

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

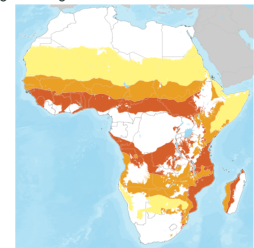
Pre-production, Equipment, Water management

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

Inclusion assessment 3 Climate impact 3 1

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 program

The Zainer addresses the arduous task of manually digging Zai pits, which limits the adoption of water and soil conservation practices in arid areas. By mechanizing this operation, it improves runoff infiltration, soil moisture retention, and the resilience of rain-fed crops to drought.

This technology supports food security and sustainable agriculture goals by making it easier for lots of people to use Zai. Its rollout is getting a boost from development partners, extension services, NGOs, cooperatives, and agricultural service providers, who are providing training, field demonstrations, and large-scale distribution of the Zainer.

1600 USD Cost per hectare	1800 USD Revenue per hectare	200 USD Net income per hectare	13 % ROI per hectare
IP No formal IP rights			



Zainer
<https://taat.africa/prv>
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