UPSCALE

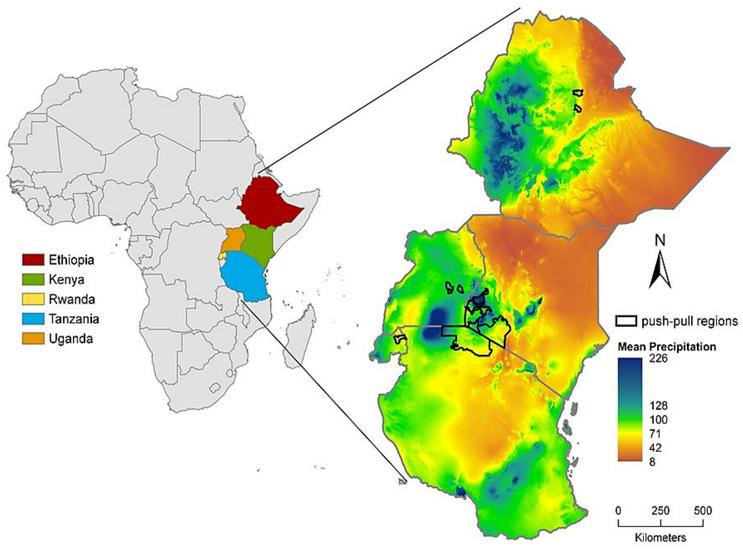
Upscaling the Benefits of Push-Pull Technology for Sustainable Agricultural Intensification in East Africa

The UPSCALE Project *https://upscale-h2020.eu/*

Aims to support smallholder farmers in sub-Saharan Africa improve food security, livelihoods and climate change resilience by fostering nature-based solutions inspired by push-pull technology

UPSCALE is an EU-funded H2020 Sustainable Agricultural Intensification research project in five **East African countries** (Ethiopia, Kenya, Uganda, Rwanda, and Tanzania) aiming to achieve the transformative potential of the push-pull cropping system from field, to landscapes and regional scales. Through an inter- and transdisciplinary approach, the project fosters the design of adaptations and adoption strategies for sustainable agroecological management.

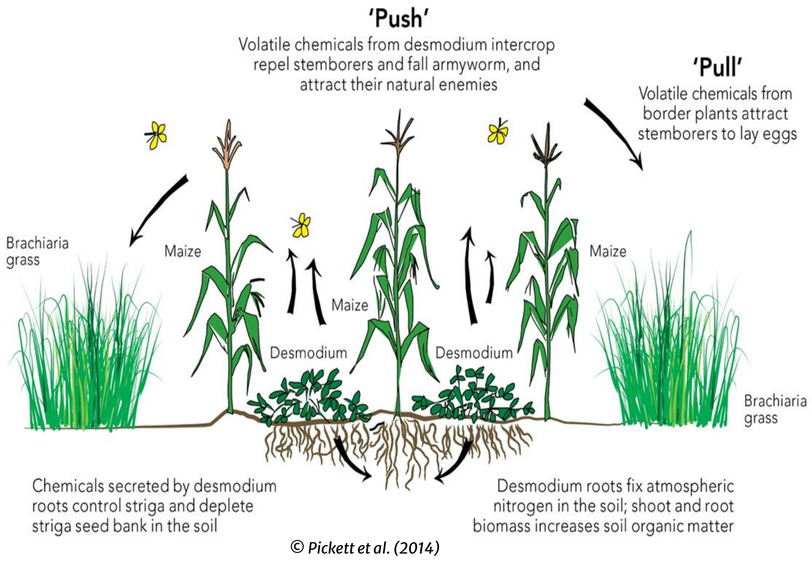
The project brings together 18 cooperating partner institutions with expertise in cropping systems ecology, chemical ecology, agro-entomology, landscape management, socio-ecological modelling, soil science, social sciences, and policy development from **4 European and 6 African countries** under the coordination of the Institute of Animal Ecology, Justus Liebig University, Gießen.



UPSCALE focal study regions

The Push-Pull Technology

Push-pull is an integrated cropping system that involves driving pests away from the main crop using volatile chemicals from a repellent intercrop (*the push*), while attracting them out of the crop with border trap plants (*the pull*),



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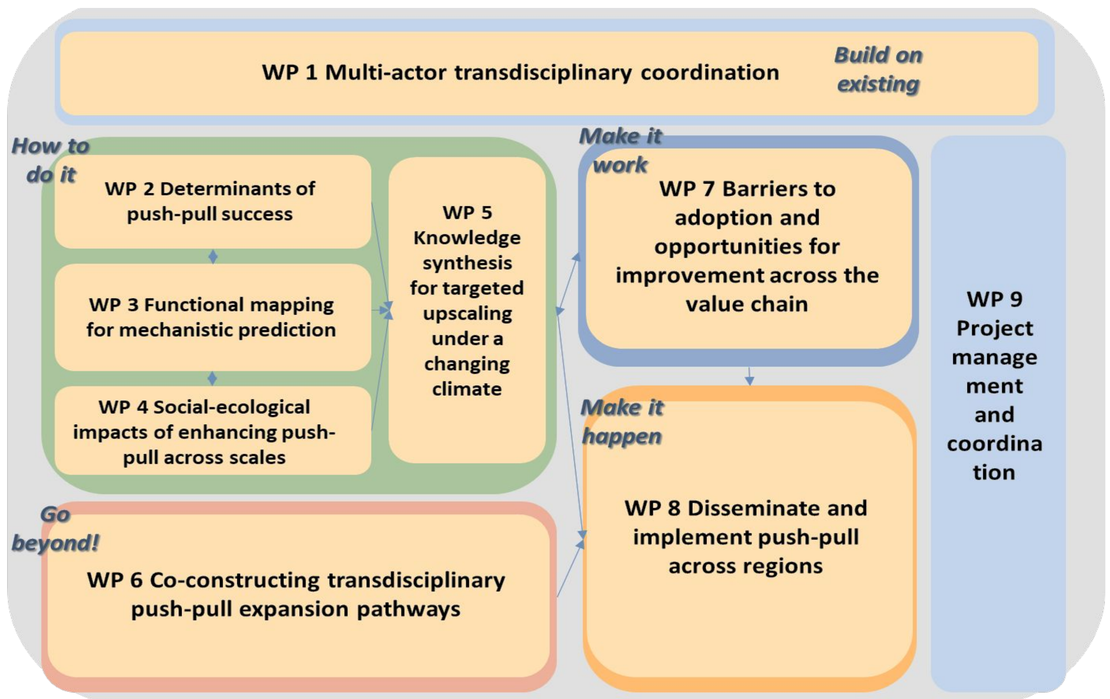
Key benefits

