

NATIONAL BIOSOLIDS CONFERENCE

Champions for Sustainability

BIOSOLIDS TO ACCELERATE THE ESTABLISHMENT OF NZ NATIVE VEGETATION ON DEGRADED SOIL

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What are Biosolids





2 %*

30 %*

70 t yr⁻¹ (dw)

How can biosolids accelerate the establishment of (native) plants?

Soil physico-chemical restoration

Limit trace element uptake, Cu, Zn, Cd, Pb

Macronutrient assimilation, N, P, K



Poa cita



Corokia cheesemani



Greenhouse trial



Cordyline australis



Griselinia littoralis



Veronica salicifolia



Phormium tenax

'Fresh'

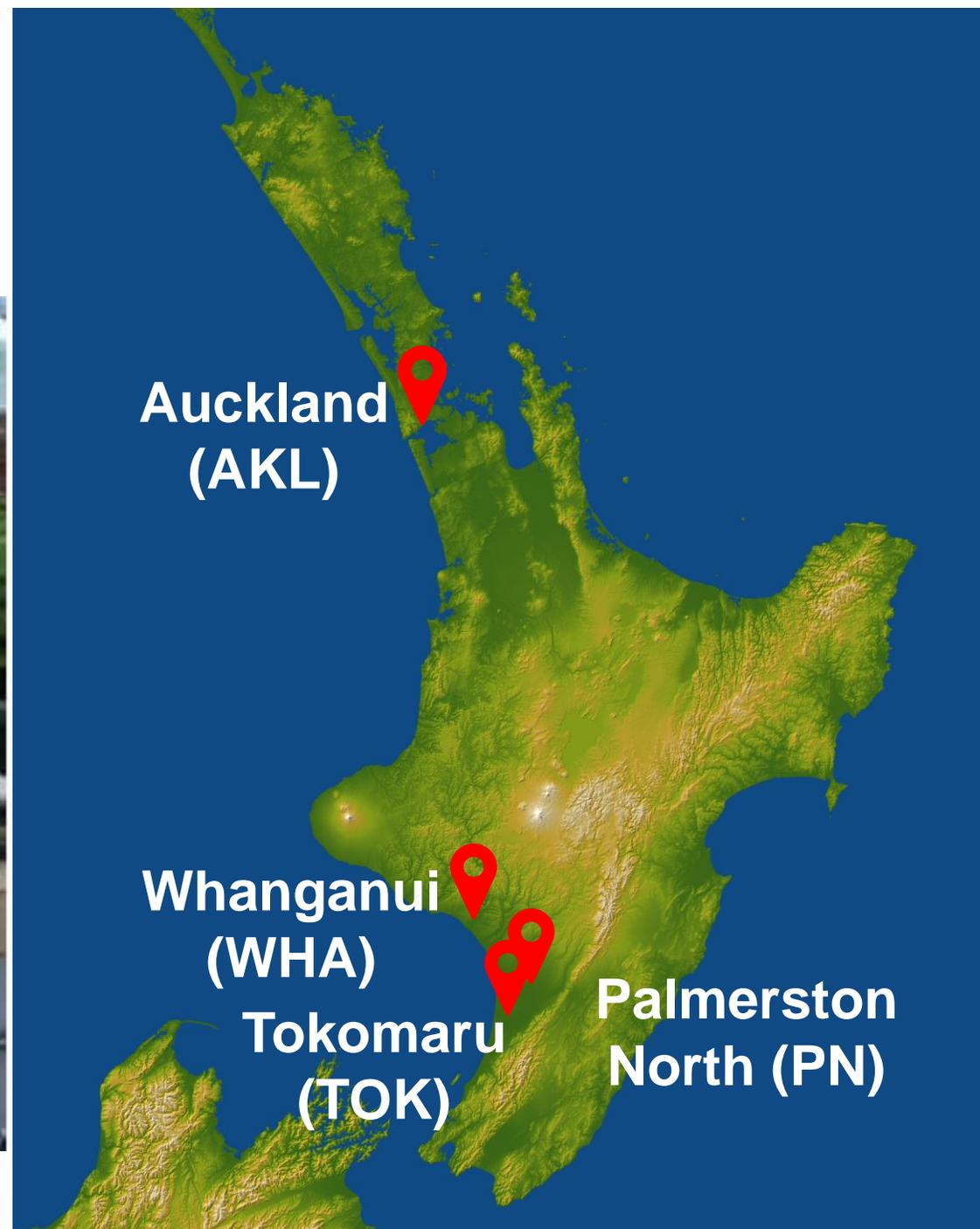
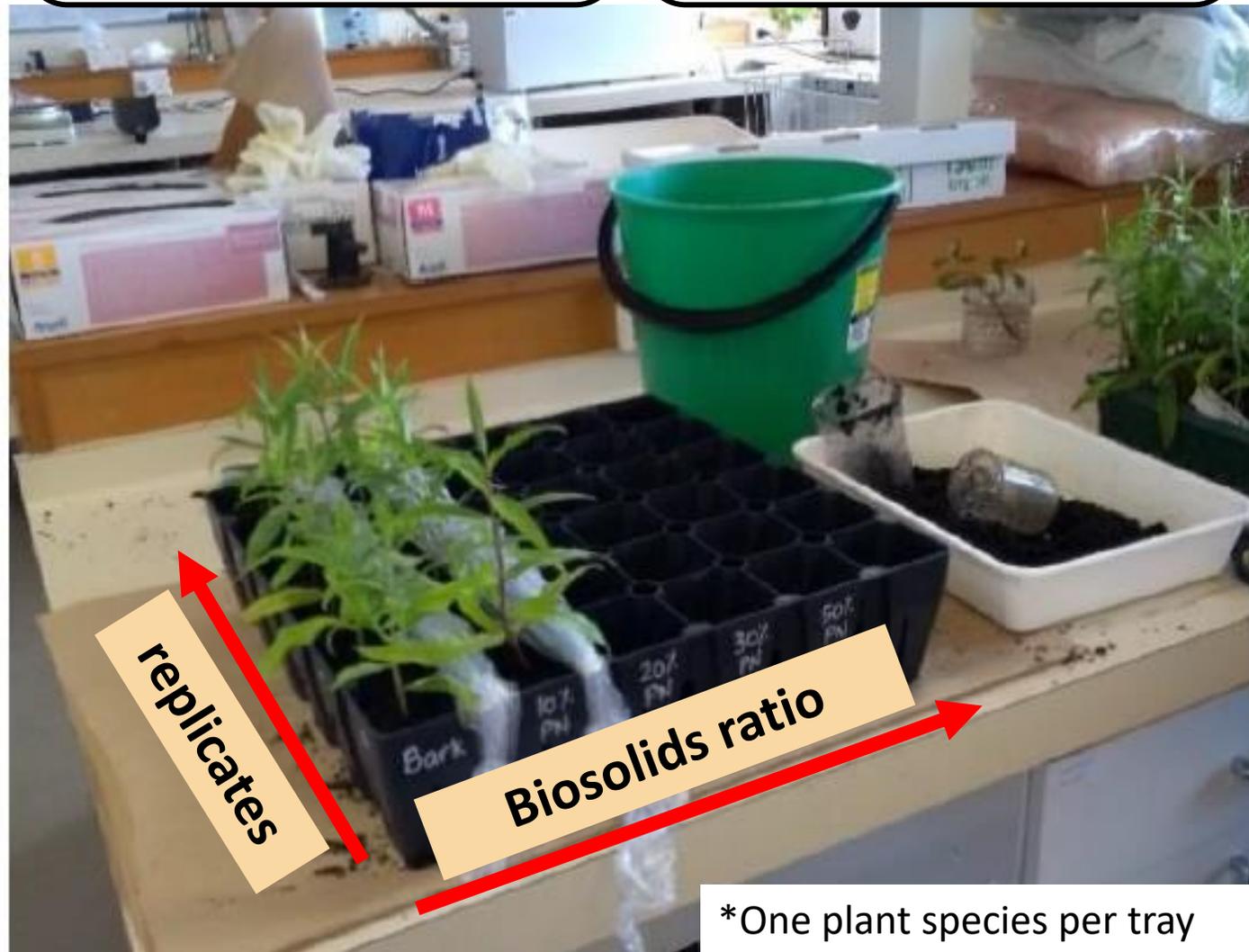
AKL – WHA

