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RESEARCH PROJECT: Evaluating New Tools For Farmers: A Health and Economic Analysis of Redesigned Garden Hoes

Brief Overview of Research

Agriculture has long been the dominant economic activity for people (especially women) in rural parts of Africa. Food production (digging, planting seeds, harvesting, etc.) is arduous, and time-consuming. Efforts to develop technologies that assist farmers with this work have primarily focused on mechanization; that is, promoting animal traction (e.g., using ox) and/or tractors to assist farmers. However, most African farmers continue to use hand tools (e.g., the jembe). These are ancient technologies, and other than replacing wood or stone with iron blades, their designs have remained unchanged. New tools for farmers exist (Figure 1). These redesigned tools are the outcome of my AAP-funded project (Wyche, Olson, and Karanu, 2019). **The goals of my research project are to assess the new tools' health impacts and to determine the equilibrium point between affordability for the farmers and profitability for the jua kali (small-scale fabricators).** This project will contribute knowledge to this AAP priority area: **Agri-foods Systems**. More broadly, this project has practical benefits, including the development of new tools that reduce the drudgery associated with weeding and the possibility of a new livelihood strategy for jua kali (i.e., manufacturing and selling these redesigned tools).

These questions will guide our research: What are the social, economic and technical factors that affect farmers' adoption of the new tools? What is the potential for the manufacturing of these new tools to support jua kali?

Work to Be Conducted

- Develop a research plan, including research instruments (i.e., interview protocols and surveys)
- Conduct a pilot test with these instruments with farmers and jua kali in Kenya
- Prepare a proposal to submit to USAID's Development Innovation Ventures (DIV) Program (See: <https://www.usaid.gov/div>)



Figure 1. Prototype tools: wheel hoe, forked jembe, and stirrup weeder.

Work Cited: Wyche, S., Olson, J., & Karanu, M. N. (2019). Redesigning Agricultural Hand Tools in Western Kenya: Considering Human-Centered Design in ICTD. *Information Technologies & International Development*, 15, 16.