



Tailored Fertilizer Application Recommendations for Cassava



STEP 1: Good Agro-Practices

STEP 2: Choose the Best Fertilizer

STEP 3: Fertilizer Application Rate

STEP 4: Calculate Cost and Benefits

STEP 5: Fertilizer Application Time

STEP 6: Fertilizer Application Method

STEP 1: Apply Good Agronomic Practices

Fertilizer use is only recommended if some minimal good agronomic practices are upheld:

- Always use improved varieties that are disease-tolerant, for example Mkombozi, Mkuranga 1 or Kiroba.
- We advise obtaining disease-free cuttings from a certified source.
- Plant in lines of 1 m between rows and 1 m within row (10,000 plants per hectare).
- Practice good land preparation and weed control. See our recommendations on “Six Steps to Cassava Weed Management and Planting Practices”.

STEP 2: Choose the Best Fertilizer

Cassava requires different nutrients to grow. The 3 most important nutrients are:



Nitrogen is required for the growth of stems and leaves.



Phosphorus provides the crop with the energy needed for growth.



Potassium is required for the bulking of the storage roots.

Some fertilizers supply all 3 of these nutrients (e.g. NPK 15:15:15, NPK 17:17:17 or NPK 20:10:10) while other fertilizers only supply 1 or 2 of these nutrients (e.g. urea 46:0:0, DAP 18:46:0 and MOP 0:0:60).

Cassava requires all 3 of these nutrients, but the amounts depend on the fertility of the soil and the planting date. For this reason, a combination of fertilizers is preferred over a single complex fertilizer. In this tool, we will focus on the use of commonly available fertilizers: Urea, DAP and NPK 17:17:17.

STEP 3: Decide the Fertilizer Application Rate

What cassava yield did you obtain in your field in the past (without fertilizer applied)? Compare the size of root stocks obtained with the picture. Is your yield commonly...

lower (less than 15 tonnes per hectare)?
(Most common yield)



about the same (between 15 and 20 tonnes per hectare)?

higher (more than 20 tonnes per hectare)?
(Very high yield)

Apply fertilizer

Yes

Are you willing to accept some risk?

No

Do not apply fertilizer

Use the flyer with maps to obtain the fertilizer rate for your district. Recommendations are provided in kilograms of urea, DAP and NPK fertilizer per hectare (100 m x 100 m). Convert these to the rates required for your field using the rule of three.

$$\frac{\text{Area of your field (m}^2\text{)} \times \text{Fertilizer needed for 1 ha (kg)}}{10,000 \text{ (m}^2\text{)}} = \text{Fertilizer needed for your field (kg)}$$

1 bag (of 50 kg) per ha is about 2 levelled crown caps per plant

2X



STEP 4: Calculate Cost and Benefits

Using fertilizer only makes sense if the value gained from the increase in root yield is larger than the cost of the fertilizer. The recommended rates are calculated using the common prices of roots and cost* of fertilizer in your area.

You must confirm the profitability of fertilizer use.
Calculate the cost and expected benefit.

Expected Gross Value Increase

Price of 1 tonne of
cassava roots (TZS)

X

Expected extra yield
(tonnes/ha)

Total Cost of Fertilizer

Price of 1 bag of Urea (TZS)

Weight of 1 bag of urea (kg)

X

Urea needed
for 1 ha (kg)

+

Price of 1 bag of DAP (TZS)

Weight of 1 bag of DAP (kg)

X

DAP needed
for 1 ha (kg)

+

Price of 1 bag of NPK (TZS)

Weight of 1 bag of NPK (kg)

X

NPK needed
for 1 ha (kg)

**Your trusted agrodealer can provide you with fertilizer prices*

Urea, DAP and NPK 17:17:17 needed for 1 ha and the expected extra yield are obtained from the flyers with maps

Is the **Expected Gross Value Increase** larger than the **Total Cost of Fertilizer** ?

No.

Yes, but less than twice the
total cost of fertilizer.

Yes, it is more than twice
the total cost of fertilizer.

**Fertilizer is not profitable.
Do not apply.**

**Only apply fertilizer if you
can accept some risk.**

**Fertilizer is profitable.
Apply fertilizer.**

STEP 5: Apply Fertilizer at the right time

- Fertilizer must always be applied when the soil is moist, after 1 or 2 rain showers.
- Apply the full dose of DAP at planting.
- Urea and NPK 17:17:17 are best split-applied in 2 to 4 equal doses. Apply the first split 1 month after planting. Spread subsequent splits, as rains permit, over the next 2 to 3 months. Apply NPK during the first 1-2 splits, and urea during later splits.

STEP 6: Apply Fertilizer in the right way

- Make a 5 cm deep half-moon, or full ring furrow about 20 cm away from each cassava plant.
- Spread the required amount of fertilizer in the furrow and cover with soil.
- Distributing the fertilizer dose equally to all plants is tricky and requires some practice. Using bottle cap measures can assist to get the dosage right (see front page).