comifer

Comité Français d'Étude et de Développement de la Fertilisation Raisonnée

Réunion du Groupe PKMg

Réunion du 8 juin 2023

Comité Français d'Étude et de Développement de la Fertilisation Raisonnée

Réunion du Groupe de Travail P K Mg

Jeudi 8 juin 2023

9h30 - 9h45 : Tour de table - Actualité COMIFER – K. Diedhiou, COMIFER

9h50 - 10h40 : Revue de littérature P K Mg sur année 2022-2023

Article P : Tendances récentes – L. Jordan-Meille, Bdx Sc Agro

Article K : Potassium Fertilizer Value of Raw and Hydrothermally Treated Igneous - Otmane Raji, UM6P, Maroc

10h40 - 11h30 : Pilotage fertilisation avec jus de tiges - Julien David (EMC2) & Grégory Dhellemmes (Eurofins Galys)

Pause-Café

11h45 - 12h45 : Mycorhizes et nutrition des plantes - Pierre-Emmanuel Courty (INRAE)

Déjeuner

14h15 - 15h00 : Point d'avancement sur le dossier « PhosphoBio » - Grégory Véricel (ARVALIS)

15h05 - 15h45 : Fertilisation starter en sol neutre et alcalin de Rhône-Alpes. Le phosphore seul maître du jeu ? - Philippe Lafleuriel, Coop Oxyane

15h50 - 16h25 : Evolutions récentes des bilans régionaux de fertilisation en France – Léo Bellenger , UNIFA

16h30 – 16h40 : Passage en revue de sujets d'intérêt pour les prochaines réunions – K. Diedhiou

1. Revue de presse scientifique

Quels axes de recherches sur P, K et Mg dans l'année écoulée ?

Phosph*
Potass* X 2022 et 2023 X Agronomy X
Magnes*

INRAe
CIRAD
CNRS
Agroscope (CH)
ETH-Zürich

18 articles P

P organique

Sokrat S 2023. Cover Crop Identity Differently Affects Biomass Productivity as well as N and P Uptake of Maize in Relation to Soil Type.
Mollier A Morel C, 2023. Mineralization and speciation of organic P in a sandy soil cropped and phosphorus-fertilized for 28 years.
Frossard E 2023. Phosphorus species in sequentially extracted soil organic matter fractions.
Frossard E 2022. The molecular size continuum of soil organic phosphorus and its chemical associations.
Houot S, 2022. An 18-year field experiment to assess how various types of organic waste used at European regulatory rates sustain crop yields and C, N, P, and K dynamics in a French calcareous soil.

Solubilisation de P dans la rhizosphère

Autfray P. 2022. Field arbuscular mycorrhizal inoculation increased plant performance without P fertilizer of 4 rice varieties in Madagascar
Courty P.E. 2022. The fine-tuning of mycorrhizal pathway in sorghum depends on both N-P availability and the identity of the fungal partner
Avice JC 2022. Are native P solubilizing bacteria a relevant alternative to mineral fertilizations for crops?
Bertrand I 2022. Co-localised P mobilization processes in the rhizosphere of field-grown maize jointly contribute to plant nutrition

P et nodulation

Drevon JJ 2022. Genotypic variability in nutrient uptake and use efficiency in chickpea grown under low P availability in a Mediter. climate
Drevon JJ 2022. Genotypic variability for tolerance to low soil phosphorus availability in faba bean (Vicia faba L.)
Hinsinger P 2022. Changes in belowground interactions between wheat and white lupin along nitrogen and phosphorus gradients

Ecologie

Chauvat M 2022. An invasive and native plant differ in their effects on the soil food-web and plant-soil P cycle
Pistocchi C 2022. P dynamics during early soil development in a cold desert: insights from oxygen isotopes in phosphate.

