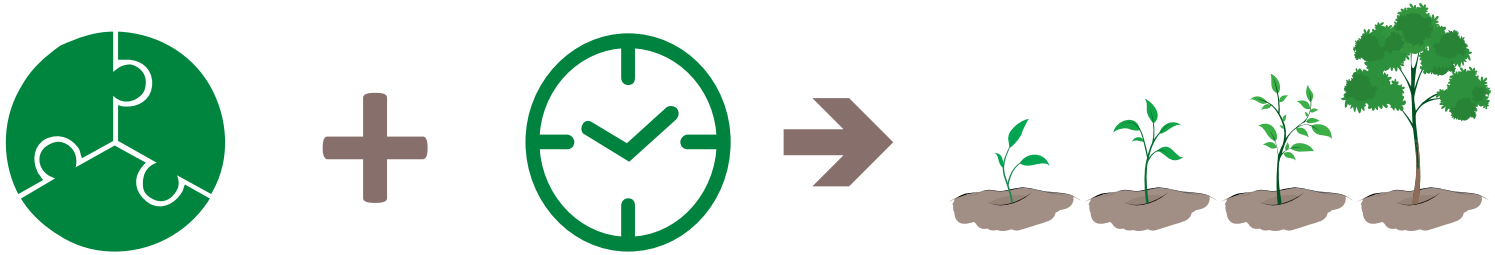
Balanced nutrition → Optimal growth



All plant essential nutrients | Timely supply | Optimal development

- **Better establishment**
- **Higher survival rate**

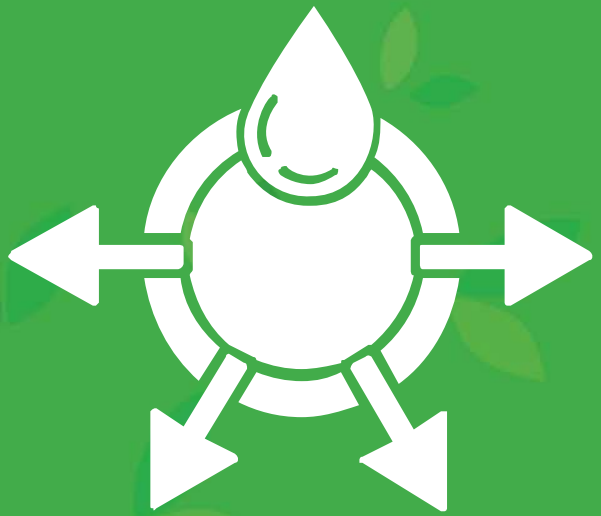
Balanced nutrition → Optimal growth

- Adequate and balanced nutrition in the 1st year is crucial for the trees establishment.
- In case of mortality, the grower will replace the tree too late (in the following year), the tree won't catch up with the rest of the forest.

1

Single application

Labor saving



Haifa’s flexible solutions

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Haifa's flexible solutions

Multicote™ Agri formulae can be blended to meet any desirable composition and release profile.

We consider parameters of:

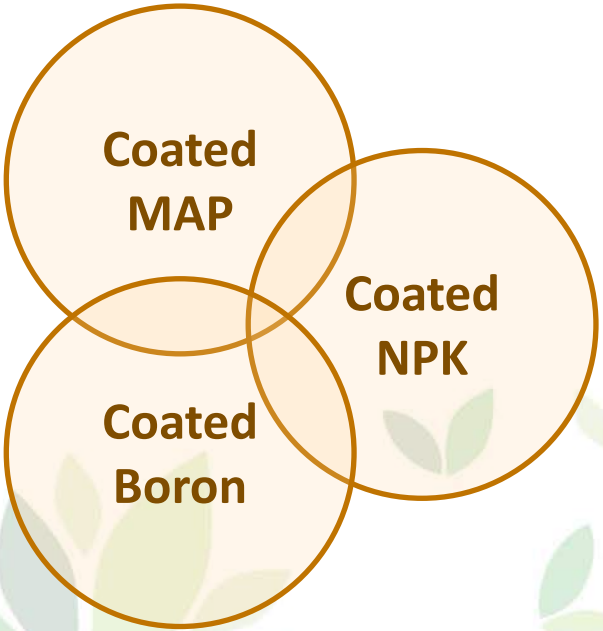
- Longevity
- Required NPK ratio
- Special care (e.g. Boron enrichment)

