Most hillside areas in sub-humid tropics of the world suffer from severe seasonal water scarcity, which is increasing due to deforestation and lack of adequate soil and crop management practices. This problem is particularly acute for rural poor that need safe water to meet their daily requirements. About 1,200 million people, almost one fifth of the world’s population, live in water scarce regions, and 500 million are approaching this situation. FAO projects that by 2030, one in five developing countries will be suffering actual or impending water scarcity. Agriculture in developing countries is under pressure to use water more efficiently. Better water management and improved technologies are needed to achieve ‘more crop per drop’. It takes between 1,000 and 3,000 liters of water to produce one kilogram of rice grain and 13,000 to 15,000 to produce a kilogram of grain-fed beef. Many of the around 840 million poor people in the world who still go hungry live in water-scarce regions.

THE SYSTEM

Quesungual Slash and Mulch Agroforestry System (QSMAS), is a smallholder production system with a group of technologies for the sustainable management of soil, water and nutrients in drought-prone areas of hillsides agroecosystems of the sub-humid tropics. It has contributed to a successful development strategy in improving rural livelihoods in the Lempira Department of Honduras. This alternative to slash and burn agriculture strongly builds on local knowledge and has been a major production system to achieve food security by resource poor farmers. Farmers practicing this system reported less soil, water and crop losses as a consequence of the “El Niño” drought event in 1997 and the Hurricane Mitch in 1998. The system includes the production of maize and common bean.

OBJECTIVES

- To determine the soil physical properties driving the acceptance, storage and redistribution of soil water;
- To assess the risk of susceptibility to erosion and water quality in the system;
- To quantify the components of water balance (precipitation, interception, runoff, drainage, evapotranspiration and storage in the soil) in the system; and
- To quantify differences in crop water productivity of maize and common bean.

SYSTEM TREATMENTS

SB = slash and burn
QSMAS<2 = Quesungual system of less than 2 years
QSMAS 5-7 = Quesungual system of 5-7 years
QSMAS>10 = Quesungual system of more than 10 years
SF = Secondary forest

CONCLUSIONS

QSMAS compared to the SB showed:

- Lower susceptibility to erosion
- Increased infiltration, decreased runoff
- Increased available water in soil
- Increased crop water productivity

PARTNERS

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