Transferts diffus échelle BV

Couic E, Gruau G 2022. Variability of P sorption properties in hydromorphic soils: Consequences for P losses in agricultural landscapes

Ecophysiologie

Morel C , Cornu JY, Mollier A 2022. The Dynamics of P Uptake and Remobilization during Grain Development Period in Durum Wheat

Effets des types de matières fertilisantes

Gerard F 2023. Soil properties and growing duration determine P phyto-availability dynamics of polyphosphate versus ortho-P fertilizers.
Poblete-Grant P. 2022 Phosphorus fertiliser source determines the allocation of root-derived organic carbon to soil organic matter fractions

P organique

Sokrat S 2023. Cover Crop Identity Differently Affects Biomass Productivity as well as N and P Uptake of Maize in Relation to Soil Type.
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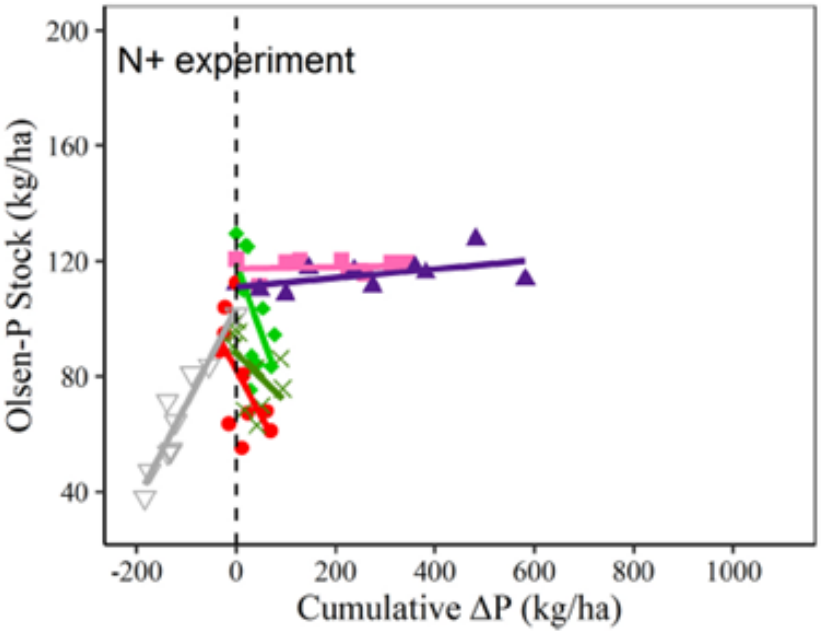