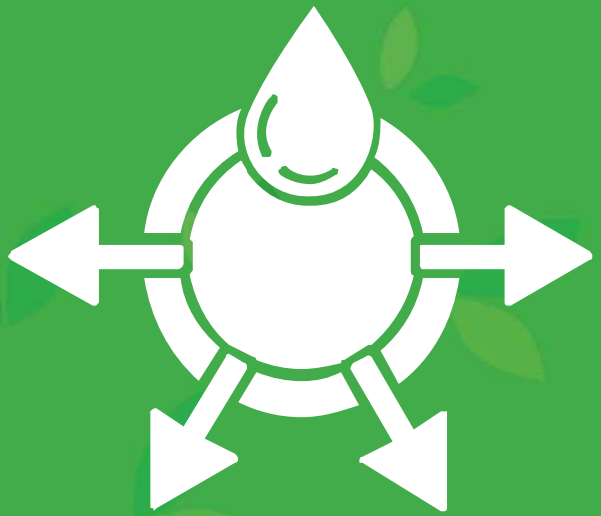
Multicote™ Agri ingredients

Fertilizer	Longevity (21°C)							
	UC*	2	3	4	6	8	12	16
MAP	■	■		■		■		
MAP mini	■							
KNO_3 prills	■	■		■	■	■	■	
KNO_3 mini	■			■				
UREA granular	■	■	■	■	■	■	■	■
UREA prills mini & regular	■	■		■				
MgSO4	■			■				
Boron				■		■	■	
Zinc Sulfate		■		■		■		
NPK 15-7-15 +2MgO+ ME		■		■	■	■	■	■
NPK 14-14-14		■		■	■	■	■	■
NPK 12-12-15+2MgO+ME	■	■		■	■	■		

* Uncoated nutrients, available for immediate uptake

Haifa solution for good establishment





Controlled release Boron

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Boron deficiencies

A common problem in eucalyptus plantations, resulting in :

- Impaired growth and broken stems
- Death of shoot tips, leading to multiple lateral branches (bush-like shape)
- Reduced lignification of the wood that may cause weeping of branches

Be careful! excessive boron in is toxic and may harm plants.

Boron deficiency

In heavily washed soils, under acidic conditions

Boron deficiency

Weak stems

Boron deficiency

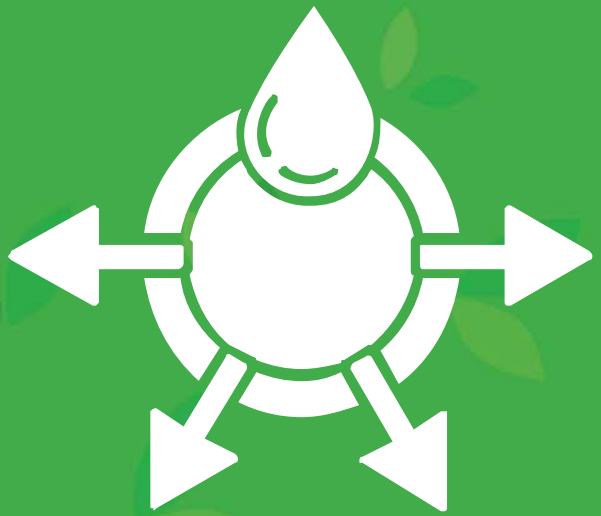
Bush-like trees

Haifa's solution: controlled release Boron

Recommended application rates

B concentration in the soil (mg/l, hot extraction)	< 0.2	02.-0.4	0.4-0.6	0.6 <
B application rate (kg/ha)	4.0	3.0	1.0	-

Apply coated boron at planting.
Additional application is required only if deficiency is noted.



