

# PARCHED-THIRST Software as a Tool for Understanding Importance of Soil and Water Conservation Measures: A Case Study of Vidunda Village in Kilosa District

*Knowledge is not lacking .... what is lacking, as ever is the will to turn this knowledge into practice – H. E. Kofi Annan, July 2004*

## The Problem

- In recent years, farmers in Vidunda village, situated on steep slopes between 35% - 45%, in Kilosa District have been experiencing low maize yields less than 0.3 t/ha (Figure 1).
- Agricultural extension Officers are lacking knowledge and tools that can assist them in investigating farmers problems and therefore advising them.
- Do Universities and research stations think that they have the knowledge and tools (e.g. PARCHED-THIRST software) that can assist agricultural extension officers to advice farmers?



Figure 2: Training Kilosa District Agricultural Extension Officers on PT Model.



Figure 3: Discussion between Vidunda village farmers and investigators.

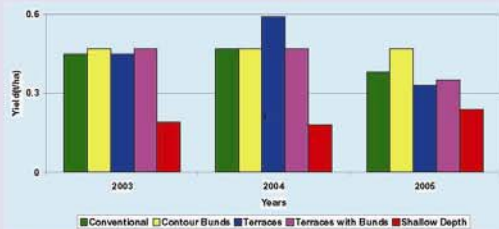


Figure 5: Simulated maize yields with no fertilizer applied. Soil depths for the first four scenarios being 90cm and for the last scenario (shallow depth) being 30 cm.

## Findings

- Figure 5 shows that if soil depth is enough (e.g. 90 cm) the yield under conventional tillage and under conservation measures is not significantly different but runoff under conventional tillage is significant causing erosion (Figure 6).
- On the contrary, if soil depth is shallow (e.g. 30 cm), yield is significantly affected (Figure 5).
- Therefore, reason for low yields that farmers experiences in Vidunda is due to shallow soil depth rather than lack of soil and water conservation measures.
- The lack of soil and water conservation measures enhance runoff generation and therefore erosion leading to shallow soil depth.



Figure 1: Most of the fields in Vidunda village have shallow soil depths and stones due to runoff and erosion. Is the low yields caused by lack of conservation measures or shallow depth?

**Needed:** Scaling-up strategies for PARCHED-THIRST software to agricultural extension officers so as to appropriately address the problem that farmers in Vidunda village are facing.

**Methods:** Training of agricultural extension officers on the use of the PT model (Figure 2), collect data relevant to the problem (Figure 3), find a joint solution by interpreting results obtained from the model (Figure 4).



Figure 4: PT Model Software for Agro-hydrological Package for Simulation of Maize, Rice, Millet and Sorghum under Rainfed and Rainwater Harvesting Environment.

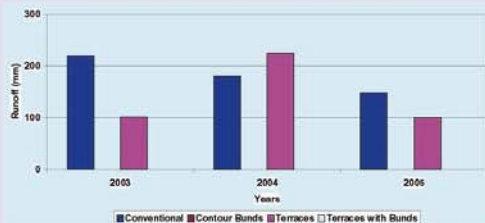


Figure 6: Simulated runoff from the field plots with fields with contour bunds and terraces with bunds showing no runoff.

## Conclusions and Recommendations

- This case study has shown that when steps are taken to turn knowledge into practice (by up-scaling knowledge on PT Software), significant benefits can be realized that help extension workers to make informed decisions.
- More extension workers need to be trained in the use of computer-based tools, such as PT Software, so that farmers and planners will be advised properly.



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