

PUSH-PULL PROJECT

CATEGORY:

POLICY RESEARCH FIELD CLIMATE

LOCATION/SCALE:

Kenya and other SSA countries (Regional)

IMPLEMENTING ORGANISATION:

Icipe (International Centre of Insect Physiology and Ecology)

SCALE:

2006 - now

IN A NUTSHELL

Push-pull is a polycropping innovation that provides integrated management of insect pests and soil fertility while making efficient use of natural resources to increase farm productivity by addressing most aspects of smallholders' constraints. The technology involves intercropping cereal crops with legumes and planting forage grasses around this intercrop.

The conventional push-pull uses Napier grass as the border crop with silverleaf desmodium as the intercrop. The climate-adapted push-pull, however, uses the drought tolerant *Brachiaria* and Greenleaf Desmodium.

This technology exploits the fact that adult female insect pests rely on chemical stimuli ('smell') emitted by plants to select those for egg laying. The desmodium emits a substance that repels female stemborer moths ("push") while the Napier grass releases attractive cues that 'pull' the moths towards itself.

Additionally, desmodium acts as weed control as it helps to deplete the striga grass.

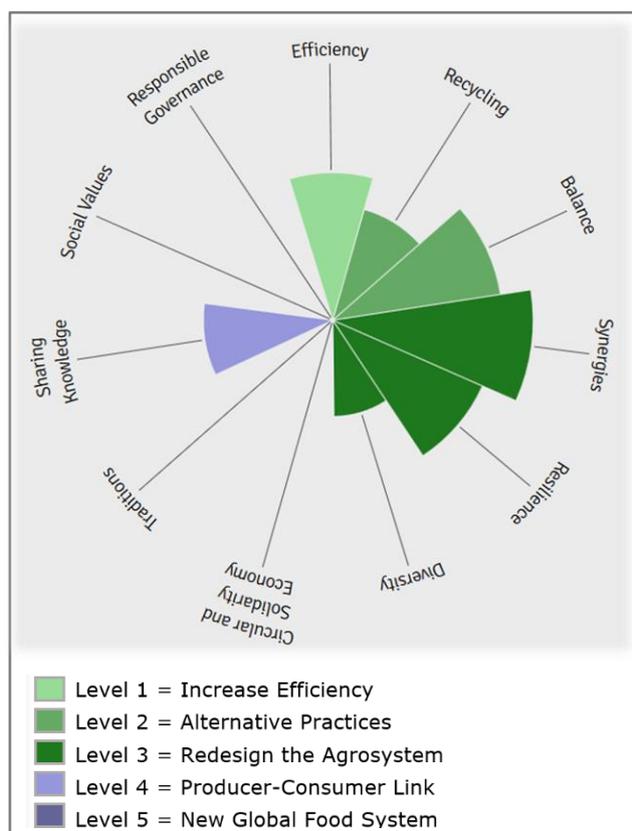


Figure: Assessment of the Push-Pull based on FAO Elements of Agroecology and Gliessman's five levels of food system change

CONTEXT

Cereals are the major food and cash crops for the majority of poor smallholders in Sub-Saharan-Africa (SSA), and together with livestock, provide the main source of nutrition and opportunities for income generation. Productivity of these crops is severely reduced by a complex of biotic constraints, such as stemborer pest complexes, fall armyworm and parasitic striga weeds, as well as abiotic factors, mainly water stress and degraded soils.

All this directly results in increased levels of food insecurity, malnutrition and poverty that are further complicated by high human population growth rates, environmental degradation and climate change.

OBJECTIVE

Through mitigating the effects of stemborer, fall armyworm and striga grass, Push-Pull seeks to increase cereal yield for smallholder farmers. Thus, enabling them to decrease the cost of external inputs, such as fertilizers or pesticides, and generate additional income through selling the Napier grass as fodder or use it to feed own livestock.

KEY INTERVENTIONS/RESEARCH

FARM LEVEL:

- Planting of desmodium between the maize to repel the stemborer and striga grass
- Planting napiergrass around the maize field to attract the stemborer and use of grass residues for livestock fodder.

REGIONAL/NATIONAL LEVEL:

- Organisation of field days to inform a lot of farmers about the most important principles
- Farmer teachers and farmer field schools are used in later stages to reinforce the message

LESSONS LEARNED/CHALLENGES

So far, a limiting factor has been the shortage of high quality desmodium seeds. In order to scale-up, a constant seed supply chain for all farmers must be established. Secondly, the Napier stunt disease has caused some troubles and is threatening the successful application of Push-Pull. Finally, climate change is presenting more and more problems for agriculture, especially in Sub-Saharan Africa, where Push-Pull is mainly used. Therefore, a climate resilient variation of the push-pull approach was designed and tested now.

RELEVANT LINKS & REFERENCES

- Icipe and Kalro: "Climate-smart Push-Pull Technology for Food Security, Safety and Environmental Sustainability"
http://www.push-pull.net/climate-smart_protocols.pdf
- Icipe: "Push-Pull: A Novel Farming System for Ending Hunger and Poverty in Sub-Saharan Africa"
<http://www.push-pull.net/>
- Biovision: "Push-Pull"
<https://www.biovision.ch/en/projects/sub-saharan-africa/push-pull-east-africa/>

