There is limited knowledge on the agronomic potential of biodiversity-based ecosystem services such as natural pest control and pollination in smallholder systems, particularly in Sub-Saharan Africa (SSA). This project aims to fill this information gap and thereby support the sustainable intensification of smallholder vegetable farms in Kenya. The project will underpin future research to help provide an economic benefit to smallholder farms in Kiambu and Muranga counties, Kenya. The survey will also generate baseline pilot data on the abundance and diversity of functionally important invertebrates that will underpin a future proposal and publications.

The most common pests and diseases encountered included maize smut, potato blight, Tuta absoluta on tomatoes and coffee berry disease on coffee. Prevention of these pests and diseases will not only support sustainable increases in the production of nutritionally important food crops, but also have the potential to provide significant economic benefits to farmers. Furthermore, the majority of farmers in Sub-Saharan Africa (SSA) are women, and because of this, they are in the strongest position to benefit, financially, from increased yield. Food quality and if farmers cannot afford these or they are unavailable, crop quality will decrease. Women are more likely to apply increased financial allocations to food quality and health, which is important for household sustainability.

The aim of the socio-economic study was to assess the diversity of smallholder vegetable farms. A household survey was conducted in 118 vegetable farms (57% male) selected along an intensification gradient of farming systems. The selected farms were mostly located in the central agro-ecological region of Kenya between key sustainable agriculture research organisations across SSA and supported by information from CABI's Plant Doctor network and crop breeding research (UoR). Natural History Museum UK, National Museum of Kenya, University of Reading helped to identify key cash crops (coffee, tea, bananas), food crops (maize, beans and tomatoes), vegetables (cabbage, carrots, onions, etc.), fruit trees (avocado, mango and pawpaw), and agro-forestry trees. A list of candidate EI solutions to inform intervention strategies to be tested in a future proposal.

The study showed that farmers cultivated an average of 0.89ha of which about 45% was vegetables, 38% was fruit trees, and the remainder was for grassland and forested areas. The farmers' lack of knowledge on identifying pollinators and natural enemies and barriers to adoption is a key challenge. Knowledge of pollination was moderate (57%) and many farmers actively maintain pollinators such as bees and butterflies but knowledge of natural pest enemies and pollinators, all of which affect crop productivity, was limited. There is limited awareness of natural enemies and pollinators, all of which affect crop productivity, and because of this, they are in the strongest position to benefit, financially, from increased yield. Pollinators and natural enemies and barriers to adoption.