0 – 5 – 10 – 15 – 25 %

'Aged'

TOK – PN

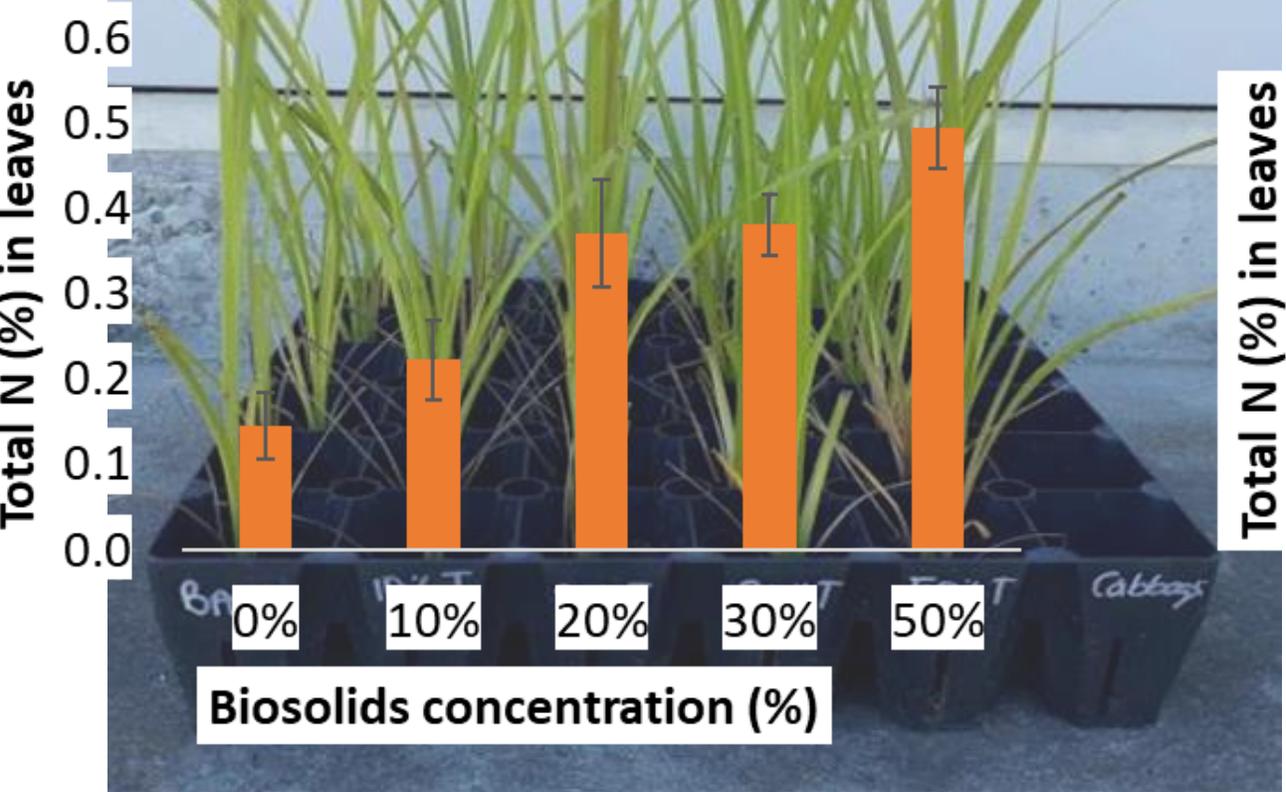
0 – 10 – 20 – 30 – 50 %



'Aged'

