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Soil organic amendments for climate-smart agriculture

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PROPOSITIONS

1. Organic amendments can substantially improve both the chemical and physical properties of agricultural soils, benefitting crop production by extension (*This Thesis*, Chapters 1, 2, 3 and 4).
2. Since organic carbon and nitrogen are compositionally diverse, our predictions of organic amendment impacts should rely on indexes additional to those based on stoichiometry (*This Thesis*, Chapters 1 and 2).
3. Hot-water extractable carbon demonstrates close associations with microbial processes and warrants further investigation given our lack of knowledge on its (bio-)chemical composition and functional use (*This Thesis*, Chapters 1 and 2).
4. Relationships between organic amendments and soil properties are mechanistically, spatially and temporally complex, confounding the derivation of universal functions for those relationships (*This Thesis*, Chapters 3 and 4).
5. Further understanding the interactions of soil microorganisms with amendments will help us to build synergistic relationships with them in order to benefit our own diverse soil uses (*This field of research*).
6. Organic amendment optimism requires tempering, as there exists a bias towards benefits-oriented research, while studies on the risks related to pathogens, pollutants and the practical and economic feasibility of application remain lacking (*This field of research*).
7. Organic amendment applications in agriculture are a low-tech and low-skill opportunity for sustainable development and circular resource use in both high- and low-income economies (*This field of research*).
8. We need to reassess whether a regulated, free-market system for agricultural production in Europe is still desirable, given increasing farmers discontent and the growing need for the sector to achieve environmental sustainability (*This field of research*).
9. Both ethically and rationally, the future should be plant-based.
10. Dulce et decorum est pro mundo investigare (Adapted from Quintus Horatius Flaccus and Wilfred Owen)

Propositions accompanying the thesis titled:
Soil Organic Amendments for Climate-Smart Agriculture
By Dirk-Jan D. Kok

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