Haifa’s expertise

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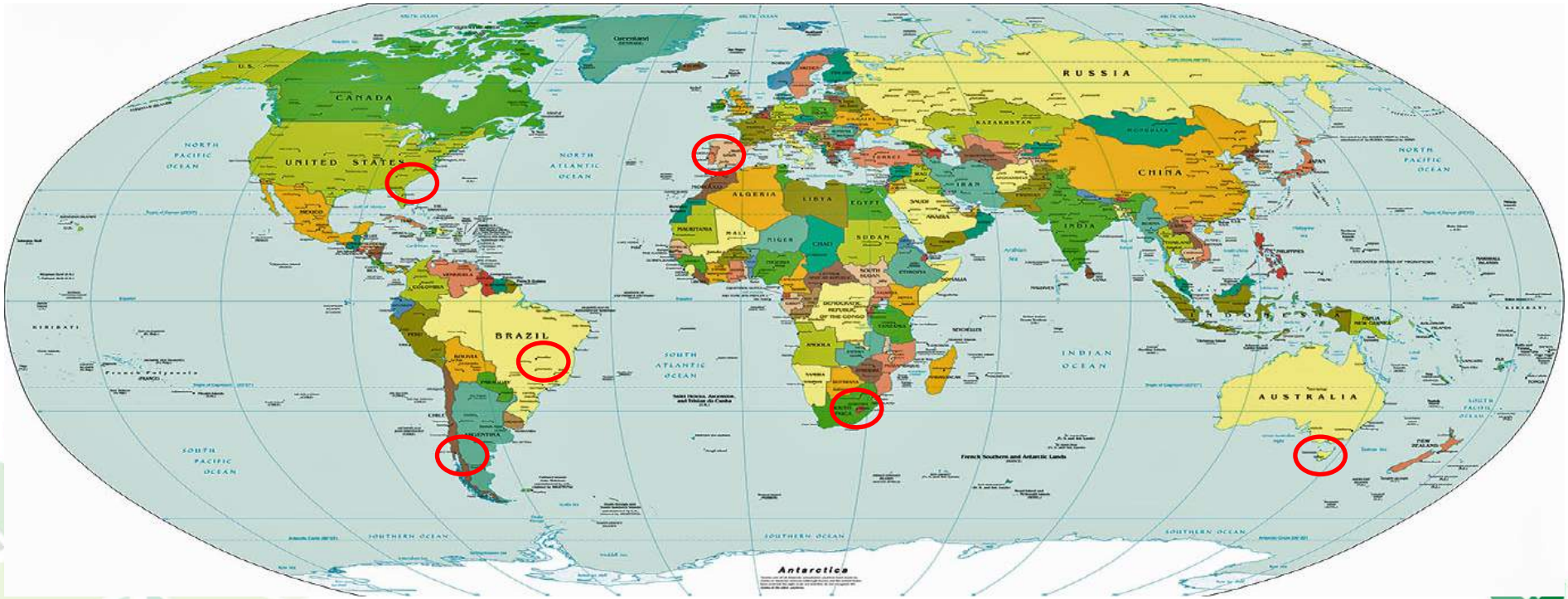
Haifa’s global experience in Forestry



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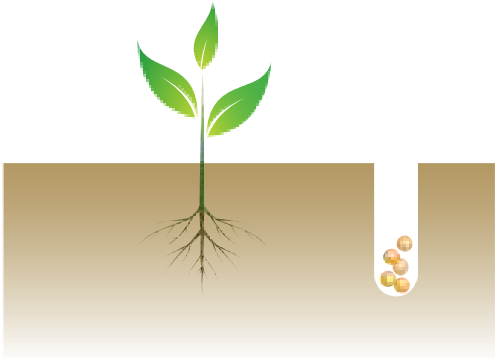
Application methods

In the planting hole

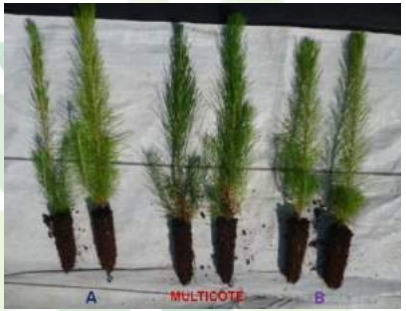
In a band, next to the planting line



Note: for efficient performance, Multicote™ Agri granules must be incorporated in the soil.