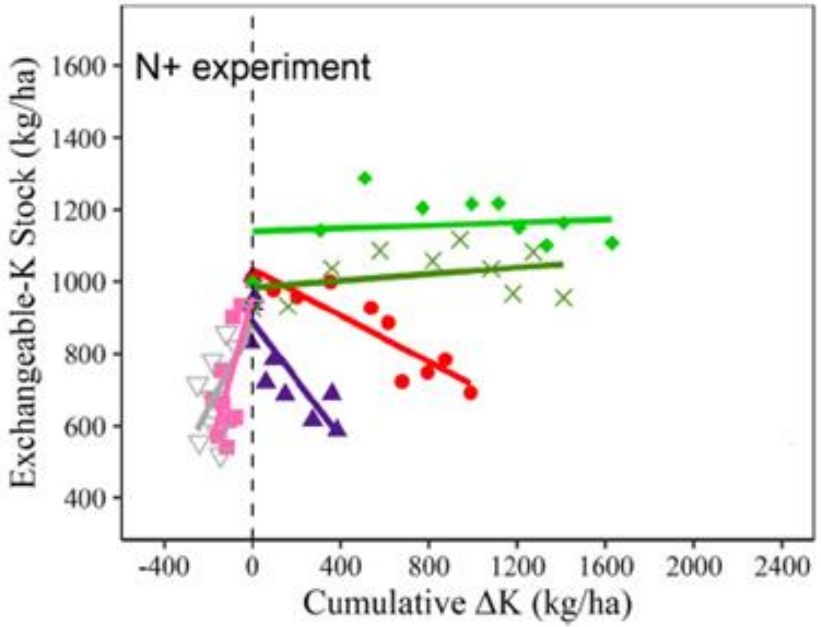

Boues
Compost DV et boues
Compost OM
Fumier
Fumier composté
0 PRO

P organique

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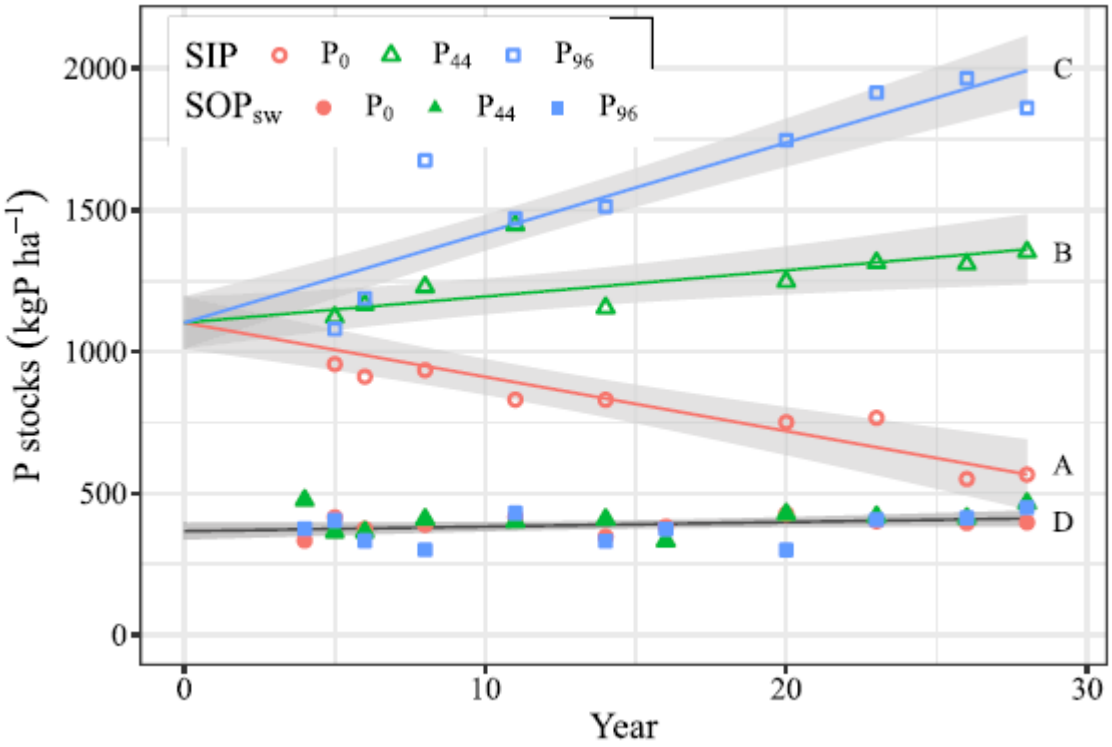

Stock initial P org. : 368 kg P_{org} / ha
Flux accumulation P org : + 1,6 kg / ha / an