TOK

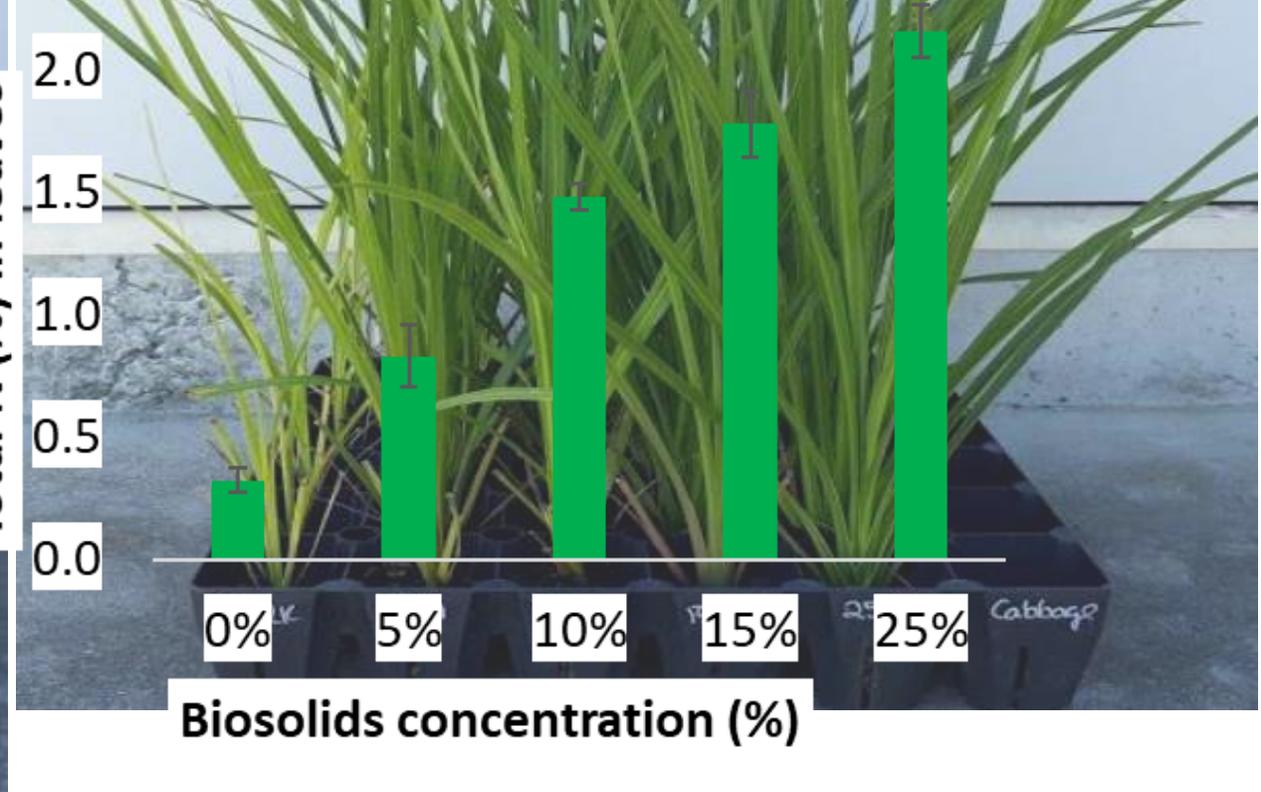
0 - 10 - 20 - 30 - 50 %



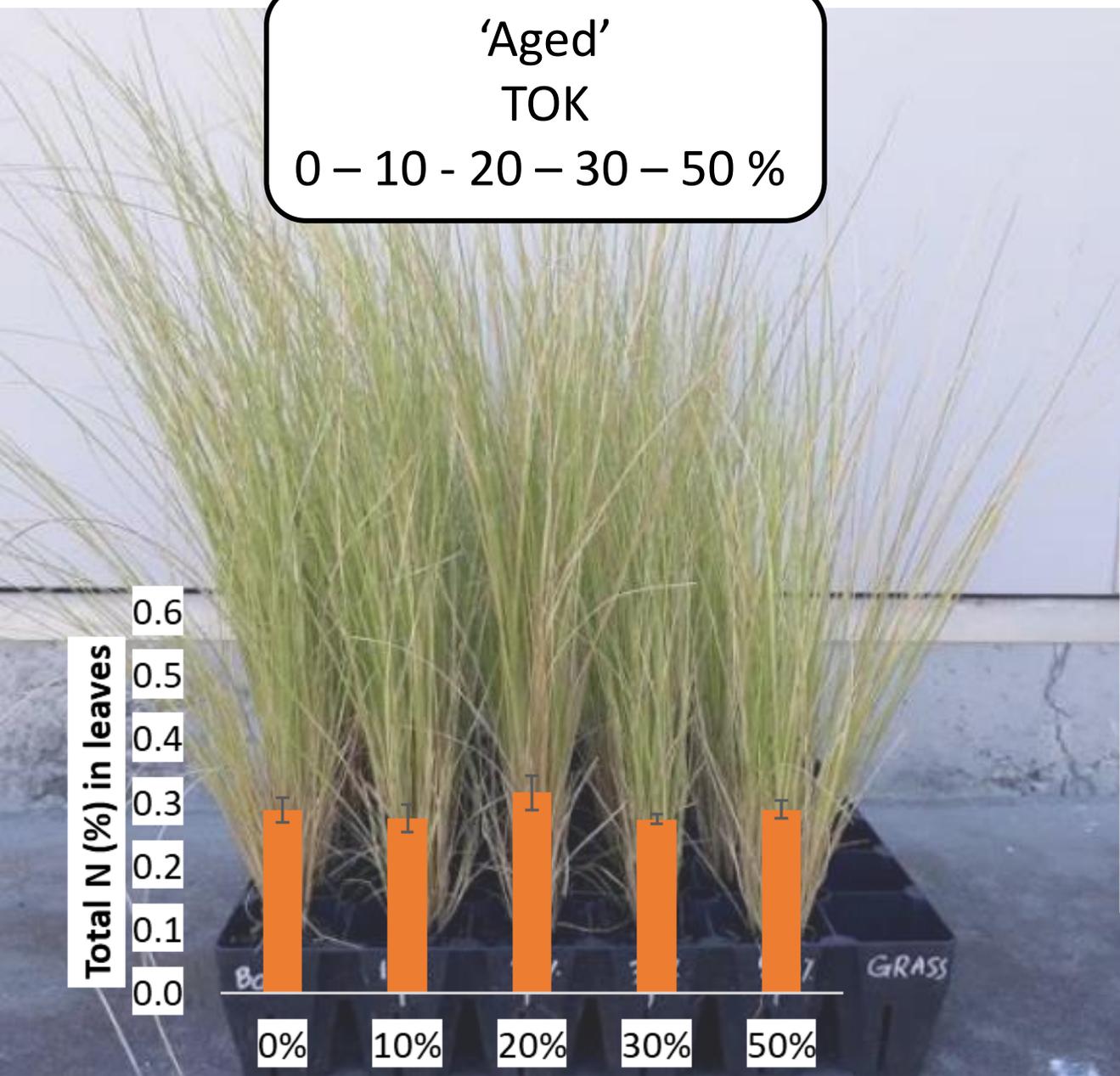
'Fresh'

