

# Using PARCHED - THIRST Software to Match Catchment Area to Cropping Area in Rainwater Harvesting System: A Case Study of a Field in Makanya Village in Same District

"People cannot discover new lands until they have the courage to lose sight of the shore." - Andre Gide

## Problem Statement

Farmers practicing RWH for crop production understand the importance of having a large catchment area compared to the cropping area  
But  
They don't have the tools (such as PARCHED-THIRST (PT) Software) for matching the catchment area to the cropping area

## Modelling RWH system using PT Software

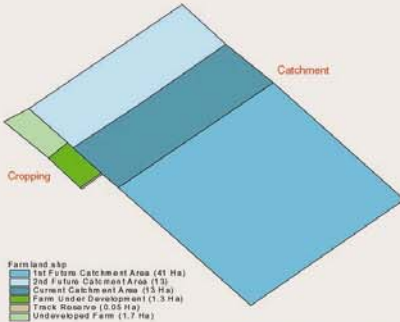


Figure 2: Cropping areas, catchment areas, of farmers' field in Makanya.

## The PT Model

- Given the catchment area, cropping area, slope, daily weather data, planting dates, the model is capable of simulating yield of maize, millet, sorghum and rice.
- Figure 1 shows the field, Figure 2 the Schematic presentation of the catchment area and cropping area; Figures 3 and 6 the RWH model in use.



Figure 3: Some district Agricultural Extension officers during PT-Model training.

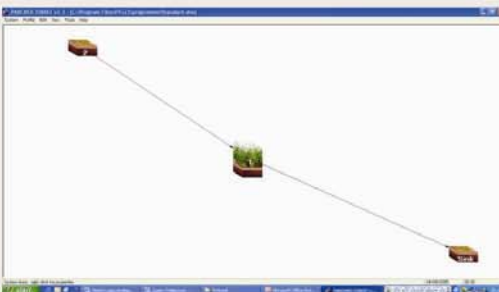


Figure 6: Modelling RWH system in PT software.



Figure 1: The cropping area of the field in Makanya.

## Methodology

- Collection of weather data (rainfall, temperature, evaporation) (1998 - 2001) and soil profile data.
- Simulation of the 1.3 ha (current) and 3.0 ha cropping areas (after expansion) with respect to 13 ha (current area), 26, 45, 55 and 67 ha potential catchment areas.

## Results

- Figures 4 and 5 show the simulated yields, which indicate that rainfed maize will only achieve 0.4 t/ha compared to about 0.8 t/ha with RWH (no fertilizer applied).
- The current catchment area of 13 ha is enough for the 1.3 ha cropping area, but if increased to 3ha, the catchment area required is between 40 - 45 ha.

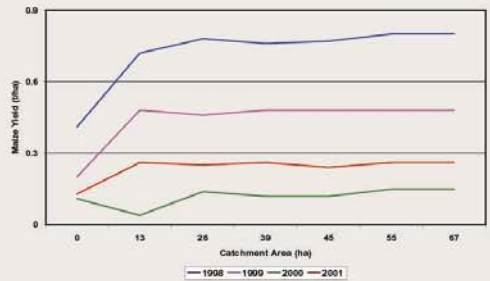


Figure 4: Yield response to increased catchment area with a cropping area of 1.3 ha.

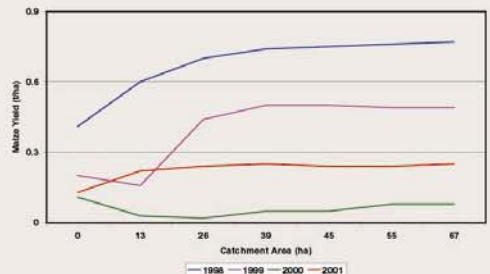


Figure 5: Yield response to increased catchment area with a cropping area of 3 ha.

## Conclusions and Recommendations

- PT Software is useful in determining the required catchment area given the cropping area.
- More frontline extension officers should be trained in the use of PT software.



This publication is an output from a project R8088a funded by the United Kingdom Department for International Development (DFID). The views expressed are not necessarily of DFID.