Temps de séjour du P_{org} : 212 ans
Flux de minéralisation : 1.7 ± 1.2 kg P / ha /an

→ Très faible contribution du P organique à la nutrition

Solubilisation de P dans la rhizosphère

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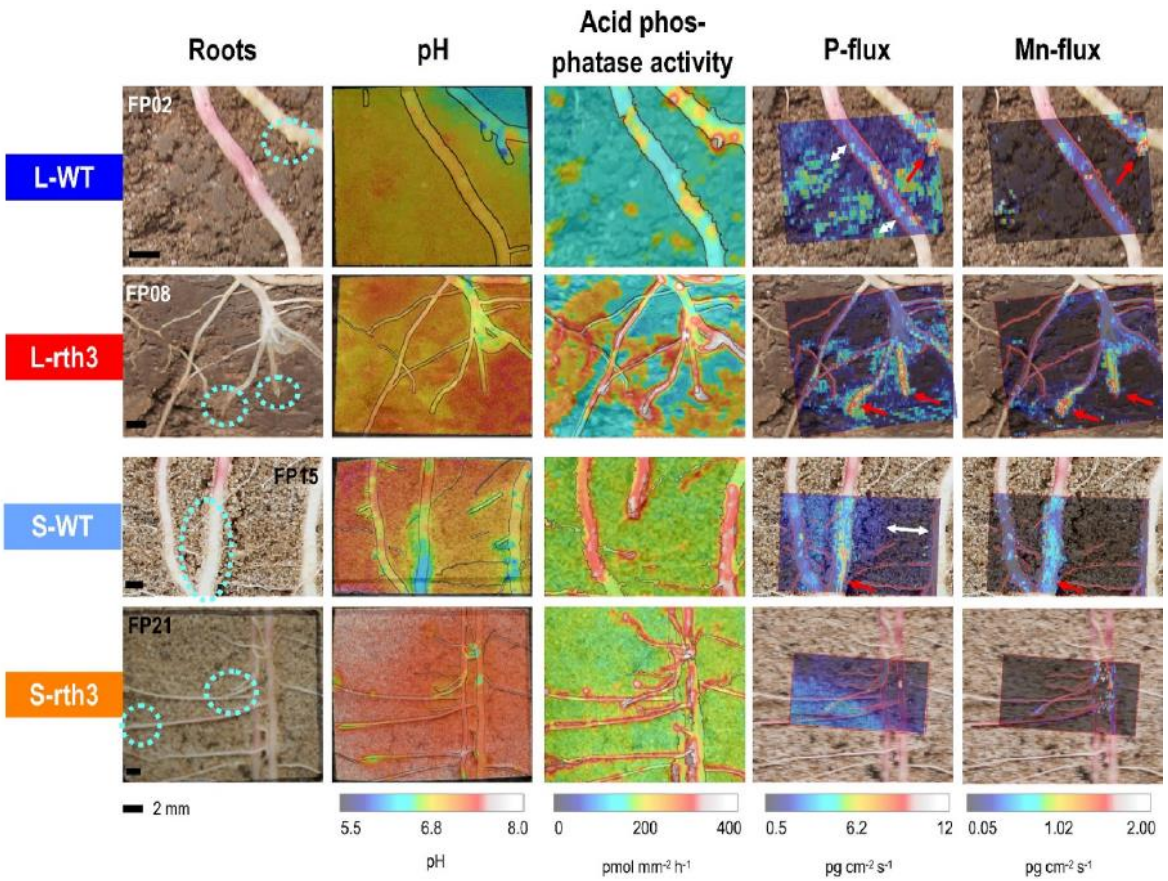