AKL

0 - 5 - 10 - 15 - 25 %

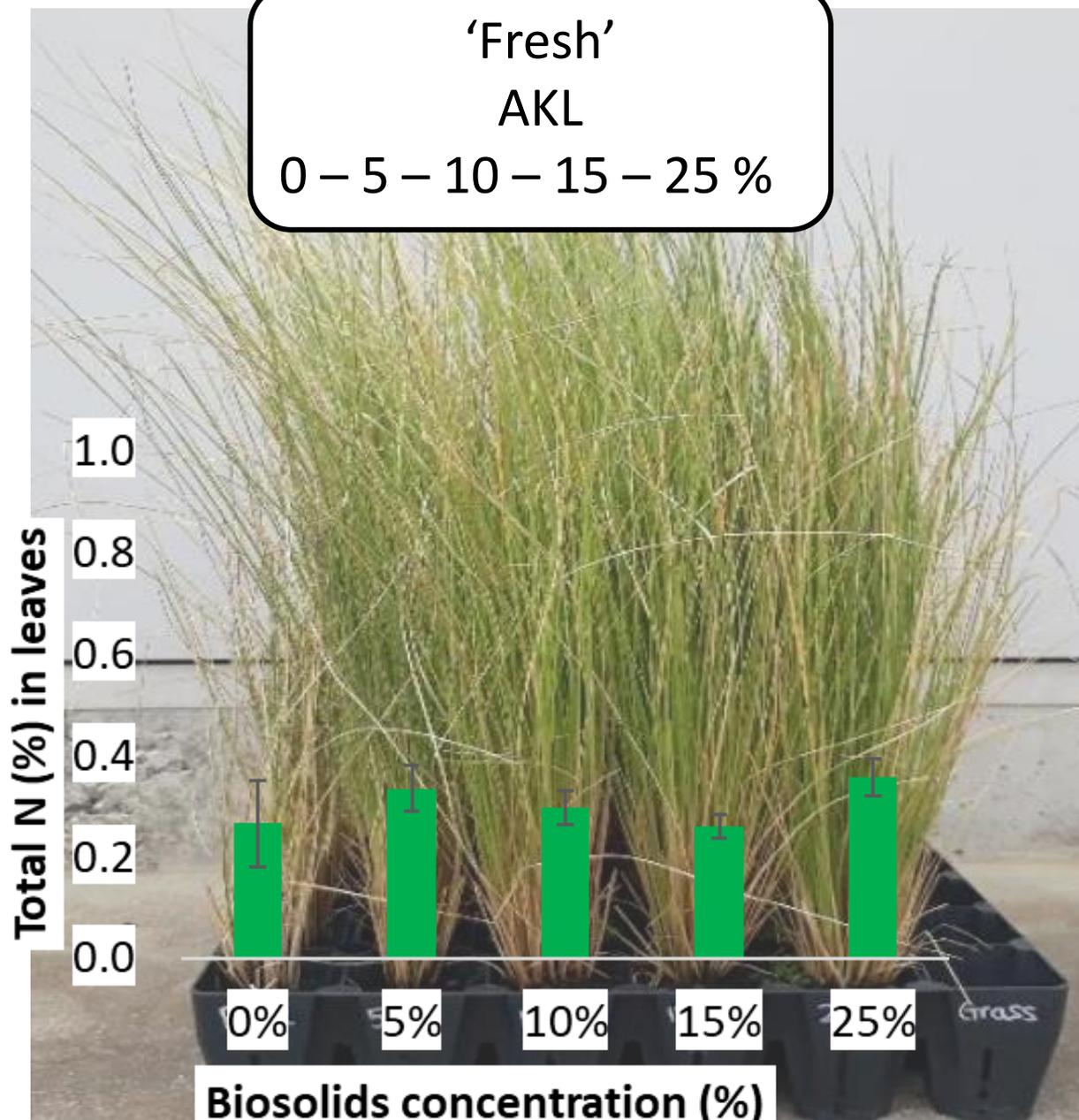


'Aged'
TOK