- Crop yield increase
- Higher income
- Gender empowerment
- Natural pest control
- Improved soil health
- Fodder for livestock
- Biodiversity conservation

UPSCALE Workflow



UPSCALE Concepts and Methodologies

Co-constructing push-pull expansion pathways and participatory analysis of socioeconomic impacts and feedbacks

Multi-Actor Community of Practices for stakeholder engagements and knowledge co-creation

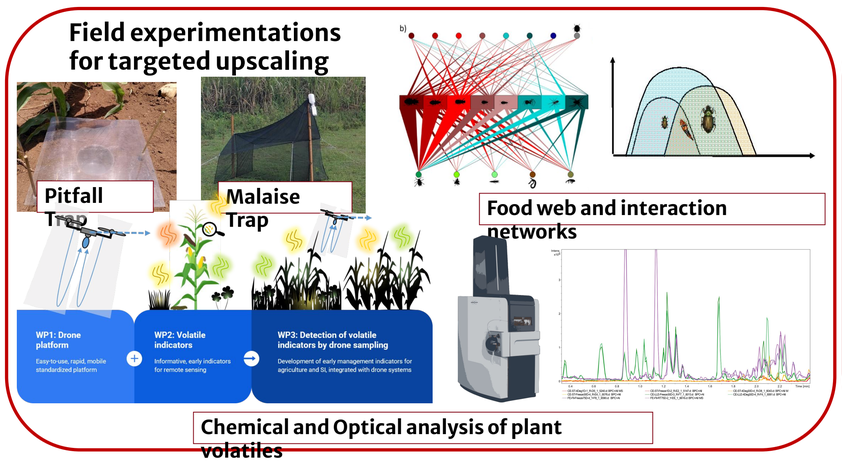
Capturing and mobilising the innovation potential among farmers to stimulate long-lasting engagement and further development

Novel Application of ecological methods, modelling tools and social-ecological approaches

Developing and adapting Innovative Dissemination Toolboxes : knowledge hub, mobile app, interactive integrative maps for spatial targeting of dissemination efforts

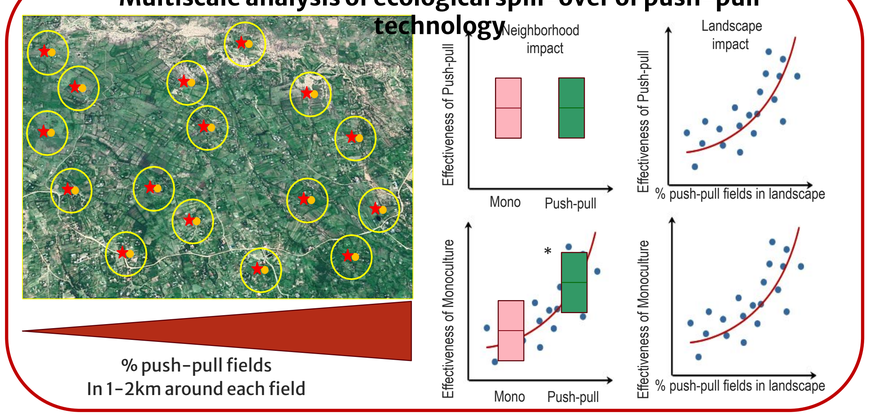
Unlocking the Potential of push-pull technology for other regions and Cultivation systems

Field experimentations for targeted upscaling



Chemical and Optical analysis of plant volatiles

Multiscale analysis of ecological spill-over of push-pull technology



UPSCALE deploys novel ecological experiments, on-farm trials, social-ecological modelling tools, and multi-actor approaches to analyze and improve productivity and social-ecological resilience of ecosystem services of the **push-pull** farming system.

With **large-scale biophysical and socioeconomic data**, UPSCALE generates evidence-based knowledge for farm management, dissemination strategies, and policy decisions, to support stakeholder training and streamlining of **push-pull** effectively along the value chain.

The project **develops dissemination toolboxes** including a Knowledge Exchange Hub, mobile app, interactive maps, and long-lasting multi-actor communities around the practice of push-pull and other sustainable intensification practices.

Multi-actor design and knowledge co-creation, intensive dissemination and integration of empirical and simulation modelling tools for **push-pull** adaptation and effectiveness, are the basis for targeted and rapid spread of push-pull and sustainable intensification information to key stakeholders.

UPSCALE Impacts

- Providing farmers with viable nature-based solutions for agro-ecological management and sustained delivery of essential ecosystem services
- Boosting crop yields and resilience of local and regional food systems to exogenous shocks
- Enhancing household livelihood and social well-being
- Reducing inequalities by supporting women, youth and farmers with special needs
- Reinforcing EU-Africa multi-lateral joint research initiatives

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 861998.