

## Concept Note:

# Exploring the Potential of Generative AI in Regenerative Agriculture Design

Date: April 22, 2025

Time: 17:00 – 18:00 CEST/ GMT +2

Format: MS Teams Webinar (online)

Moderator: Sander Janssen (Digital Agri Hub)

## 1. Background and Rationale

As climate change, biodiversity loss, and soil degradation accelerate, regenerative agriculture has emerged as a holistic approach to restore ecological health while enhancing agricultural productivity. However, the design and implementation of regenerative systems often require complex decision-making that integrates environmental, social, and technological variables.

Generative AI (GenAI), with its ability to process vast datasets, model complex systems, and generate innovative solutions, offers immense potential to support regenerative agriculture. Yet, critical questions remain about how best to align GenAI capabilities with on-the-ground needs, ethical considerations, and the principles of sustainable development.

This webinar aims to bridge that gap by bringing together AI developers, agri-experts, and global stakeholders to explore how GenAI can co-create solutions for regenerative farming systems.

## 2. Objectives

- **Architectural Innovation:** Propose system architectures for GenAI-driven tools supporting regenerative agriculture.
- **Technical Exploration:** Address challenges around data quality, model validation, reinforcement learning, and interactive expert systems.
- **Collaborative Models:** Identify inclusive collaboration frameworks between AI developers, farmers, and AgriTech providers.
- **Ethical Framing:** Explore ethical and social implications of AI tools, including equitable access, cultural sensitivity, and transparency.
- **Strategic Roadmapping:** Define key research and innovation priorities to shape pilot initiatives and long-term impact.

## 3. Target Audience

- **AI Developers and AgriTech Engineers:** Building GenAI tools for climate-resilient agriculture.
- **Regenerative Agriculture Experts:** Practitioners and researchers with an understanding of digital technologies.
- **International Organizations, NGOs & Investors:** Supporting digital innovations for sustainable food systems.
- **Academic and Ethical Scholars:** Engaged in responsible AI, indigenous knowledge systems, and participatory design.

## 4. Expected Outcomes

- A conceptual **blueprint for GenAI integration** in regenerative farming systems.
- formation of **interdisciplinary networks** connecting tech innovators and agri-practitioners.
- Identification of **research gaps and development priorities** for future GenAI applications.
- Development of **action plans for pilot projects** focusing on co-creation and field validation.

## 5. Timeline

Time	Topic	Speaker
00:00 – 00:05	Welcome & Introduction	Sander Janssen
00:05 – 00:14	Regenerative Agriculture Design Challenges	Fadi Mujahid
00:14 – 00:30	Advanced Technical Approaches	Ahmad Mujahid
00:30 – 00:38	Knowledge and Usage of GenAI in Agricultural Extension	Abdelaziz Lawani
00:38 – 00:46	Ethics in Action: ELSA Lab WUR Perspective	Mireille van Hilten
00:46 – 00:55	Introducing the Speaker	Laura MacNeil
	Regen Ag & Web3: Insights from Canada and Beyond	Niels A. Smith
00:55 – 01:05	Q&A with Speakers	All Panellists
01:05 – 01:08	The Way Forward	Fadi Mujahid