0 – 10 – 20 – 30 – 50 %



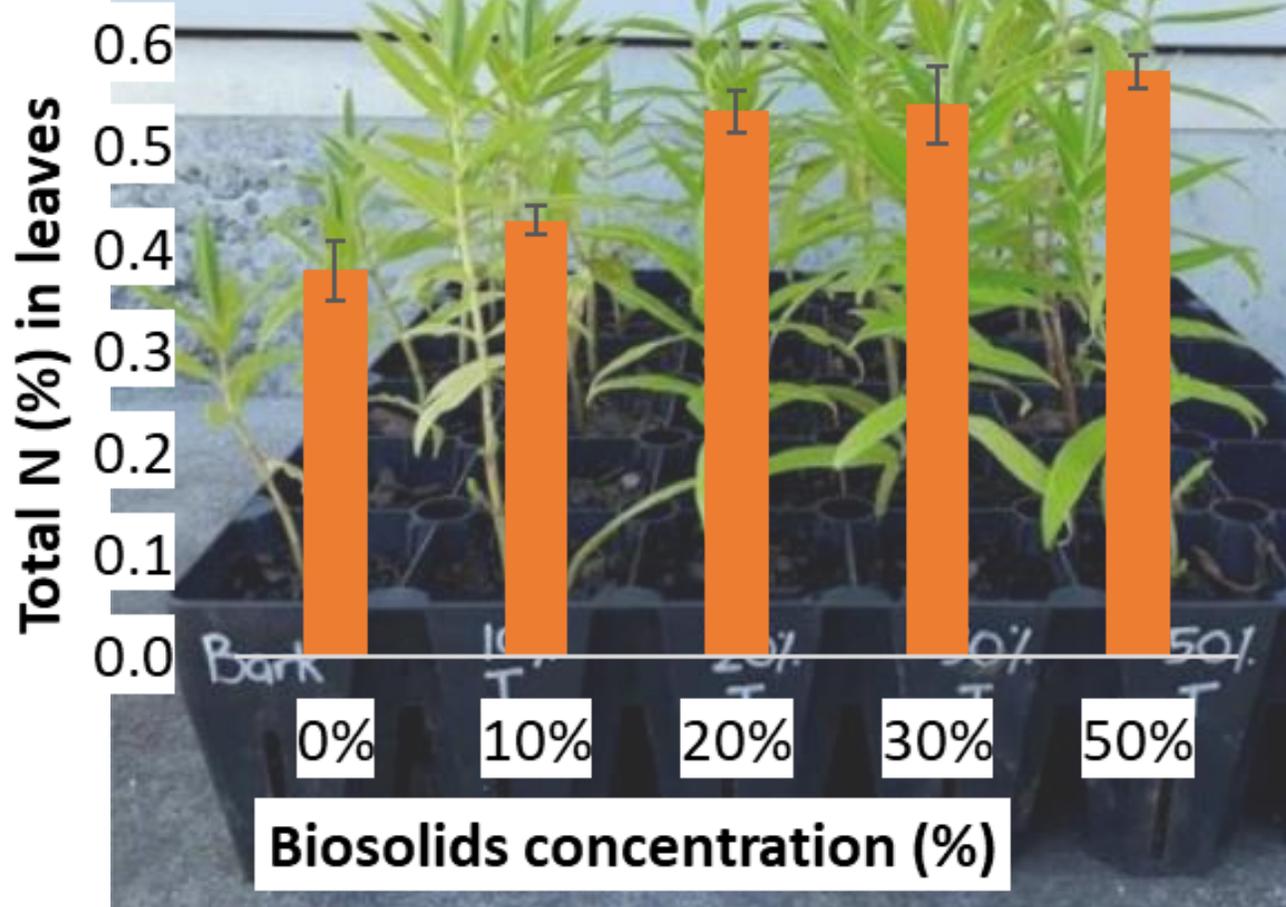
Biosolids concentration (%)