Optopodes Zymographie Diffusive Gradient in Thin films

P et nodulation

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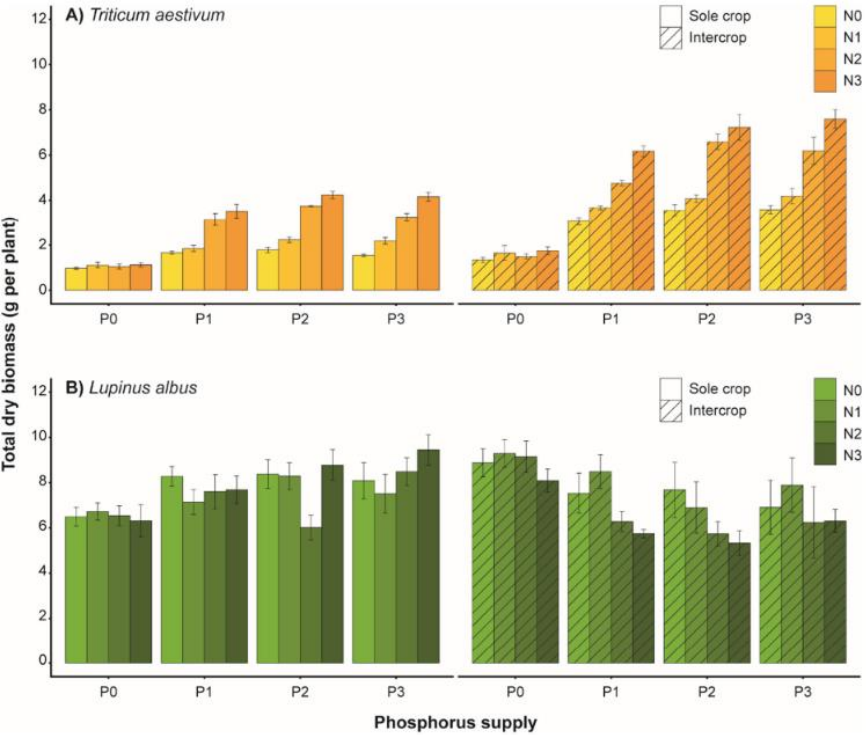
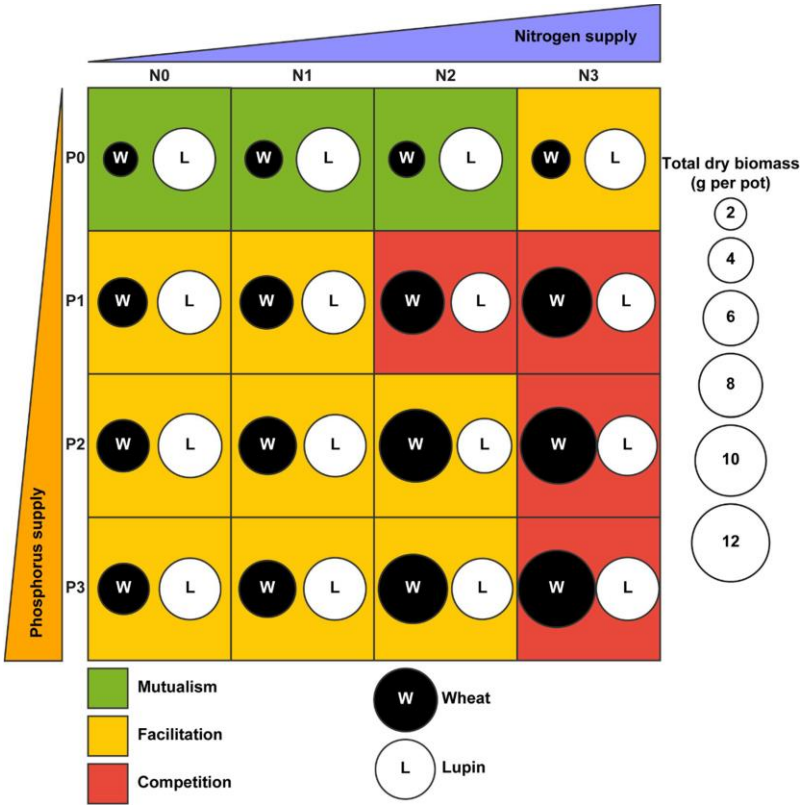




