

Appropriate Climate Technologies and Sustainable Land Management

TECHNICAL SPECIFICATIONS ON THE ZAÏ

1. Definition

Zaï is a technology that promotes agro-ecological processes focused on the sustainable management of agricultural land. It consists of working the soil to create basins (in the form of planting holes) into which seeds or plants are sown, arranged regularly or irregularly (depending on the desired layout), thus retaining the water and organic matter that the plant will need. This technology combines soil cultivation and localized fertilization.

2. Why the zaï technique?

Soil is a habitat for microorganisms and a reservoir of nutrients essential for plant growth and development. From an agronomic perspective, soil fertility depends, among other things, on its nutrient content. Soil is considered poor when its nutrient content is low; it is considered rich when its nutrient content is high.

Some soils are poor due to their typology (sandy, ferruginous, silty), environmental phenomena (erosion, salinization), the practices applied to them (agriculture, livestock farming, farms), among other things.

The zaï technique helps combat soil depletion by improving fertility while limiting nutrient loss and water waste. It is an innovative technology for sustainable land management and an effective means of building resilience to climate change.

3. Where and when can zaï be applied?

The zaï technique can be applied to different types of soil. The only difference lies in the soil preparation, as heavy soils (clay soils, for example) are more difficult to work compared to light soils (sandy soils, for example).

Generally, it is carried out during the soil preparation phase (before planting or sowing).

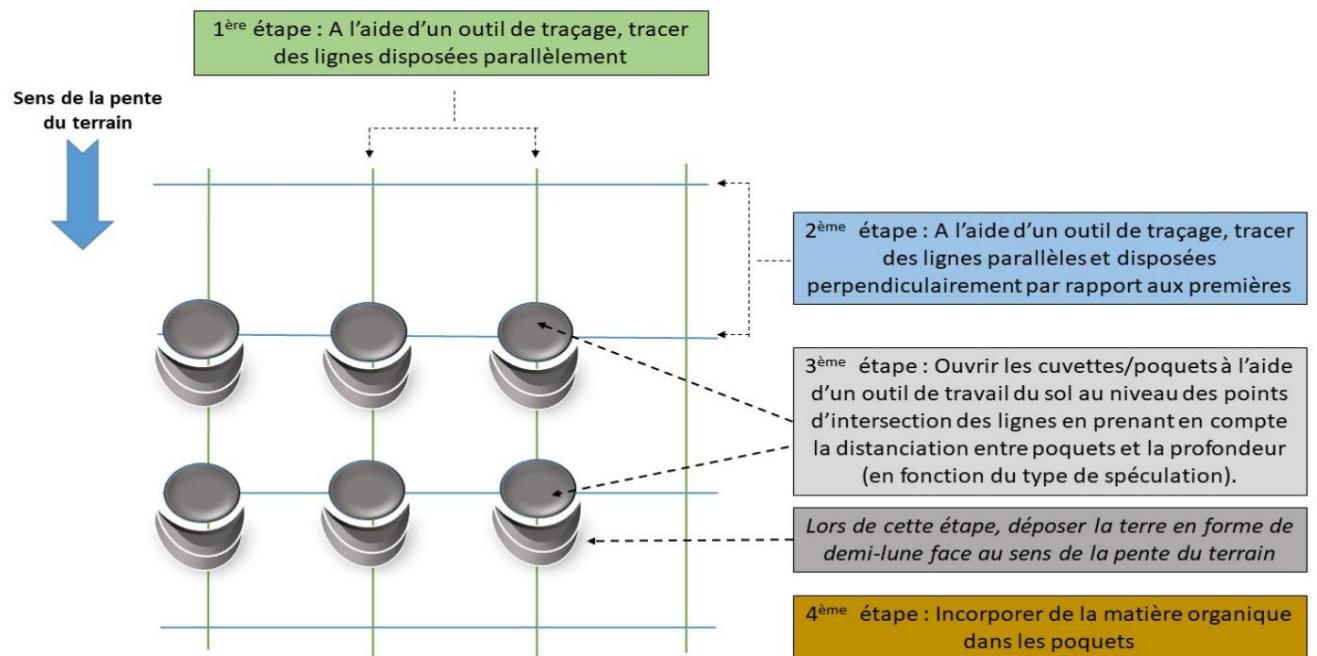
4. Zaï technique

The technique involves working the soil, which can be done manually or mechanically, following different stages:



