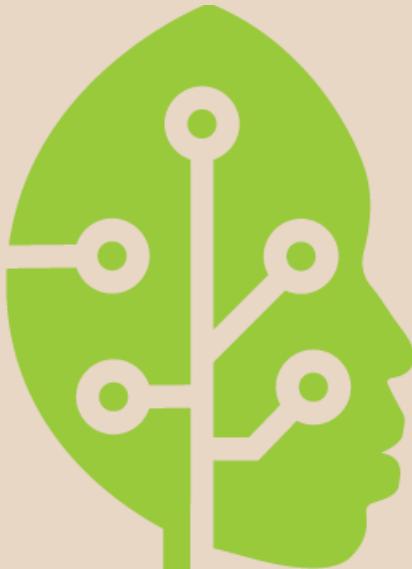


Hi there!



AKILIMO

we know cassava



You will learn all about

Hectare
version

Tailored fertilizer recommendations

and how to use our printable guides

in **6** easy steps



You will learn

You will learn

1 The importance of good agronomic practices

You will learn

- 
- 1** The importance of good agronomic practices
 - 2** How to choose the right fertilizer types

You will learn

1 The importance of good agronomic practices

2 How to choose the right fertilizer types

3 How to obtain the recommended fertilizer rate

You will learn

1 The importance of good agronomic practices

2 How to choose the right fertilizer types

3 How to obtain the recommended fertilizer rate

4 How to evaluate if fertilizer use is profitable

You will learn

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2 How to choose the right fertilizer types

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4 How to evaluate if fertilizer use is profitable

5 When to apply the fertilizer

You will learn

1 The importance of good agronomic practices

2 How to choose the right fertilizer types

3 How to obtain the recommended fertilizer rate

4 How to evaluate if fertilizer use is profitable

5 When to apply the fertilizer

6 How to apply fertilizer correctly

You need to know

You need to know

1 Your location



You need to know

1 Your location

2 Your planting date



You need to know

1 Your location

2 Your planting date

3 Your current cassava yield (without fertilizer)

You need to know

1 Your location

2 Your planting date

3 Your current cassava yield (without fertilizer)

4 The price of fertilizer

You need to know

- 
- 1 Your location
 - 2 Your planting date
 - 3 Your current cassava yield (without fertilizer)
 - 4 The price of fertilizer
 - 5 The expected price for your cassava roots

You need to know

1 Your location

2 Your planting date

3 Your current cassava yield (without fertilizer)

4 The price of fertilizer

5 The expected price for your cassava roots

6 Your land area

You will use AKILIMO guide

The screenshot shows a mobile application interface for cassava fertilizer application. At the top, there's a header with the title "Tailored Fertilizer Application Recommendations for Cassava" and the logos for ACAI and AKILIMO. To the right of the title is a vertical list of six steps: 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, and 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 TME 419, TMS 30572 or TMS 98-0581.
- We advise obtaining disease-free cuttings from a certified source.
- Plant in lines of 1 m between rows and 80 cm within row (5,000 plants per acre).
- 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 and NPK 15:15:15.

STEP 3: Decide the Fertilizer Application Rate

The amount of fertilizer to apply depends on your current cassava yield. Think of how cassava performed in your field in the past, and compare the size of the root stock to the pictures.

Illustrations show a woman holding cassava roots, with five categories: LOW, NORMAL, MEDIUM, HIGH, and VERY HIGH, corresponding to yields of <7.5 tonnes per hectare, 7.5 - 15 tonnes per hectare, 15 - 22.5 tonnes per hectare, 22.5 - 30 tonnes per hectare, and >30 tonnes per hectare respectively.

The higher your current yield, the less fertilizer is required. Use the flyer with maps and tables to obtain the fertilizer rate for your LGA, month of planting and current yield level. Recommendations are provided in kilograms of urea and NPK fertilizer per acre. Convert these to rates required for your field using the calculations below.

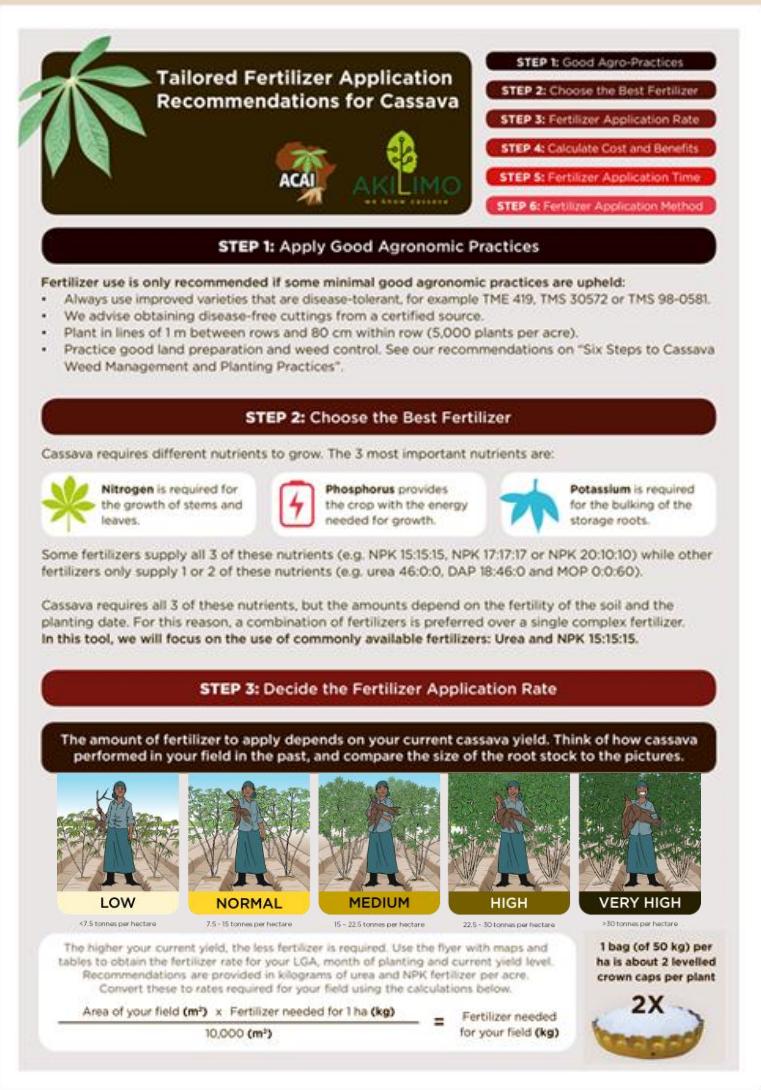
Area of your field (m^2) \times Fertilizer needed for 1ha (kg) = Fertilizer needed for your field (kg)

10,000 (m^2) \times 2X = 20,000 kg

2X

You will use

AKILIMO guide



Tailored Fertilizer Application Recommendations for Cassava

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Yield Level	Root Stock Size
LOW	<7.5 tonnes per hectare
NORMAL	7.5 - 15 tonnes per hectare
MEDIUM	15 - 22.5 tonnes per hectare
HIGH	22.5 - 30 tonnes per hectare
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The higher your current yield, the less fertilizer is required. Use the flyer with maps and tables to obtain the fertilizer rate for your LGA, month of planting and current yield level. Recommendations are provided in kilograms of urea and NPK fertilizer per acre. Convert these to rates required for your field using the calculations below.

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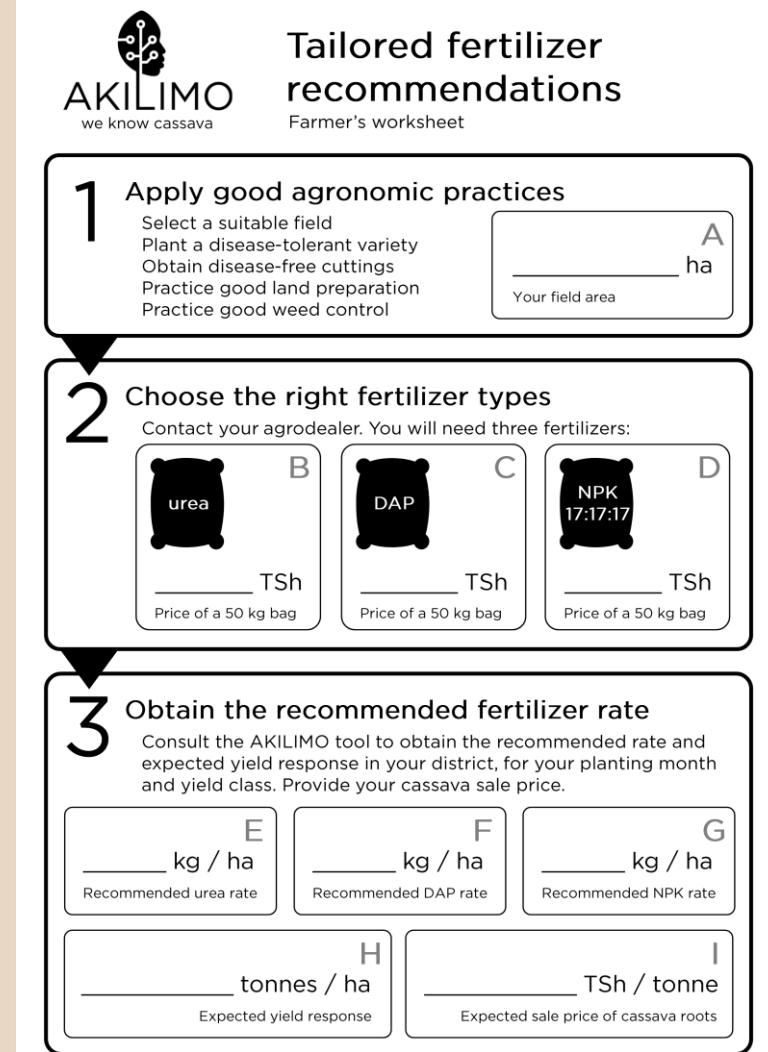
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STEP 4: Calculate Cost and Benefits

STEP 5: Fertilizer Application Time

STEP 6: Fertilizer Application Method

Farmer's worksheet



AKILIMO
we know cassava

Tailored fertilizer recommendations
Farmer's worksheet

1 Apply good agronomic practices

Select a suitable field
Plant a disease-tolerant variety
Obtain disease-free cuttings
Practice good land preparation
Practice good weed control

A _____ ha
Your field area

2 Choose the right fertilizer types

Contact your agrodealer. You will need three fertilizers:

Fertilizer Type	Price of a 50 kg bag
urea (B)	TSh _____ Price of a 50 kg bag
DAP (C)	TSh _____ Price of a 50 kg bag
NPK 17:17:17 (D)	TSh _____ Price of a 50 kg bag

3 Obtain the recommended fertilizer rate

Consult the AKILIMO tool to obtain the recommended rate and expected yield response in your district, for your planting month and yield class. Provide your cassava sale price.

Fertilizer Rate	Expected Sale Price	
E kg / ha Recommended urea rate	F kg / ha Recommended DAP rate	G kg / ha Recommended NPK rate
H tonnes / ha Expected yield response	I TSh / tonne Expected sale price of cassava roots	

You will use

Flyer with fertilizer rates



Recommended Fertilizer Rates

MWANZA
SHINYANGA
SIMIYU
(or your region)

This tool contains tables and maps with advice on application rates of urea, DAP, NPK 17:17:17 fertilizer for cassava. Response to fertilizer depends on soil conditions, the time of planting and your yield class. Tables are provided that specify the recommended fertilizer application rates by district, month of planting, and your yield class, as well as the expected root yield response. Maps are also provided to show how fertilizer rates vary across the region.

AKILIMO guide

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Area of your field (m^2) \times Fertilizer needed for 1ha (kg) = Fertilizer needed for your field (kg)

10,000 (m^2) \times 2X = 20,000 kg

STEP 4: Calculate Cost and Benefits

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

STEP 5: Fertilizer Application Time

STEP 6: Fertilizer Application Method

Farmer's worksheet



Tailored fertilizer recommendations

Farmer's worksheet

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A _____ ha
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3 Obtain the recommended fertilizer rate

Consult the AKILIMO tool to obtain the recommended rate and expected yield response in your district, for your planting month and yield class. Provide your cassava sale price.

Rate	Value	Unit
E	kg / ha	Recommended urea rate
F	kg / ha	Recommended DAP rate
G	kg / ha	Recommended NPK rate
H	tonnes / ha	Expected yield response
I	TSh / tonne	Expected sale price of cassava roots



Let's get started

1 Apply good agronomic practices

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

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- Always use improved varieties that are disease-tolerant.

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- Practice good land preparation and weed control.
See our video on “Six Steps to Cassava Weed Management and Planting practices”.
- Always use improved varieties that are disease-tolerant.
- We advise obtaining disease-free cuttings from a certified source.
- Plant in lines of 1 m between rows.
Space erect varieties at 80 cm within row (12,500 plants per hectare).
Space branching varieties at 1 m within row (10,000 plants per hectare).

1 Apply good agronomic practices

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

1

Apply good agronomic practices

- Select a suitable field
- Plant a disease-tolerant variety
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A
_____ ha
Your field area

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0.5

A

Your field area

2 Choose the right fertilizer types

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P

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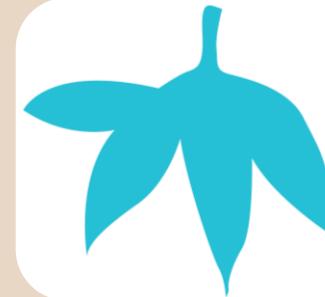
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Phosphorus provides the crop with energy needed for growth.



Potassium is used for the bulking of the storage roots.

N

P

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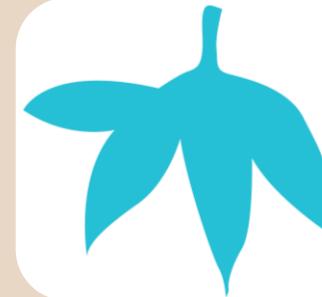
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P

K

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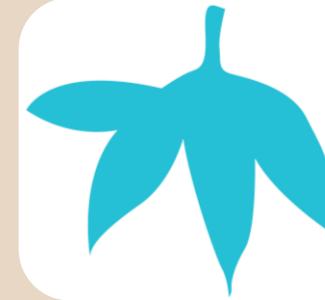
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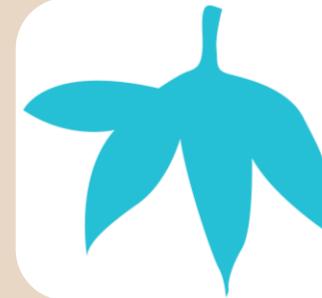
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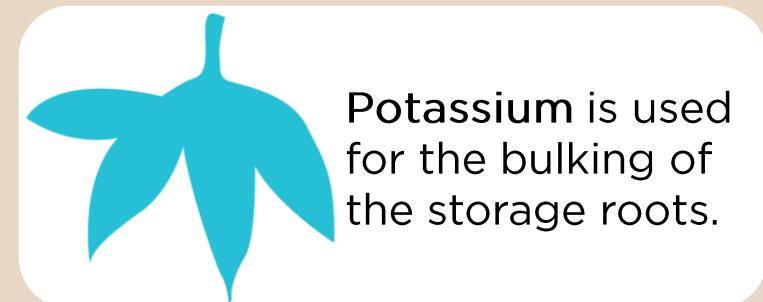
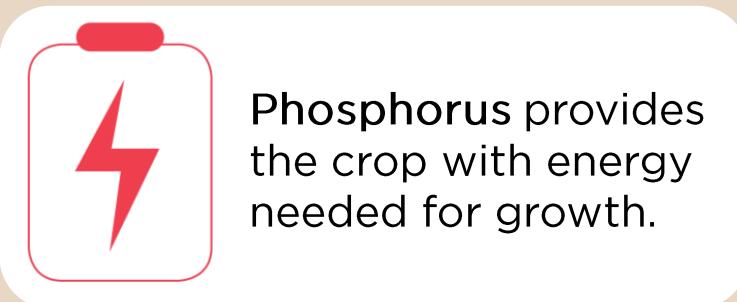
NPK 15:15:15, NPK 17:17:17, NPK 20:10:10

Other fertilizers only supply 1 or 2 of these nutrients:

urea 46:0:0, DAP 18:46:0, MOP 0:0:60

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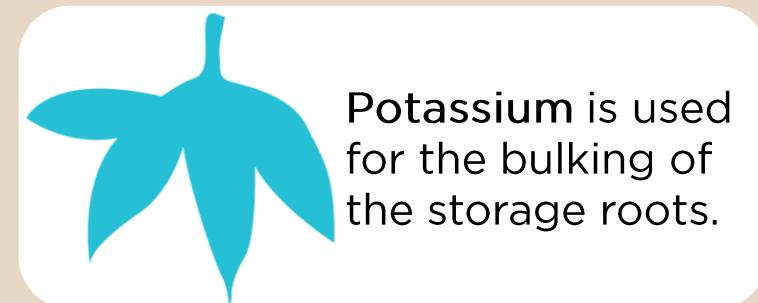
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Phosphorus

P



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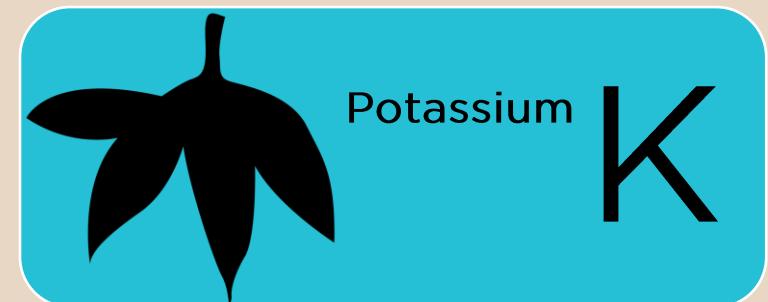
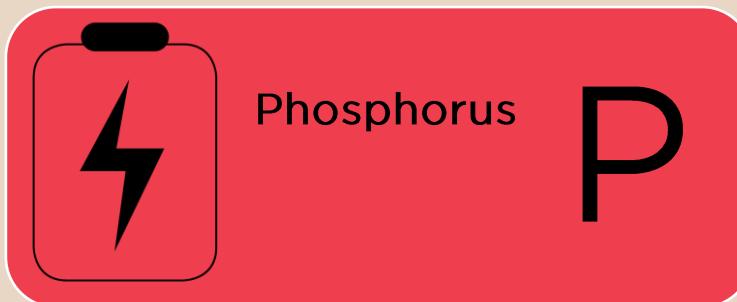
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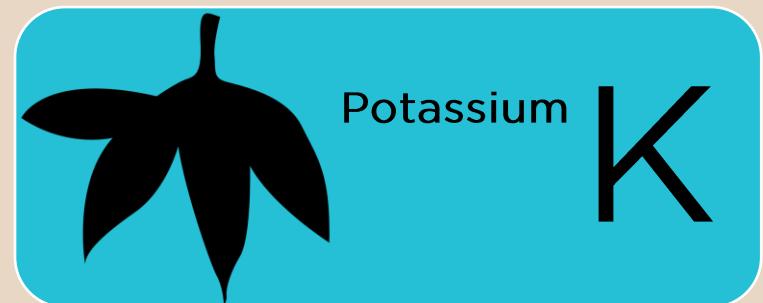
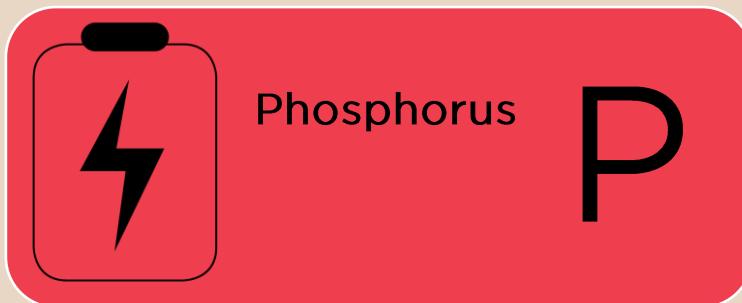
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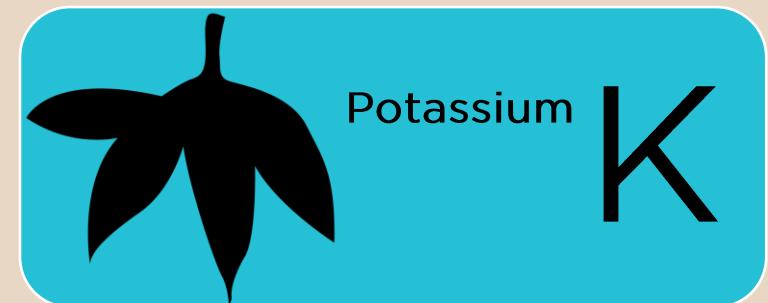
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In this video, we will focus on a combination of 3 commonly available fertilizers:

urea 46:0:0 + DAP 18:46:0 + NPK 17:17:17

2 Choose the right fertilizer types

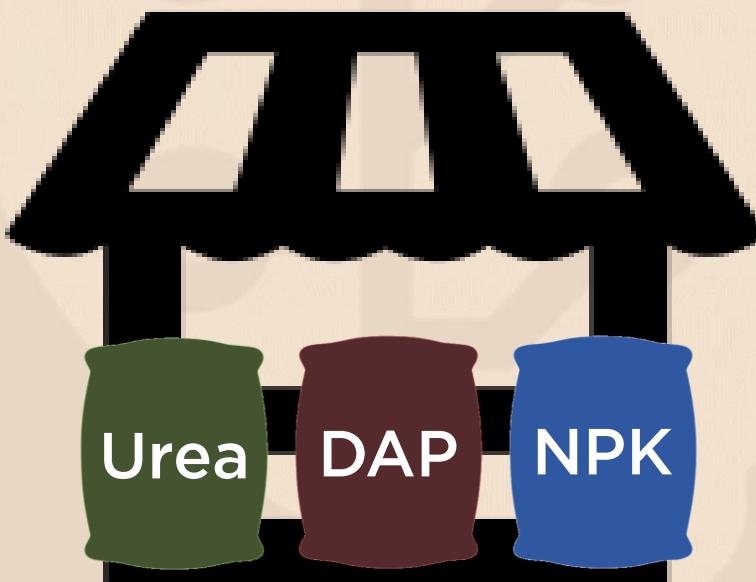
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Ask your local agrodealer for the prices of urea and NPK 17:17:17.

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In this video, we will focus on a combination of 3 commonly available fertilizers:

urea 46:0:0 + DAP 18:46:0 + NPK 17:17:17

The worksheet collects price information for these three fertilizers:

2 Choose the right fertilizer types

Contact your agrodealer. You will need three fertilizers:

 urea	B	<hr/> TSh
Price of a 50 kg bag		

 DAP	C	<hr/> TSh
Price of a 50 kg bag		

 NPK 17:17:17	D	<hr/> TSh
Price of a 50 kg bag		

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B
urea
50,000 TSh
Price of a 50 kg bag



C
DAP
_____ TSh
Price of a 50 kg bag



D
NPK
17:17:17
_____ TSh
Price of a 50 kg bag

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B



urea

50,000 TSh

Price of a 50 kg bag

C



DAP

70,000 TSh

Price of a 50 kg bag

D



NPK
17:17:17

_____ TSh

Price of a 50 kg bag

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urea

50,000 TSh

Price of a 50 kg bag

C



DAP

70,000 TSh

Price of a 50 kg bag

D



NPK
17:17:17

60,000 TSh

Price of a 50 kg bag

3 Obtain the recommended fertilizer rate

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The amount of fertilizer to apply depends on your current cassava yield.

