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## Selection and Strategic Use of Multipurpose Forage Germplasm by Smallholders in Production Systems in the Central American Hillsides

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### Abstract

Smallholders in the hillsides of Central America have to adapt to prolonged dry seasons and changing global market conditions while struggling with soil fertility losses and the reduction of arable land due to population growth. Traditional maize-bean systems are no longer providing sufficient returns to cover production costs and grant adequate living conditions. System diversification and intensification are needed. Multipurpose forage plants have the potential to play a decisive role in this process by enabling the integration of livestock and crops in farming systems. While offering feed, multipurpose forage plants are also key elements for soil conservation and soil fertility enhancement. Moreover, dry season tolerant forage plants may lead to a more even cash flow throughout the year. Multipurpose germplasm has to combine characteristics for variable demands, germplasm selection, development and subsequent dissemination has to be carried out in a participatory framework. During the last three years, such a participatory framework was used for the selection and strategic use of multipurpose forage germplasm in the hillsides of Honduras, Nicaragua and Costa Rica offering farmers an ample collection of grasses, herbaceous legumes, shrubs and cover crops. Participatory evaluations of forage options through farmer groups supported by on-farm experiments resulted in a diversity of selected germplasm and its dissemination. A method for quantitative and qualitative analysis of data from participatory evaluations was developed which also enables researchers to match farmer information with formal agronomic evaluation data creating germplasm profiles for different uses and environmental conditions. This information is highly valuable to define further research needs and for germplasm targeting purposes. A GIS based germplasm targeting software tool is currently developed. Results from the BMZ/GTZ funded work motivated development projects in Nicaragua and Honduras to apply the participatory framework approach with new multipurpose forage germplasm. Further steps include the formation of artisanal seed production enterprises in order to maintain the dissemination process and connect farmers to markets. Other forage products such as leaf meal are seen as further market options.

**Keywords:** Dry season, germplasm targeting, grasses, legumes, participatory procedures, seed production, soil conservation