- First, the perimeter must be cleared/cleaned (if necessary) in order to remove all obstacles that could hinder the layout in order to have good visibility;
- Study the topography of the land (determining the slope of the land is essential to know the direction of water runoff). The arrangement of the holes can be in regular shape in a single line, double line, staggered or even irregular shape (according to suitability in the layout);
- Draw parallel lines spaced 70 to 100 cm apart all along the perimeter. taking one side of the perimeter as the baseline (reference);
- Draw lines perpendicular to the first ones with the same distances. This exercise allows for good alignment of the basins/holes in a regular arrangement;
- Create holes (basins) by excavating the soil at the points where the lines intersect, 20 to 40 cm in diameter and 10 to 20 cm deep; ***(note: these dimensions are only a guideline; they generally depend on the sowing or planting density of the type of crop being cultivated. For example: crops with a taproot system (chili peppers, for example) require a greater depth compared to those with a fibrous root system (cabbage, for example), which require less). Crops with tiller-like vegetative growth (millet, for example) require a larger diameter.***
- When excavating, deposit the soil in the shape of a crescent moon downstream of each basin (the hollow part of the "crescent" is oriented towards the direction of water runoff). This design reduces water runoff and traps water in depressions. Runoff plays two major roles in soil degradation: erosion, which creates gullies by disrupting the soil structure, and the transport of organic matter and nutrients to low-lying areas, thus creating a fertility gradient.
- Incorporate organic matter (green leaves, manure, compost, organic fertilizer, etc.) into the planting basins, covering it with a light layer of soil. ***Before sowing or planting, ensure that the manure is well decomposed.*** If the organic matter (manure, leaves, etc.) is not yet decomposed, water the basins occasionally (if resources allow) to promote rapid decomposition;
- Surround the perimeter with a stone ridge or an anti-erosion dike. This system will help combat runoff and water erosion;
- After each crop, maintain the planting trays, which can last up to two years. renewal.

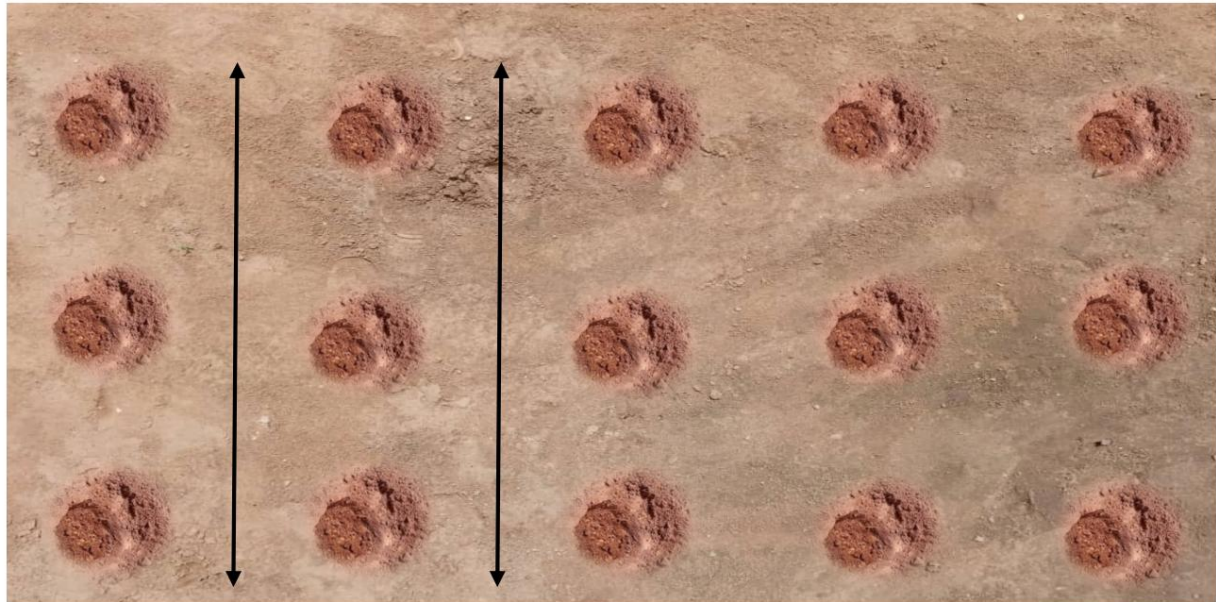
5. Basin/Pocket Layout Diagram



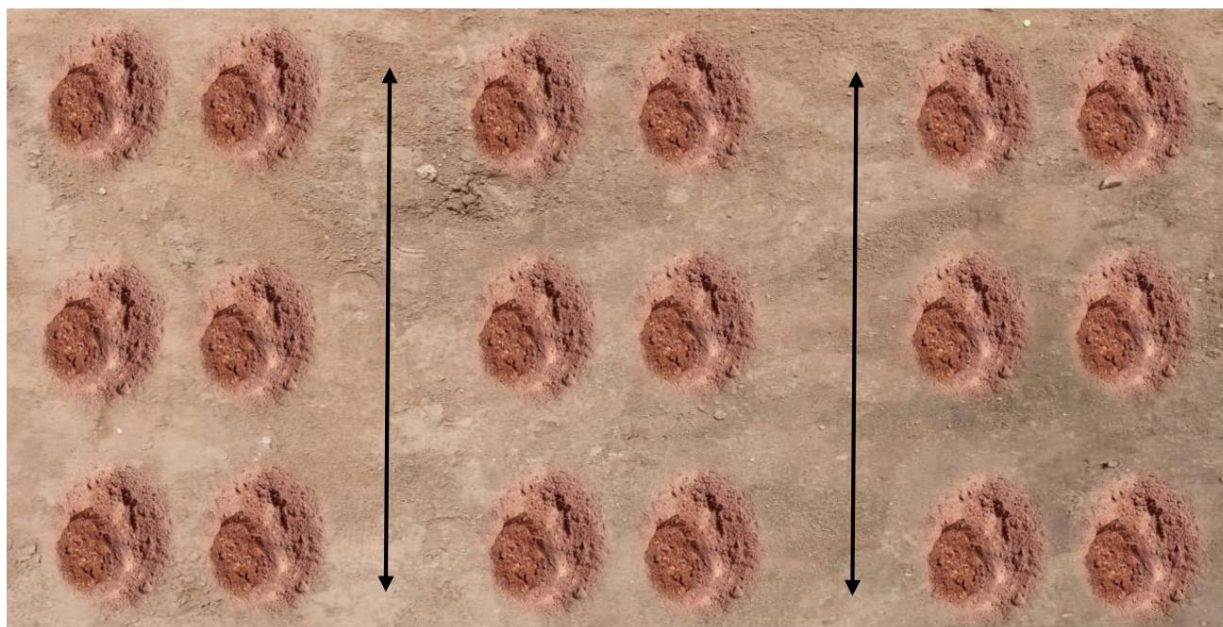
Create the pits/holes by arranging the sand in a half-moon shape following the slope of the land.