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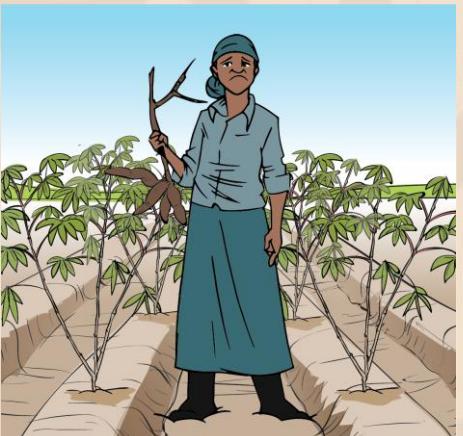
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Think of how cassava performed in your field in the past, and compare the size of a typical root stock harvested from your field to the rootstocks shown in these pictures.

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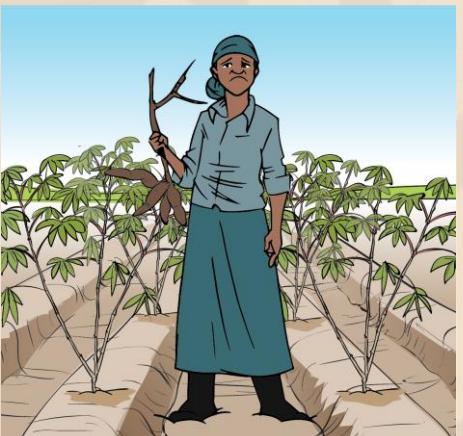
LOW

<7.5 tonnes per hectare

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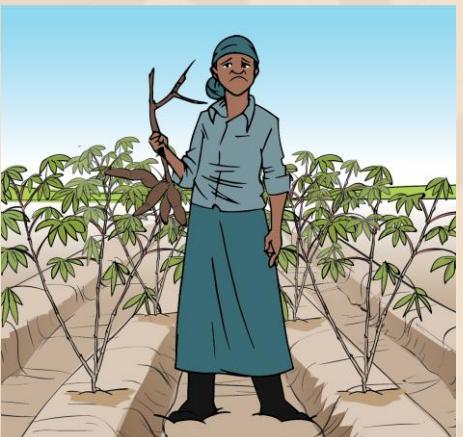
NORMAL

7.5 - 15 tonnes per hectare

3 Obtain the recommended fertilizer rate

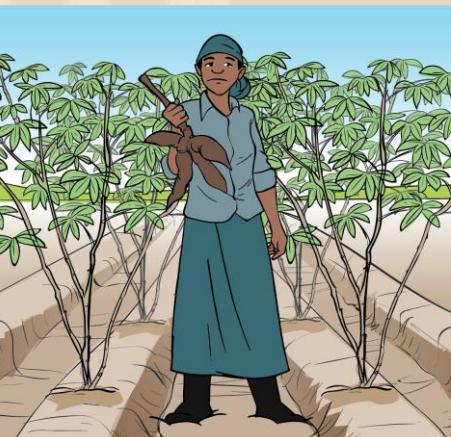
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LOW

<7.5 tonnes per hectare



NORMAL

7.5 - 15 tonnes per hectare



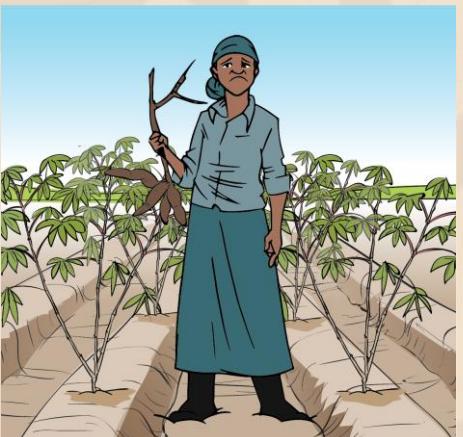
MEDIUM

15 - 22.5 tonnes per hectare

3 Obtain the recommended fertilizer rate

The amount of fertilizer to apply depends on your current cassava yield.

Think of how cassava performed in your field in the past, and compare the size of a typical root stock harvested from your field to the rootstocks shown in these pictures.



LOW



NORMAL



MEDIUM



HIGH

<7.5 tonnes per hectare

7.5 - 15 tonnes per hectare

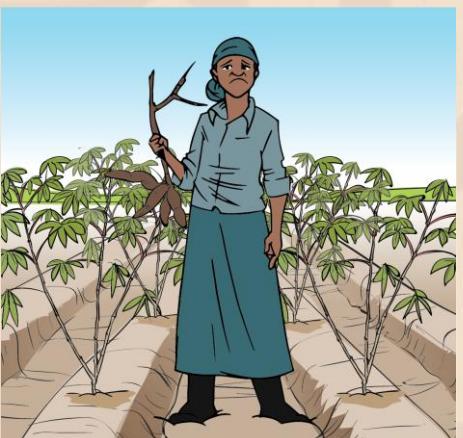
15 - 22.5 tonnes per hectare

22.5 - 30 tonnes per hectare

3 Obtain the recommended fertilizer rate

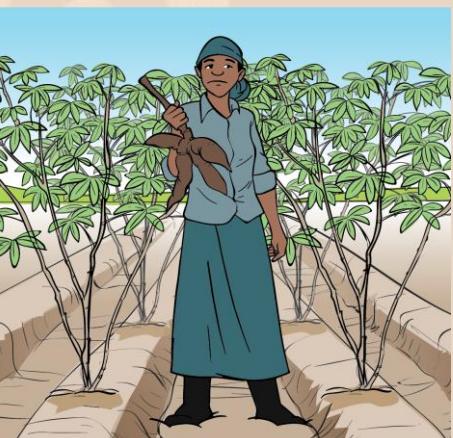
The amount of fertilizer to apply depends on your current cassava yield.

Think of how cassava performed in your field in the past, and compare the size of a typical root stock harvested from your field to the rootstocks shown in these pictures.



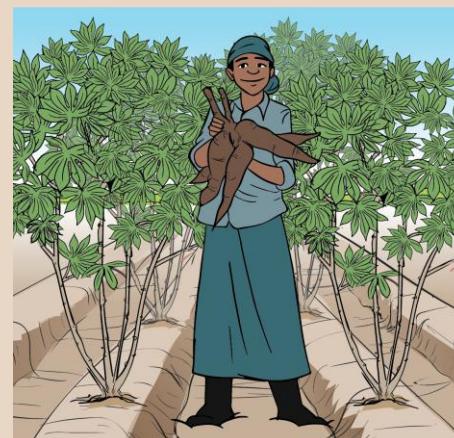
LOW

<7.5 tonnes per hectare



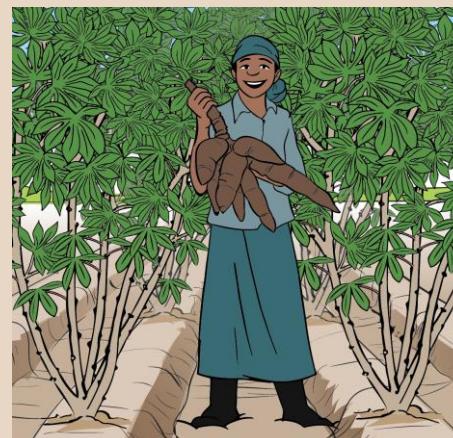
NORMAL

7.5 - 15 tonnes per hectare



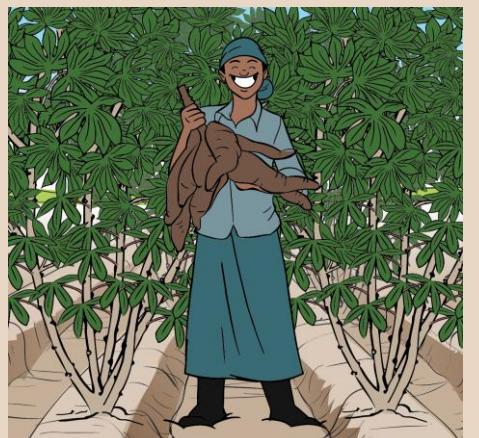
MEDIUM

15 - 22.5 tonnes per hectare



HIGH

22.5 - 30 tonnes per hectare



VERY HIGH

>30 tonnes per hectare

3 Obtain the recommended fertilizer rate

The amount of fertilizer to apply depends on your current cassava yield.

Think of how cassava performed in your field in the past, and compare the size of a typical root stock harvested from your field to the rootstocks shown in these pictures.



NORMAL

7.5 - 15 tonnes per hectare

For example

A good crop stand is 10,000 plants per hectare.
If every plant yields 1 kg of roots, then your
yield will be:

3 Obtain the recommended fertilizer rate

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If every plant yields 1 kg of roots, then your
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$$10,000 \times 1\text{kg} = 10 + / \text{ha}$$

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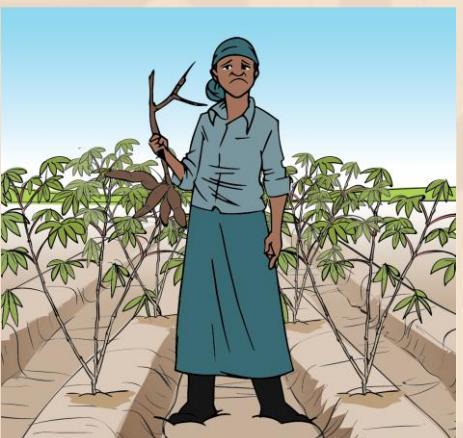
$$10,000 \times 1\text{kg} = 10 + / \text{ha}$$

This is a typical yield for smallholder cassava growers.

3 Obtain the recommended fertilizer rate

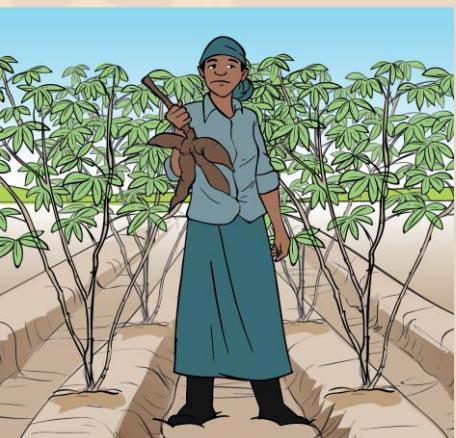
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LOW

<7.5 tonnes per hectare



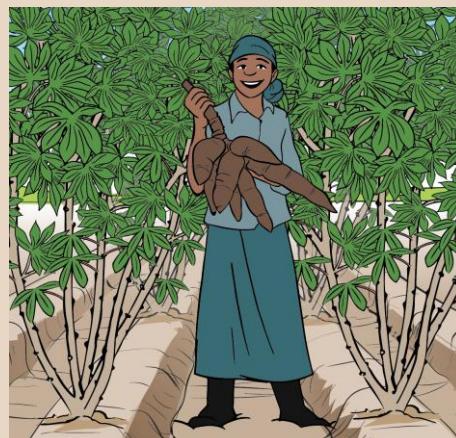
NORMAL

7.5 - 15 tonnes per hectare



MEDIUM

15 - 22.5 tonnes per hectare



HIGH

22.5 - 30 tonnes per hectare



VERY HIGH

>30 tonnes per hectare

The higher your yield, the more productive your soil, and the smaller the fertilizer requirement.

3 Obtain the recommended fertilizer rate

AKILIMO also considers where you are located, and your planting date.

3 Obtain the recommended fertilizer rate

AKILIMO also considers where you are located, and your planting date.

Region / District

AKILIMO uses information about the typical soils in your area to calculate how much nutrients your soil can typically supply.



Different soils require different amounts of fertilizer nutrients.

3 Obtain the recommended fertilizer rate

AKILIMO also considers where you are located, and your planting date.

Region / District

AKILIMO uses information about the typical soils in your area to calculate how much nutrients your soil can typically supply.



Different soils require different amounts of fertilizer nutrients.

Planting month

AKILIMO uses the typical rainfall your crop will receive to calculate how much it can benefit from fertilizer application.



Your planting date affects when and how much rainfall your crop receives.

3 Obtain the recommended fertilizer rate

Use the AKILIMO flyer to look up the recommended fertilizer rate for your current yield level, your region / district, and your planting month.

3 Obtain the recommended fertilizer rate

Use the AKILIMO flyer to look up the recommended fertilizer rate for your current yield level, your region / district, and your planting month.



Recommended
Fertilizer Rates

www.akilimo.org

MWANZA
SHINYANGA
SIMIYU
(or your region)

The recommended fertilizer rate depends on:

3 Obtain the recommended fertilizer rate

Use the AKILIMO flyer to look up the recommended fertilizer rate for your current yield level, your region / district, and your planting month.



Recommended
Fertilizer Rates

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MWANZA
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Yield class



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MWANZA
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LOW
NORMAL
MEDIUM
HIGH
VERY HIGH

District



3 Obtain the recommended fertilizer rate

Use the AKILIMO flyer to look up the recommended fertilizer rate for your current yield level, your region / district, and your planting month.



Recommended
Fertilizer Rates

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MWANZA
SHINYANGA
SIMIYU
(or your region)

The recommended fertilizer rate depends on:

Yield class



LOW
NORMAL
MEDIUM
HIGH
VERY HIGH

District



Planting month



3 Obtain the recommended fertilizer rate

How does this work? Let's look at an example.

3 Obtain the recommended fertilizer rate

How does this work? Let's look at an example.

What is your Region?

3 Obtain the recommended fertilizer rate

How does this work? Let's look at an example.

What is your Region?

Simiyu

3 Obtain the recommended fertilizer rate

How does this work? Let's look at an example.

What is your Region?

Simiyu

What is your District?

3 Obtain the recommended fertilizer rate

How does this work? Let's look at an example.

What is your Region?

Simiyu

What is your District?

Busega

3 Obtain the recommended fertilizer rate

How does this work? Let's look at an example.

What is your Region?

Simiyu

What is your District?

Busega

In what month will you plant your cassava?

3 Obtain the recommended fertilizer rate

How does this work? Let's look at an example.

What is your Region?

Simiyu

What is your District?

Busega

In what month will you plant your cassava?

November

3 Obtain the recommended fertilizer rate

How does this work? Let's look at an example.

What is your Region?

Simiyu

What is your District?

Busega

In what month will you plant your cassava?

November

What yield do you typically obtain?

(without fertilizer)

3 Obtain the recommended fertilizer rate

How does this work? Let's look at an example.

What is your Region?

Simiyu

What is your District?

Busega

In what month will you plant your cassava?

November

What yield do you typically obtain?

(without fertilizer)



3 Obtain the recommended fertilizer rate

How does this work? Let's look at an example.

What is your Region?

Simiyu

What is your District?

Busega

In what month will you plant your cassava?

November

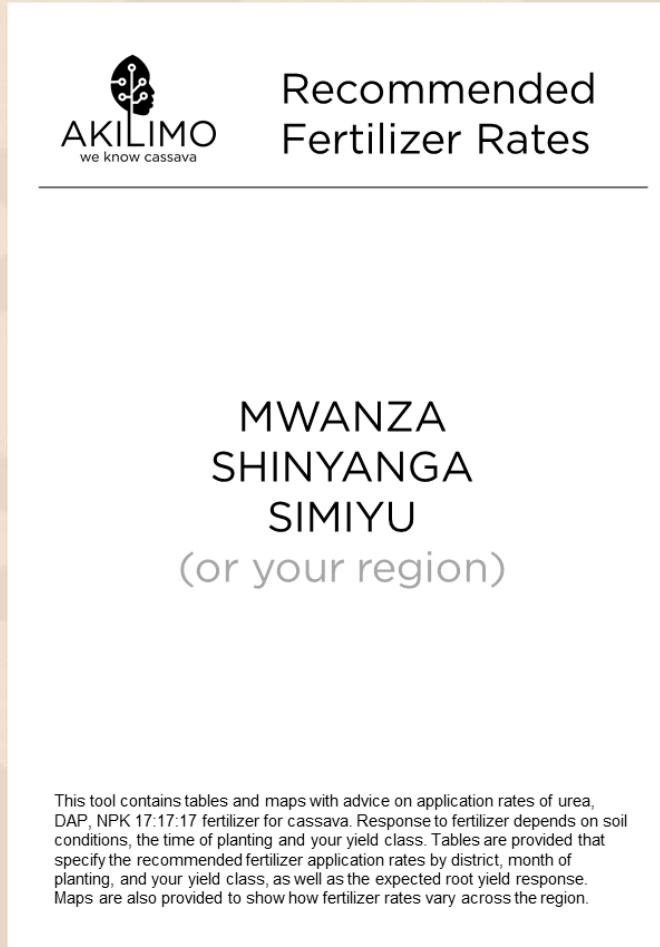
What yield do you typically obtain?

(without fertilizer)



3 Obtain the recommended fertilizer rate

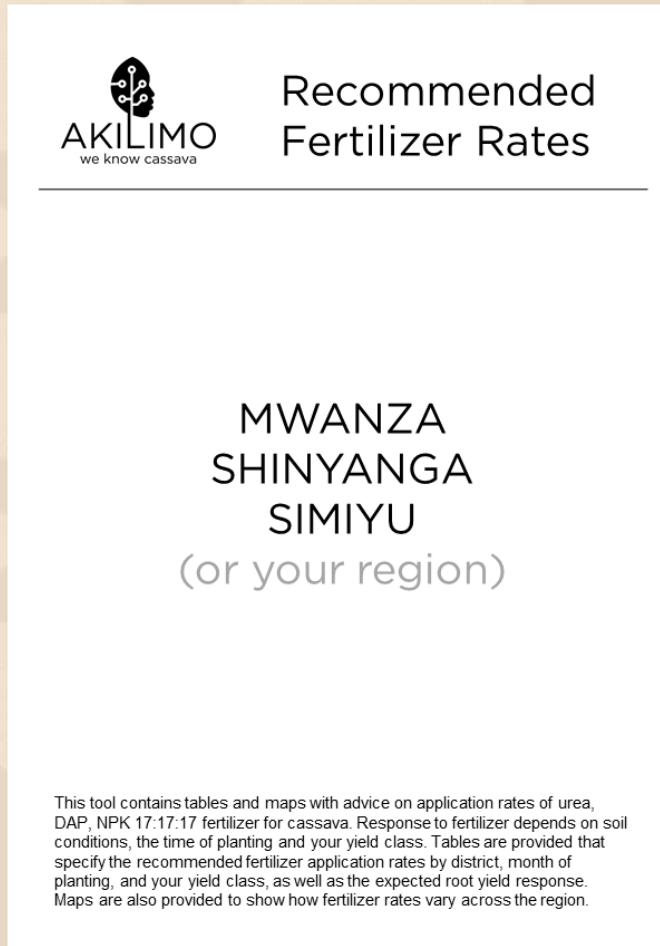
Let's look at the flyer...



AKILIMO provides a flyer that contains the recommended fertilizer rates for your region.

3 Obtain the recommended fertilizer rate

Let's look at the flyer...

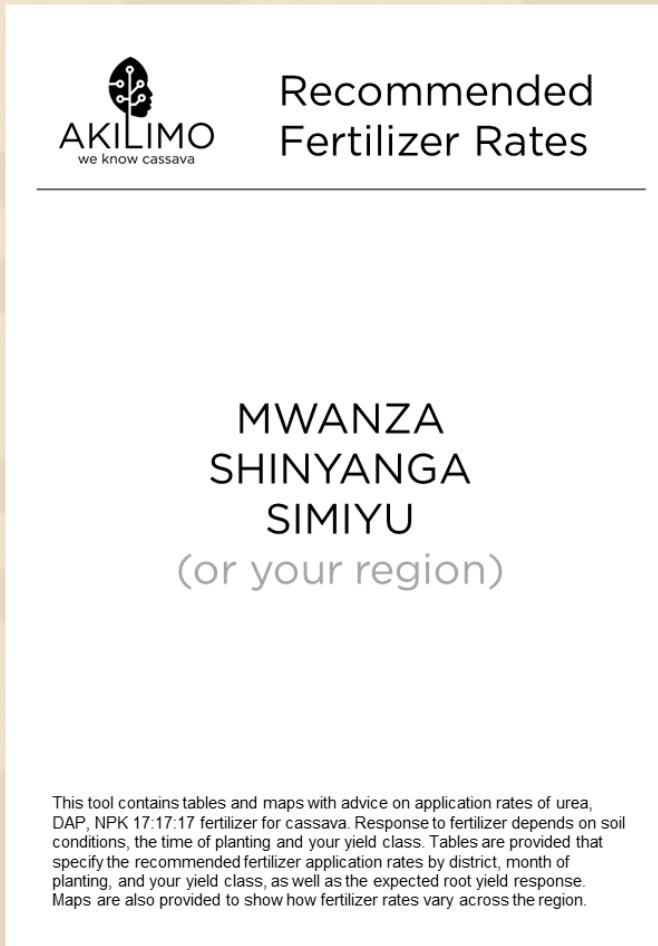


AKILIMO provides a flyer that contains the recommended fertilizer rates **for your region**.

The flyer contains maps and tables that specify the recommended urea, DAP and NPK 17:17:17 rates **per district, planting month and yield class**.

3 Obtain the recommended fertilizer rate

Let's look at the flyer...



