









21 tree species

3300 \$/ha/year

- 50 kg N/ha/year

Gambart, C. et al. (2020) 'Impact and opportunities of agroecological intensification strategies on farm performance: A case study of banana-based systems in Central and South-Western Uganda', Frontiers in Sustainable Food Systems, 4(June), pp. 1–13. doi: 10.3389/fsufs.2020.00087.

Exploring nitrogen use efficiency in Musa spp.

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High-throughput phenotyping platform

ITC collection



Greenhouse



Treatment optimalization

BananaTainer



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High-throughput phenotyping



Treatment optimalization



- Bluggoe (ABB)

- Cachaco

Mutika/Lujugira (AAA-EA)Mbwazirume

- Cavendish (AAA)
 - Valery
 - Williams

Nitrogen concentrations

- 0 mM
- 0.6 mM
- 1.3 mM
- 7 mM



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Treatment optimalization

0 mM N 1.3 mM N 0.6 mM N 7 mM N

Root length ↑



Chlorophyll ↑

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One-way ANOVA Most of the variation explained by genotype



Less N, higher NUE

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E-poster: Combat climate change with biodiversity- high throughput phenotyping of the banana diversity for suitability in current and future agro-ecozones



3 layers, 2 separate circuits 504 plants



HC 2027

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\$ Banksii (AA) Nitrogen concentrations Bluggoe (ABB) Cavendish (AAA) 0.6 mM Gros Michel hybrid (AAAA) - 7 mM -Mutika/Lujugira (AAA-EA) Mysore (AAB) Peyan (ABB) Red (AAA) -Silk (AAB)



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SCIAT

Conclusion





Thank you for your attention!

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Nutrient solution composition

Chemical product	Nutrient solutions						
(g/100l)	0 mM N	0.6 mM N	1.3 mM N	7 mM N			
K ₂ SO ₄	148.12	148.12	148.12	148.12			
MgSO ₄ .7H ₂ O	369.71	369.71	369.71	369.71			
KH ₂ PO ₄	544.29	544.29	544.29	544.29			
NH ₄ NO ₃	0.00	2.40	5.20	29.90			
H ₃ BO ₃	1.14	1.14	1.14	1.14			
MnSO ₄ .H ₂ O	2.70	2.70	2.70	2.70			
ZnSO ₄ .7H ₂ O	0.23	0.23	0.23	0.23			
CuSO ₄ .5H ₂ O	0.16	0.16	0.16	0.16			
Na ₂ MoO ₄ .2H ₂ O	0.07	0.07	0.07	0.07			
CaSO ₄ .2H ₂ O	86.08	86.08	86.08	86.08			
CaCl ₂ .2H ₂ O	183.05	183.05	183.05	183.05			
Chemical product		Nutrient solutions					
(ml/100l)	0 mM N	0.6 mM N	1.3 mM N	7 mM N			
Fe-EDDHSA	112.50	112.50	112.50	112.50			

One-way ANOVA

Genotype	0.6 mM N			1.3 mM N		
	ESS	TSS	%ESS	ESS	TSS	%ESS
growthCanopy	167387.00	331052.00	50.56	45566.00	501054.00	9.09
numberLeaves	2.55	6.55	38.93	2.20	6.20	35.48
leafAreaYoungest	4843.00	4985.00	97.15	8639.00	17904.00	48.25
massShootDry	8.51	11.69	72.80	32.79	87.78	37.35
massRootDry	0.13	0.48	27.87	1.72	16.05	10.71
ratioRootShootDry	0.01	0.01	65.32	0.08	0.25	31.78
NUE	9.49	14.29	66.41	5.51	24.99	22.03

TSS represents the total sum of squares, ESS the explained sum of squares, and %ESS the percentage of explained sum of squares by genotype for the 0.6 and 1.3 mM N treatments.