Manure: apply one mug-full (tumpeco) of compost in each basin.

Fertilizer: DAP (diammonium phosphate) applied evenly in the basin at the time of planting – put either one soda bottle cap (7 g) or three quarters of a mineral water bottle cap (this is done by filling some space in the cap with a thumb). This adds up to about 100 kg per hectare. After applying the manure and fertilizer, use a hand hoe to nearly fill the basin with soil, followed by sowing the seed. As a rule of thumb, always cover the manure and fertilizer completely with soil to avoid contact with the seed.

Urea: Apply urea just like DAP. For maize the best time to apply urea is about 1½ months after planting or when the maize crop has reached knee-height. This is best done when the soil is moist and/ or in the evenings.

Weed control

Weeds may be controlled by mulching, weeding or using herbicides. If properly mulched, hand weeding is sufficient. However, if weeds are not effectively suppressed by the mulch, a hand hoe can be used. Maize should be weeded at least twice, with the first weeding done 3 weeks after planting and the second, 8 weeks after planting.

Controlling weeds using herbicides: Weeds can also be controlled using herbicides such as glyphosate. Apply the herbicide before planting or by spraying between rows within two days of sowing the seed. Apply at a rate of 5 to 7.5 litres per hectare; applied as 400 ml of herbicide per 20 litres of water.



Required tools and implements

- A hand hoe for digging the basins – should be of suitable size, for example 10cm wide.
- A long string for marking the field – this is used for marking the correct distance between the basins. Knots are tied in the string or metallic soda bottle tops are clamped at the plant spacing required.
- Soda or mineral water bottle tops – these are used for applying fertilizer. A soda bottle top applies 7g of fertilizer while a water bottle top applies 10g.
- A plastic mug (tumpeco) – this is used to apply manure
- Knapsack sprayer – this is used to apply herbicides

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NARO

PERMANENT PLANTING BASINS (PPB)

BRIDGING THE YIELD GAP



STEP-BY-STEP GUIDE TO

CONSERVATION FARMING

NARL-KAWANDA

PERMANENT PLANTING BASINS (PPB)

BRIDGING THE YIELD GAP

Farmers using **Permanent Planting Basins** (PPB) in Uganda have improved grain yield from an average of 300 kg/ha^{-1} to 1,000 kg/ha^{-1} and and maize grain yields from an avarage of 3,000 kg/ha^{-1} to 6,000 kg/ha^{-1}.

Permanent Planting Basins, as used in conservation farming, is a crop production method which enhances the capture and storage of rainwater and allows precision application and utilization of limited plant nutrients.

The method is widely used to reduce risk of crop failure due to unreliable rainfall. This strategy is a good option on small plots for annual crops and where animal draught is not an option.



How to make the basins

Instead of digging or ploughing the whole field, dig basins only where the crops are going to be planted and cover the space between the rows with crop residues. Prepare basins during the dry season, so they are ready for planting at the beginning of the rainy season. This also helps to shape them well, break surface crust and hardpans as well as staying in use for several seasons. In case of a hardpan, dig the basins slightly deeper than the depth normally reached when using a hand hoe in order to break through it.

Basins are made by first marking them out using a planting line and digging holes in the ground about 15cm wide, 35cm long, (about the size of a man's foot) and 15cm deep (about as deep as a man's hand), with spacing of 75cm between rows and 70cm within rows from the centre of one basin to the centre of the next basin.

Since basins are permanent they are constructed in order to accommodate both cereals e.g. maize and legumes e.g. beans planted in a rotation. At this spacing, with three seeds per basin the total maize plant population is 57,143 per hectare and that of beans, with six beans per basin, is 114,286 per hectare.

Applying fertilizer and manure

After digging the basins, apply fertilizer and/ or manure within the basins. This helps in precision nutrient management. Do this at the time of planting or just before planting to speed up the planting exercise.