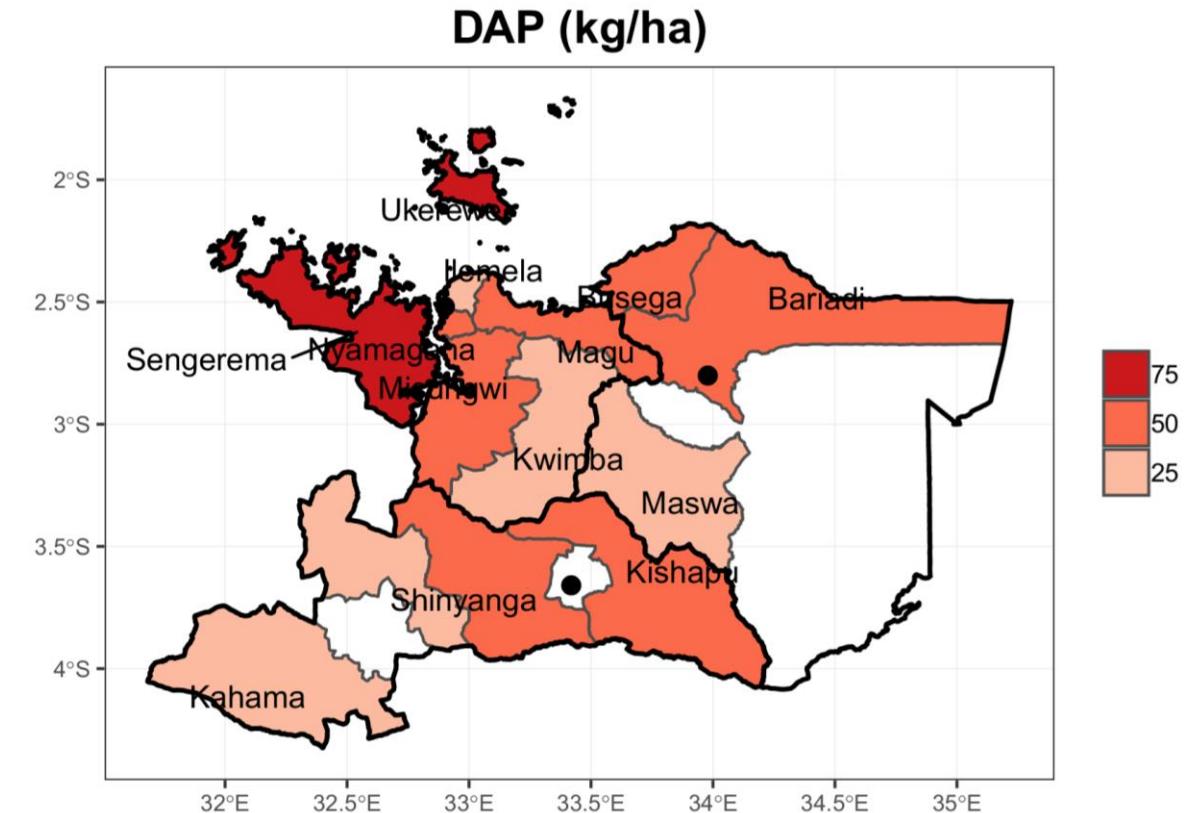
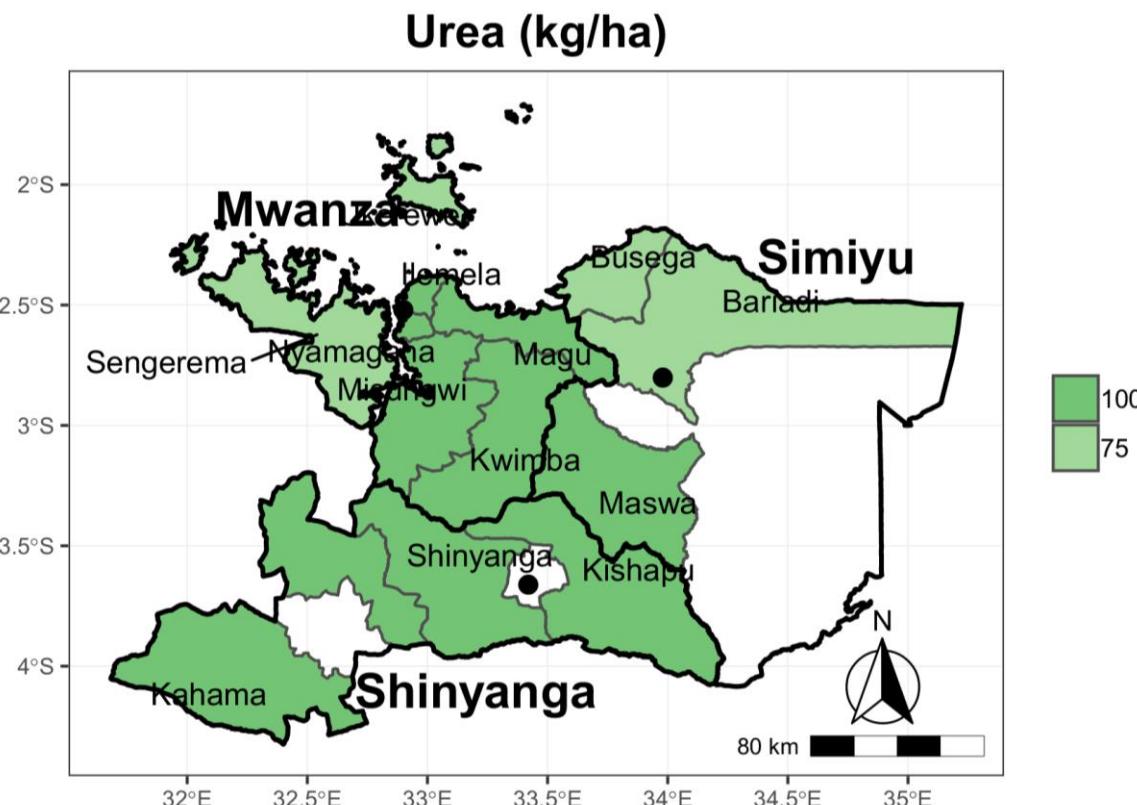
AKILIMO provides a flyer that contains the recommended fertilizer rates **for your region**.

The flyer contains maps and tables that specify the recommended urea, DAP and NPK 17:17:17 rates **per district, planting month and yield class**.

So for our example, we look for recommendations **for Busega, Simiyu, when planting in November, in a field with typically normal yield**.

3 Obtain the recommended fertilizer rate

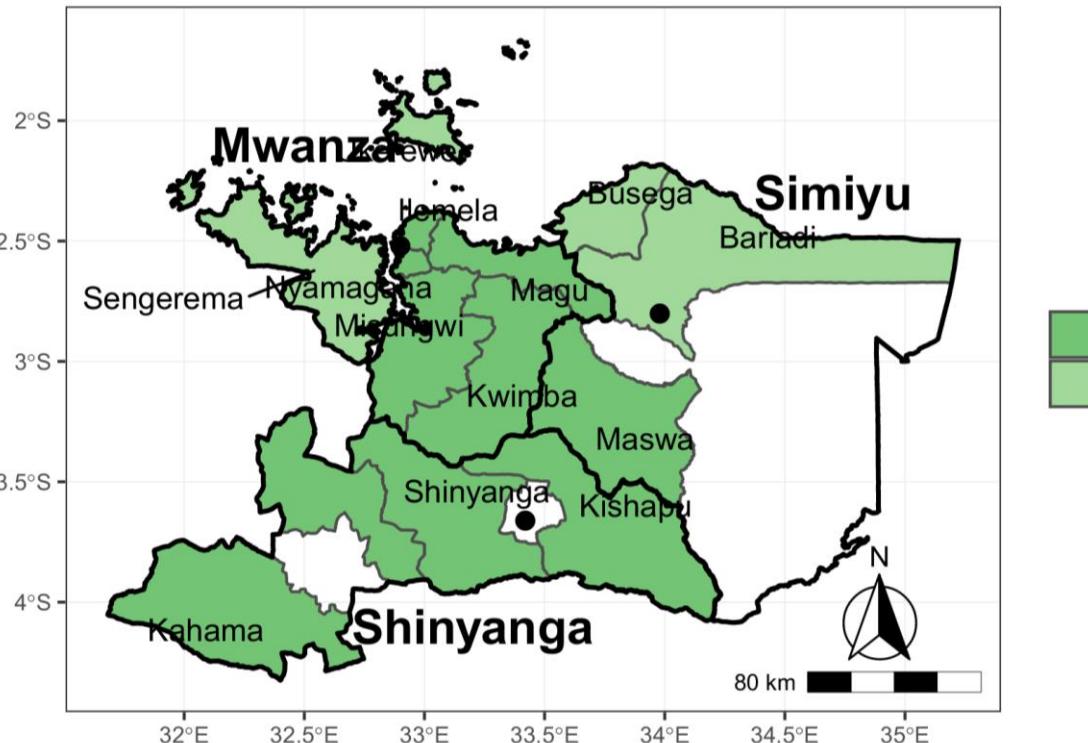
Simiyu region ; planting in November ; yield class = **NORMAL**



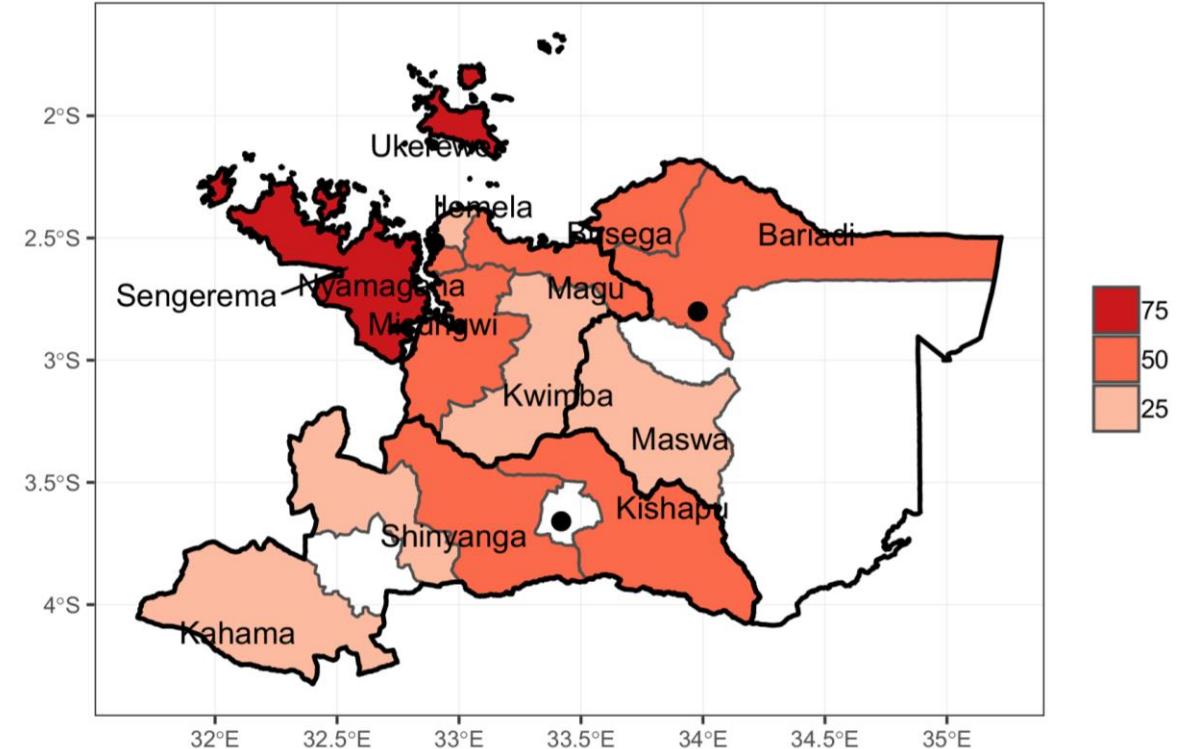
3 Obtain the recommended fertilizer rate

Simiyu region ; planting in November ; yield class = **NORMAL**

Urea (kg/ha)



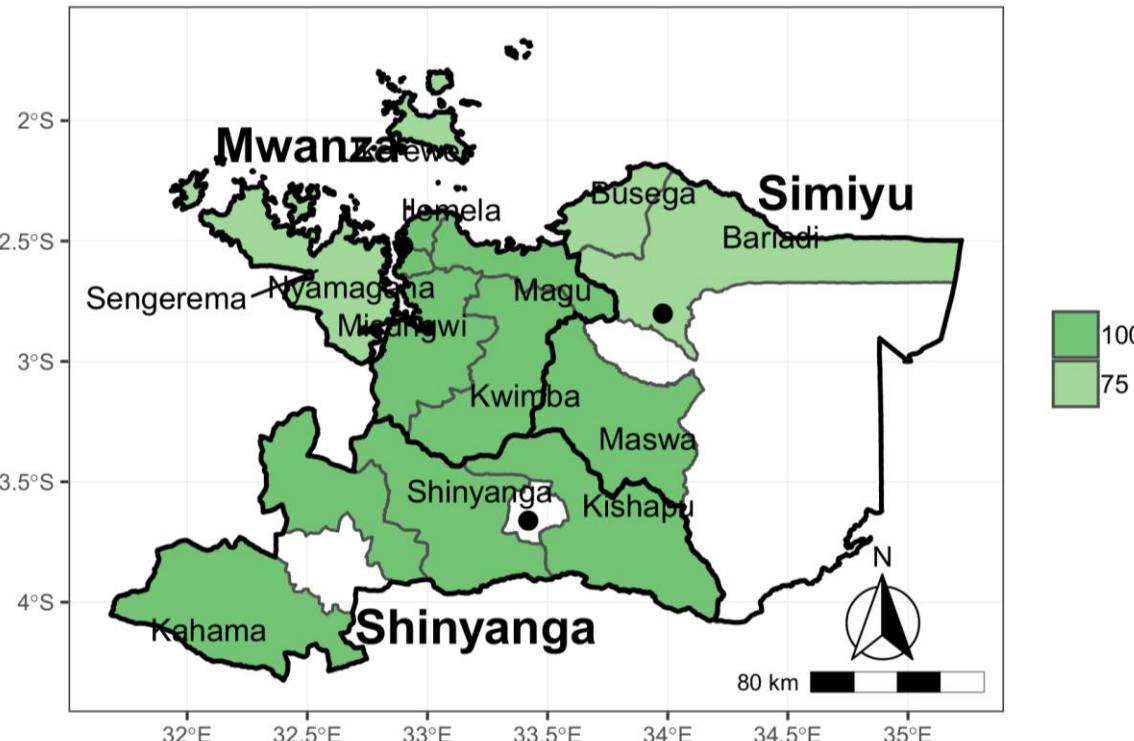
DAP (kg/ha)



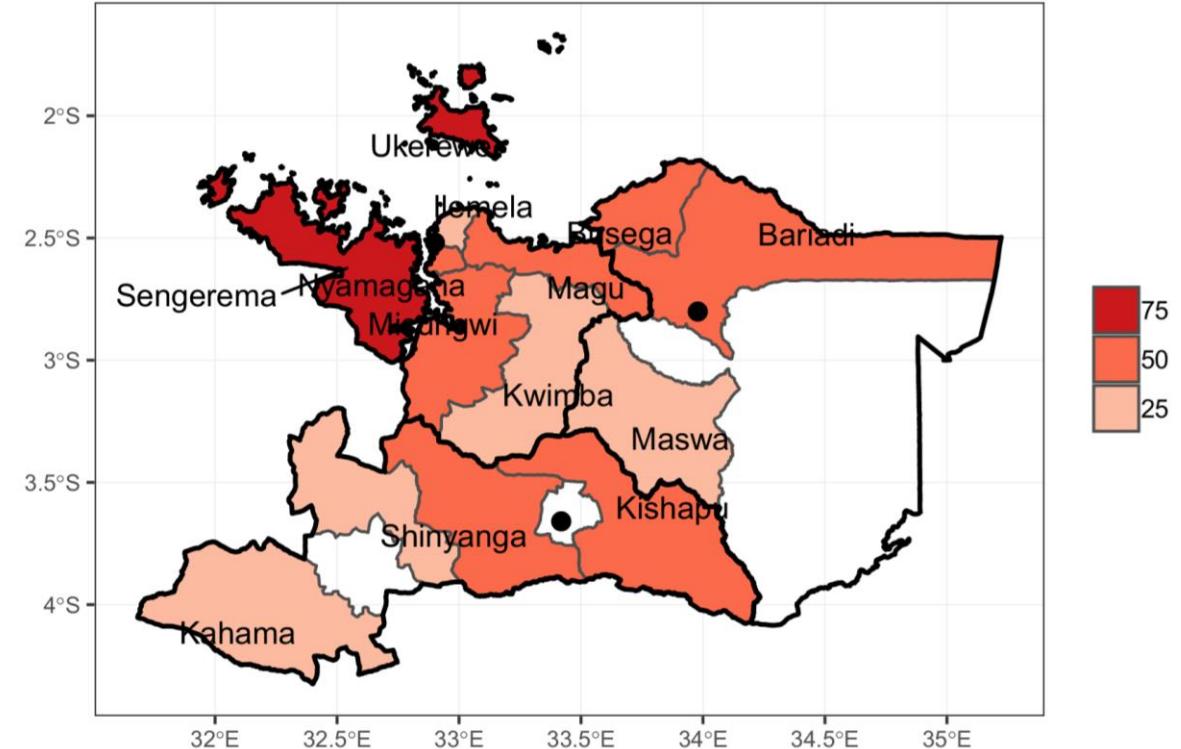
3 Obtain the recommended fertilizer rate

Simiyu region ; planting in November ; yield class = **NORMAL**

Urea (kg/ha)

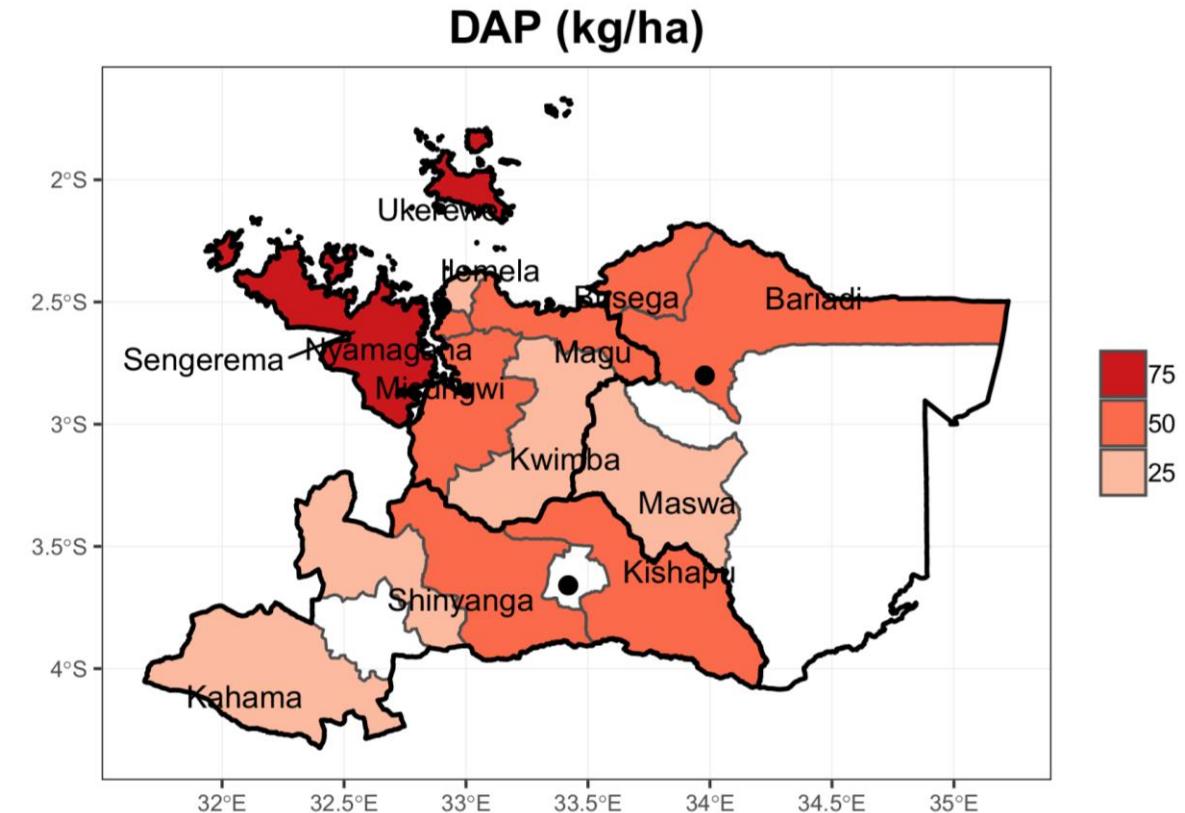
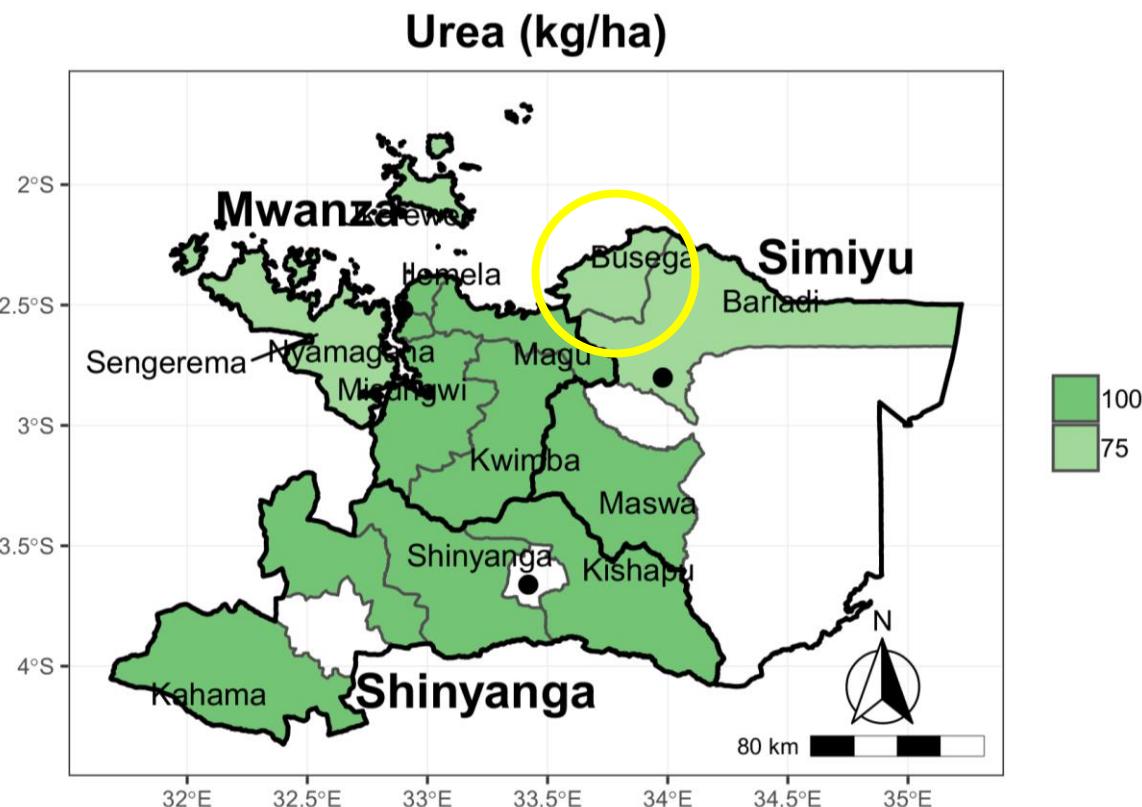


DAP (kg/ha)



