### 1.3.2 Zero Tillage Technology

**Zero tillage technology for reduction of vulnerability of food security and enhancement of farmers’ resilience in Gadarif State**

<table>
<thead>
<tr>
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<tr>
<td><strong>Introduction</strong></td>
<td>Under the vulnerability of rain-fed mechanized agriculture in Sudan in general and in Gedarif State in particular, attempts have been made to reduce this vulnerability through adoption of Zero Tillage technology. The project is targeting farmers in the state for sake of increasing crop yield and sustainability of agricultural production</td>
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| **Objectives**  | - To select cover crops based on goals,  
                  - To select proper cropping rotation  
                  - To increase crop yields while decreasing input costs. |
| **Outcome**     | - Increase crop production  
                  - Organize farmers into working groups  
                  - Increase income generation  
                  - Enhance farmers’ awareness  
                  - Reduce farmers’ expenditures |
<p>| <strong>Relationship to the country’s sustainable development priorities</strong> | The project is well linked to government policies and plans, being in line with the 25-year National Strategy and the Poverty Reduction Strategy Program (PRSP). It has also strong links with the Millennium Development Goals (MDGs). |
| <strong>Project Deliverables</strong> | The project will provide the rain-fed farmers in Gadarif State with the technical know-how by demonstration plots and mobilization and sensitization of farmers to adopt the intervention. The project will benefit from the active extension unit of the Ministry of Agriculture and Animal Resources at the state level besides the Higher Council for Environment and Natural Resources at Gadarif State. |
| <strong>Project Scope</strong> | In Gadarif State vast rain-fed areas exist that are suitable for the application of zero tillage. The total area under mechanized farming reached 71,400 km². Most of these areas became degraded owing to various climatic and non-climatic factors. Land degradation has been found to cause decrease of agricultural production. Accordingly, many communities are extremely vulnerable as they do not guarantee food security. |</p>
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| **Project activities** | Awareness raising  
Organizing local people and establishing leadership committees/cooperatives to facilitate group work and overcome financial and non-financial barriers  
Training and capacity building of zero-tillage farming and its management  
Establishing physical infrastructures necessary for facilitating zero tillage farming  
Purchasing agricultural machinery and equipment  
Providing production inputs  
Introduce pilot farms for research  
Involvement of private sector and decision makers |
| **Timeline** | The estimated timeline for the project is 5 years |
| **Budget** | Budget for project management team: 330,000 USD (48,000 USD project manager/year + 18,000 USD assistant/year x 5 years of project)  
Budget for technical/extension consultants: 35,000 USD (350 USD/man-day x 100 days)  
Budget for elaborating a financial mechanism for subsidies and for sustaining extension activities: 4,000 USD  
Budget for communication tools development, including demonstration plots: 12,000 USD  
Budget for training of trainers: 2,000 USD (100 USD for 6 trainings/person x 20 persons)  
Budget for field visits and training: 5,000 USD  
Total budget: 388,000 USD |
| **Potential source of finance** | Federal Government  
Farmers Union |
| **Measurement/Evaluation** | Increase in production per unit area  
Increase in income  
Status of poverty of the farmers  
Increase in resilience of farmers  
Change in perception of farmers towards land management and utilization of zero tillage |
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| **Possible compli-  
  cations/  
  challenges** | Social and cultural barriers (e.g. mistaken perception that soil plowing is essential for high crop production)  
  Insufficient extension services  
  Insufficient policies  
  others |
| **Assumptions** | The project will contribute to achieving food security, responding to climate variability and change as well as contributing to environmental conservation. |
| **Responsibilities** | Main stakeholders: Ministry of Agriculture at federal and state level, Farmers’ Union, NGOs, relevant private sectors, etc.  
  Financing to be provided by both national and international donors |