3 articles K

Lamade E., Tcherkez, G. **Revisiting foliar diagnosis for oil palm potassium nutrition**, 2023. European Journal of Agronomy, 10.1016/j.eja.2022.126694

Akter Shova, Kamruzzaman Md., Khan Md. Zulfikar, Amin Sadiqul, 2023. **Enhanced Potassium Fertilization Improved Rice (Oryza sativa) Yield and Nutrient Uptake in Coastal Saline Soil of Bangladesh**. Journal of Soil Science and Plant Nutrition. 10.1007/s42729-023-01144-3

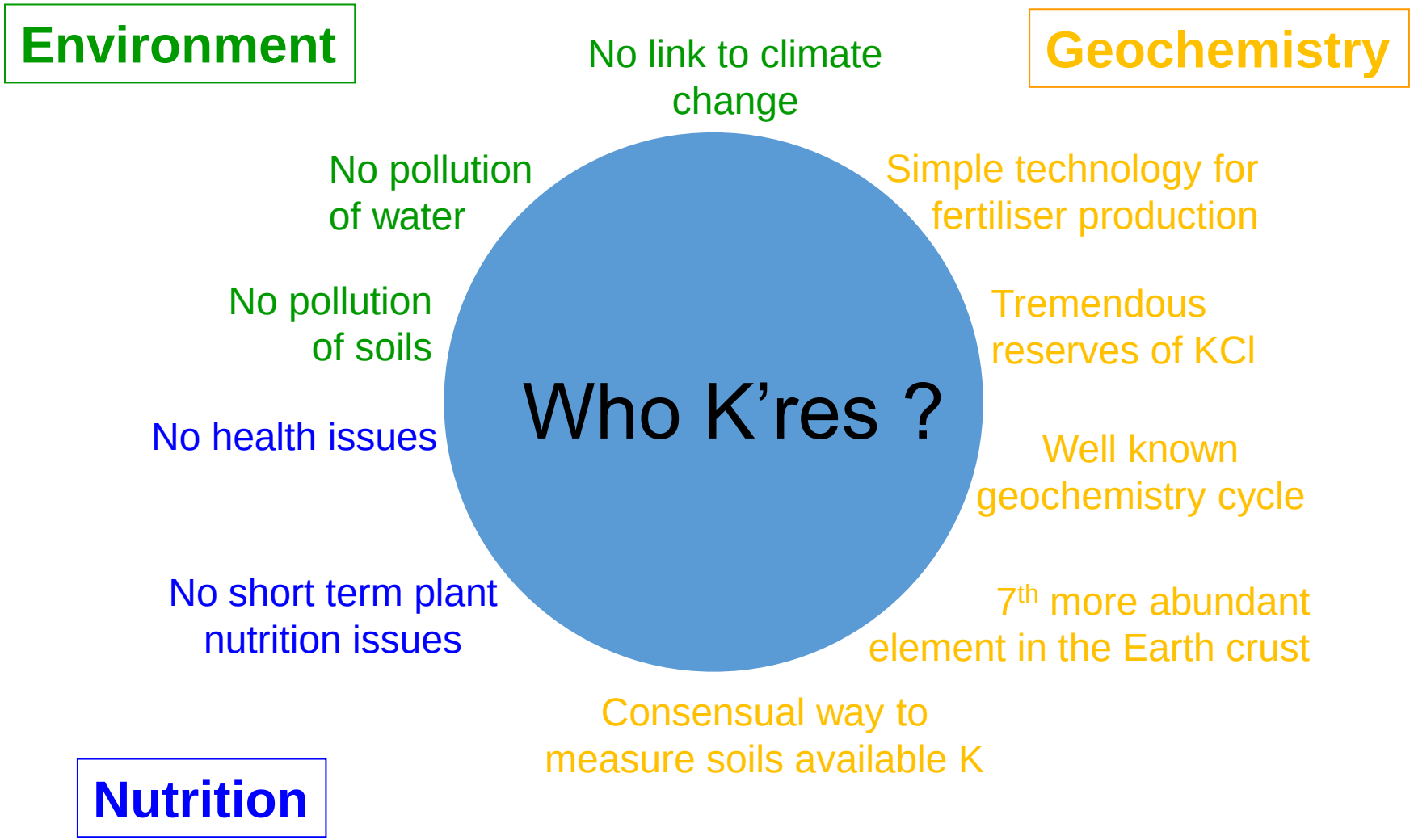
Herve Aaron, Khiari Lotfi, Raji Otmane, Elghali Abdellatif, Lajili Abdelkarim, Ouabid Muhammad, Jemo Martin, Bodinier Jean-Louis, 2023. **Potassium Fertilizer Value of Raw and Hydrothermally Treated Igneous Rocks. Journal of Soil Science and Plant Nutrition.** 10.1007/s42729-022-01101-6

