

ZAI HOLES



Mali and Burkina Faso's Farmers apply the Zai technique to recover crusted land in semi-arid regions.

Zai is a hole, a planting pit with a diameter of 20-40 cm and a depth of 10-20 cm - the dimensions vary according to the type of soil. Pits are dug during the dry season from November until May and the number of Zai pits per hectare varies from 12,000 to 25,000. (The number of zai per hectare and their dimensions determine how much water they harvest. The bigger the number and the smaller their size, the less water they each harvest.) The excavated earth is ridged around the demi-circle to improve the water retention capacity of the pit.

After digging the pits, composted organic matter is added at an average, recommended rate of 0.6 kg/pit and, after the first rainfall, the matter is covered with a thin layer of soil and the seeds placed in the middle of the pit.

Zai fulfils three functions: soil and water conservation and erosion control for encrusted soils. The advantages of Zai are that it :

- captures rain and surface/ run-off water;
- protects seeds and organic matter against being washed away;
- concentrates nutrient and water availability at the beginning of the rainy season;
- increases yields; and
- Reactivates biological activities in the soil and eventually leads to an improvement in soil structure.
- The manure applied to the pits contains seeds of trees or bushes. This helps the regeneration of the vegetation on fields treated with pits.

The application of the Zai technique can reportedly increase production by up to 500% if properly executed.

Difficulties

- High labour to dig the zai holes (between 300 and 450 hours/hectare)
- High maintenance labour (in soils with a high clay or gravel portion, pits require less maintenance than pits dug in sandier soils.)
- No mechanization possible.
- The pits should be dug during the dry season.
- Size and position are important.
- Composted organic material should be used, not raw organic material.