



# Fertilizer in cassava production



# Fertilizers for Cassava Production

## What is fertilizer?

- Fertilizers are organic or mineral sources of plant nutrients required for healthy and robust plant growth.
- If applied in correct quantity, time and properly cassava highly benefits from fertilizer application



Plate 1 Fertilized cassava with lush green healthy foliage and high root yields (left) and unfertilized field with unhealthy low yielding crop (right).

## Why use Fertilizers in Cassava production?

- Organic and mineral fertilizers maintain fertility of cassava fields
- Organic and mineral fertilizers reduce environmental damage
- Mineral and organic fertilizers increase yields of cassava by more than 30%
- The removal of natural soil nutrients by cassava causes destruction of soil physical structure, soil erosion and cassava yield reduction.
- Farmers become poor because of yield losses
- Land and environment is destroyed

## 15:15:15 NPK Fertilizer

Different fertilizers can be used in cassava production

- In Nigeria the 15:15:15 NPK is the most common fertilizer used in cassava production
- NPK is a compound fertilizer which contains, 15% Nitrogen, 15% Phosphorous and 15% Potassium
- Nitrogen, Phosphorous and Potassium are nutrients required by cassava in different amounts for good growth and yields.
- Nitrogen for example is needed by cassava to manufacture its own food.
- Phosphorus (P) is important for tuber root system development.
- Potassium is needed for both root development and manufacture of plant food.
- Cassava needs high amounts of potassium than phosphorous and nitrogen

## Rates of 15:15:15 NPK Fertilizers in Cassava

- Apply 200 kg/Ha of 15:15:15 NPK fertilizer 3-4 weeks after planting
- This is applying equivalent to 1 full match box of the fertilizer per cassava plant
- It is also the same as applying 20 g of the fertilizer per cassava plant
- Apply another 200 kg/ha of NPK 14-18 weeks after planting
- The farmer should use same local measuring tools as in the first application above
- How to apply the 15:15:15 NPK fertilizer
- There are several ways of applying 15:15:15 NPK fertilizer in a cassava field
- Most common are broadcasting, band placement and ring placement.

## Broadcasting

- Take a match box full of the fertilizer

- Broadcast the fertilizer uniformly around the cassava plant
- Avoid any contact between the fertilizer and the cassava stems
- Wear gloves and protective clothing to avoid fertilizer getting into contact with your body
- Use well-known local measuring tools to minimize risks of over or under dosing

### Ring Placement

- Make a ring 10 cm way from the cassava plant and 6 cm deep
- Apply the 15:15:15 NPK fertilizer in the ring
- Avoid the fertilizer getting into contact with any part of the cassava plant
- Wear protective clothing to minimize body contact with the fertilizer
- Use well-known local measuring tools to minimize risks of over or under dosing

### Band Placement

- Make a band 10 cm way from the cassava plant and 6 cm deep
- Apply 15:15:15 NPK fertilizer within the band
- Spread the fertilizer uniformly within the band
- Avoid contact between the fertilizer and any part of the plant
- Wear protective clothing and gloves

### When to apply the 15:15:15 NPK fertilizers in cassava

- Do the first 200 kg/ha of the NPK fertilizer 3-4 weeks after planting
- This ensures the fertilizer is applied after cassava root network is developed to absorb fertilizer

- Apply the second 200 kg/ha of the NPK fertilizer to cassava 14-18 weeks after planting
- This ensures fertilizer applied after good leaf development to help cassava make its food
- Apply when soils have enough moisture but are not too wet
- Do not apply when soils are too dry

### The 3.5:13:34:4.5 NPKS fertilizer

- Cassava needs more potassium than phosphorous and nitrogen
- Cassava also requires Sulphur for good growth and yields
- A new blend of fertilizer containing 3.5% nitrogen, 13 phosphorous, 34% potassium and 4.5% sulphur has been recommended for cassava in Nigeria
- The new blend contains more potassium than nitrogen and phosphorous. It also contains sulphur and is more suitable for cassava