Univ Mohamed VI

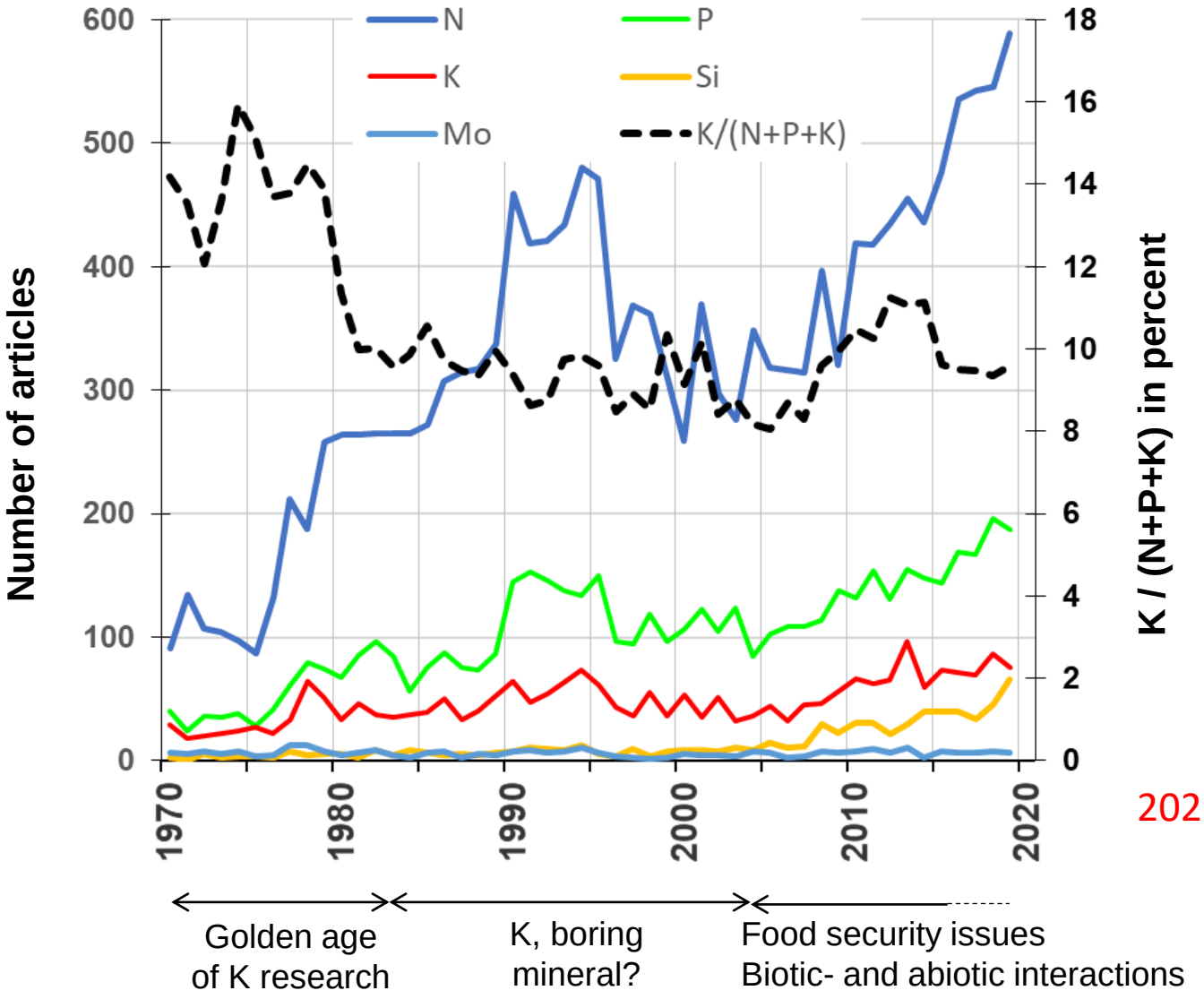
0 articles

Mg

Who K'res?


Environment
No link to climate change
Geochemistry
No pollution of water
Simple technology for fertiliser production
No pollution of soils
Tremendous reserves of KCl
Who K’res ?
No health issues
Well known geochemistry cycle
No short term plant nutrition issues
7th more abundant element in the Earth crust
Consensual way to measure soils available K
Nutrition

Who K'res?



2022 : 56 K, 111 Si

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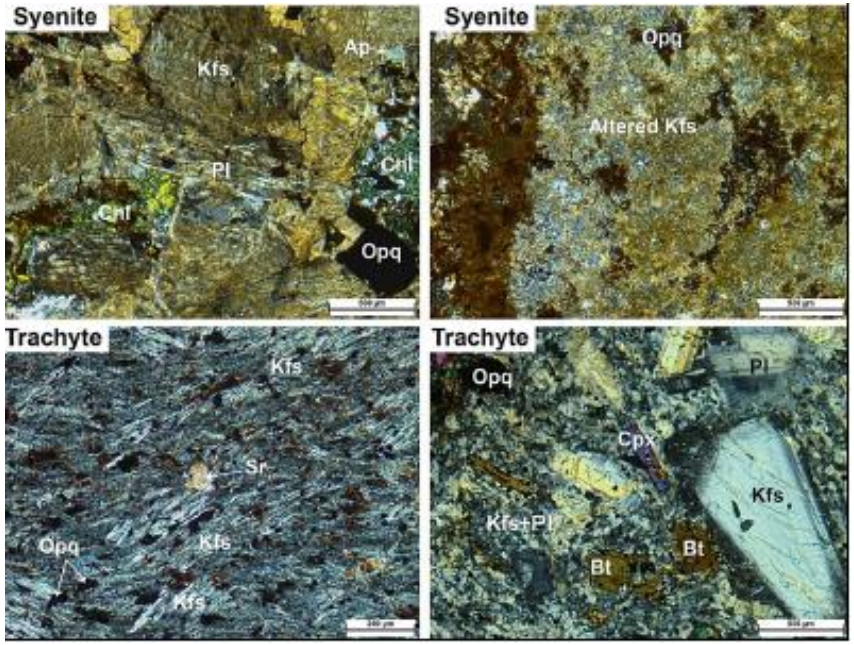
ORIGINAL PAPER

Potassium Fertilizer Value of Raw and Hydrothermally Treated Igneous Rocks

Aaron Herve[1] · Lotfi Khiari[2,3] · Otmane Raji[1] · Abdellatif Elghali[1] · Abdelkarim Lajili[3] · Muhammad Ouabid[1] · Martin Jemo[4] · Jean-Louis Bodinier[1,5]



Kfs : K-feldspar
Nph : nepheline
Pl : plagioclase
Bt : biotite
Sr : sericite
Chl : chlorite
Cpx : clinopyroxene
Ap : apatite
Opq : opaque minerals