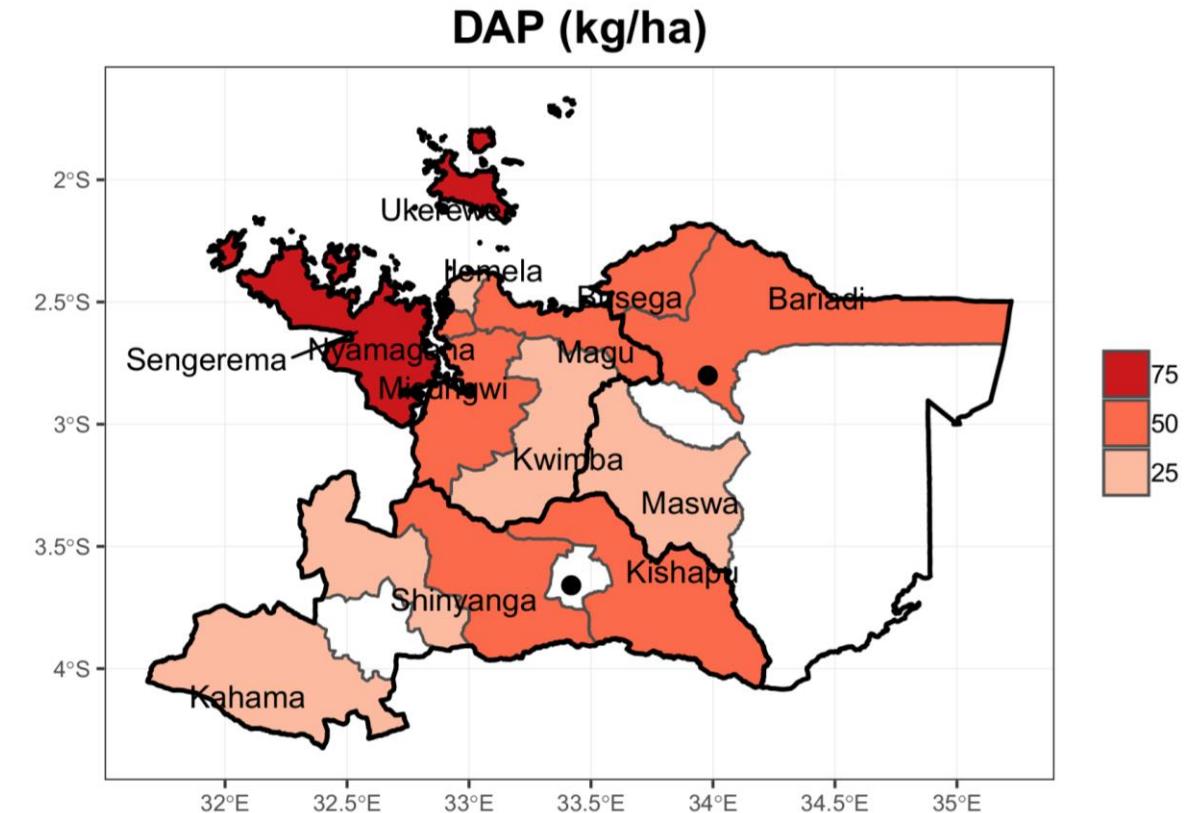
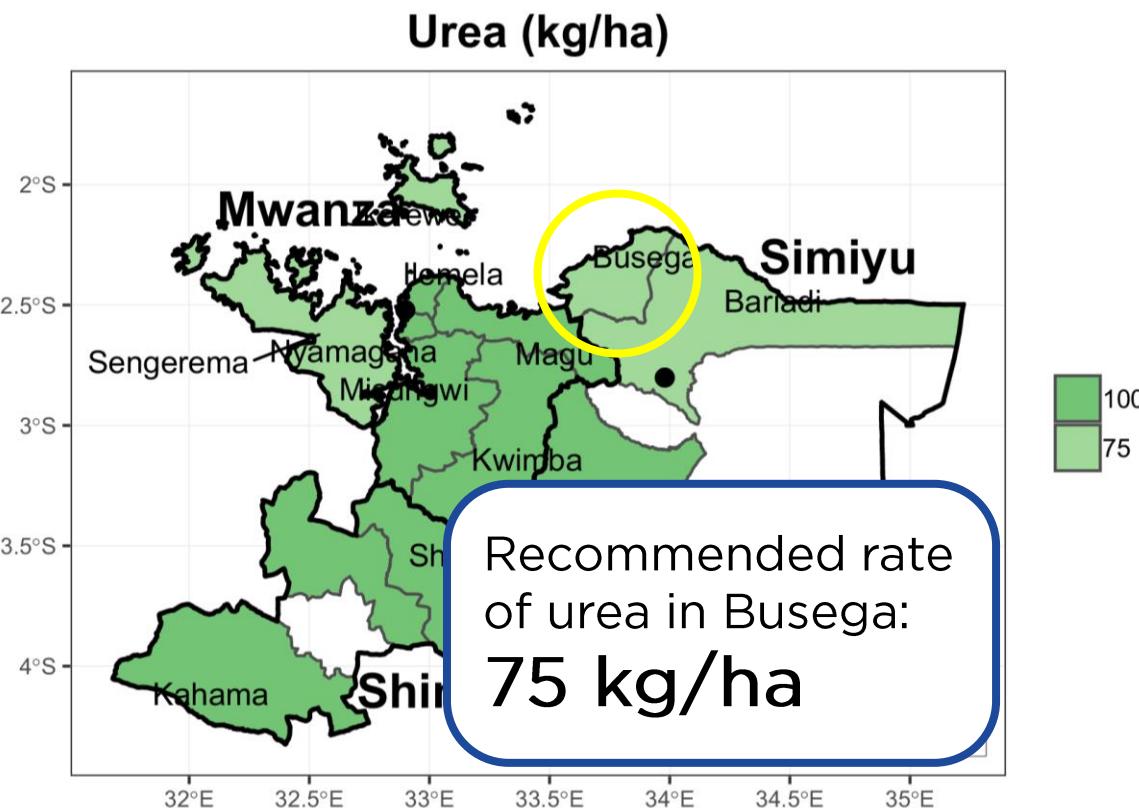
3 Obtain the recommended fertilizer rate

Simiyu region ; planting in November ; yield class = **NORMAL**



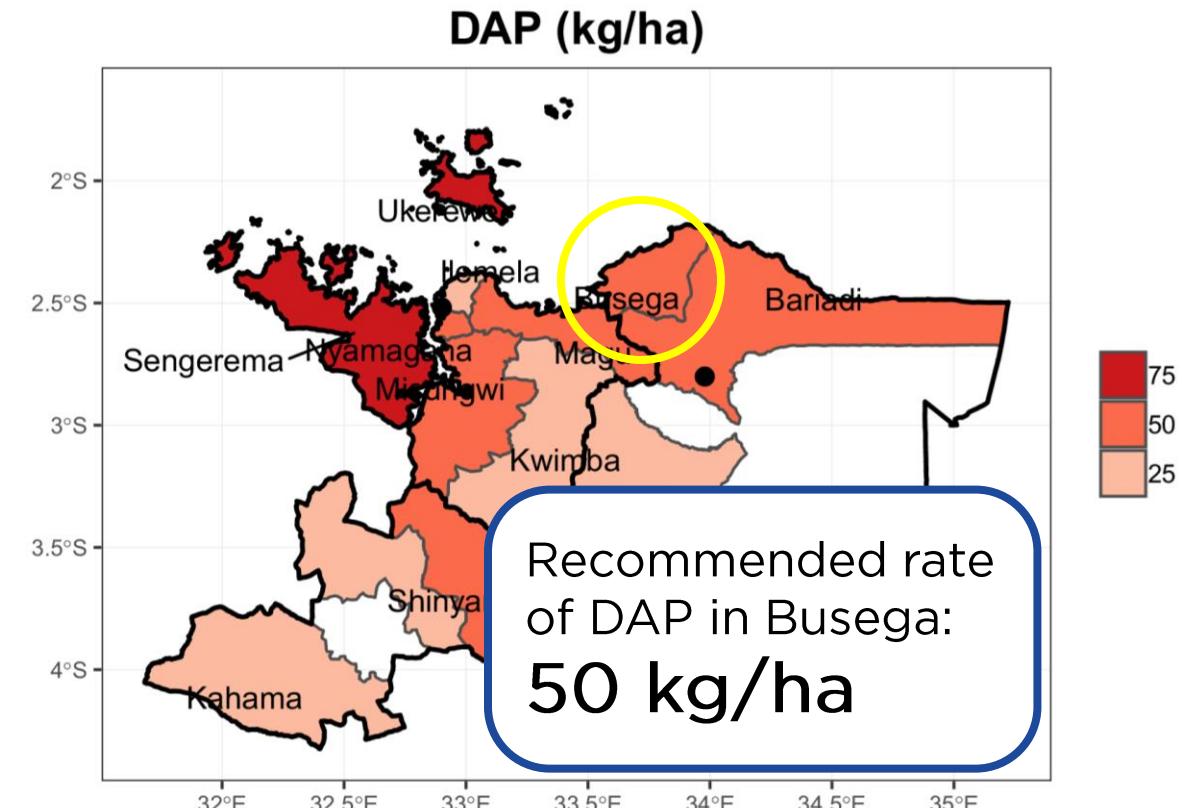
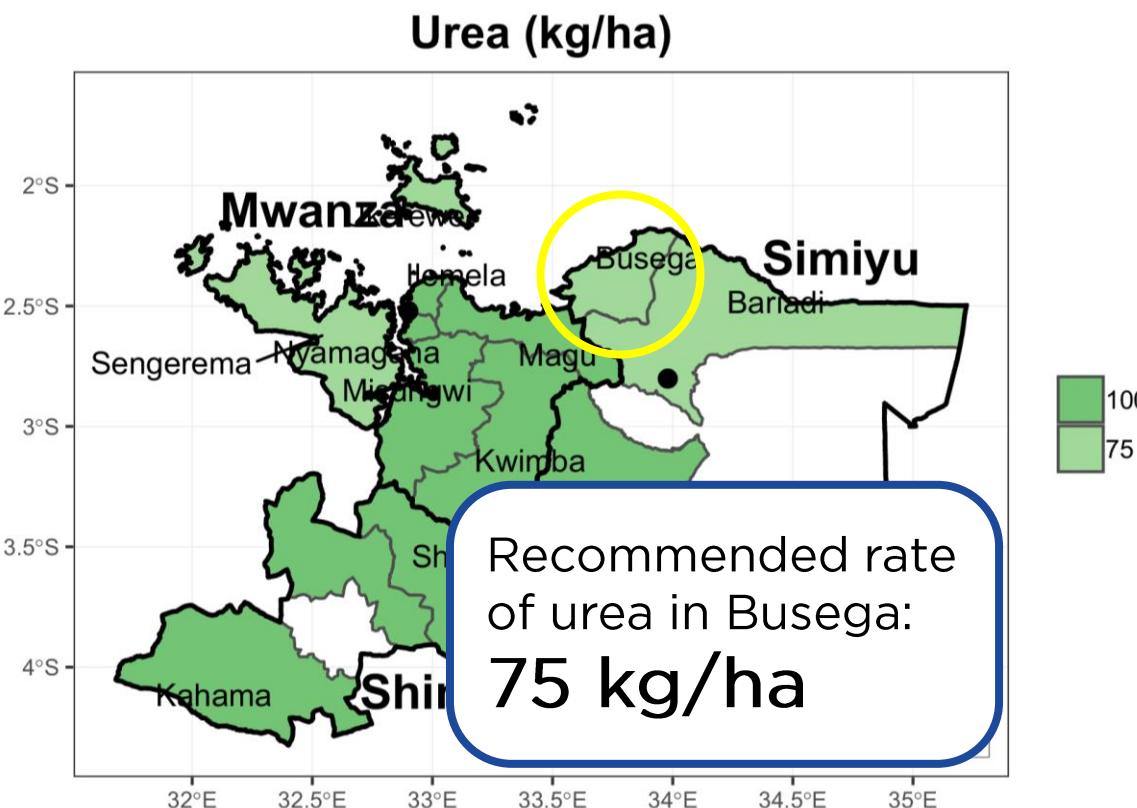
3 Obtain the recommended fertilizer rate

Simiyu region ; planting in November ; yield class = **NORMAL**



3 Obtain the recommended fertilizer rate

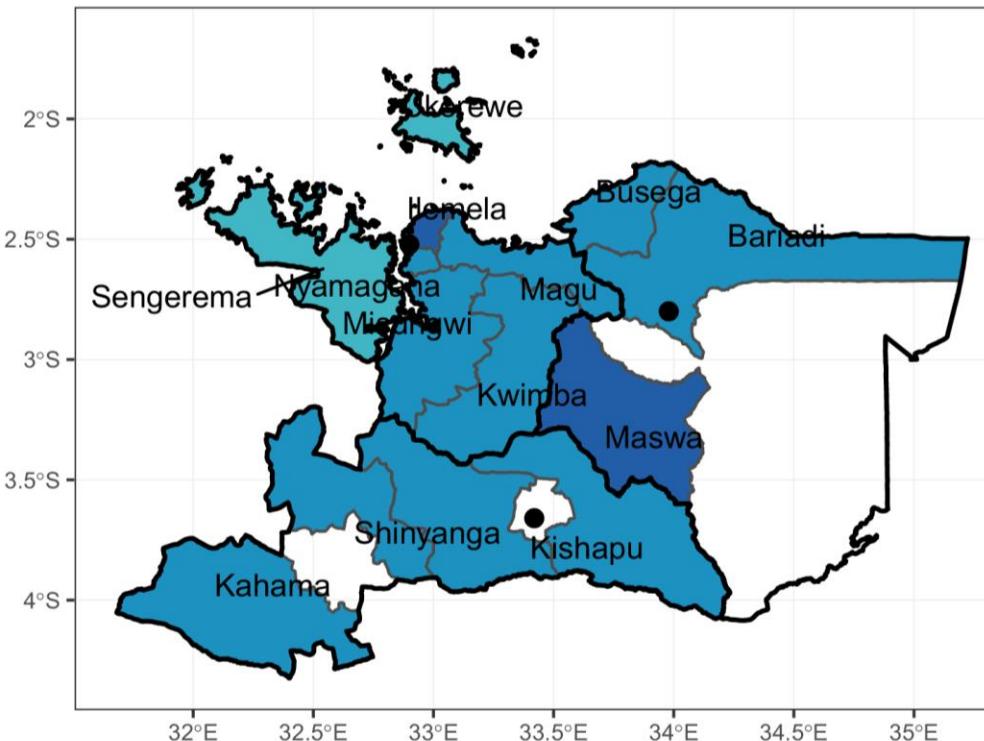
Simiyu region ; planting in November ; yield class = **NORMAL**



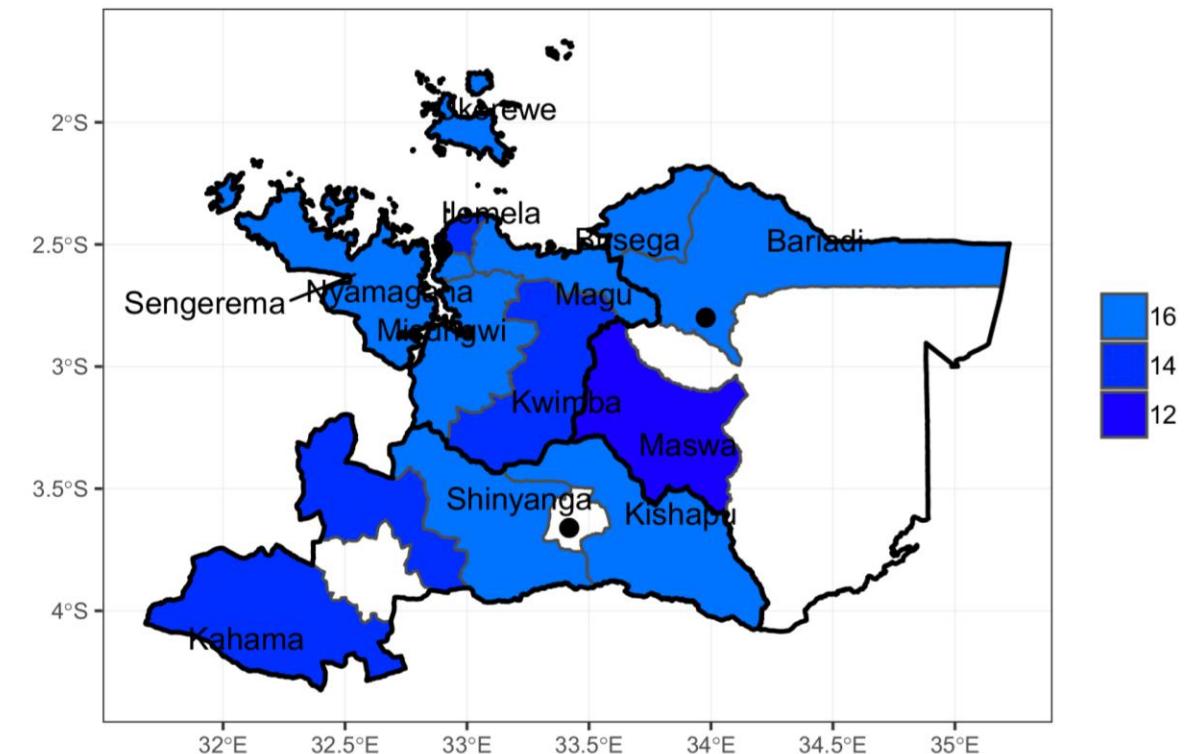
3 Obtain the recommended fertilizer rate

Simiyu region ; planting in November ; yield class = **NORMAL**

NPK17:17:17 (kg/ha)



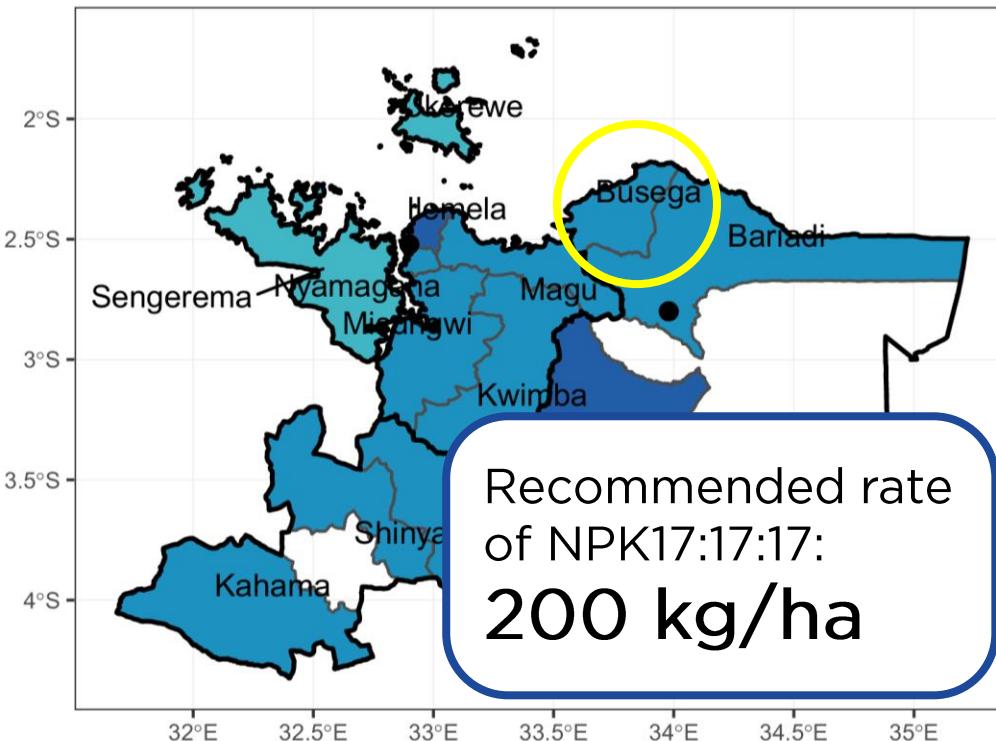
Yield increase (t/ha)



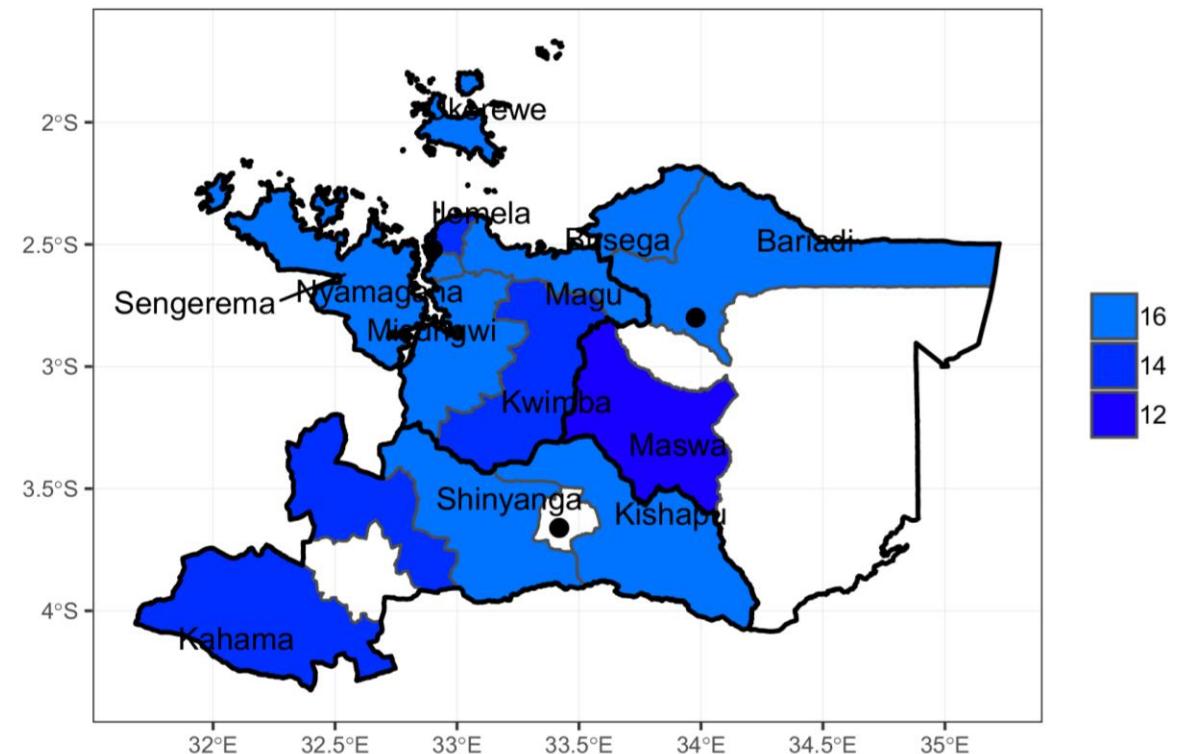
3 Obtain the recommended fertilizer rate

Simiyu region ; planting in November ; yield class = **NORMAL**

NPK17:17:17 (kg/ha)



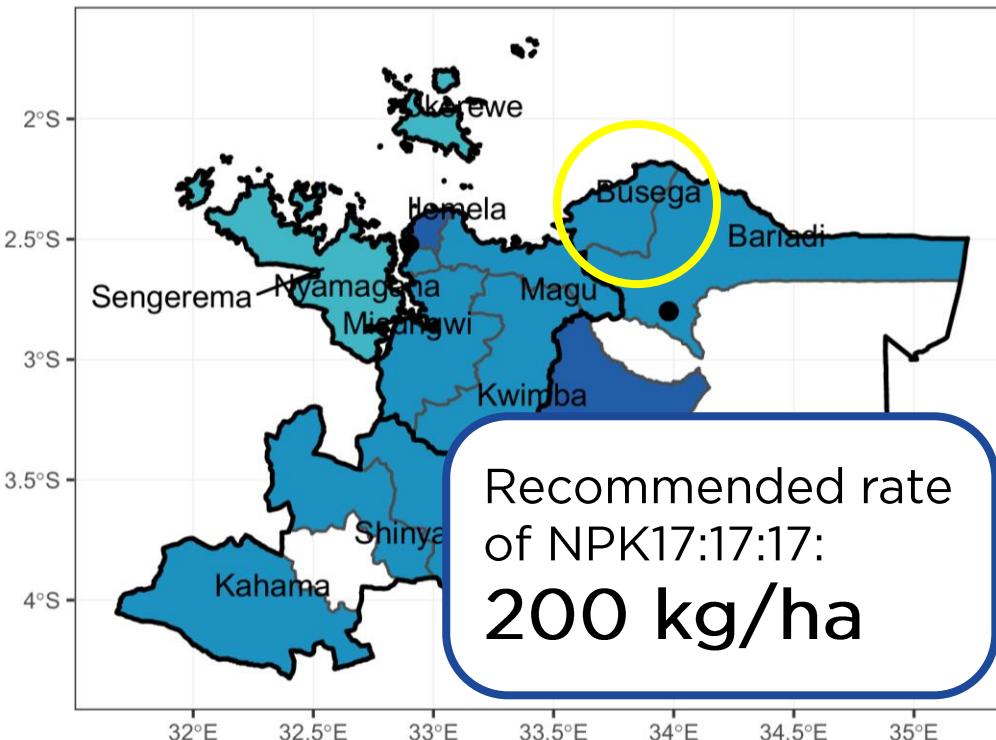
Yield increase (t/ha)



