

The 'Push-Pull' cropping system: feeding people, feeding the soil



ROTHAMSTED
RESEARCH

Rothamsted has helped develop a simple companion planting system that has tripled maize yields in Africa

Smallholder farmers in Africa have tragically benefited very little from the Green Revolution with maize crops still being destroyed by insect pests and the weed Striga.

"Push-pull" is a novel cropping system developed by the International Centre of Insect Physiology and Ecology (Kenya) in close collaboration with Rothamsted Research (UK). It involves attracting insect pests (stemborers) with trap plants (pull), whilst driving them away from the main crop using a repellent intercrop (push), as in Figure 1.

Chemicals released by the intercrop roots also induce abortive germination of the parasitic Striga plant, providing very effective control of this noxious weed. Furthermore, the companion plants provide high value animal fodder, facilitating milk production and diversifying farmers' income sources as well as improving soil fertility and reducing soil degradation.



For more information, see our publications:

- www.push-pull.net
- Khan *et al* 2010. *Journal of Experimental Botany* 61: 4185-4196.
- Tsanuo *et al* 2003. *Phytochemistry* 64: 265-273.
- Khan *et al* 2008. *Field Crops Research* 106: 224-233.

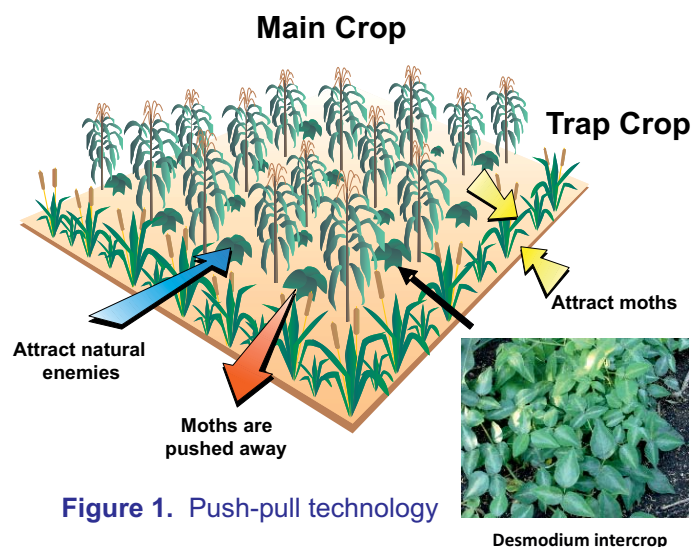


Figure 1. Push-pull technology

Desmodium intercrop

The technology is appropriate and economical as it is based on locally available plants, rather than on expensive external inputs. It also fits well with traditional mixed cropping systems in Africa. To date, it has been adopted by over 40,000 smallholder farmers in East Africa, where maize yields have been increased from 1 t/ha to 3.5 t/ha, achieved with minimal inputs. This innovation could help to end hunger and poverty in sub-Saharan Africa.

In essence, Rothamsted has taken complex science and given it a simple application. Push-pull requires nothing more from farmers than some knowledge and some locally available plants, which is helping to dramatically improve the lives of resource-poor farmers.