

Zainer: Low-cost Zai field preparation

Zainer

The Zainer is a lightweight vertical soil drill mounted on a two-wheeled cart and powered by a 5 hp petrol engine. It drills Zai planting holes to a depth of about 25 cm in 4 seconds, producing up to 17 pits per minute and covering 1 hectare in approximately 40 working hours. The machine directs excavated soil to enhance runoff infiltration, is fuel-efficient, easy to operate by both men and women, and can be maintained locally, with a lifespan of about five years under minimal maintenance.



International Water Management Institute
International Water Management Institute and PRACTICA

Commodities

Sorghum/Millet, Maize, Tomato, Pepper, Onions

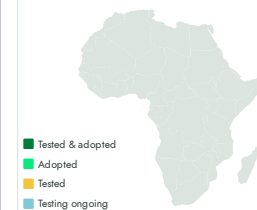
Sustainable Development Goals



Categories

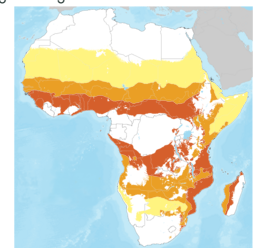
Pre-production, Equipment, Water management

Tested/adopted in



Where it can be used

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



Target groups

Farmers

This technology is **pre-validated**.

9-9



Scaling readiness: idea maturity 9/9; level of use 9/9

1600 USD

Cost per hectare

1800 USD

Revenue per hectare

200 USD

Net income per hectare

13 %

ROI per hectare



No formal IP rights

Problem

- **Manual labor is very strenuous:** Digging Zai pits by hand requires up to 300 hours per hectare, which greatly limits its adoption.
- **Low mechanization of land preparation:** The lack of suitable equipment hinders the spread of water conservation practices in arid areas.
- **High acquisition cost for individuals:** With its high price tag, the Zainer remains difficult to access without a collective approach or mechanized services.

Solution

- **Rapid land preparation:** The Zainer can create Zai holes at a rate of up to 17 holes per minute, significantly reducing the time required per hectare.
- **Reduced labor intensity:** Mechanization limits physical effort and facilitates the adoption of water conservation practices.
- **Better soil water management:** Zai holes improve runoff infiltration and moisture retention in dry areas.
- **Suitable for small producers and agricultural services:** Lightweight and easy to use, it can be operated by cooperatives or service providers.

Key points to design your business plan

The Zainer enables smallholders and agricultural service providers to mechanize the creation of Zai pits, reducing labor from 300 hours to 5 days per hectare and improving soil moisture conservation and crop productivity.

Suitable for collective use by cooperatives or service providers, the equipment is lightweight, simple to use, and easy to maintain. Its working capacity allows it to prepare several hectares per season and serve many producers.

The Zainer thus represents a sustainable economic opportunity for land preparation services, while strengthening the resilience of agricultural systems and the incomes of small-scale producers in arid areas.

Inclusion assessment

3

Climate impact

3

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<https://taat.africa/sg>

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