Title: Maize Farmer Preferences for Striga Control Practices in Malawi

In Southern Africa the repeated cultivation of maize (Zea mays) and climate variability (e.g., erratic rainfall, extended drought) have eroded soils, and consequently, encouraged the emergence of parasitic weeds (Striga asiatica). Striga attaches to maize underground, removing precious photosynthates and severely stunting growth. In the past decade, Striga has threatened the sustainable production of maize for Malawian smallholder farmers (cultivating less than two hectares), attributing losses between 30-100%.

Numerous Striga control practices (SCPs) have been disseminated in Malawi, including the integration of legumes. Smallholders face tradeoffs when choosing to implement a SCP (e.g., increased labor for reduced Striga emergence). Understanding these tradeoffs informs researchers how to better align SCPs with desired outcomes and ensure they are implemented once they are disseminated.

We use focus groups to identify SCP attributes (e.g., labor days, maize yield) smallholders consider before implementing them on their farm. Then we conduct discrete choice experiments (DCEs) to quantify the percent of maize yield farmers are willing sacrifice for these attributes. In the DCEs, we present hypothetical scenarios to farmers where they must select between two SCPs or choose to opt-out and continue their status quo practice/s. Each SCP has a varying level of Striga emergence, labor demands, legume yield, soil fertility benefits and maize yield.

Findings indicate that lower Striga emergence and labor requirements as well as increased soil fertility and legume yield significantly influenced the decision to select a SCP across 215 participants. Preferences for labor and legume yield were heterogenous across the sample. Male and female farmers showed they were willing to pay different quantities of maize for different SCP attributes. Female farmers were willing to sacrifice 36% of their maize yield for higher legume yield whereas male farmers were willing to sacrifice 17% for increased soil fertility.

Country-wide hunger can be ameliorated when the development and dissemination of SCPs are informed by a better understanding of smallholder preferences for farming practice attributes. SCPs are unlikely to be employed when farmers believe they exceed yield losses they are unwilling to make. With little uptake, Striga will likely ensue and devastate the Malawian staple foods sector.