'Fresh'
AKL
0 – 5 – 10 – 15 – 25 %

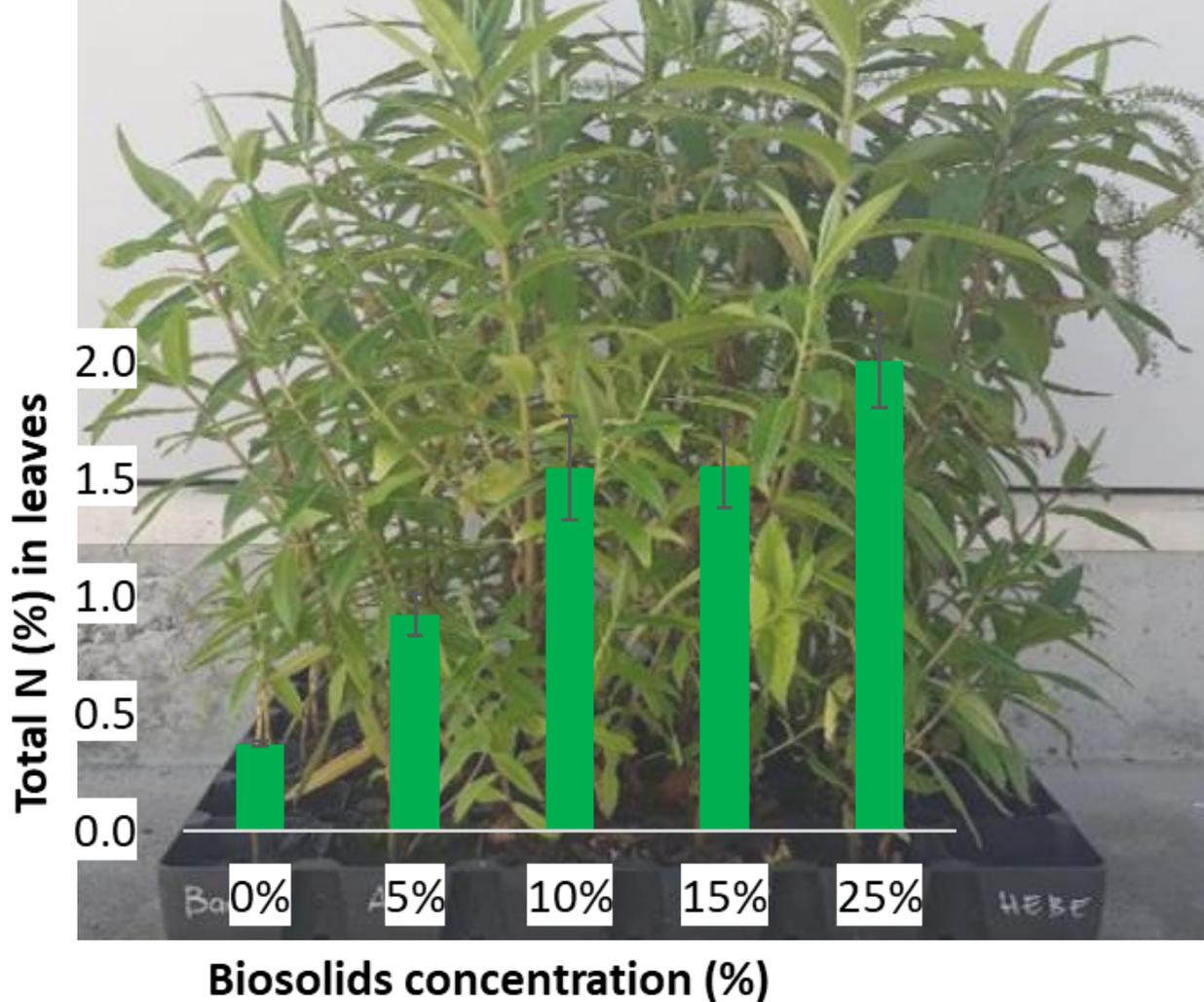


Biosolids concentration (%)

