

# IMPLEMENTING *ZAI PLANT PIT SYSTEM* IN BURKINA FASO TO RESTORE DEGRADED DRYLANDS

ZAI is a farming technique to dig pits in the soil during the pre-season to catch water and collect compost.

The technique, traditionally used by farmers in the Sahel Region to restore degraded drylands and increase soil fertility, was rescued since the 1980s by [Yacouba Sawadogo](#) a farmer from Burkina Faso, introducing the innovation of filling them with manure and compost to provide plant nutrients.

The creative recovery of this traditional technology achieved very significant results to improve agricultural production in Burkina Faso. ZAI holes help improving the yields of trees, sorghum, and millet by up to 500%.

In 2010, the filmmaker Mark Dodd created a documentary based on Yacouba Sawadogo's experiences called *The Man Who Stopped the Desert*.

ZAI is a *plant-pit system* with a diameter of 20-40 cms and a depth of 10-20 cms (the dimensions vary according to the type of soil). Pits are dug during the dry season from November to May. The number of ZAI pits per hectare varies from 12,000 to 25,000 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. Composted organic material should be used, not raw organic material.

The manure attracts termites, whose tunnels help further break up the soil. He also slightly increased the size of the holes over the traditional models. The process takes between 300 and 450 hours per hectare digging the ZAI and 150 hours per hectare filling up with manure. In soils with a high clay or gravel portion, pits require less maintenance than pits dug in sandier soils.

The ZAI system fulfils three functions: soil and water conservation and erosion control for encrusted soils. In particular, the advantages 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;
- 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.

Also thanks to the innovations made by Yacouba Sawadogo, these technologies were relaunched in different countries of the region and are currently used to improve forest growth and increase soil quality. Experiences of use ZAI system are also ongoing in Asian countries, recovering local ancient technologies.

### To know more

[Zai holes in howtopedia.org](http://howtopedia.org)

[Yacouba Sawadogo in Wikipedia](https://en.wikipedia.org/wiki/Yacouba_Sawadogo)

[The man who stopped the desert video in Youtube](https://www.youtube.com/watch?v=...)

[Article in UNEP website](http://www.unep.org)

[Article in cgiar.org](http://www.cgiar.org)

[ZAI technique manual](#)

[Article in worldwatch.org](http://www.worldwatch.org)

[Article in thefieldstheyflow.blogspot](http://thefieldstheyflow.blogspot.com)

[Article in sublimart.blogspot](http://sublimart.blogspot.com)

[Article in krackenscape.blogspot](http://krackenscape.blogspot.com)

[Article in sustainabilityquest.blogspot](http://sustainabilityquest.blogspot.com)

[Article in maliagroecologie.wordpress.com](http://maliagroecologie.wordpress.com)

[Document in FAO website](http://www.fao.org)

