

*The 10 Steps to*

# A GOOD SOYBEAN PRODUCTION

*Ghanaian Farmers :*

Follow these 10 steps and  
increase your soybean harvest





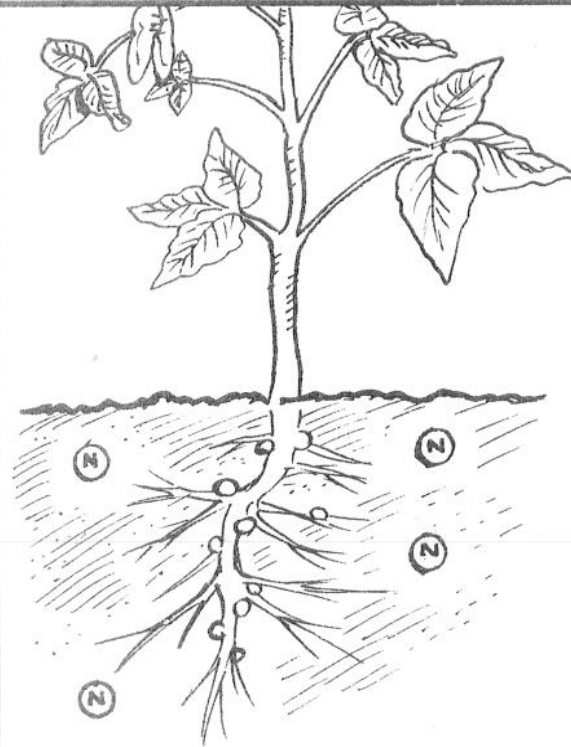
# Step 1 Why grow soybean?

## Soybean is for good health



- Soybean provides the body with high quality protein

## Soybean enriches the soil



- Soybean roots fix nitrogen in the soil for plants to use
- Some of this nitrogen is used by succeeding crops

## Soybean breaks the pests and disease cycle

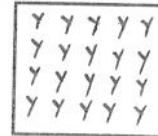
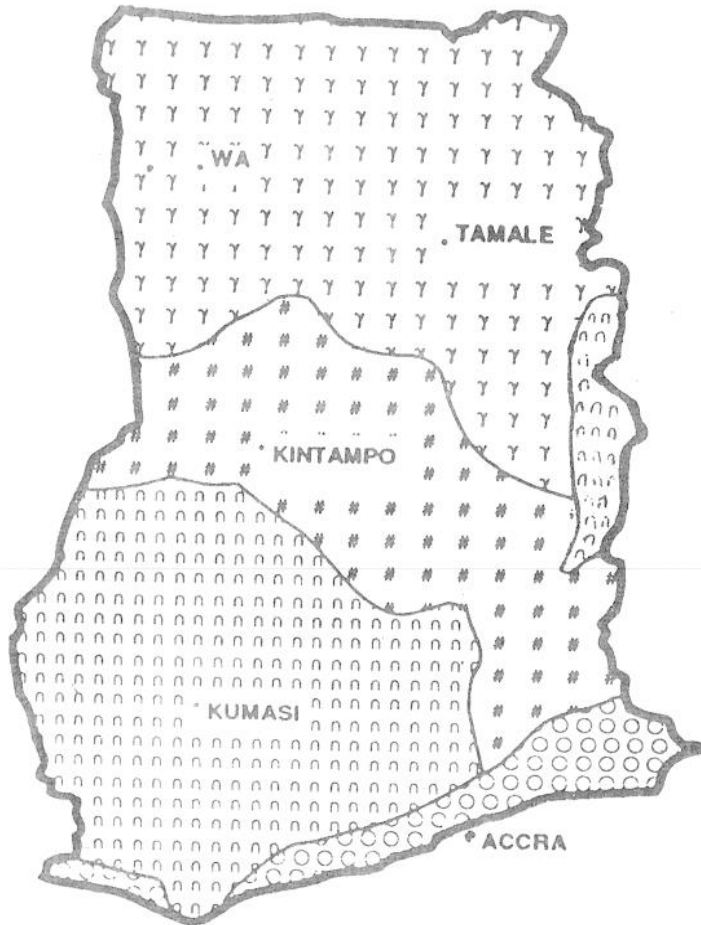


- Growing soybean in rotation with cereals breaks the pests and diseases cycles for both crops

