

WATER FOR DRY LAND FARMING WITH ZAI: A CLIMATE SMART RESPONSE IN ARID REGIONS

An indigenous climate smart approach

Zai is an ancestral practice to regenerate degraded and crusted soils by breaking up the surface crust to improve water infiltration. It consists of dug holes excavated in grids, with a diameter of 15-20 cm and a depth of 10-15 cm, filled with manure. This organic matter attracts termites, which play a crucial role in improving soil structure. Row crops are then planted in the pits which are able to hold water in excess of 500% of the water holding capacity of the soil. Zai practice has the potential to increase cereal yields by a factor 10, and yields increase further with the application of organic amendments. Zai allows collecting 25% of a run-off coming from 5 times its area.



Why is it a climate smart practice?

- Avoids risks linked to erratic and declining rainfall
- Reduces run off and soil erosion
- Stores rainwater for longer periods against long mid-season dry spells
- Maximizes the use efficiency of water and plant nutrient.

Zai Practice in Burkina Faso

Reduced and unreliable rainfall and severe drought in the 1980s resulted in food insecurity and increased poverty in the Sahel regions of Burkina Faso as sorghum and millet yield had dropped by 50%.

Zai of larger diameter with addition of manure and fertilizer supported the production of healthy millet and sorghum.

Impacts

About 300,000 ha were revitalized with zai and stone bunds and grain production was increased by 80,000 tons of food annually.

Triggers

- Success of farmer initiatives
- Development of Farmer-based Organizations
- Support by public and private sector projects and NGOs

Benefits

- Production of enough food to feed 500,000 people
- Grain yield increased by 120%.
- Reduction in food aid and food import required
- Increased income
- Improved livelihoods

Constraints

To achieve these impacts farmers had to invest in more labor for constructing the zai (300 man-hours per ha) and applying the manure. Wealthier farmers benefitted more from the technology.

Prepared for Agriculture Rural Development Day Learning Event on How can rainwater management help support food production and smallholder farmers' ability to adapt to climate variability and change?