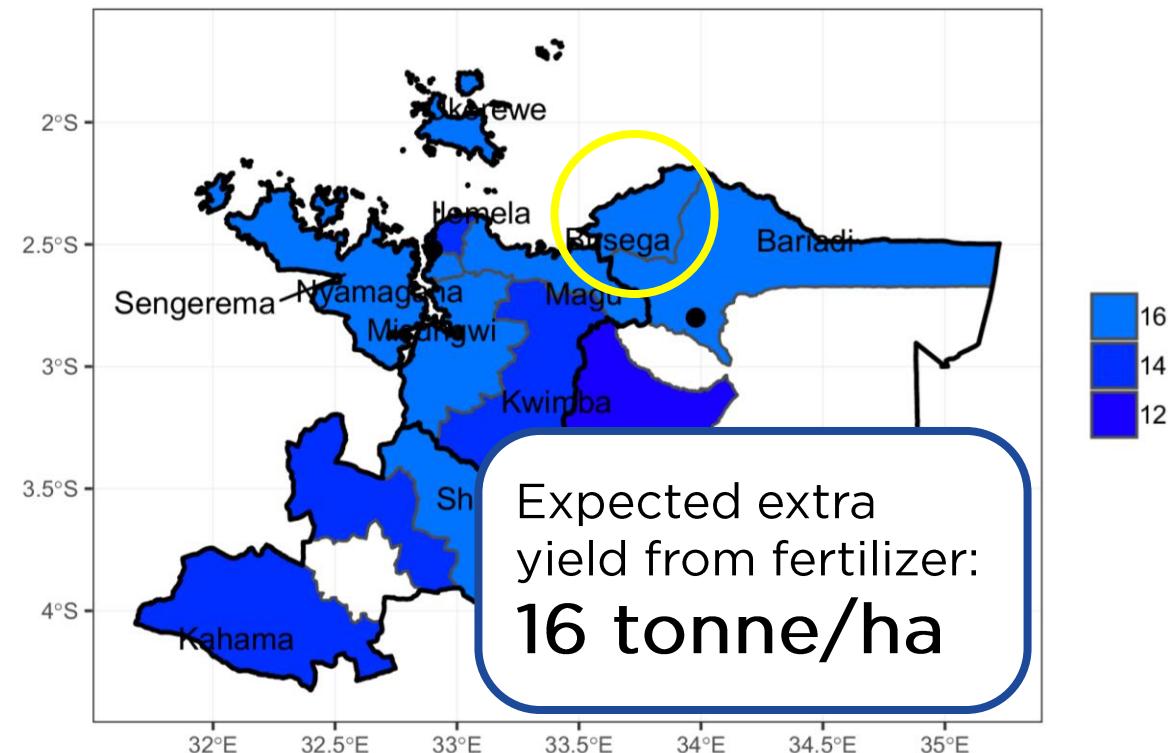
3 Obtain the recommended fertilizer rate

Simiyu region ; planting in November ; yield class = **NORMAL**

NPK17:17:17 (kg/ha)



Yield increase (t/ha)



3 Obtain the recommended fertilizer rate

The flyer also contains easy look-up tables:

3 Obtain the recommended fertilizer rate

The flyer also contains easy look-up tables:

REGION	DISTRICT	Planting in November		NPK17:17:17 (kg/ha)	Current yield: NORMAL (t/ha)
		Urea (kg/ha)	DAP (kg/ha)		
Mwanza	Ilemela	100	25	225	14
Mwanza	Kwimba	100	25	200	14
Mwanza	Magu	100	50	200	15
Mwanza	Misungwi	100	50	200	15
Mwanza	Nyamagana	100	50	200	15
Mwanza	Sengerema	75	75	175	16
Mwanza	Ukerewe	75	75	175	16
Shinyanga	Kahama	100	25	200	14
Shinyanga	Kishapu	100	50	200	15
Shinyanga	Shinyanga	100	50	200	15
Simiyu	Bariadi	75	50	200	16

3 Obtain the recommended fertilizer rate

The flyer also contains easy look-up tables:

REGION	DISTRICT	Planting in November			Current yield: NORMAL
		Urea (kg/ha)	DAP (kg/ha)	NPK17:17:17 (kg/ha)	
Mwanza	Ilemela	100	25	225	14
Mwanza	Kwimba	100	25	200	14
Mwanza	Magu	100	50	200	15
Mwanza	Misungwi	100	50	200	15
Mwanza	Nyamagana	100	50	200	15
Mwanza	Sengerema	75	75	175	16
Mwanza	Ukerewe	75	75	175	16
Shinyanga	Kahama	100	25	200	14
Shinyanga	Kishapu	100	50	200	15
Shinyanga	Shinyanga	100	50	200	15
Simiyu	Bariadi	75	50	200	16

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Mwanza	Ilemela	100	25	225	14	
Mwanza	Kwimba	100	25	200	14	
Mwanza	Magu	100	50	200	15	
Mwanza	Misungwi	100	50	200	15	
Mwanza	Nyamagana	100	50	200	15	
Mwanza	Sengerema	75	75	175	16	
Mwanza	Ukerewe	75	75	175	16	
Shinyanga	Kahama	100	25	200	14	
Shinyanga	Kishapu	100	50	200	15	
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Shinyanga	Kahama	100	25	200	14
Shinyanga	Kishapu	100	50	200	15
Shinyanga	Shinyanga	100	50	200	15
Simiyu	Bariadi	75	50	200	16
Simiyu	Busega	75	50	200	16
Simiyu	Maswa	100	25	225	13

3 Obtain the recommended fertilizer rate

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		Planting in November		Current yield: NORMAL	
REGION	DISTRICT	Urea (kg/ha)	DAP (kg/ha)	NPK17:17:17 (kg/ha)	Yield increase (t/ha)
Shinyanga	Kahama	100	25	200	14
Shinyanga	Kishapu	100	50	200	15
Shinyanga	Shinyanga	100	50	200	15
Simiyu	Bariadi	75	50	200	16
Simiyu	Busega	75	50	200	16
Simiyu	Maswa	100	25	225	13

3 Obtain the recommended fertilizer rate

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REGION	DISTRICT	Planting in November		NPK17:17:17 (kg/ha)	Current yield: NORMAL (t/ha)
		Urea (kg/ha)	DAP (kg/ha)		
Shinyanga	Kahama	100	25	200	14
Shinyanga	Kishapu	100	50	200	15
Shinyanga	Shinyanga	100	50	200	15
Simiyu	Bariadi	75	50	200	16
Simiyu	Busega	75	50	200	16
Simiyu	Maswa	100	25	225	13

Recommended rate
of urea in Busega:
75 kg/ha

Recommended rate
of DAP in Busega:
50 kg/ha

Recommended rate
of NPK17:17:17:
200 kg/ha

Expected extra
yield from fertilizer:
16 tonne/ha

3 Obtain the recommended fertilizer rate

3

Obtain the recommended fertilizer rate

Consult the AKILIMO tool to obtain the recommended rate and expected yield response in your district, for your planting month and yield class. Provide your cassava sale price.

E
_____ kg / ha

Recommended urea rate

F
_____ kg / ha

Recommended DAP rate

G
_____ kg / ha

Recommended NPK rate

H
_____ tonnes / ha

Expected yield response

I
_____ TSh / tonne

Expected sale price of cassava roots

Recommended rate
of urea in Busega:
75 kg/ha

Recommended rate
of DAP in Busega:
50 kg/ha

Recommended rate
of NPK17:17:17:
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Expected extra
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 tonnes / ha

Expected yield response

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 TSh / tonne

Expected sale price of cassava roots

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Recommended rate
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Expected yield response

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of urea in Busega:

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75 kg / ha

Recommended urea rate

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Recommended DAP rate

200 kg / ha

Recommended NPK rate

_____ tonnes / ha

Expected yield response

H

_____ TSh / tonne

Expected sale price of cassava roots

Recommended rate
of urea in Busega:
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of DAP in Busega:
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Recommended rate
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3 Obtain the recommended fertilizer rate

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Obtain the recommended fertilizer rate

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75 kg / ha

Recommended urea rate

50 kg / ha

Recommended DAP rate

200 kg / ha

Recommended NPK rate

16 tonnes / ha

Expected yield response

 TSh / tonne

Expected sale price of cassava roots

Recommended rate
of urea in Busega:
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Recommended rate
of DAP in Busega:
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Recommended rate
of NPK17:17:17:
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Expected extra
yield from fertilizer:
16 tonne/ha

3 Obtain the recommended fertilizer rate

3

Obtain the recommended fertilizer rate

Consult the AKILIMO tool to obtain the recommended rate and expected yield response in your district, for your planting month and yield class. Provide your cassava sale price.

75 kg / ha

Recommended urea rate

50 kg / ha

Recommended DAP rate

200 kg / ha

Recommended NPK rate

16

tonnes / ha

Expected yield response

H

TSh / tonne

Expected sale price of cassava roots

I
For the cost benefit analysis in Step 4, you need to provide the price you expect to receive for 1 tonne of cassava roots.

Recommended rate of urea in Busega:
75 kg/ha

Recommended rate of DAP in Busega:
50 kg/ha

Recommended rate of NPK17:17:17:
200 kg/ha

Expected extra yield from fertilizer:
16 tonne/ha

3 Obtain the recommended fertilizer rate

3

Obtain the recommended fertilizer rate

Consult the AKILIMO tool to obtain the recommended rate and expected yield response in your district, for your planting month and yield class. Provide your cassava sale price.

75 kg / ha

Recommended urea rate

50 kg / ha

Recommended DAP rate

200 kg / ha

Recommended NPK rate

16 tonnes / ha

Expected yield response

100,000 TSh / tonne

Expected sale price of cassava roots

Recommended rate
of urea in Busega:
75 kg/ha

Recommended rate
of DAP in Busega:
50 kg/ha

Recommended rate
of NPK17:17:17:
200 kg/ha

Expected extra
yield from fertilizer:
16 tonne/ha

For the cost benefit analysis in Step 4, you need to provide the price you expect to receive for 1 tonne of cassava roots.

3 Obtain the recommended fertilizer rate

We now know how to obtain the recommended fertilizer rates for 1 hectare.

Recommended rate
of urea in Busega:
75 kg/ha

Recommended rate
of DAP in Busega:
50 kg/ha

Recommended rate
of NPK17:17:17:
200 kg/ha

Expected extra
yield from fertilizer:
16 tonne/ha

3 Obtain the recommended fertilizer rate

We now know how to obtain the recommended fertilizer rates for 1 hectare.

These need to be converted to the fertilizer amounts required for your field.

Recommended rate
of urea in Busega:
75 kg/ha

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$$0.5 \times 75 = 37.5 \text{ kg of urea}$$



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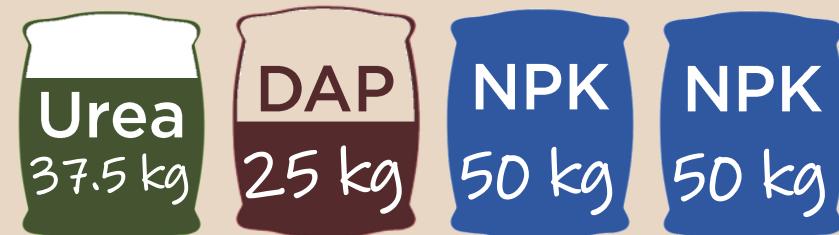
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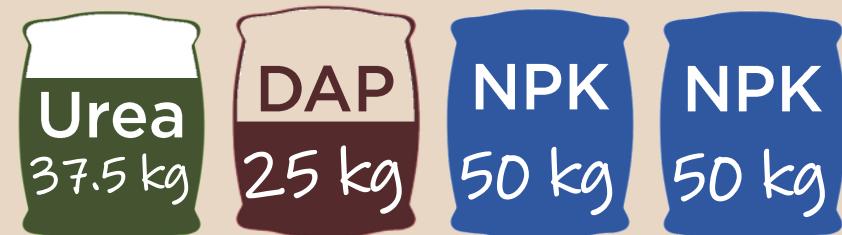
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But is this profitable?

Let's continue to step **4** and do a cost-benefit analysis...

4 Do a cost-benefit analysis

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Using fertilizer only makes sense if the value gained from the increase in root yield is larger than the cost of fertilizer.

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The recommended fertilizer rates obtained in step 3 are calculated using the common prices of roots and prices of fertilizer in the country.

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You must confirm profitability using the fertilizer prices in your local area, and your expected cassava root price.

4 Do a cost-benefit analysis

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Remember: under step **2**, we obtained prices of urea, DAP and NPK 17:17:17 from your local agrodealer.

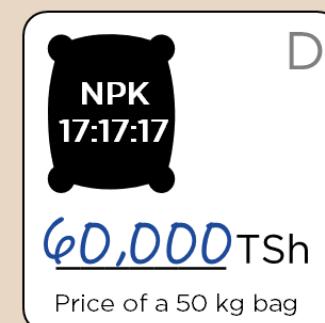
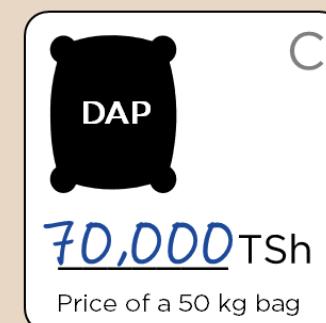
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And under step **3**, we recorded the expected sales price of the cassava roots.

4 Do a cost-benefit analysis

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And under step **3**, we recorded the expected sales price of the cassava roots.

100,000 TSh / tonne |

Expected sale price of cassava roots

4 Do a cost-benefit analysis

You evaluate profitability by comparing

Expected Gross Value Increase

against

Total Cost of Fertilizer

4 Do a cost-benefit analysis

To calculate the

Expected Gross Value Increase

4 Do a cost-benefit analysis

To calculate the

Expected Gross Value Increase

Multiply the root price and the expected extra yield

Price of 1 tonne of
cassava roots (TSh)

×

Expected extra yield
(tonnes/ha)

4 Do a cost-benefit analysis

To calculate the

Total Cost of Fertilizer

4 Do a cost-benefit analysis

To calculate the

Total Cost of Fertilizer

Multiply the price of fertilizer and the rate, then add up

$$\begin{aligned} & \frac{\text{Price of 1 bag of urea (TSh)}}{\text{Weight of 1 bag of urea (kg)}} \times \\ & + \frac{\text{Price of 1 bag of DAP (TSh)}}{\text{Weight of 1 bag of DAP (kg)}} \times \\ & + \frac{\text{Price of 1 bag of NPK (TSh)}}{\text{Weight of 1 bag of NPK (kg)}} \times \end{aligned}$$

Urea needed
for 1 ha (kg)

DAP needed
for 1 ha (kg)

NPK needed
for 1 ha (kg)

4 Do a cost-benefit analysis

The worksheet helps you do these calculations:

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	tonnes	J
Increase in gross revenue	H x I	TSh	K
Quantity of urea to apply	A x E	kg	L
Quantity of DAP to apply	A x F	kg	M
Quantity of NPK to apply	A x G	kg	N
Cost of urea	L x B ÷ 50	TSh	O
Cost of DAP	M x C ÷ 50	TSh	P
Cost of NPK	N x D ÷ 50	TSh	Q
Total cost	O + P + Q	TSh	R
Profit from fertilizer	K - R	TSh	S
Benefit cost ratio (BCR)	K ÷ R		T

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0.5 A
ha
Your field area

4 Do a cost-benefit analysis

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0.5 A
ha
Your field area

16 H
tonnes / ha
Expected yield response

4 Do a cost-benefit analysis

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0.5 A
ha

Your field area

16 H
tonnes / ha

Expected yield response

$$0.5 \times 16 = 8$$

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0.5 A
Your field area

16 H
Expected yield response

$$0.5 \times 16 = 8$$

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100,000 TSh / tonne

Expected sale price of cassava roots

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100,000 TSh / tonne

Expected sale price of cassava roots

$$8 \times 100,000 = 800,000$$

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100,000 TSh / tonne

Expected sale price of cassava roots

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0.5 A
ha
Your field area

4 Do a cost-benefit analysis

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0.5 A
Your field area

75 E
Recommended urea rate

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0.5 A
ha
Your field area

75 E
kg / ha
Recommended urea rate

$$0.5 \times 75 = 37.5$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes J
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Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

0.5 A
ha
Your field area

75 E
kg / ha
Recommended urea rate

$$0.5 \times 75 = 37.5$$

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Quantity of DAP to apply	A x F		kg M
Quantity of NPK to apply	A x G		kg N
Cost of urea	L x B ÷ 50		TSh O
Cost of DAP	M x C ÷ 50		TSh P
Cost of NPK	N x D ÷ 50		TSh Q
Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	K ÷ R		T

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes J
Increase in gross revenue	H x I	800,000 TSh K
Quantity of urea to apply	A x E	37.5 kg L
Quantity of DAP to apply	A x F	kg M
Quantity of NPK to apply	A x G	kg N
Cost of urea	L x B ÷ 50	TSh O
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Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

4 Do a cost-benefit analysis

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Now do the following calculations:

Increase in production	A x H	8 tonnes	J
Increase in gross revenue	H x I	800,000	TSh K
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Cost of NPK	N x D ÷ 50		TSh Q
Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	K ÷ R		T

0.5 A
ha
Your field area

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes J
Increase in gross revenue	H x I	800,000 TSh K
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Cost of NPK	N x D ÷ 50	TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

0.5 A
Your field area

50 F
Recommended DAP rate

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes J
Increase in gross revenue	H x I	800,000 TSh K
Quantity of urea to apply	A x E	37.5 kg L
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Cost of urea	L x B ÷ 50	TSh O
Cost of DAP	M x C ÷ 50	TSh P
Cost of NPK	N x D ÷ 50	TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

0.5 A
Your field area

50 F
Recommended DAP rate

$$0.5 \times 50 = 25$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes J
Increase in gross revenue	H x I	800,000 TSh K
Quantity of urea to apply	A x E	37.5 kg L
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Cost of urea	L x B ÷ 50	TSh O
Cost of DAP	M x C ÷ 50	TSh P
Cost of NPK	N x D ÷ 50	TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

0.5 A
Your field area

50 F
Recommended DAP rate

$$0.5 \times 50 = 25$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

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Increase in production	A x H	8 tonnes	J
Increase in gross revenue	H x I	800,000	TSh K
Quantity of urea to apply	A x E	37.5	kg L
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Cost of NPK	N x D ÷ 50		TSh Q
Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	K ÷ R		T

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Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

0.5 A
ha
Your field area

4 Do a cost-benefit analysis

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Cost of NPK	N x D ÷ 50	TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

0.5 A
ha

Your field area

200 G
kg / ha

Recommended NPK rate

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

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Cost of NPK	N x D ÷ 50	TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

0.5 A
ha

Your field area

200 G
kg / ha

Recommended NPK rate

$$0.5 \times 200 = 100$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

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Cost of NPK	N x D ÷ 50	TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

0.5 A
ha

Your field area

200 G
kg / ha

Recommended NPK rate

$$0.5 \times 200 = 100$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes J
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Cost of NPK	N x D ÷ 50	TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T



4 Do a cost-benefit analysis

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Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	K ÷ R		T

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Cost of NPK	$N \times D \div 50$		TSh Q
Total cost	$O + P + Q$		TSh R
Profit from fertilizer	$K - R$		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

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Cost of NPK	$N \times D \div 50$	TSh Q
Total cost	$O + P + Q$	TSh R
Profit from fertilizer	$K - R$	TSh S
Benefit cost ratio (BCR)	$K \div R$	T

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Total cost	$O + P + Q$	TSh R
Profit from fertilizer	$K - R$	TSh S
Benefit cost ratio (BCR)	$K \div R$	T



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Cost of NPK	N x D ÷ 50	TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T



$$37.5 \times 50,000 \div 50 = 37,500$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	$A \times H$	8 tonnes J
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Cost of NPK	$N \times D \div 50$	TSh Q
Total cost	$O + P + Q$	TSh R
Profit from fertilizer	$K - R$	TSh S
Benefit cost ratio (BCR)	$K \div R$	T



$$37.5 \times 50,000 \div 50 = 37,500$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

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Increase in production	$A \times H$	8 tonnes	J
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Cost of urea	$L \times B \div 50$	37,500	TSh O
Cost of DAP	$M \times C \div 50$		TSh P
Cost of NPK	$N \times D \div 50$		TSh Q
Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

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Cost of NPK	$N \times D \div 50$		TSh Q
Total cost	$O + P + Q$		TSh R
Profit from fertilizer	$K - R$		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

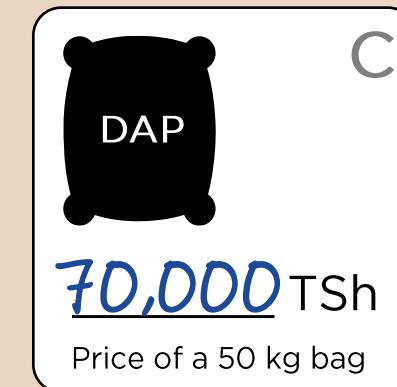
Increase in production	$A \times H$	8 tonnes	J
Increase in gross revenue	$H \times I$	800,000	TSh K
Quantity of urea to apply	$A \times E$	37.5 kg	I
Quantity of DAP to apply	$A \times F$	25 kg	M
Quantity of NPK to apply	$A \times G$	100 kg	N
Cost of urea	$L \times B \div 50$	37,500	TSh O
Cost of DAP	$M \times C \div 50$		TSh P
Cost of NPK	$N \times D \div 50$		TSh Q
Total cost	$O + P + Q$		TSh R
Profit from fertilizer	$K - R$		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

4 Do a cost-benefit analysis

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Cost of DAP	$M \times C \div 50$	TSh P
Cost of NPK	$N \times D \div 50$	TSh Q
Total cost	$O + P + Q$	TSh R
Profit from fertilizer	$K - R$	TSh S
Benefit cost ratio (BCR)	$K \div R$	T

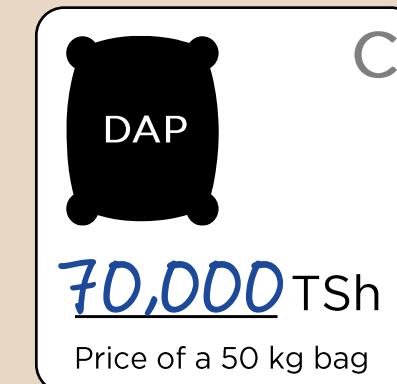


4 Do a cost-benefit analysis

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Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T



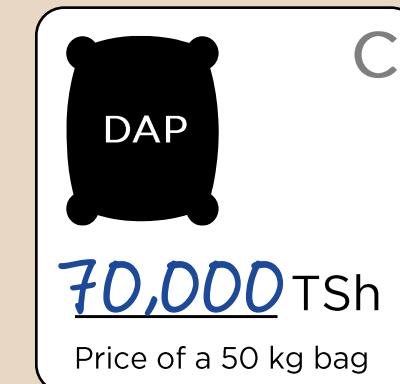
$$25 \times 70,000 \div 50 = 35,000$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

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Increase in production	A x H	8 tonnes J
Increase in gross revenue	H x I	800,000 TSh K
Quantity of urea to apply	A x E	37.5 kg L
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Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T



$$25 \times 70,000 \div 50 = 35,000$$

4 Do a cost-benefit analysis

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Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
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Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

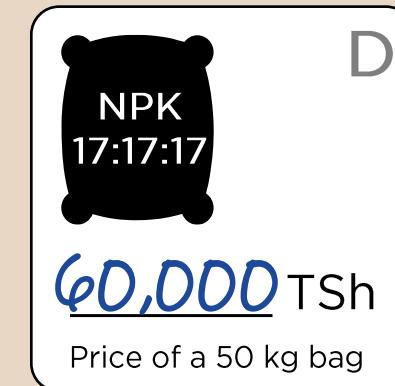
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Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	$K \div R$	T

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Total cost	$O + P + Q$	TSh R
Profit from fertilizer	$K - R$	TSh S
Benefit cost ratio (BCR)	$K \div R$	T

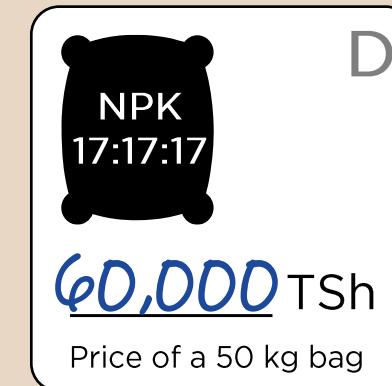


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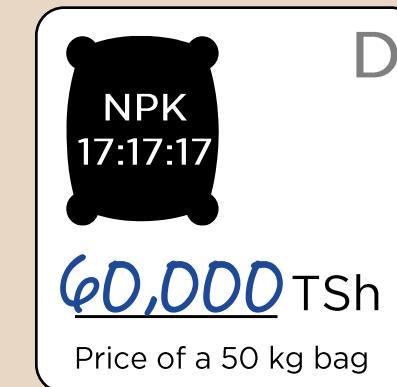
$$100 \times 60,000 \div 50 = 120,000$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