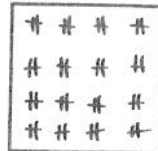
# Step 2 Select a good site

Loamy soils in the Savannah and the Transition Zones have the highest yield potential

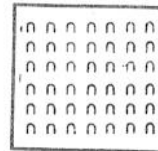
Soybean does well in the following ecologies:



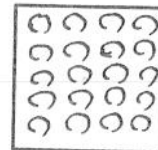
Guinea Savannah



Transition



Semi-deciduous Forest



Coastal Savannah

Loamy soils are the best

Hold water well

Avoid these soils

Deep Sandy Soils do not hold water well

Heavy Clayey Soils Hold too much water

# Step 3 Prepare the land

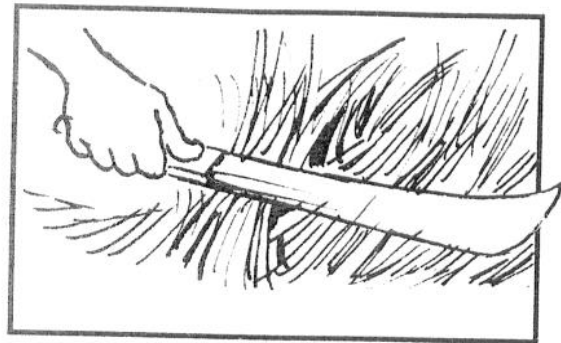
Proper clearing helps good stand establishment and reduces weed problems

Clear land the traditional way



Choose deep, well drained loamy soil rather than sandy or shallow soil

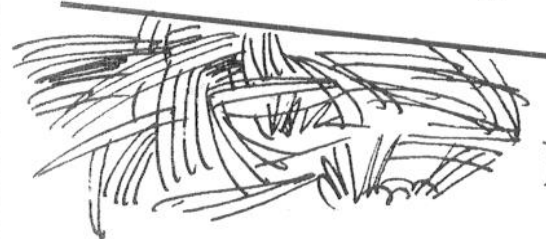
On slopy fields, plant directly into the cut vegetation to avoid soil erosion



A Slash with cutlass.



Do not burn slashings

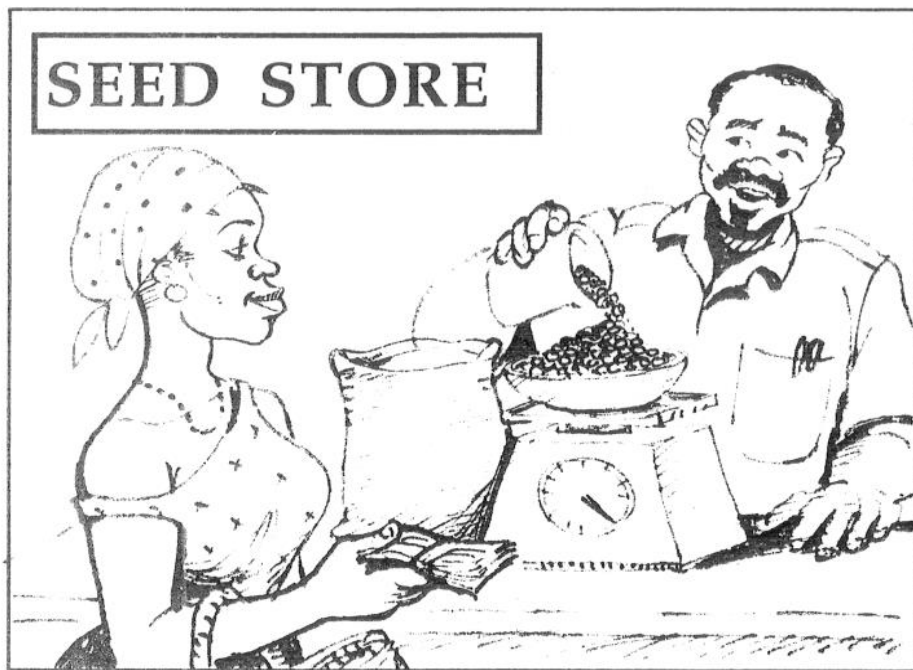


B

If grassy weeds are in the field, remove stumps with hoe after brushing with cutlass