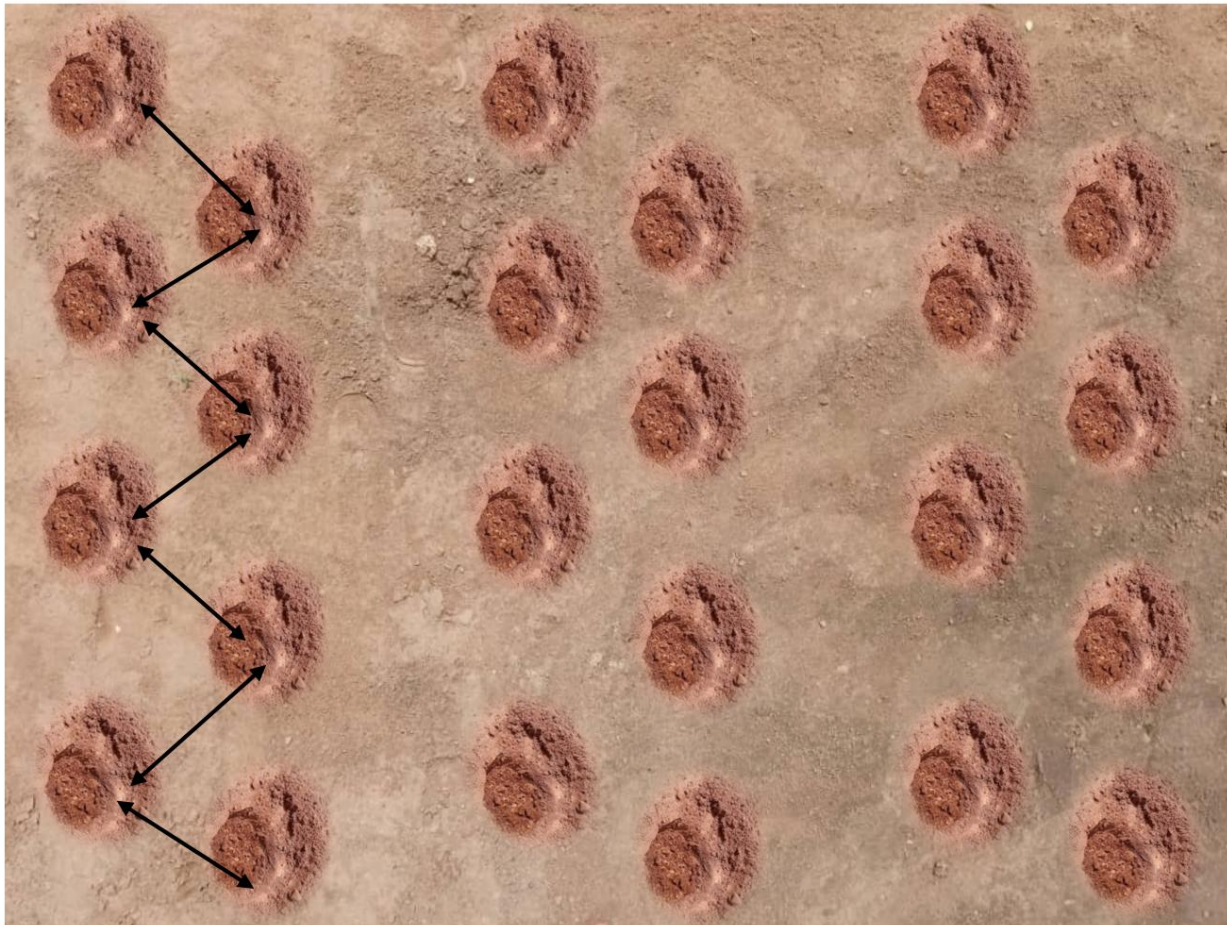
Incorporation of well-decomposed organic matter into the planting pits/holes



Arrangement of bowls/pockets in simple lines



Arrangement of the basins/holes in double rows



Staggered arrangement of the basins/epochs