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| **Info-Tech** | **1) Zones and Definition** |
| Push-Pull Technology | Agro-ecological zones: all agro-ecological zones.Push-Pull Technology is a biological control method against stemborer pests and striga weeds mainly in maize, sorghum, millet and rice. Striga borers are repelled by a leguminous intercrop plant (push factor) and attracted by a trapping crop (pull factor). |
| **2) Objective** |
| Biological control of stemborer pests (like maize stemborer and fall armyworm), striga weeds, as well as improvement of soil fertility, thereby improving yields. A secondary objective is the production of high quality fodder, of which an eventual surplus can be marketed, generating additional income. In agro-pastoralist communities, the secondary objective of high-quality fodder production might be more important than the primary goal. The Pull plants also serves as a windbreak for the cash crops within. |
| **3) Suitability and Adaptability Based upon Local Knowledge** |
| Suitable where significant losses occur to yields because of stemborer damage and striga weed competition. Since it is based on locally available plants without expensive external inputs, it fits well with traditional resource-poor mixed cropping systems. Most pronounced effects are in irrigated or flood-based cropping and in high potential rainfed fields. However, not suitable without fencing or where waterlogging occurs regularly. For drier areas, Greenleaf Desmodium (Desmodium intortum) or Molasses grass (Melinis minutiflora) can be used as the Push factor and Sudan grass (Sorghum vulgare sudanense) and Elephant grass (Pennisetum purpureum) as the pull factor. The involved plants and planting methods are known to local agro-pastoralists. However, the specific combination of these elements is the novelty of the system.  |
| **4) Target Beneficiaries** |
| Target beneficiaries are agro-pastoralists. However, since additional labour is required, and best effects are achieved in collectively managed land, the technology is best suited for community-based organisations (CBO) in land rehabilitation schemes. |
| **5) Yield and Market Demand** |
| Reduction of pests and weeds as well as nitrogen fixation increases cereal yields. The Push and Pull plants can both be used as sources of high- quality and quantity fodder (see Info-Techs *Cut & Carry* and *Elephant Grass* etc. for yield figures).  |
| **6) Periods and Phases of Implementation** |
| Can be implemented year round at irrigated sites. To be implemented at onset of rainy season at rainfed sites and in flood-based cropping. |
| **7) Planning and Implementation Arrangements** |
| * Introduction of concept to user group with discussion of benefits, requirements and risks;
* Assist in negotiations with supporting organisation on seeds and other supplies, if needed;
* Assist in negotiating roles and contributions from beneficiaries;
* Encourage decision for women to significantly benefit from future Cut & Carry activities;
* Training for beneficiaries on the Push-Pull Technology and necessary management requirements (e.g. intercropping, species-related agronomic practices);
* Assist CBO to decide on plot location as well as on their internal input and labour organisation for implementation and subsequent management.
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| **8) Work Steps and Input Requirements** |
| * Assist user group in establishing a nursery plot to grow cuttings for transplanting;
* Assist in lay-out of plot and land preparation for row planting (furrows or planting pits) for intercropping;
* Supervise layout implementation:
* Plant 3 rows of Elephant Grass around the border of the field. Planting distance: 75 cm between plants and 75 cm between rows;
* Plant Desmodium cuttings in alternate rows with maize or other cereal;
* Start the first cereal row in 1 m distance from the Elephant Grass. Recommended spacing: 30 cm between plants and subsequent rows spaced 75 cm apart;
* Sow Desmodium in a row in the middle between the cereal rows;
* Plant Desmodium at both sides of the outer rows of cereal with a distance of 37.5 cm.
* Supervise planting of Desmodium cuttings;
* Monitor regular weeding. Recommendation: 3 and 5 weeks after sowing of cereal.
* Inputs:
* Land and Soil preparation: like for cereal crops;
* Sowing of intercrop (2.5 kg seeds/ha): like for cereal crops;
* Planting of elephant grass: : compare *Info-Tech ‘Elephant Grass’*.
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| **9) Risks, Constraints and Limitations** |
| Availability of seeding material for Desmodium might be an issue. |