

Co-Creating Knowledge to Address the Challenges of Cereal-Crops' Pests for Food and Fodder Production: Case of Push-Pull Technology Implementation in Ethiopia

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Abstract:

Farming systems are under constant pressure to innovate to meet food and feed demands. In the Ethiopian case, agriculture is characterised by low productivity with average grain yields of about 1.2 t ha⁻¹ or less. These losses are attributed to factors such as lack of an integrated scientific and practice knowledge base, farmers socio-economic conditions to environmental constraints such as *Striga* weed, stemborers and low soil fertility. A knowledge systems perspective which gives more attention to the interaction between researchers and other stakeholder for learning about the existing, generating and putting new agricultural knowledge into productive use to address these challenges is often lacking. In this study push-pull technology (PPT) was used as a boundary object to provide an opportunity for learning, collaboration and interaction across science-practice knowledge cultures with aim of co-creating new knowledge to address cereal crops pests and other related farming challenges. PPT is a multi-functional innovation platform that addresses concurrently cereal production constraints of stemborers, Strigaweed, low soil fertility and soil moisture retention while at the same time producing high quality fodder. In this strategy cereal crop is intercropped with a stemborer moth repellent fodder legume, *Desmodium* (the push), together with an attractant trap plant, Napier/*Brachiaria* grass (the pull), planted around maize-legume intercrop. Participatory trans-disciplinary action research approach was used with the involvement of researchers, extension professionals and farmers in Bako Tibe, Jimma Arjo and Yaya districts of Ethiopia. The process provided an opportunity for engagement of researchers and other stakeholders from understanding the problem, joint planning, implementation and evaluation of the performance of PPT. Data was collected from 12 focus group discussions, 30 key informant interviews, surveys and participant observations. The study lasted 8 months from August 2014 to April 2015. The stakeholders from various disciplinary and experiential orientations learned PPT based on common concepts of yield improvements, soil erosion and pest control. New research and practices about the pest control was learnt such as chemical free reduction of stemborer infestation, using inter and trap crops as fodder and soil conservation, extracting and marketing of *Desmodium* seeds as forest conservation measure, creation of new markets for green-maize and fodder production for in-door livestock feeding.

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