


Sorghum Production Through application of Water Harvesting Techniques

Désignations	Informations techniques, institutionnelles, culturelles, économiques
Nom commun	Sorghum Production Through application of Water Harvesting Techniques
Nom local	Trus
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Pilier (1 à 5) : mettre les intitulés des piliers	Pilier 3 : Augmentation durable de la production alimentaire, des revenus des ménages vulnérables et de leur accès aux aliments
Secteur d'activités (Foresterie, agriculture, sécurité alimentaire, élevage, ...) en fonction du pilier choisi	<ol style="list-style-type: none"> 1. <i>Agriculture</i> : To produce sorghum for the household consumption. 2. <i>Livestock</i> : To use the sorghum stalks, clitoria spp, cucumber, and watermelon as fodder for the animals.
Type de chocs (sécheresse, inondation, conflits civiles, conflits communautaires, ravageurs, prédateurs, maladies, incendies, Feux de brousse, orpaillage, déforestation, ...) auxquels la pratique apporte une réponse	Sécheresse
Zones d'application actuelles	Soudan
Zones potentielles d'application (par exemple zones agro écologiques) : décrire les types de sols, la pluviométrie, ...	In the Sahelien and sudanian ecosystems (zones?)
Description de l'environnement humain /genre	<ol style="list-style-type: none"> 1. The project proposed a pilot of water harvesting programme. 2. 125 households are selected as direct beneficiaries for water harvesting cluster trail initially; 3. Two livelihoods activities in the area traditional sorghum production at upper lands and fishing at the adjacent dam lake. 4. 54 families were selected 7 of them were females and they are divided into working group to facilitate the pilot management out of 125 households and remaining were considered as control they received improved seeds without techniques application to compare the difference. 5. The land seems to be flat with little slope without any obstacles and completely clean of vegetation.
Objectif	<p>The ultimate outcome of the Integrated Food Security Project (IFSP) is to improved food and nutrition security of the targeted population in Kassala, especially for women and youth. Available rain water and land in the area, liable to water harvesting harnessing and comprise rainfall/overland water flow.</p> <p>The specific objectives are:</p>

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	<ol style="list-style-type: none"> 1. To meet the increasing demand of water for agricultural practices. 2. Increased land productivity for crops and animal fodders through efficient post harvesting operations. 3. Water use efficiency. 4. Soil fertility. 5. Plants and their management. 6. Improved livelihoods. 7. Costs and benefits. 8. Improved ecosystems: being environmentally friendly. 9. Prevent, mitigate and rehabilitate land degradation. 10. To increase the land humidity and speed up the cracks closure in the clay plain. 11. To reduce soils erosion. 12. To train and build the capacity of extension staff and farmers on the operation and management of the techniques of water harvesting. 13. To raise farmers' awareness about the need for sustainable land use through improved agronomic and conservation practices and farmlands protection.
Description	<ol style="list-style-type: none"> 1. The Project nominate international and national consultants the former to develop a study on the potentiality and conduct training for the staff (project and government) and the national one to continue in laying out the agreed upon design at field level. 2. Selection of the participants through bottom up approaches & selection of the suitable site of terraces. 3. Contour line making using a frame to identify direction of the run off. 4. Demarcation of the terraces using disc plough). 5. The final marking ,layout and treatment of the farmers plots produced a net farming areas (run on) and corresponding catchment areas (run off) (90x70 Mt for catchment & 60x70 for farm areas) 6. The farm land divided into three terraces 20 x70 for each one. 7. The construction of the terraces conducted using tractor scraper and the areas levelled by cutting 6 cm deep to create artificial slope to enhance the flow of the water from catchment land to farm land. 8. The farm land ploughed by chisel plough to depth of 20—25 cm & the objective behind of this operation was to increase soil water holding capacity to sustain the planted crops. 9. Main crops grown are two varieties of sorghum namely Arfagudumak & Gieshash. 10. NPK fertilizers applied in sorghum area during crops sowing.