'Aged'
TOK
0 – 10 – 20 – 30 – 50 %

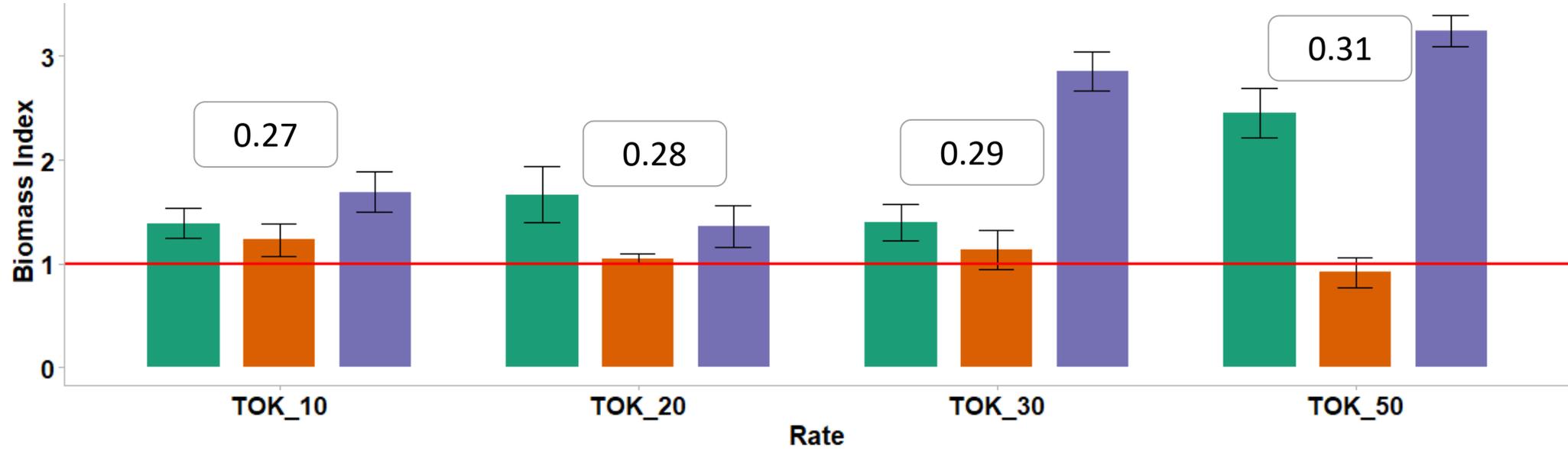
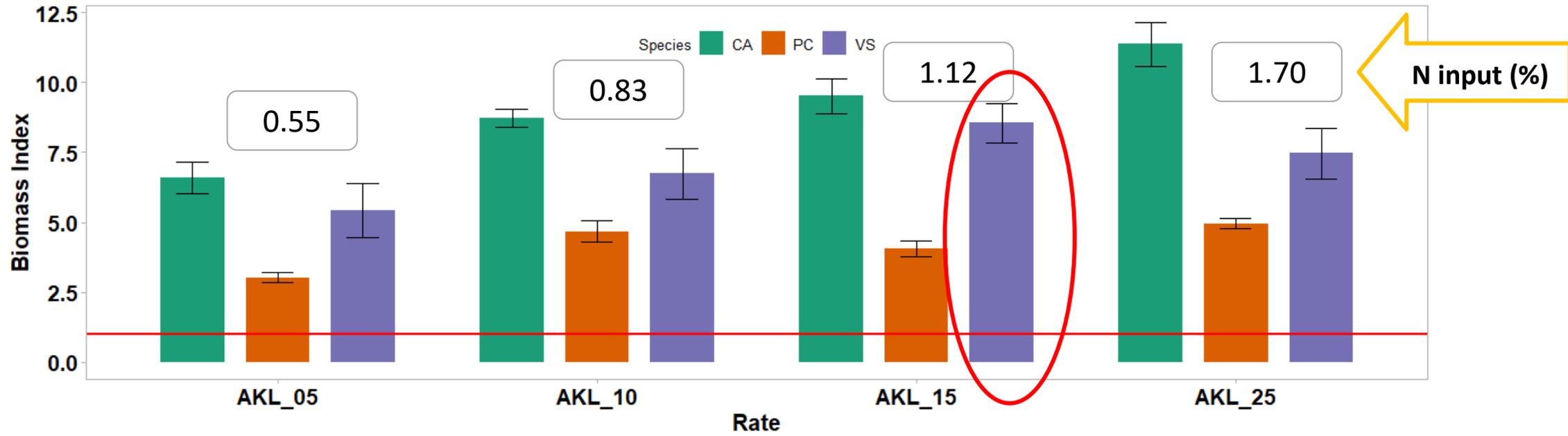


'Fresh'
AKL
0 – 5 – 10 – 15 – 25 %



Biomass index \propto N input?

$$BI = \frac{\text{treatment mass (g)}}{\text{control mass (g)}}$$



What else is going on?

Dec - 2021

Kairaki – raw soil
pH ~ 4.5
Total N < 1.0 %



Phormium tenax



*Dacrycarpus
dacrydioides*

*Macropiper
excelsum*



Cordyline australis



*Leptospermum
scoparium*



Kunzea robusta



Coprosma robusta



*Pittosporum
eugenioides*



*Pittosporum
tenuifolium*



Dodonea viscosa



*Phormium
cookianum*



Aristotelia serrata



*Griselinia
littoralis*



*Pseudowintera
colorata*



Application types



In depth



Mixed

Surface





May - 2022

Jul - 2022





Six months later



Nov - 2022



Westcoast

Next week, new sampling!

- Soil



Conclusion

- ✓ Different biosolids produce a distinct effect on plant chemistry
- ✓ Plant species perform differently – *Veronica salicifolia*
- ✓ Application type affects weed growth





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