Zaï Pits: Water Harvesting and Soil Improvement

Zaï pits are a traditional Sahelian technique for restoring degraded land by capturing rainwater and nutrients. Farmers dig small basins (20–40 cm wide, 10–20 cm deep) during the dry season, creating 12,000–25,000 pits per hectare to enhance water retention. Organic matter and 5–6 g of NPK or DAP per pit improve soil fertility, supporting millet and sorghum growth. This method boosts water infiltration, soil structure, and crop resilience in arid areas. Zaï pits can be combined with other dryland techniques like stone bunds and tied ridges for greater land restoration and productivity.

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INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS

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This technology is TAAT1 validated.

Scaling readiness: idea maturity unknown; level of use unknown

Gender assessment 4

Climate impact 7

Problem

- **Low rainfall and frequent droughts** in the Sahel reduce crop yields and threaten food security.
- **Soil degradation and crust formation** limit water infiltration and plant growth.
- **Nutrient-poor soils** hinder crop productivity, making farming unsustainable.
- **Runoff and erosion** lead to further soil loss and reduce available moisture for crops.

Solution

- **Increases crop resilience** by improving moisture availability during dry periods.
- **Boosts yields** by 60–90% for millet and sorghum compared to flat cultivation.
- **Restores degraded lands**, making marginal soils productive again.
- **Optimizes local resources** by incorporating organic and mineral fertilizers.
- **Is cost-effective and easy to adopt**, requiring only manual labor.

Key points to design your project

The **Zaï Pit Implementation** provides a structured approach for scaling up **Zaï pits** as a **land restoration and climate-resilient farming solution**. It integrates **financial, institutional, capacity-building, and technical aspects** to ensure sustainability and impact.

Key Steps:

1. **Define Objectives** – Align Zaï pit adoption with **national priorities** like food security and climate resilience.
2. **Financial Plan** – Secure funding through **government programs, NGOs, and climate funds**.
3. **Capacity Building** – Train **farmers and extension officers** on best practices.
4. **Needs Assessment** – Adapt **Zaï designs** based on local soil, rainfall, and cropping systems.
5. **Data & Governance** – Monitor **yields, soil health, and water retention** to guide policies.
6. **Impact Evaluation** – Track adoption and adjust strategies for **long-term sustainability**

60 - 90 %
Yield Improvement

IP
Open source / open access

Commodities

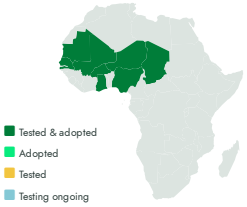
Sorghum/Millet

Sustainable Development Goals

Categories

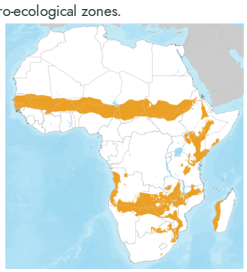
Production, Practices, Water management

Tested/adopted in



Where it can be used

This technology can be used in the colored agro-ecological zones.



Target groups

Farmers