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	<ol style="list-style-type: none"> 11. Fodder species planted at the edges of the terraces to increase the strength and keep the terraces for many years. 12. Targeted area for trail was 84 ha. (31.5 ha. Used to apply water harvesting techniques and 52.5 ha. Without techniques but farmers provided by the same improved sorghum seeds) 13. Water level was measured to determine the height of the main terraces per each compartment using the topographic applications. 14. In the design the main terrace was raised at the lowest side of each compartment and spillway located properly to avoid water logging. 15. Land prepared by chizle and the cultivation done manually using traditional tool called (SALOKA). 16. In each compartment only 2/5 of the land cultivated and the remaining 3/5 left as buffer zone or catchment area in which preparation was not conducted.
Type de capacité (absorption, anticipation, adaptation, transformation) : comment la pratique agit pour renforcer la capacité ?	Adaptation
Manière dont la BP renforce la résilience des populations	<ol style="list-style-type: none"> 1. Increase the soil humidity especially for pastures plants during dry season. 2. Increasing the infiltration and reducing water erosion. 3. Land stabilization. 4. By slow down the water flow increase the precipitation and fertile the soil.
Illustrations (photos documentées)	<div style="text-align: center;">  <p>Community Meeting for Selection Participants</p> </div>

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Terraces Construction



Spillway Construction

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	<div data-bbox="732 255 1241 636" data-label="Image"> </div> <p data-bbox="715 656 1259 689">ArfaGadamuk variety at Shagarab Village</p> <div data-bbox="668 703 1303 1084" data-label="Image"> </div> <p data-bbox="754 1086 1219 1120">Gishash Variety at Almunaba village</p>
<p data-bbox="153 1346 549 1406">Conseils pratiques de mise en œuvre</p>	<ol data-bbox="600 1234 1420 1518" style="list-style-type: none"> 1. Following up the correct procedure on laying out the design in the presence of farmers. 2. Sowing of fodder seeds on the terraces that have a large root system to maintain the terraces stabilize for long period. 3. Persuasions by farmers leave an empty space to increase water harvesting of the cultivated area. 4. Applying a pilot with interested few farmers and conducting continuous visits for all kind of farmers.
<p data-bbox="153 1529 469 1563">Avantages / effets / impacts</p>	<ol data-bbox="600 1529 1420 1998" style="list-style-type: none"> 1. Maintaining the group work. 2. Minimize the efforts. 3. Increase the production for (crops & Fodder). 4. Stable terraces between farms reduce conflicts. 5. Reduce the gaps of food shortage during the year. 6. More than 600 households adopted the techniques in the next year and an area of 588 ha. divided into catchment & farm area (catchment 352.8 ha. & farm land was 325.2 ha.). 7. The pilot group formed a cooperative society registered at official authorities and linked with finance institutions like micro-finance units. 8. Some farmers used part of their revenue from the water harvesting production to renew their fishing equipment,

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	<p>which had a good effect in changing the standard of living for families.</p> <p>9. Concerning yield in traditional terraces, the average yield per farm (2.1 ha.) was 5 sacks and this rarely produced during the last years which is enough to covered family consumption for five months</p> <p>-Gross margin for improved terraces was = 561.4 \$ -Gross margin for traditional terraces was =211.93 \$ -So the percentage of increasing was 65%.</p> <p>10.</p>
Contraintes liées à la mise en œuvre	<ol style="list-style-type: none"> 1. The implementation of the techniques requires the acceptance of land owners when farmers rented a land. 2. Leaving an empty area within the farm as catchment area farmers thought that it will bring animals. 3. The government institutions staffs that are directly connected with this technique are not stable as per their units.
Mesures nécessaires à la levée des contraintes	in need of more extension activities and exchange visits between villages to acquire more skills and concrete the adoption
Coût de réalisation	Total cost per Ha. = 211.93 \$
Défis et perspectives pour la mise à l'échelle	
Echelle (initial, maturité et léthargie) dans le processus de diffusion et durabilité	maturity
Recommandations pour la diffusion	<ol style="list-style-type: none"> 1. Link the farmers with related institutions Ministry of Agric. 2. Capacity building for water harvesting farmers and extension agencies on required techniques on improved terraces such as using of A frame for Identification of water directions & using of contour line device. 3. Strengthening the links of water harvesting farmers with Ministry of Agriculture concerned department (Land use+ Technology Transfer & Extension Admin-TTEA, And Agric. Research Center). 4. Training of farmers on producing farm yard manure for enriching arable lands. 5. Linking the farmers with sorghum seeds suppliers (companies) & funding agencies. 6. Formation of CBOs for water harvesting farmers.

Bibliographie