

- d) Minimization of pesticide usage
- e) Increased soil cover (therefore soil erosion controlled)
- f) Increased soil organic matter.



Increased organic matter from goat fed on desmodium



Pest and diseases



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PUSH-PULL TECHNOLOGY FOR DRIER AREAS

For increased cereal yields, animal feeds and soil improvement.



Adaptation of Push-Pull Technology

Constraints

- Problems such as pests (stem borer) weeds (striga), water stress and degraded soils hinder productivity on many small holder cereal-livestock farms low cereal productivity-1 t/ha).
- These constraints result in food insecurity, malnutrition and poverty.

The Push-Pull technology:

- Push-pull is a novel technology for dry areas.
- It integrates soil, pest and weed management in a cereal-based farming system.
- It involves the repellent intercrop plant (Green leaf Desmodium) pushing the pest away from main crop.
- The trap plant (Brachiaria grass) pulling the insect pest (stem borers) to itself.
- Chemicals released by the roots of desmodium induce abortive germination of the parasitic striga weed, providing an effective control against this noxious weed.

Land preparation

1. Clear land during the dry season
2. Plough and harrow the land to fine till
3. Plan to plant Brachiaria (Mullato II) when soil is moist, i.e. after rains or using irrigation technology.



Land preparation spacing for crop

Technology design

1. Plant 3 rows of Brachiaria (Mullato II) along the edge of the plot.
2. Mark the rows at 60 cm (inter-row spacing) using a string and pegs.
3. Use a stick to make 2 cm deep holes.
4. Mix seeds of Brachiaria (200 g) with 1 kg of dry sand.
5. Plant in each hole at a rate of 7-10 seeds per hole.
6. Plant in a hole: spacing of 60 cm x 30 cm.
7. Ensure push-pull plot does not exceed 40 x 40 m and is not less than 20 x 20 m.



Push-Pull technology works best with cereal crops (e.g. sorghum, maize or millet) intercropped with Green leaf desmodium and hedged by a trap crop (Brachiaria sp) in dry areas

How to intercrop green leaf desmodium

1. For maize or sorghum, drill rows 60 cm apart.
2. Using a strong pointed stick, make a furrow 1-2 cm deep in the middle of the cereal crop
3. Mix the desmodium with fine dry soil at a ratio of 1:3 desmodium to soil to ensure a sparse distribution of the desmodium seeds along the furrow and cover lightly with soil
4. Plant one kilogramme of desmodium seed in one acre
5. Make sure that desmodium is at the outer rows of maize/sorghum as well
6. Plant desmodium when soil is moist for maximum germination.



Desmodium intercropped with sorghum and maize

- The desmodium plants provide high value animal fodder that contributes to higher milk yield, thus diversifying farmers' income sources.
- It also improves soil fertility and prevents soil degradation.
- The technology is based on available plants, requires no expensive external inputs, and fits well within the traditional mixed cropping systems.

Environmental benefits will include:

- a) Soil and moisture conservation
- b) Improved soil health
- c) Enhanced biodiversity