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**COSTA RICA
REGENERATIVA**



Mulched Raised Beds

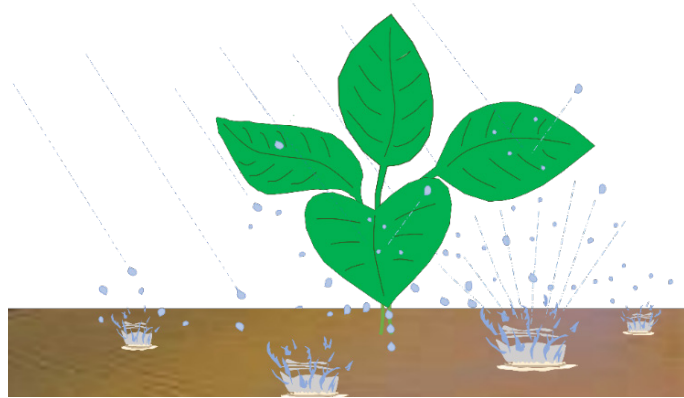
Raised beds with Mulch



Mulched beds prevent flooding from causing damage to crops during heavy rains. Inside them the soil remains loose and ventilated which is good for worms, the many beneficial organisms and microorganisms that will proliferate there. The roots and plants will also have good development for good production.

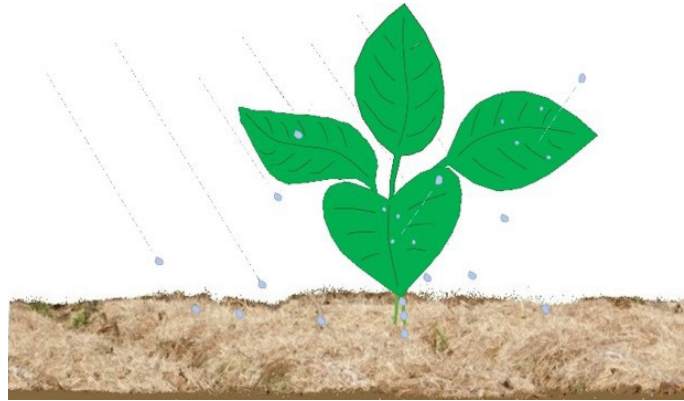
The mulch helps prevent plants from being attacked by fungi:

When large, heavy raindrops hit bare soil, small droplets are returned, splashing the underside of leaves (the underside), fruits, and stems of plants. As shown in the picture.



These droplets return from the soil loaded with fungal spores that, when they come into contact with the leaves and fruits, cause diseases and losses in small crops such as tomatoes, beans and chiltomas (sweet chili), as shown in the photo.





This does not occur when the soil is protected with mulch, since it cushions the impact of large drops that, instead of splashing, run through it until they are absorbed by the soil of the bed.

The mulch, nutrients, worms, organisms and microorganisms improve the structure of the soil, regenerating it and increasing crop yields, without increasing production costs.

How to build and get raised beds ready

To make the raised bed, you begin by digging a trench (channel), and with the soil that is removed, the threshing base is formed on one side. In addition to capturing water and retaining humidity, ditches make it easier for the farmer to move around and work on the threshing floor. Trenches and mulching also prevent soil from eroding.

1. The first step will be to mark with stakes where the trenches are going to be dug and where the beds will be formed (place the stakes every 2 meters).

It is important to place the stakes in the correct places and well aligned before starting, marking the width of the trenches: 45 centimeters and the width of the base of the threshing floor: 115 centimeters. The length of each era will depend on the terrain and the producer's preference.

To ensure that they remain even, it is best to tie the stakes along the threshing base with a string or rope.



2. Once everything is well marked, the trench is excavated (about 35 centimeters deep); The earth that is taken out is thrown to the side, where the threshing floor will be formed.

When excavating the trench, care must be taken to keep its walls intact since the stability of the threshing floor and the cultivation area will depend on it. Note the ear walls in the photo (just before covering them).

In the ditches, small unexcavated areas are left, about 25 to 30 centimeters wide: these will be the dikes or retainers, which will help keep rainwater in the ditch.

The spacing of the dams will depend on the inclination of the terrain: on rather flat land you can leave a dam every 5 meters of the ditch, but if it is inclined, it will be better to leave them every 2 or 3 meters.



3. Once all the dirt of the threshing has been placed, it needs to be carefully leveled with a rake (as in the photo).

- If you have biochar, it is advisable to apply it as soon as the beds are ready for the day, just before covering them with organic matter.
- If you don't have biochar, mulch must be applied immediately: a layer about 7 centimeters thick. If it rains or is windy, no soil will be lost, and the soil of the threshing floor will begin to receive the benefits of the mulching.
- It'll be better to have seedlings ready in a simple nursery to plant them immediately. You can also sow seeds; If necessary, you could wait only a few days to grow them, but you will always have to keep them covered.
- They can be as long as you want or can make them, but for the other dimensions we recommend the ones in the following image:



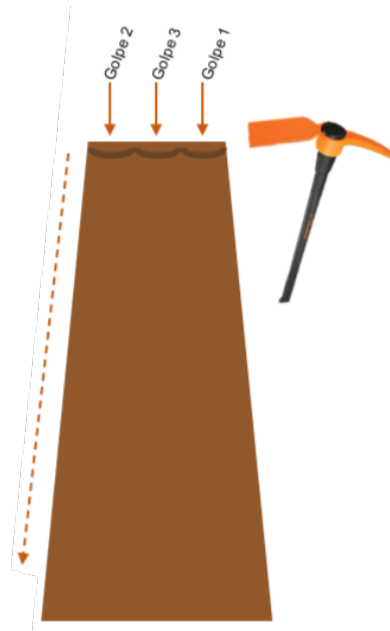


Para hacer la zanja correctamente

1. Pick the edges of what will be the trench with the shovel to mark the edge up to where the first dike will be left (right illustration).
2. Next, with the wide part of the beak, break the ground in three strokes: a) The inner side of the right edge, b) The inner side of the left edge and c) The center (as in the illustration). The force needed to break the soil will depend on how hard it is.
3. You will advance along the trench, spreading the soil with the shovel on the side where the raised bed will be formed. The process will be repeated until the recommended depth is reached.

Tools for the job:

- Rounded tip shovel.
- Beak.
- Rake.
- Machete (to cut stakes).



More recommendations

- It is preferable to make the beds during the dry season: the soil will not be heavy.
- It will be best to do the work early in the morning to make as much progress as possible before the sun fully shines.
- If the land is on a slope, make the first threshing floor at the highest point and move downhill to prevent erosion damage in case it rains.
- The orientation of the threshing floors should be perpendicular to the slope, as in the photo.



- You should never walk on the beds to avoid causing damage to worms, organisms and microorganisms.
- When constructing threshing floors, preserve the trees that were on the plot: their shape and size can be controlled to limit shade on crops.
- Also keep roots running through the area; Even thick roots in a trench can function as dams.
- It will be better to wear waterproof boots to walk in ditches or canals in the rainy season.
- Collaborative work will be important: the more people who work, the faster they will advance and reach the goal. Working in a group is always easier.
- Several families can agree to work together, dedicating a day to each one's plot (for example).



- To familiarize yourself with the system, you can establish a trial in an area of 10 x 10 meters (or smaller, if the farm is small), which would be enough to produce food for a small family and even generate income.
- The beds should always be protected with organic coverage and cultivated.
- If the family raises animals (such as chickens, ducks, sheep, etc.), protect the outline of the area with mesh.