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Quantity of DAP to apply	$A \times F$	25 kg M
Quantity of NPK to apply	$A \times G$	100 kg N
Cost of urea	$L \times B \div 50$	37,500 TSh O
Cost of DAP	$M \times C \div 50$	35,000 TSh P
Cost of NPK	$N \times D \div 50$	120,000 TSh Q
Total cost	$O + P + Q$	TSh R
Profit from fertilizer	$K - R$	TSh S
Benefit cost ratio (BCR)	$K \div R$	T



$$100 \times 60,000 \div 50 = 120,000$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes J
Increase in gross revenue	H x I	800,000 TSh K
Quantity of urea to apply	A x E	37.5 kg L
Quantity of DAP to apply	A x F	25 kg M
Quantity of NPK to apply	A x G	100 kg N
Cost of urea	L x B ÷ 50	37,500 TSh O
Cost of DAP	M x C ÷ 50	35,000 TSh P
Cost of NPK	N x D ÷ 50	120,000 TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

4 Do a cost-benefit analysis

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Now do the following calculations:

Increase in production	$A \times H$	8 tonnes	J
Increase in gross revenue	$H \times I$	800,000	TSh K
Quantity of urea to apply	$A \times E$	37.5	kg L
Quantity of DAP to apply	$A \times F$	25	kg M
Quantity of NPK to apply	$A \times G$	100	kg N
Cost of urea	$L \times B \div 50$	37,500	TSh O
Cost of DAP	$M \times C \div 50$	35,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

4 Do a cost-benefit analysis

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Now do the following calculations:

Increase in production	$A \times H$	8 tonnes	J
Increase in gross revenue	$H \times I$	800,000	TSh K
Quantity of urea to apply	$A \times E$	37.5	kg L
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Quantity of NPK to apply	$A \times G$	100	kg N
Cost of urea	$L \times B \div 50$	37,500	TSh O
Cost of DAP	$M \times C \div 50$	35,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

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Now do the following calculations:

Increase in production	$A \times H$	8 tonnes	J
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Quantity of urea to apply	$A \times E$	37.5	kg L
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Quantity of NPK to apply	$A \times G$	100	kg N
Cost of urea	$L \times B \div 50$	37,500	TSh O
Cost of DAP	$M \times C \div 50$	55,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

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Now do the following calculations:

Increase in production	A x H	8 tonnes J
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Cost of NPK	N x D ÷ 50	120,000 TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

37,500

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	$A \times H$	8 tonnes J
Increase in gross revenue	$H \times I$	800,000 TSh K
Quantity of urea to apply	$A \times E$	37.5 kg L
Quantity of DAP to apply	$A \times F$	25 kg M
Quantity of NPK to apply	$A \times G$	100 kg N
Cost of urea	$L \times B \div 50$	37,500 TSh O
Cost of DAP	$M \times C \div 50$	35,000 TSh P
Cost of NPK	$N \times D \div 50$	120,000 TSh Q
Total cost	$O + P + Q$	TSh R
Profit from fertilizer	$K - R$	TSh S
Benefit cost ratio (BCR)	$K \div R$	T

37,500

4 Do a cost-benefit analysis

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Now do the following calculations:

Increase in production	A x H	8 tonnes J
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Quantity of urea to apply	A x E	37.5 kg L
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Cost of NPK	N x D ÷ 50	120,000 TSh Q
Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

37,500
35,000

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Now do the following calculations:

Increase in production	$A \times H$	8 tonnes	J
Increase in gross revenue	$H \times I$	800,000	TSh K
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Cost of DAP	$M \times C \div 50$	25,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	O + P + Q		TSh
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

37,500

35,000

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Cost of DAP	M x C ÷ 50	35,000	TSh P
Cost of NPK	N x D ÷ 50	120,000	TSh Q
Total cost	O + P + Q		TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	K ÷ R		T

37,500

35,000

120,000

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

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Increase in production	A x H	8 tonnes J
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Total cost	O + P + Q	TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

$$\begin{array}{r} 37,500 \\ 35,000 \\ + 120,000 \\ \hline 192,500 \end{array}$$

4 Do a cost-benefit analysis

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Now do the following calculations:

Increase in production	A x H	8 tonnes	J
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Total cost	O + P + Q	192,500	TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	K ÷ R		T

$$\begin{array}{r} 37,500 \\ 35,000 \\ + 120,000 \\ \hline 192,500 \end{array}$$

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Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	$O + P + Q$	192,500	TSh R
Profit from fertilizer	$K - R$		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

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Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	$O + P + Q$	192,500	TSh R
Profit from fertilizer	$K - R$		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

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Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	K ÷ R		T

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Cost of NPK	N x D ÷ 50	120,000	TSh Q
Total cost	O + P + Q	192,500	TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	K ÷ R		T

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Increase in production	$A \times H$	8 tonnes	J
Increase in gross revenue	$H \times I$	800,000	TSh K
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Cost of urea	$L \times B \div 50$	37,500	TSh O
Cost of DAP	$M \times C \div 50$	35,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	$O + P + Q$	192,500	TSh R
Profit from fertilizer	$K - R$	800,000	TSh S
Benefit cost ratio (BCR)	$K \div R$		T

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Increase in production	$A \times H$	8 tonnes	J
Increase in gross revenue	$H \times I$	800,000	TSh K
Quantity of urea to apply	$A \times E$	37.5	kg L
Quantity of DAP to apply	$A \times F$	25	kg M
Quantity of NPK to apply	$A \times G$	100	kg N
Cost of urea	$L \times B \div 50$	37,500	TSh O
Cost of DAP	$M \times C \div 50$	35,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	O + P + Q	192,500	TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	$K \div R$		T

800,000

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes J
Increase in gross revenue	H x I	800,000 TSh K
Quantity of urea to apply	A x E	37.5 kg L
Quantity of DAP to apply	A x F	25 kg M
Quantity of NPK to apply	A x G	100 kg N
Cost of urea	L x B ÷ 50	37,500 TSh O
Cost of DAP	M x C ÷ 50	35,000 TSh P
Cost of NPK	N x D ÷ 50	120,000 TSh Q
Total cost	O + P + Q	192,500 TSh R
Profit from fertilizer	K - R	TSh S
Benefit cost ratio (BCR)	K ÷ R	T

$$800,000 - 192,500$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes	J
Increase in gross revenue	H x I	800,000	TSh K
Quantity of urea to apply	A x E	37.5	kg L
Quantity of DAP to apply	A x F	25	kg M
Quantity of NPK to apply	A x G	100	kg N
Cost of urea	L x B ÷ 50	37,500	TSh O
Cost of DAP	M x C ÷ 50	35,000	TSh P
Cost of NPK	N x D ÷ 50	120,000	TSh Q
Total cost	O + P + Q	192,500	TSh R
Profit from fertilizer	K - R		TSh S
Benefit cost ratio (BCR)	K ÷ R		T

$$800,000 - 192,500 = 607,500$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes	J
Increase in gross revenue	H x I	800,000	TSh K
Quantity of urea to apply	A x E	37.5	kg L
Quantity of DAP to apply	A x F	25	kg M
Quantity of NPK to apply	A x G	100	kg N
Cost of urea	L x B ÷ 50	37,500	TSh O
Cost of DAP	M x C ÷ 50	35,000	TSh P
Cost of NPK	N x D ÷ 50	120,000	TSh Q
Total cost	O + P + Q	192,500	TSh R
Profit from fertilizer	K - R	607,500	TSh S
Benefit cost ratio (BCR)	K ÷ R		T

$$800,000 - 192,500 = 607,500$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	$A \times H$	8 tonnes	J
Increase in gross revenue	$H \times I$	800,000	TSh K
Quantity of urea to apply	$A \times E$	37.5	kg L
Quantity of DAP to apply	$A \times F$	25	kg M
Quantity of NPK to apply	$A \times G$	100	kg N
Cost of urea	$L \times B \div 50$	37,500	TSh O
Cost of DAP	$M \times C \div 50$	35,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	$O + P + Q$	192,500	TSh R
Profit from fertilizer	$K - R$	607,500	TSh S
Benefit cost ratio (BCR)	$K \div R$		T

4 Do a cost-benefit analysis

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Increase in production	A x H	8 tonnes	J
Increase in gross revenue	H x I	800,000	TSh K
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Quantity of DAP to apply	A x F	25	kg M
Quantity of NPK to apply	A x G	100	kg N
Cost of urea	L x B ÷ 50	37,500	TSh O
Cost of DAP	M x C ÷ 50	35,000	TSh P
Cost of NPK	N x D ÷ 50	120,000	TSh Q
Total cost	O + P + Q	192,500	TSh R
Profit from fertilizer	K - R	607,500	TSh S
Benefit cost ratio (BCR)	K ÷ R		T

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	$A \times H$	8 tonnes	J
Increase in gross revenue	$H \times I$	800,000	TSh K
Quantity of urea to apply	$A \times E$	375	kg L
Quantity of DAP to apply	$A \times F$	25	kg M
Quantity of NPK to apply	$A \times G$	100	kg N
Cost of urea	$L \times B \div 50$	37,500	TSh O
Cost of DAP	$M \times C \div 50$	35,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	$O + P + Q$	192,500	TSh R
Profit from fertilizer	$K - R$	607,500	TSh S
Benefit cost ratio (BCR)	$K \div R$		T

4 Do a cost-benefit analysis

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Increase in gross revenue	$H \times I$	800,000	TSh K
Quantity of urea to apply	$A \times E$	37.5	kg L
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Quantity of NPK to apply	$A \times G$	100	kg N
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Cost of DAP	$M \times C \div 50$	35,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	$O + P + Q$	192,500	TSh R
Profit from fertilizer	$K - R$	607,500	TSh S
Benefit cost ratio (BCR)	$K \div R$		T

800,000

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	$A \times H$	8 tonnes	J
Increase in gross revenue	$H \times I$	800,000	TSh K
Quantity of urea to apply	$A \times E$	37.5	kg L
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Quantity of NPK to apply	$A \times G$	100	kg N
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Cost of DAP	$M \times C \div 50$	35,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	$O + P + Q$	192,500	TSh R
Profit from fertilizer	$K - R$	607,500	TSh S
Benefit cost ratio (BCR)	$K \div R$	800,000	T

4 Do a cost-benefit analysis

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Now do the following calculations:

Increase in production	A x H	8 tonnes J
Increase in gross revenue	H x I	800,000 TSh K
Quantity of urea to apply	A x E	37.5 kg L
Quantity of DAP to apply	A x F	25 kg M
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Cost of DAP	M x C ÷ 50	35,000 TSh P
Cost of NPK	N x D ÷ 50	120,000 TSh Q
Total cost	O + P + Q	192,500 TSh R
Profit from fertilizer	K - R	607,500 TSh S
Benefit cost ratio (BCR)	K ÷ R	T

$$800,000 \div 192,500$$

4 Do a cost-benefit analysis

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Now do the following calculations:

Increase in production	A x H	8 tonnes	J
Increase in gross revenue	H x I	800,000	TSh K
Quantity of urea to apply	A x E	37.5	kg L
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Cost of NPK	N x D ÷ 50	120,000	TSh Q
Total cost	O + P + Q	192,500	TSh R
Profit from fertilizer	K - R	607,500	TSh S
Benefit cost ratio (BCR)	K ÷ R		T

$$800,000 \div 192,500 = 4.2$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	A x H	8 tonnes	J
Increase in gross revenue	H x I	800,000	TSh K
Quantity of urea to apply	A x E	37.5	kg L
Quantity of DAP to apply	A x F	25	kg M
Quantity of NPK to apply	A x G	100	kg N
Cost of urea	L x B ÷ 50	37,500	TSh O
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Cost of NPK	N x D ÷ 50	120,000	TSh Q
Total cost	O + P + Q	192,500	TSh R
Profit from fertilizer	K - R	607,500	TSh S
Benefit cost ratio (BCR)	K ÷ R	4.2	T

$$800,000 \div 192,500 = 4.2$$

4 Do a cost-benefit analysis

4 Do a cost benefit analysis

Now do the following calculations:

Increase in production	$A \times H$	8 tonnes	J
Increase in gross revenue	$H \times I$	800,000	TSh K
Quantity of urea to apply	$A \times E$	37.5	kg L
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Quantity of NPK to apply	$A \times G$	100	kg N
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Cost of DAP	$M \times C \div 50$	35,000	TSh P
Cost of NPK	$N \times D \div 50$	120,000	TSh Q
Total cost	$O + P + Q$	192,500	TSh R
Profit from fertilizer	$K - R$	607,500	TSh S
Benefit cost ratio (BCR)	$K \div R$	4.2	T

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

- 1 What is the increase in gross revenue?

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

- 1 What is the increase in gross revenue?

We expect to produce an additional 8 tonnes of cassava roots in our field. This has value of 800,000 TSh.

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

- 1 What is the increase in gross revenue? *800,000 TSh*

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

- 1 What is the increase in gross revenue? 800,000 TSh
- 2 What is the total cost of fertilizer?

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

- 1 What is the increase in gross revenue? **800,000 TSh**
- 2 What is the total cost of fertilizer?
We calculated that our field needs 50 kg of urea, 25 kg of DAP and 100 kg of NPK 17:17:17. This has a cost of $37,500 + 35,000 + 120,000 = 192,500$ TSh.

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

- 1 What is the increase in gross revenue? 800,000 TSh
- 2 What is the total cost of fertilizer? 192,500 TSh

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

- 1 What is the increase in gross revenue? 800,000 TSh
- 2 What is the total cost of fertilizer? 192,500 TSh
- 3 What is the profit from fertilizer?

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

- 1 What is the increase in gross revenue? 800,000 TSh
- 2 What is the total cost of fertilizer? - 192,500 TSh
- 3 What is the profit from fertilizer? 607,500 TSh

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

- | | | |
|---|--|----------------------|
| 1 | What is the increase in gross revenue? | 800,000 TSh |
| 2 | What is the total cost of fertilizer? | - <u>192,500 TSh</u> |
| 3 | What is the profit from fertilizer? | 607,500 TSh |

Whether this profit is large enough depends on your risk appetite.

4 Do a cost-benefit analysis

Let's look at your risk appetite. How often do you invest in new farm products or technologies?

4 Do a cost-benefit analysis

Let's look at your risk appetite. How often do you invest in new farm products or technologies?

Farmers who invest often in new products or technologies like taking risks, and can usually also afford to make investments that do not pay off.

The lower your risk appetite, the larger the expected profit margin must therefore be, to justify an investment in fertilizer.

4 Do a cost-benefit analysis

Let's look at your risk appetite. How often do you invest in new farm products or technologies?

Very rarely

Sometimes

Often

4 Do a cost-benefit analysis

Let's look at your risk appetite. How often do you invest in new farm products or technologies?

Very rarely

Sometimes

Often

You don't like taking risks

4 Do a cost-benefit analysis

Let's look at your risk appetite. How often do you invest in new farm products or technologies?

Very rarely

Sometimes

Often

You don't like taking risks

Only invest in fertilizer if
Expected Gross Value Increase
is at least 3 times larger than
Total Cost of Fertilizer

4 Do a cost-benefit analysis

Let's look at your risk appetite. How often do you invest in new farm products or technologies?

Very rarely

Sometimes

Often

You don't like taking risks

You can accept some risk

Only invest in fertilizer if
Expected Gross Value Increase

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Only invest in fertilizer if
Expected Gross Value Increase
is at least 20% larger than
Total Cost of Fertilizer

4 Do a cost-benefit analysis

Let's evaluate: is fertilizer use profitable?

- | | | |
|---|--|----------------------|
| 1 | What is the increase in gross revenue? | 800,000 TSh |
| 2 | What is the total cost of fertilizer? | <u>- 192,500 TSh</u> |
| 3 | What is the profit from fertilizer? | 607,500 TSh |

Whether this profit is large enough depends on your risk appetite.

4 Do a cost-benefit analysis

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Whether this profit is large enough depends on your risk appetite.

$$3 \times \text{cost} = 3 \times 192,500 = 577,500$$

$577,500 < 800,000 \rightarrow$ Fertilizer is recommended!
(even if you are very risk-averse)

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The farmer's worksheet guides you through these steps.

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The ratio of benefits over costs (BCR) was already calculated:

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--------------------------	------------	---

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$$800,000 \div 192,500 = 4.2$$

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Benefit cost ratio (BCR)	$K \div R$	4.2	T
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How often do you invest in new farm products or technologies?

Rarely You don't like taking risks. → Invest in fertilizer if $BCR(T) > 2.8$

Sometimes You can accept some risk. → Invest in fertilizer if $BCR(T) > 2$

Often You like taking risks. → Invest in fertilizer if $BCR(T) > 1.2$

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Benefit cost ratio (BCR)	$K \div R$	4.2	T
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- Sometimes

You can accept some risk.

Invest in fertilizer if $BCR(T) > 2$

- Often

You like taking risks.

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4.2 > 2.8!

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This is also explained in the farmer's worksheet:

5 Apply fertilizer at the right time

Apply DAP at planting, follow with NPK, and apply urea last.
Spread applications during the first 3-4 months as rains permit.

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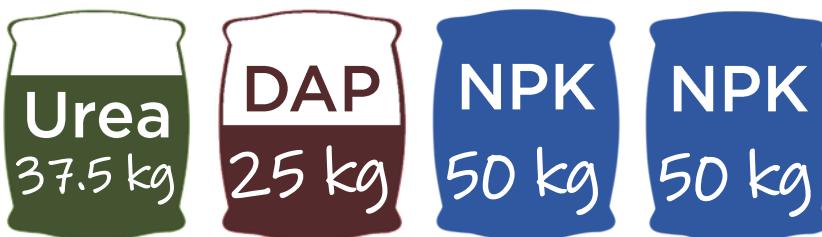
Let's look at our example for our field of **0.5** hectare.

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Remember: we had previously calculated the amounts of urea, DAP and NPK 17:17:17 to apply.

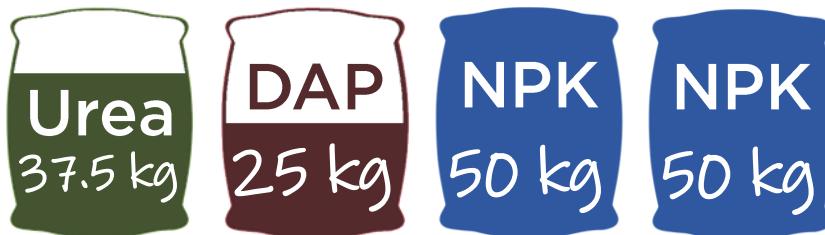


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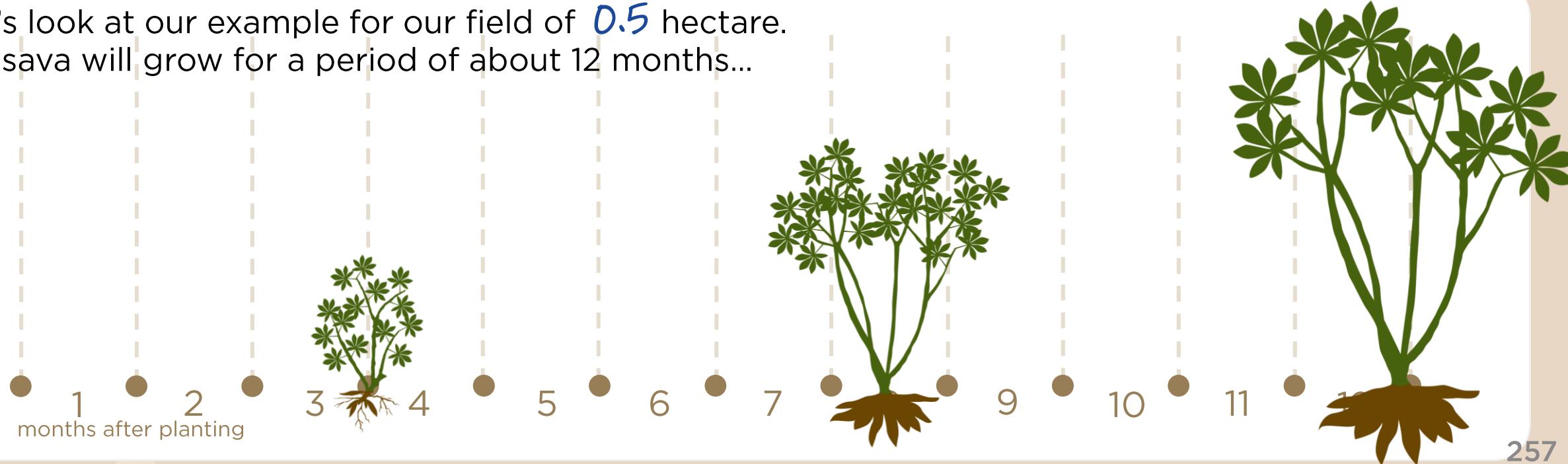
When is this fertilizer now best applied?



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Cassava will grow for a period of about 12 months...



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Fertilizer is best applied during the first 4 months.

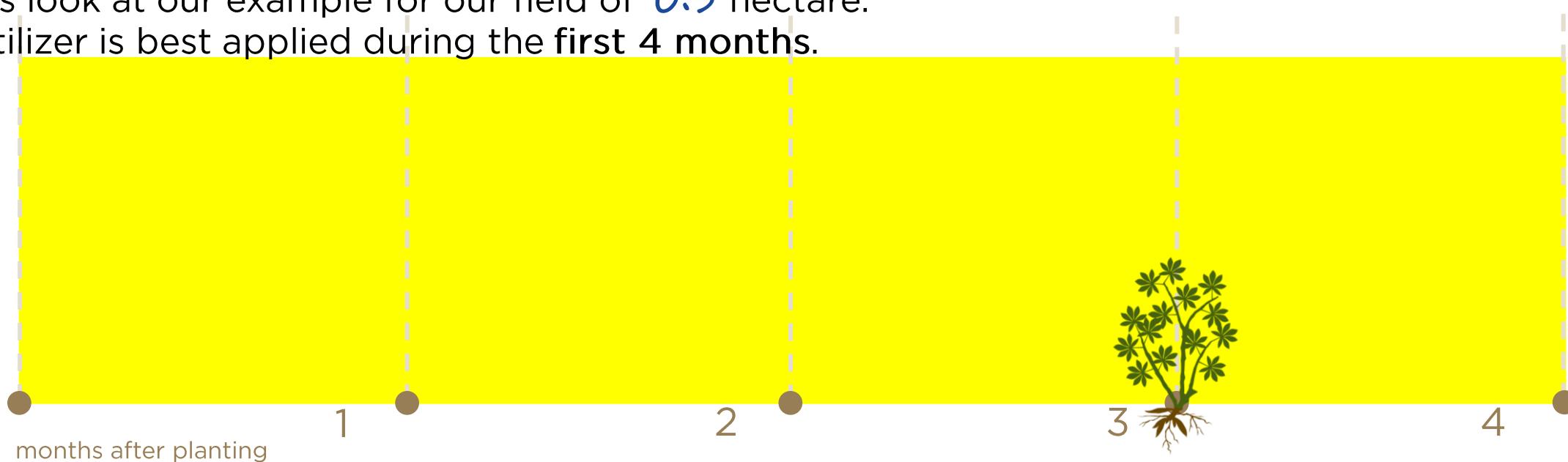


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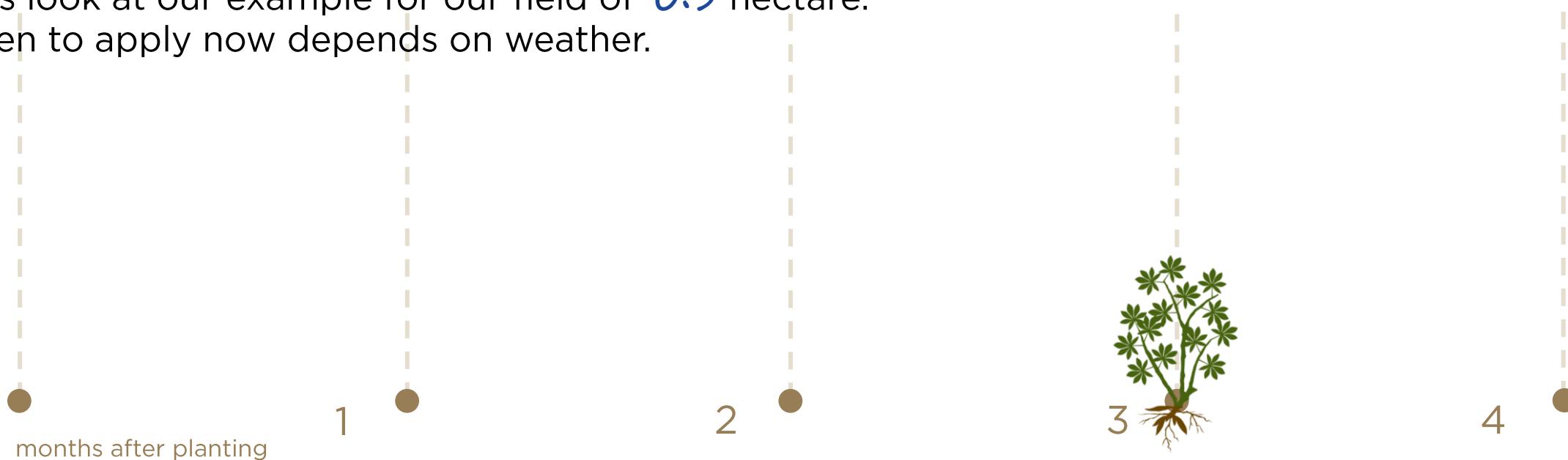


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Let's look at our example for our field of **0.5** hectare.

