

The selection of the localities will be based on the following criteria:

- Relative size of rural households involved in traditional rain-fed agriculture.
- Locality free of natural resource-based conflict and with conducive work environment.
- Willingness of the community to accept development interventions of the project.
- Willingness and readiness of the community to form farmer groups and mobilize women.
- Potential for productivity increase; and availability of Ministry of Agriculture and Farmers Union staff to facilitate project interventions.

The strategy of the project will base on the establishment of a demonstration farm at each locality for sake of dissemination of information in the six states. This method is selected because it offers the chance for demonstration of methods of raising seedlings using nursery techniques. Sixteen nurseries are proposed to be established at the different localities relying on simple materials in order to guarantee the sustainability of the activity.

1.2.2 Project Idea for Zero Tillage Technology

Research results in the country showed that zero-tillage technology resulted in significant increase in sorghum production (from about 700 kg/ha to 1,650 kg/ha). Research findings also indicate that zero tillage is promising and recommended particularly in mechanized rain-fed agriculture, which is sensitive to climate change and constitutes 35% of the national cultivated land. With the current and future climate change vulnerabilities, the adoption of the technology is expected to increase resilience of vulnerable communities and consequently enhance their adaptation.

The Introduction of zero tillage technology in different parts of the country and its testing with different crop species remain one of the challenges that require careful consideration. However, the findings

of the research showed that in spite of the challenges facing the technology, there are numerous opportunities that could be created by the adoption of zero tillage such as:

- Reducing the number of labourers, considering that since farmers are poor and reluctant to hire labour
- Stable yields and improved soil fertility
- Profitable crop production under zero tillage over time relative to conventional agriculture
- Conservation of soil and biodiversity
- Potential economic benefits
- Poverty reduction

At the global level, zero tillage sequesters carbon and consequently decreases CO₂ in the atmosphere. Gedarif State has been selected for this project due to the fact that this state encompasses the main rain fed mechanized agriculture schemes in the country, and the state is responsible for guaranteeing satisfactory crop production for the whole country and export of the surplus. Few years ago fluctuation of rainfall in terms of intensity and distribution led to sharp decline of productivity besides the changes in the physical and chemical properties of the soil. As a remedy for these problems zero tillage has been suggested given its restoration of soil fertility and relatively high productivity. The entire stakeholders involved in Sudan – TNA, through general consensus, agreed on the project and the selection of the project site. It is worth mentioning that the majority of the stakeholders are from the Ministry of Agriculture. Moreover, one of the national team is from the Ministry of Agriculture.

1.3 Project overview

1.3.1 Production of Improved Seeds and Seedlings

Name of the Project	Production of improved seeds and seedlings
Introduction	The farmers in Sudan rely heavily on farm saved seeds and have little access to commercial improved seed. Improved crop varieties seed reach only 10 per cent of farmer producers in Sudan. The rain fed-sector is characterized by low productivity and horizontal expansion of the area in rain fed farming. This has negative consequences for forests and pasture as it creates an agro-ecological imbalance with severe environmental consequences. In addition, the production of improved seed variety on large-scale will strengthen the capacity of research, extension and the private sector in the development, dissemination and adoption of improved seed varieties. This can lead to improved food security and sustainable crop production intensity and livelihoods.
Objectives	This project aims to guarantee satisfactory crop production that leads to food security, improved and diversified nutritional status, and poverty reduction among marginal and small-scale farmers by upgrading agricultural production and improving income
Outcome	<ul style="list-style-type: none"> - Establish the necessary infrastructure for plant multiplication, inspection, sanitation and certification - Increase the production of improved seeds and seedlings in six states
Relationship to the country's sustainable development priorities	The project is in line with the Country Agricultural Strategy and its commitment to the UNFCCC which focuses on the organization of seed and seedlings production as well as on the production of certified plant material for high yielding varieties. Moreover, it aims to increase the productivity vertically and induce reduction in cost of production. In addition, the project intends to reduce the need for more new land, a prospect that bodes well for the country's green covering of trees while decreasing GHG emissions.
Project Deliverables	Provision of improved seeds and seedlings of the different crops to all small farmers in the rain-fed areas, which will improve food security and diversify crops. The project will benefit from 16 local nurseries that will have a positive impact on yield of all crops (15 to 50 per cent increase, depending on crop and climatic conditions).