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Tenure Track adjunkt  
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## Curriculum Vitae

I am a crop scientist with a special focus on plant physiology and belowground ecology. My key research areas cover root biology, digital phenomics, **perennial cropping systems** and **sustainable intensification**. I have developed novel methods (digital and biochemical) to reveal several fundamental plant-soil mechanisms in relation to solving complex problems in agriculture such as climate change.

## Kvalifikationer

Agricultural Sciences, Ph.D., Biopore-associated root growth in arable subsoil as affected by crop sequence, University of Bonn

Dimissionsdato: 5 sep. 2016

Sustainable Int'l Agriculture, M.Sc, Structure, income opportunities and agricultural resources endowments of farm households in degraded mine land areas of Gatumba, Western Rwanda, University of Göttingen

Dimissionsdato: 5 aug. 2011

Agriculture, B.Sc, Tamil Nadu Agricultural University

Dimissionsdato: 7 maj 2009

## Ansættelse

### Tenure Track adjunkt

Institut for Agroøkologi - Klima og Vand

Aarhus Universitet

Tjele, Danmark

1 maj 2023 → present

## Projekter

### GrassProtein

Jensen, S. K. (PI), Jørgensen, U. (PI) & Han, E. (Projektkoordinator)

01/01/2022 → 31/12/2024

### New emission factors for nitrous oxide from crop residues

Olesen, J. E. (PI), Abalos, D. (Deltager), Butterbach-Bahl, K. (Deltager), Han, E. (Deltager), Kristensen, H. L. (Deltager) & Mikkelsen, M. H. (Deltager)

01/04/2024 → 31/03/2029

### PerennialSystems

Han, E. (PI), Jørgensen, U. (Deltager) & Peterson, A. N. (Deltager)

01/05/2023 → 30/04/2027

### PerennialTraits: Showcasing de novo domestication of perennial grain crops for profitable, resilient and sustainable agriculture

Han, E. (PI), Munkholm, L. J. (Deltager), Dippold, M. (Deltager) & Crews, T. (Deltager)

01/01/2025 → 31/12/2028

### **RootVision: Illuminating root diversity under crop mixtures**

Han, E. (PI), Lombardi, M. (Deltager), Rewald, B. (Deltager), Bodner, G. (Deltager), Jørgensen, U. (Deltager), Madsen, C. K. (Deltager) & Brinch-Pedersen, H. (Deltager)  
01/01/2025 → 31/12/2027

### **Sensing the future for resilient farming systems**

Han, E. (PI)  
01/01/2021 → 01/10/2024

## **Publikationer**

### **Temporary growth cessation of wheat roots following defoliation**

Han, E., Kirkegaard, J. A. & Thorup-Kristensen, K., sep. 2024, I: Plant and Soil. 502, 1-2, s. 315-331 17 s.

### **Usefulness of techniques to measure and model crop growth and yield at different spatial scales**

He, D., Wang, E., Kirkegaard, J., Han, E., Malone, B., Swan, T., Brown, S., Glover, M., Lawes, R. & Lilley, J., 1 apr. 2024, I: Field Crops Research. 309, 109332.

### **Effect of grazing on root growth in dual-purpose wheat - implication for soil water use**

Han, E., Swan, T., Whish, J., Lilley, J., Brown, G., Hicks, M., Li, X., Thorup-Kristensen, K. & Kirkegaard, J., 2024. 4 s.

### **The enhancing effect of intercropping sugar beet with chicory on the deep root growth and nutrient uptake**

Czaban, W., Han, E., Lund, O. S., Stokholm, M. S., Jensen, S. M. & Thorup-Kristensen, K., 1 maj 2023, I: Agriculture, Ecosystems and Environment. 347, 108360.

### **The Chlorophyll Fluorescence Parameter $F_v/F_m$ Correlates with Loss of Grain Yield after Severe Drought in Three Wheat Genotypes Grown at Two $CO_2$ Concentrations**

Sommer, S. G., Han, E., Li, X., Rosenqvist, E. & Liu, F., feb. 2023, I: Plants. 12, 3, 436.

### **Deep learning with multisite data reveals the lasting effects of soil type, tillage and vegetation history on biopore genesis**

Han, E., Kirkegaard, J. A., White, R., Smith, A. G., Thorup-Kristensen, K., Kautz, T. & Athmann, M., 1 nov. 2022, I: Geoderma. 425, 116072.