When to apply now depends on weather.

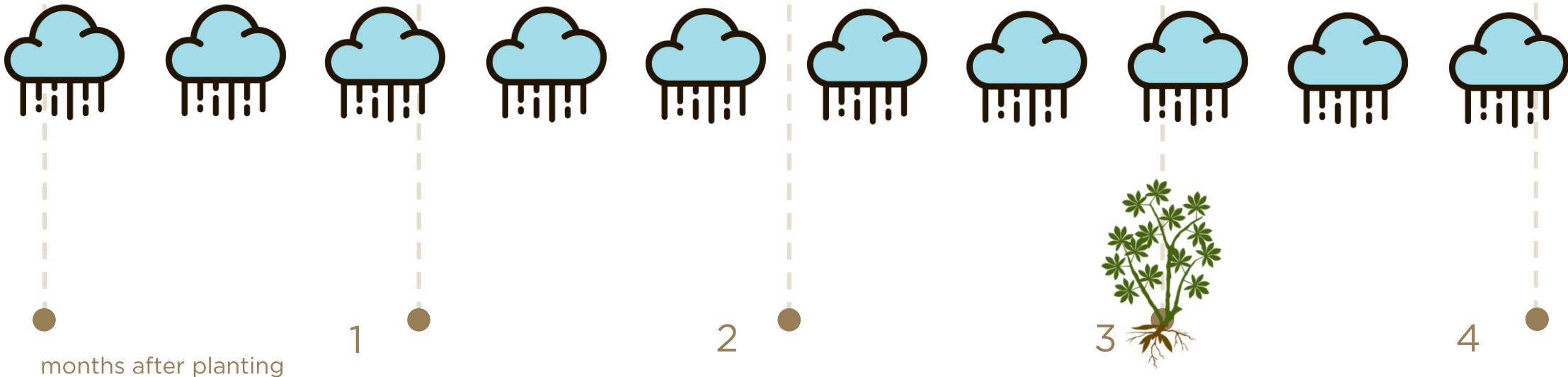


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Let's look at our example for our field of **0.5** hectare.

If you expect ample and regular rainfall...

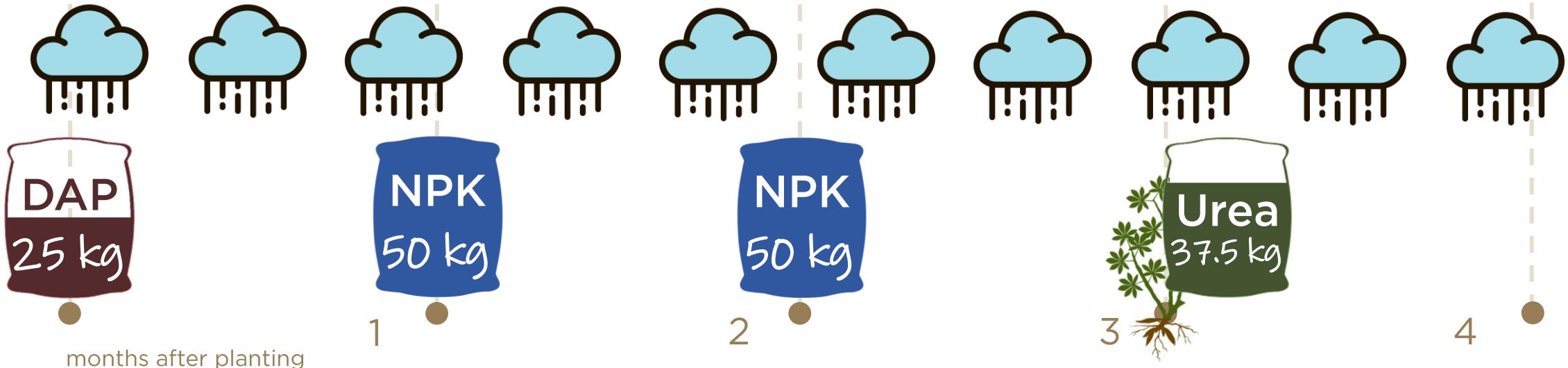


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Let's look at our example for our field of **0.5** hectare.

If you expect ample and regular rainfall... then split and spread the fertilizer application.

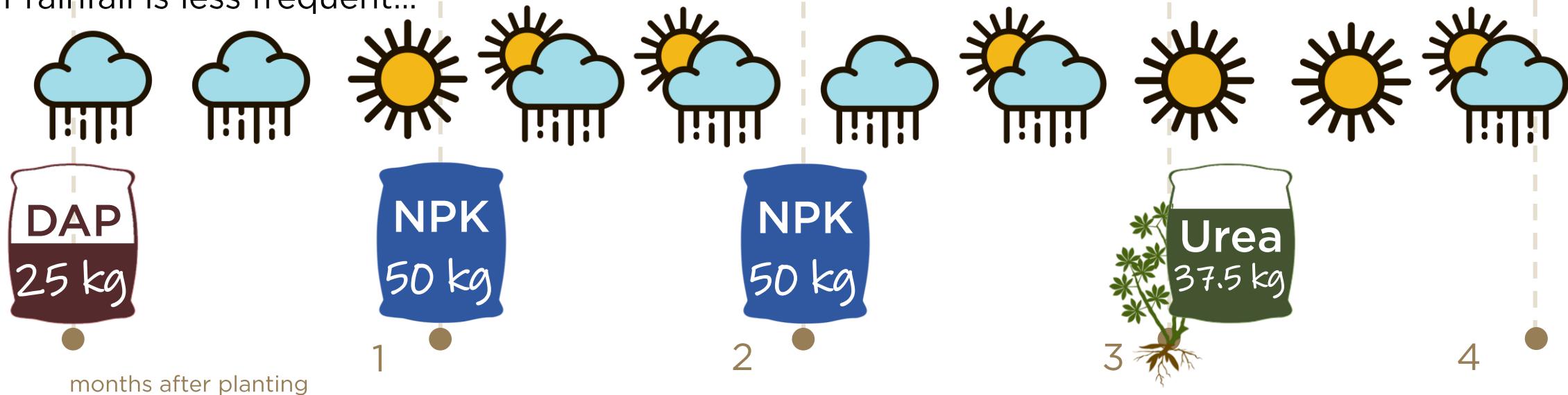


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If rainfall is less frequent...

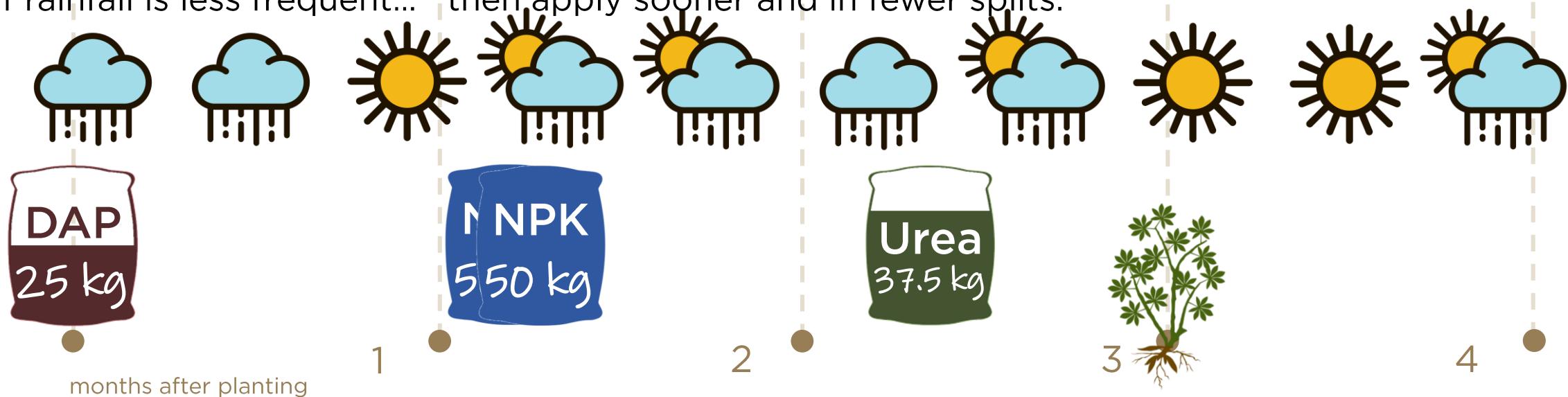


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Let's look at our example for our field of **0.5** hectare.

If rainfall is less frequent... then apply sooner and in fewer splits.

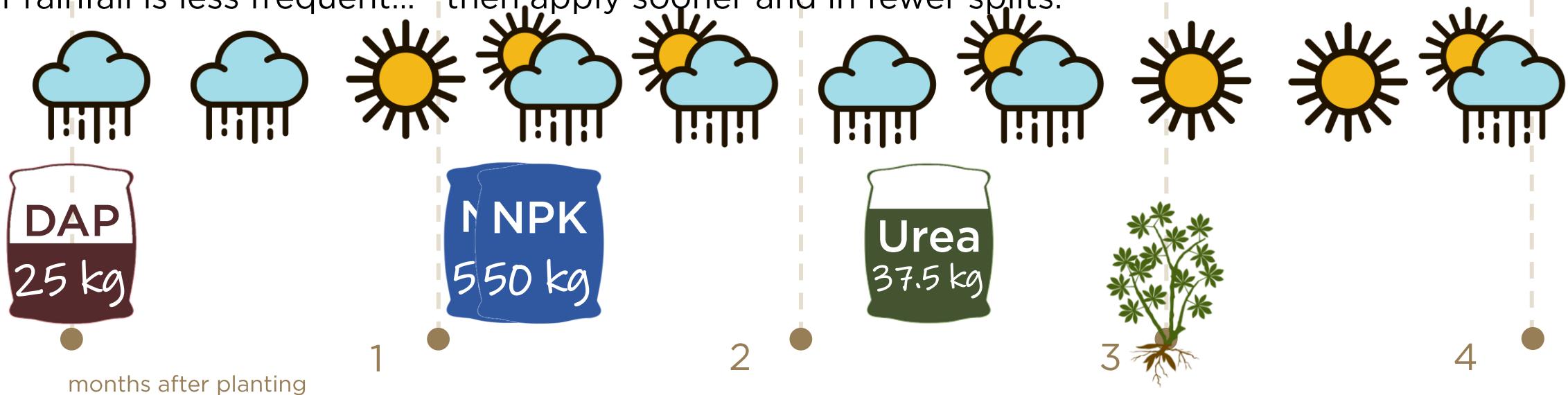


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These are examples!

You can modify this, but remember to apply DAP first, then follow with NPK 17:17:17, and urea last. Spread applications of NPK and urea as much as possible. Only apply fertilizer if the soil is moist and you expect continued rainfall in the weeks after application.

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Especially with high fertilizer doses, it is important to split and spread application. That way, nutrients will be less easily washed away by rain, and then nutrients in the fertilizer are available when the cassava crop needs them.

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Apply in a half-moon or full ring furrow around each plant and cover with soil. Only apply fertilizer if the soil is moist.

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



If you plant at 1 m between rows and 1 m within row (10,000 plants per ha), then 1 bag of fertilizer per hectare is about 2 levelled crown caps of fertilizer per plant.

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80 kg per hectare
is about 2 full
crown caps per plant



2X

And if the crown cap is full (heaped) with fertilizer instead of levelled, than two caps per plant corresponds to about 80 kg per hectare.

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Let's look at our example for our field of **0.5** hectare.

We had obtained the recommended rates for Busega, Simiyu region, when planting in November.

Recommended rate
of urea in Busega:
75 kg/ha

Recommended rate
of DAP in Busega:
50 kg/ha

Recommended rate
of NPK17:17:17:
100 kg/ha

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So let's now
see how
much this is
per plant...

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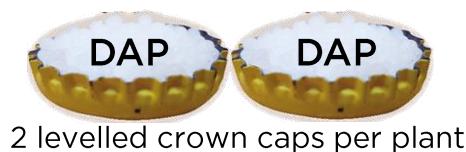
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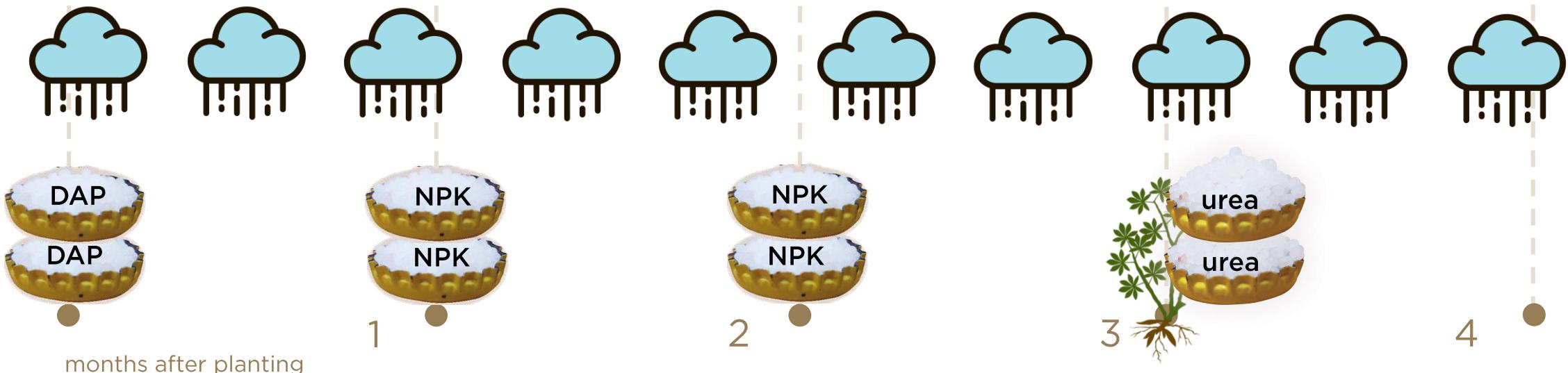
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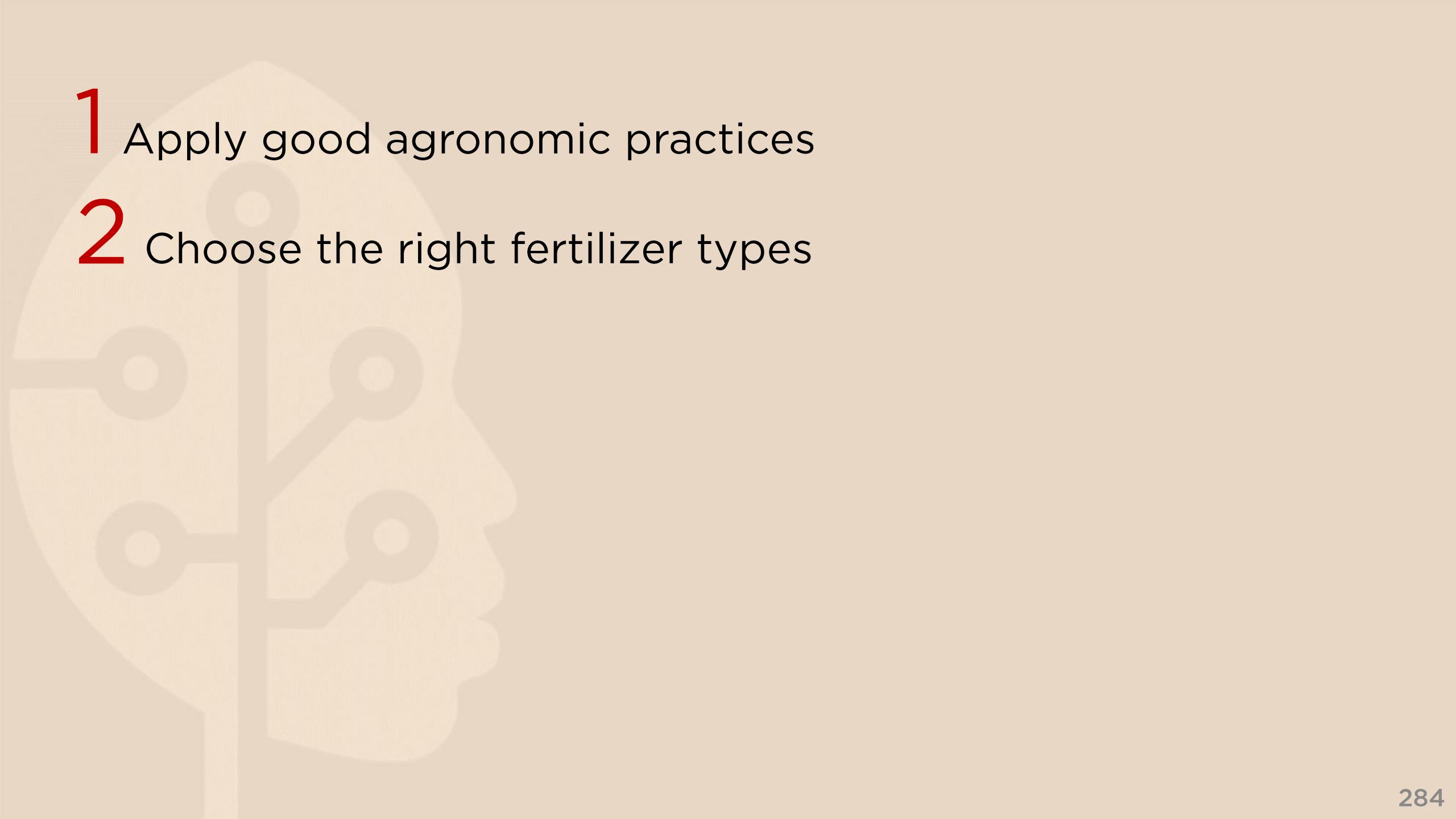


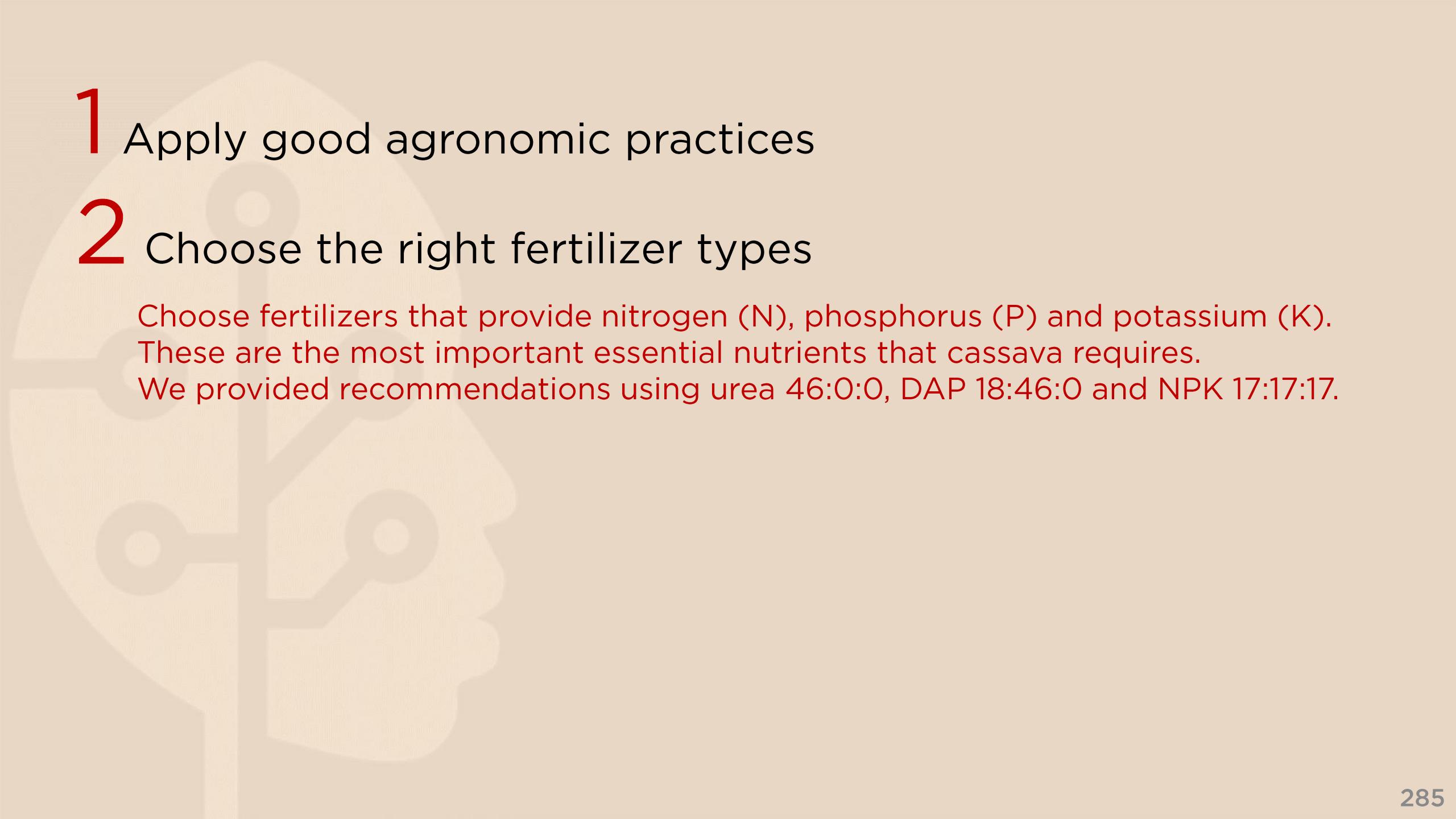
So what have we learned?

1 Apply good agronomic practices

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Fertilizer use is only sensible if good agronomic practices are upheld! Practice good land preparation and weed control, plant disease-free cuttings of improved varieties, and plant in lines at the right density.