Plate 2 50 kg bag of New 3.5:13:34:4.5 NPKS fertilizer for cassava left and 10kg bags of Urea right

### Why Apply 3.5:13:34:4.5 NPKS in Cassava

- Cassava needs more potassium than nitrogen and phosphorous, the NPKS contains (34%) potassium that meets the requirements for cassava

- Cassava also requires sulfur and soils in cassava growing areas in Nigeria show sulfur deficiency
- The new NPKS contains 4.5% Sulfur that would address the Sulfur deficiency

### How to Apply 3.5:13:34:4.5 NPKS in Cassava

There are different ways of applying fertilizers to the field. They include:

#### Broadcasting

- Apply uniformly on the ground around each cassava plants
- Ensure the right quantity by taking at least a matchbox full of NPKS per plant.
- Wear gloves and protective clothing to avoid any injuries
- Avoid placing the fertilizer too close to the plant
- Avoid placing the fertilizer on any exposed roots or tubers

#### Row or Band Placement

- Prepare lines or bands 6 cm deep and 10 cm away from the cassava stem
- Take a match box full of NPKS and apply uniformly within the band
- The bands should be on both sides of the rows of cassava
- Wear protective clothing and gloves to avoid injuries
- Ensure the fertilizer does not fall on leaves, exposed roots or stems



*Plate 3 Band or row placement method of fertilizer application*

### Ring Placement of NPKS



*Plate 4 Ring placement method of fertilizer application*

Prepare a ring 6 cm deep and 10 cm away from the cassava stem

- Take a match box full of fertilizer
- Spread uniformly within the ring
- Avoid any contact between fertilizer and any part of the plant
- Wear protective clothing and gloves to avoid injuries

### Top Dressing with UREA

- 3.5:13:34:4.5 NPKS has very low nitrogen content
- Cassava will not yield well with only NPKS application
- Top dress with 120 kg/ha of urea 14-16 weeks after planting to get good vegetative growth and high yields
- This is equivalent to 1 water bottle tops of Urea or 12 (g)
- You can broad cast, place the fertilizer in a ring or band



- Avoid any contact between Urea and any part of the plant during top dressing
- Wear protective clothing to avoid injuries

### When to Apply NPKS in Cassava

- NPKS is applied 3-4 weeks after planting of a cassava field
- Applying NPKS when planting is waste full because the young cassava have no root network to absorb nutrients
- Most of the fertilizer risk being leached or washed away by rains if applied too early
- Late application of NPKS could affect root development
- Apply when soils have adequate moisture to facilitate efficient absorption of nutrients
- Do not apply when soils are too dry to avoid fertilizer losses and possible injuries to cassava

### Good Storage Methods for Fertilizers

- Purchase your fertilizer from reputed suppliers or agro-dealer
- Store the fertilizer in dry, cool well aerated rooms
- Place a raised wooden pallet on the floor to avoid fertilizers getting into contact with cold cemented floor
- The fertilizer store should be well secured to avoid children gaining access to the store



Plate 5: Well sealed fertilizers bags on a pallet left and fertilizer kept in an open plastic container right

### What Information Do You Need When Buying NPKS

- The suppliers should have full information on chemical content of NPKS and provide this information to the farmers
- NPKS contains 3.5% nitrogen, 13% phosphorous, 34% potassium and 4.5% sulfur
- The label should be clearly displayed on the fertilizer bag for the agro-dealers and farmers to see and read
- Please ask your extension agent or agro-dealer for the fertilizer requirements (type and rates for your crop before buying)
- Do not apply NPKS to crops other than root crops because it is very low in nitrogen and will give poor response to seasonal crops unless top dressing with urea is done at the right time
- Apply adequate quantities of fertilizer to avoid under-dosing
- Buy appropriate bag size as NPKS comes in 50 and 10 kg bags



Plate 6 Fertilized cassava field left and unfertilized field right

