Agriculture continues to play a vital role in Kenya’s economy; however, the vast majority of the country’s smallholder farmers remain poor. Their farms are small, yields are low, and production is inefficient. Although researchers have developed technologies to address these problems, little attention has been devoted to improving the design of the hand-held tools smallholder farmers use every day. The “jembe”, or garden hoe is used throughout Africa for agricultural work; it is generally considered one of the most important artifacts in rural households. These are ancient technologies, and other than replacing their blades (from stone to metal) their design has remained unchanged. Using them to weed, plant seeds, move soil, and so on, is time-consuming and tiring. Maintaining these tools is also expensive, because they must be regularly sharpened. Further long-term use of these tools results in crippling lower back pain, especially among women. Smallholder farmers need well-designed, locally available, and affordable agriculture tools.

In this oral presentation, we will describe our exploratory efforts to address this problem by working with smallholder farmers in Kenya to redesign their farm tools. A ‘human-centered design’ approach guided our project; that is, a creative, interdisciplinary, and participatory strategy for solving problems which places farmers’ perspectives at the center of the design process. We held five ‘design workshops’, with 73 smallholder farmers at multiple sites in Kakamega County. During these sessions, we conducted focus groups interviews, and asked farmers questions about their agricultural practices and tools. We also asked them to brainstorm ideas, and to draw pictures of the tools they wanted. Our findings—especially the collection of drawings—demonstrate the feasibility of using this approach in this context, more specifically they draw attention to small holder farmers’ innovative ideas on how to improve the design of their tools. We then discuss the implications of our findings: in particular, how this human-centered design approach can be used to: develop tools which could improve farmers’ livelihoods; generate jobs through the local manufacturing of these tools; and more generally support sustainable development programs.