### **Exploitation of neighbouring subsoil for nutrient acquisition under annual-perennial strip intercropping systems**

Han, E., Czaban, W., Dresbøll, D. B. & Thorup-Kristensen, K., 15 okt. 2022, I: Agriculture, Ecosystems and Environment. 338, 108106.

### **RootPainter: deep learning segmentation of biological images with corrective annotation**

Smith, A. G., Han, E., Petersen, J., Olsen, N. A. F., Giese, C., Athmann, M., Dresbøll, D. B. & Thorup-Kristensen, K., okt. 2022, I: New Phytologist. 236, 2, s. 774-791 18 s.

### **Prospects for summer cover crops in southern Australian semi-arid cropping systems**

Rose, T. J., Parvin, S., Han, E., Condon, J., Flohr, B. M., Schefe, C., Rose, M. T. & Kirkegaard, J. A., jun. 2022, I: Agricultural Systems. 200, 103415.

### **Tracing deep P uptake potential in arable subsoil using radioactive $^{33}P$ isotope**

Han, E., Dresbøll, D. B. & Thorup-Kristensen, K., mar. 2022, I: Plant and Soil. 472, 1-2, s. 91-104 14 s.

### **Digging roots is easier with AI**

Han, E., Smith, A. G., Kemper, R., White, R., Kirkegaard, J. A., Thorup-Kristensen, K. & Athmann, M., 22 jun. 2021, I: Journal of Experimental Botany. 72, 13, s. 4680-4690 11 s.

### **Can precrops uplift subsoil nutrients to topsoil?**

Han, E., Li, F., Perkons, U., Küpper, P. M., Bauke, S. L., Athmann, M., Thorup-Kristensen, K., Kautz, T. & Köpke, U., jun. 2021, I: Plant and Soil. 463, 1-2, s. 329-345 17 s.

Strip Intercropping Promotes Nutrient-Snatching By Deep Roots  
Han, E., Dresbøll, D. B. & Thorup-Kristensen, K., 2021.

**Biopore-induced deep root traits of two winter crops**

Huang, N., Athmann, M. & Han, E., dec. 2020, I: Agriculture (Switzerland). 10, 12, s. 1-16 16 s., 634.

**Core-labelling technique (CLT): A novel combination of the ingrowth-core method and tracer technique for deep root study**

Han, E., Dresbøll, D. B. & Thorup-Kristensen, K., 10 jun. 2020, I: Plant Methods. 16, 1, 84.

Determining deep root activity in arable fields by the core-labelling technique (CLT)

Han, E., Dresbøll, D. & Thorup-Kristensen, K., 2018.

The effect of Intercropping on the Deep Root Development and Nutrient Uptake in a Sugar Beet–Chicory Mixture

Czaban, W., Han, E., Dresbøll, D. & Thorup-Kristensen, K., 2018.

The hidden half of the plants for 'deep-rooted' organic agriculture

Han, E., 2018.

**Dynamics of plant nutrient uptake as affected by biopore-associated root growth in arable subsoil**

Han, E., Kautz, T., Huang, N. & Köpke, U., 1 jun. 2017, I: Plant and Soil. 415, 1-2, s. 145-160 16 s.

**Precrop root system determines root diameter of subsequent crop**

Han, E., Kautz, T. & Köpke, U., 1 jan. 2016, I: Biology and Fertility of Soils. 52, 1, s. 113-118 6 s.

**Root growth dynamics inside and outside of soil biopores as affected by crop sequence determined with the profile wall method**

Han, E., Kautz, T., Perkons, U., Uteau, D., Peth, S., Huang, N., Horn, R. & Köpke, U., 22 okt. 2015, I: Biology and Fertility of Soils. 51, 7, s. 847-856 10 s.

**Quantification of soil biopore density after perennial fodder cropping**

Han, E., Kautz, T., Perkons, U., Lüsebrink, M., Pude, R. & Köpke, U., 26 sep. 2015, I: Plant and Soil. 394, 1-2, s. 73-85 13 s.

Effects of Biodynamic Prepara on 500 (P500) Cow Horn Manure on Early Growth of Barley, Pea, Quinoa, and Tomato under Saline Stress Conditions

Han, E., 2015.

Optimising cropping techniques for nutrient and environmental management in organic agriculture

Köpke, U., Athmann, M., Han, E. & Kautz, T., 2015, I: Sustainable Agriculture Research. 4, 3

Preferential root growth through biopore channels increases rooting density of barley and canola in the subsoil

Han, E., Kautz, T., Huang, N. & Köpke, U., 2015.

## **Aktiviteter**

### **Springer (Forlag)**

Han, E. (Redaktør)

25 sep. 2023