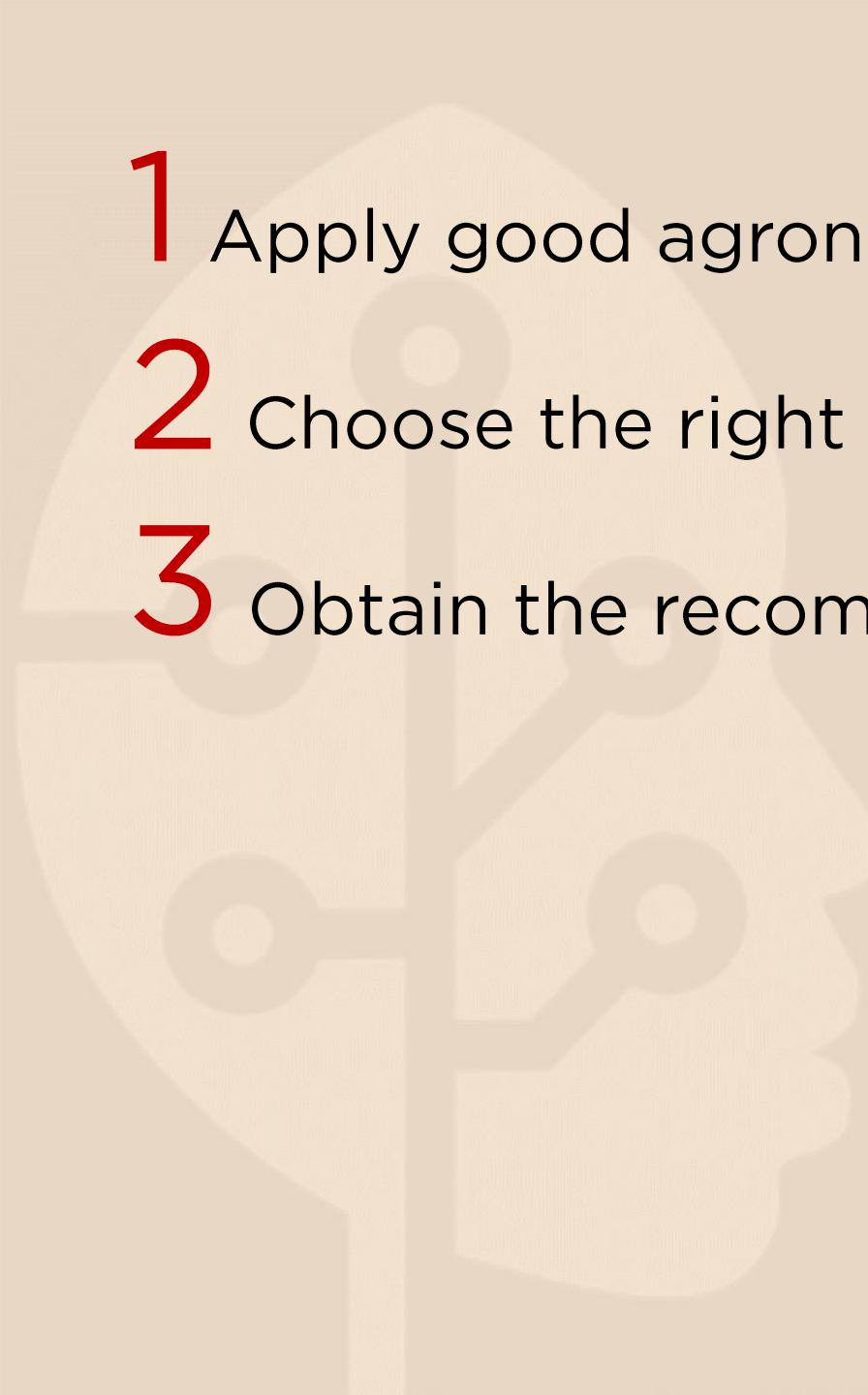
- 
- 1 Apply good agronomic practices
 - 2 Choose the right fertilizer types



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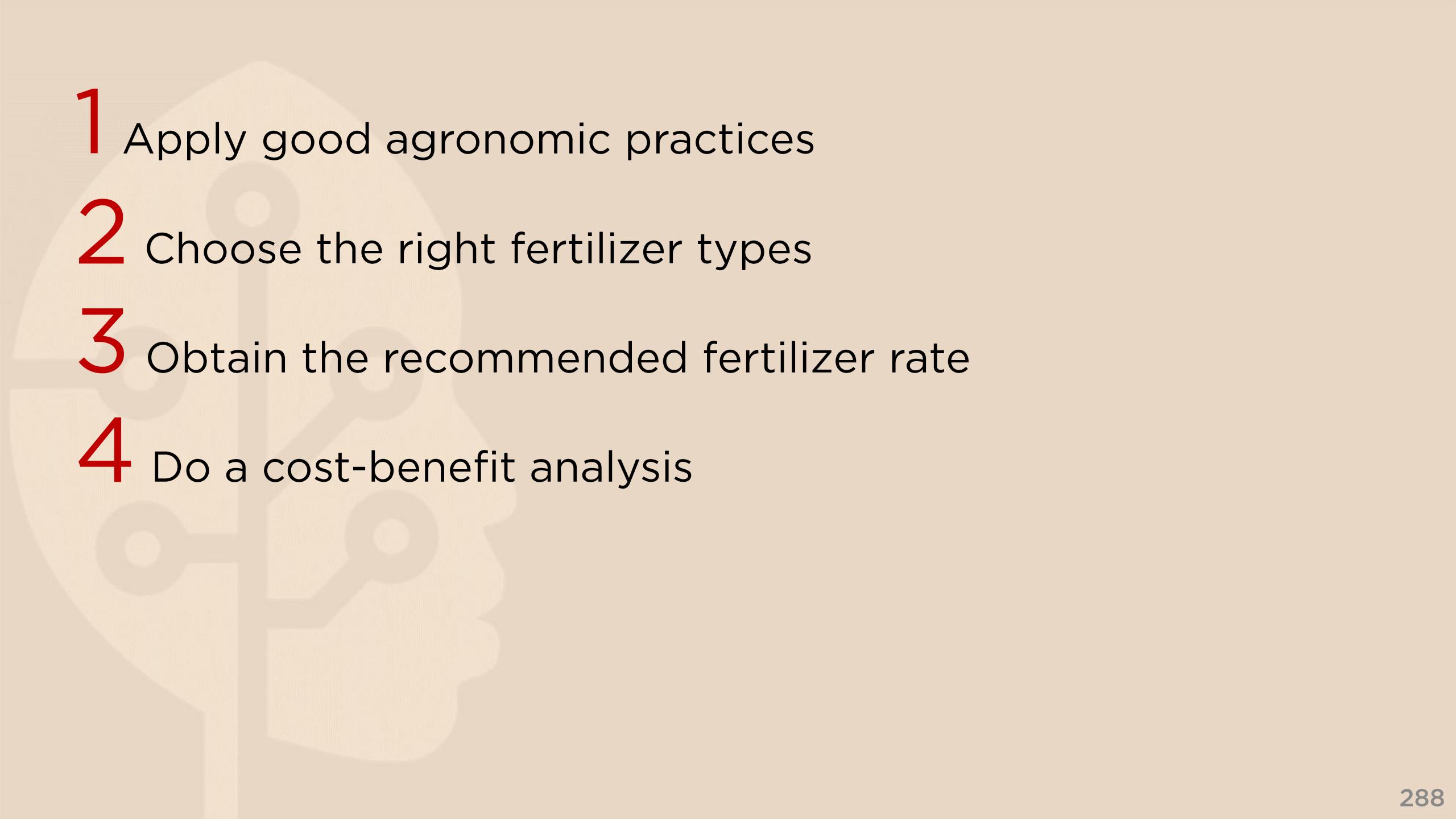
2 Choose the right fertilizer types

Choose fertilizers that provide nitrogen (N), phosphorus (P) and potassium (K). These are the most important essential nutrients that cassava requires. We provided recommendations using urea 46:0:0, DAP 18:46:0 and NPK 17:17:17.

- 
- 1** Apply good agronomic practices
 - 2** Choose the right fertilizer types
 - 3** Obtain the recommended fertilizer rate

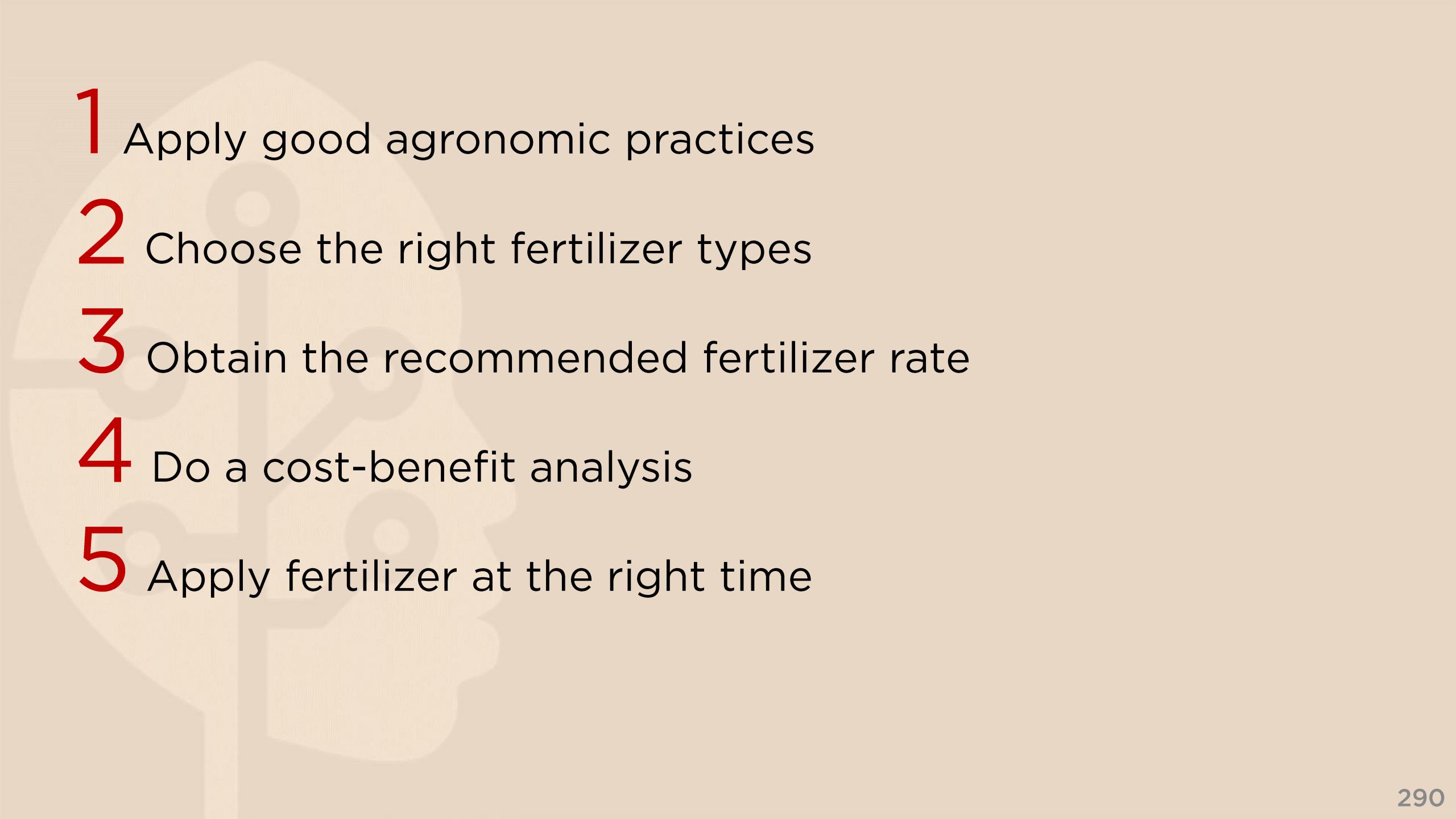
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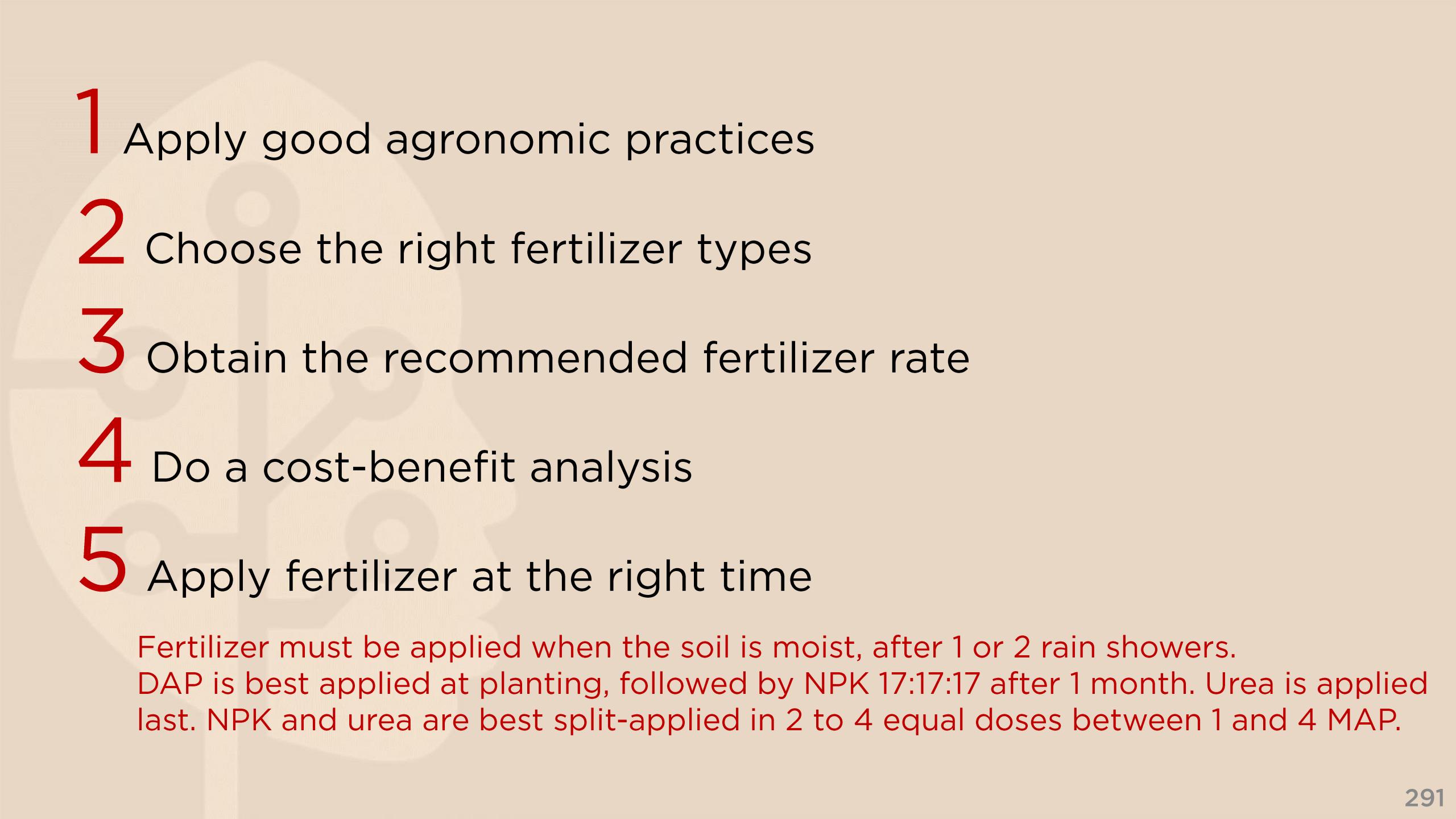
The recommended rate of fertilizer depends on the soil and weather in your area. We showed how you can obtain the recommended rate of urea, DAP and NPK 17:17:17 for your district, your planting month, and your current yield level.

- 
- 1** Apply good agronomic practices
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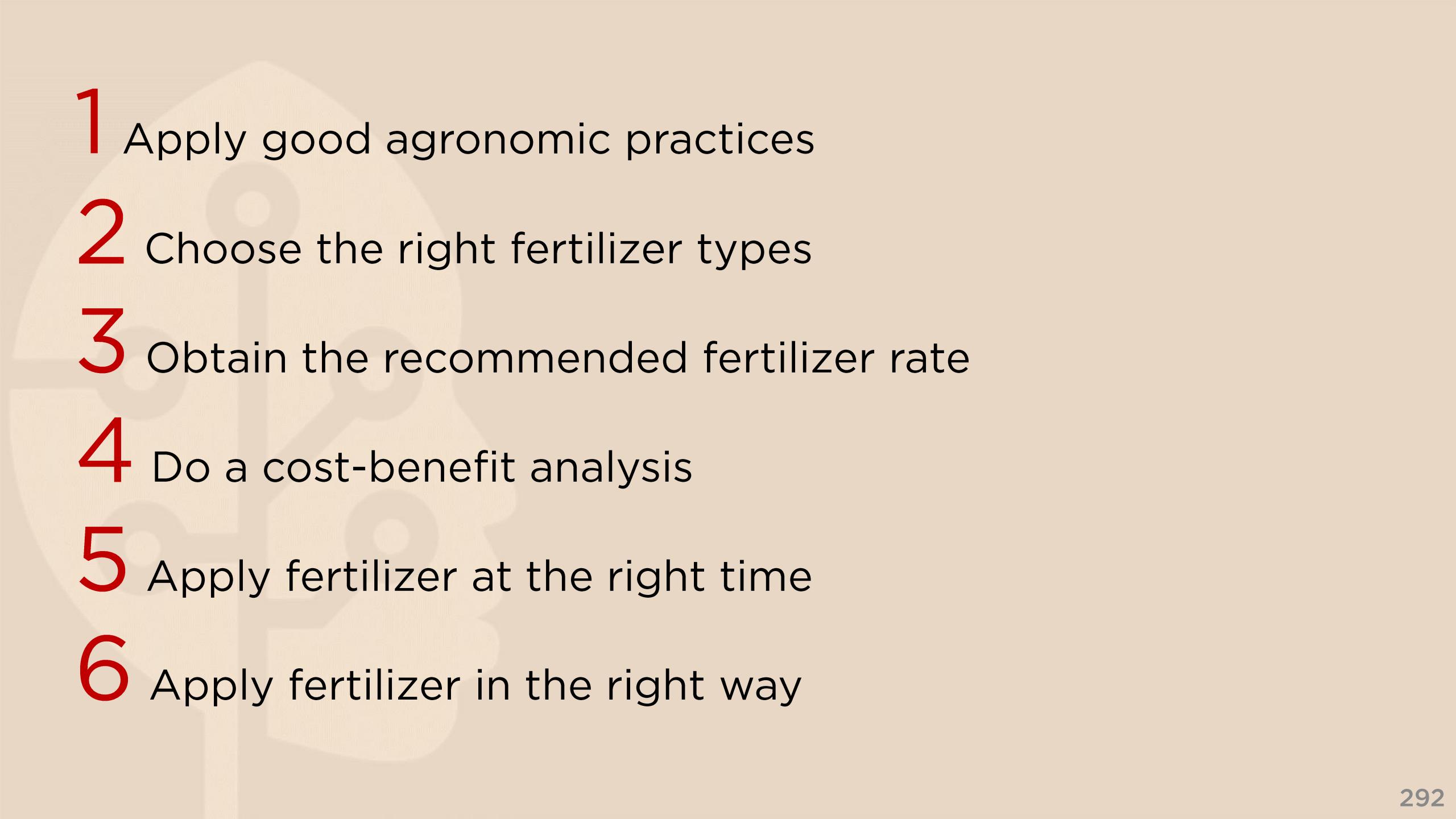
You must evaluate the profitability of fertilizer use before deciding to invest. Use your knowledge of how cassava performed in your field previously, the fertilizer price, and the expected cassava root price to calculate the expected extra profit.

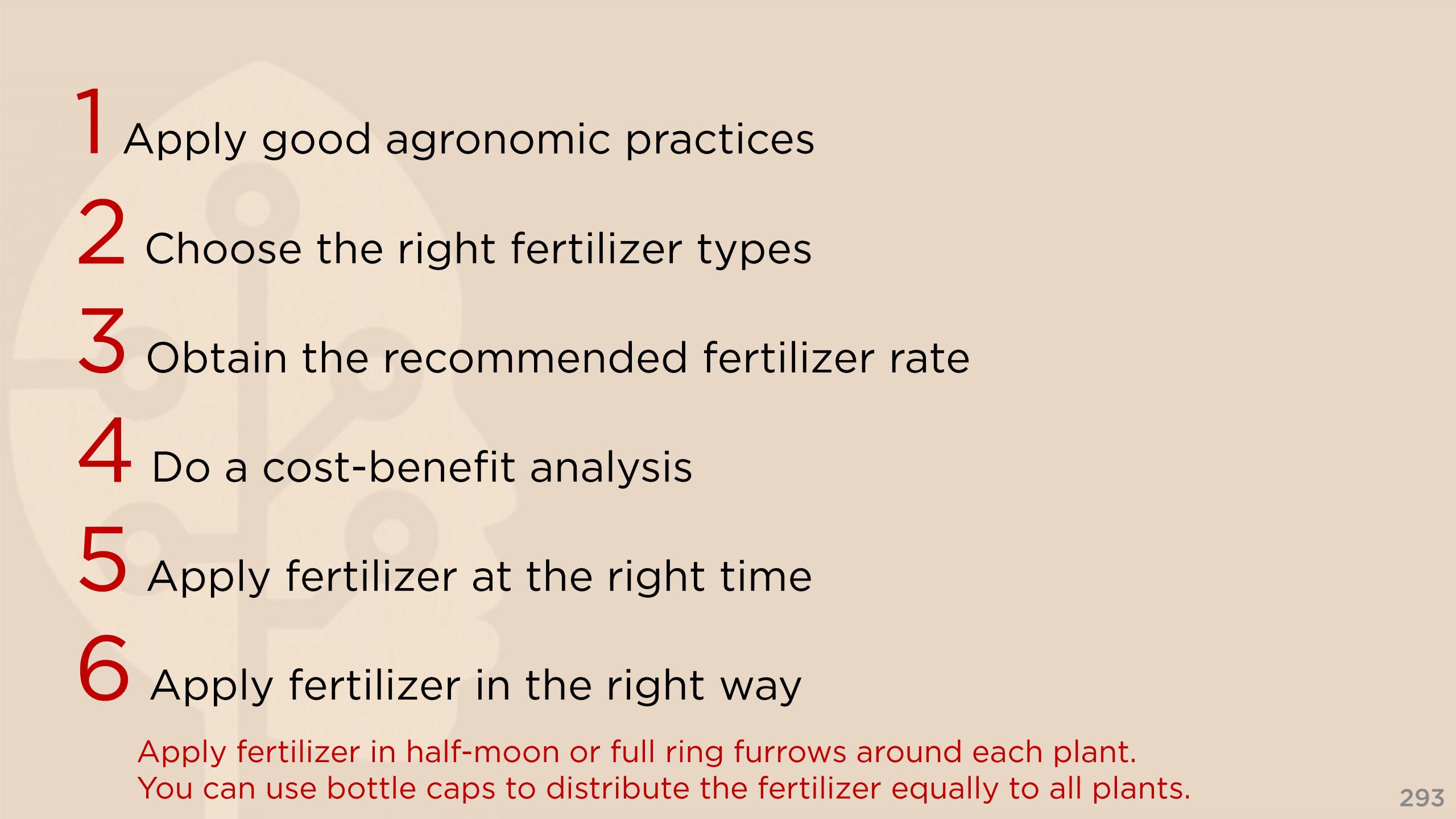
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- 
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Fertilizer must be applied when the soil is moist, after 1 or 2 rain showers.

DAP is best applied at planting, followed by NPK 17:17:17 after 1 month. Urea is applied last. NPK and urea are best split-applied in 2 to 4 equal doses between 1 and 4 MAP.

- 
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- 
- A faint background watermark shows a hand holding a fertilizer bag and a fertilizer spreader.
- 1 Apply good agronomic practices
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Apply fertilizer in half-moon or full ring furrows around each plant.
You can use bottle caps to distribute the fertilizer equally to all plants.



You now know all about

Tailored fertilizer recommendations

and how to use our printable guides

in **6** easy steps

Thank you for watching!



AKILIMO

we know cassava