Abstract

Global food production systems are under pressure due to population increase, limited farmland, biotic and abiotic constrains, and ongoing climate change. Sustainable intensification is needed to increase agricultural productivity with minimal adverse environmental and social impacts. Vegetable-integrated push pull (VIPP) technology coupled with black soldier fly (BSF) frass offer such opportunities to smallholder farmers. However, farmers' vegetable preferences and willingness to adopt these innovations remain unknown and are variable across various geographic scales. Focus group discussions (FGDs) and in-person interviews with smallholder farmers were conducted to assess vegetable production constraints and select vegetables to be integrated into VIPP coupled with BSF frass biofertilizer in Kenya and Uganda. Twenty-six FGDs followed by in-person interviews were conducted from July to November 2023 with 227 and 106 farmers from Kenya and Uganda, respectively. A total of 23 vegetable types were identified. The most considered discerning parameters and traits included household consumption, income generation, nutritional value, extended harvesting, drought tolerance and resistance to diseases and insect pests. The major constraints were the high cost of agrochemicals and fertilizers and poor seed quality in Kenya while diseases, pests, drought and poor rainfall, low soil fertility, too much rainfall and floods, high cost of agrochemicals and fertilizers, lack of seeds and poor seed quality were pressing constraints among farmers in Uganda. More than 83% of farmers showed readiness to adopt a combination of VIPP+BSF. Kales, spinach, cabbage, *Amaranthus*, African nightshade and tomatoes were preferred in central Kenya whereas cowpeas, kales, African nightshade, *Amaranthus*, pumpkin leaves and spider plants in western Kenya were preferred as vegetables to be included in VIPP and BSF frass innovations. Ugandan farmers considered eggplants, *Amaranthus*, garden eggs, cabbage, kales and tomatoes the most popular vegetables to be incorporated in VIPP and BSF frass innovations. Our results provide a baseline for vegetables to be integrated into VIPP with BSF frass biofertilizer for validation with farmers. The study also underlies how farmer crop preferences vary according to site and the need for participatory selection to increase the chances of adoption of agricultural interventions.