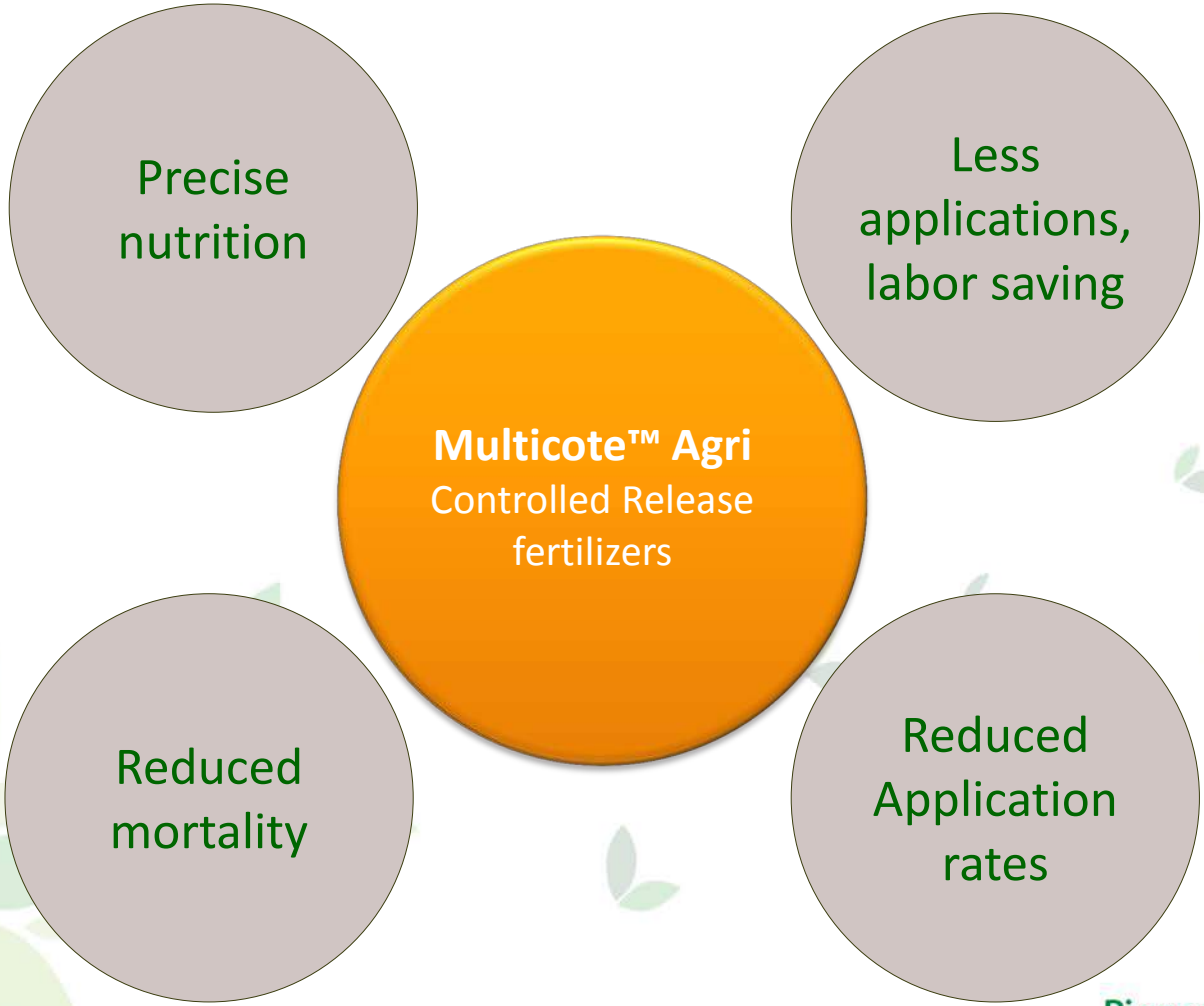
Suggested formulae for tree nurseries

Formula	Recommended application rate(kg/M³)
Multicote™ Agri (4) 12-25-12	4-5
Multicote™ Agri (6) 12-25-12	5-6
Multicote™ (4) 10-26-10	4-5
Multicote™ (6) 10-26-10	5-6
Multicote™ (4,6,8) 15-7-15+2MgO+ME	4-7
Multicote™ (16) 14-7-14+2MgO+ME	7-11



Boron-enriched formulae

Formula	Recommended application rate (gr/tree)
Multicote Agri(4)9-32-4+3MgO+**2B**	30-50
Multicote Agri(4)9-36-4+**2B**	30-50
Multicote Agri(12)9-36-7+**1B**	40-70
Multicote Agri(8)11-22-9+4MgO+**0.15B**	40-70


Precise nutrition
Less applications, labor saving
Multicote™ Agri
Controlled Release fertilizers
Reduced mortality
Reduced Application rates

Thank You

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