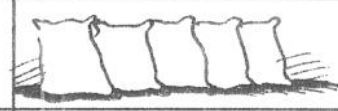
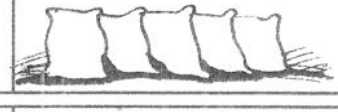
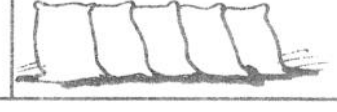
# Step 4 Plant improved varieties



Days to Maturity	Maturity Group
100 - 115	medium
Over 115	Late

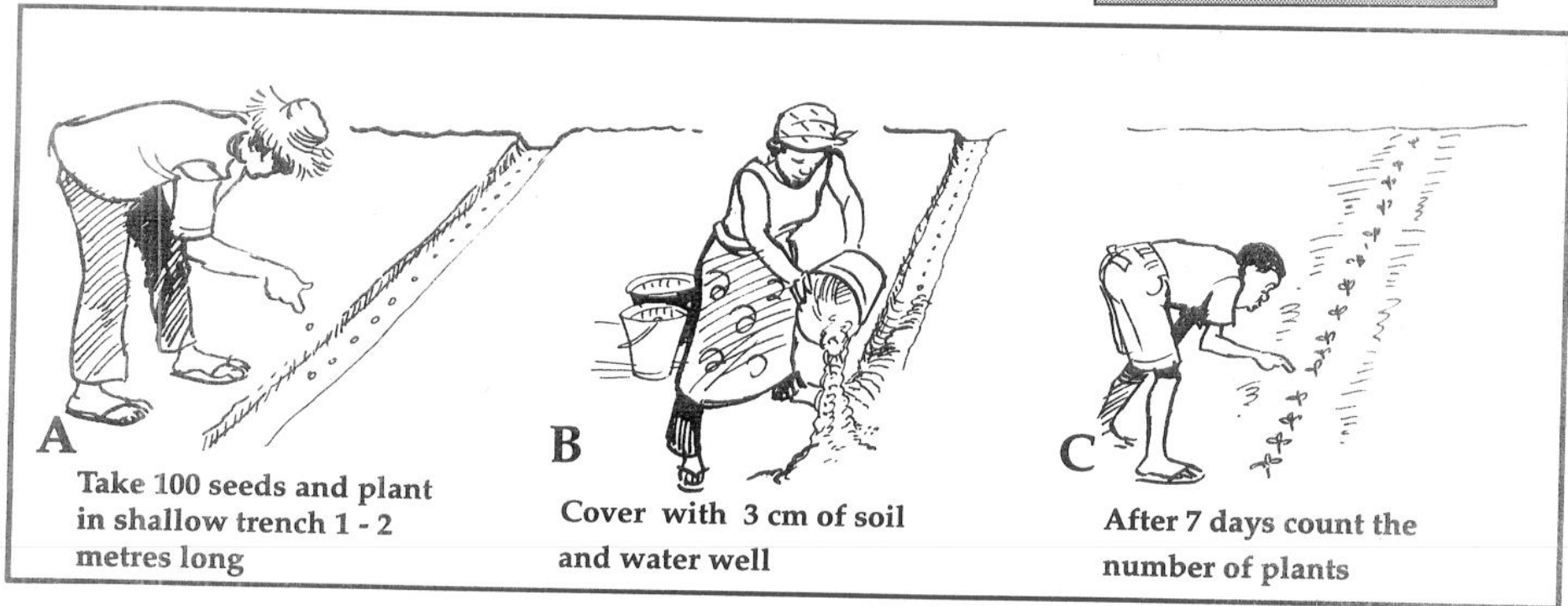
For good germination purchase seed from :

Certified Seed Growers

Variety	Colour	Maturity Group	Yield Potential Bags/Acre
Anidaso	Yellow	medium	
Bengbie	Light-yellowish Green	medium	
Sallintuya-1	Yellow	medium	
Sallintuya-2	Yellow	late	

# Conduct a germination test.

A germination test before planting will help you decide on good seed



## PLANTING GUIDE


If you have this number of plants ...	Then put this number of seeds in each hole
85 or more	2 seeds per hole
70-84 plants	3 seeds per hole

If you have this number of plants ...	Then put this number of seeds in each hole.
50 - 70 plants	Get better seeds or 4 per hole
Less than 50 plants	Do not waste your time sowing the seeds

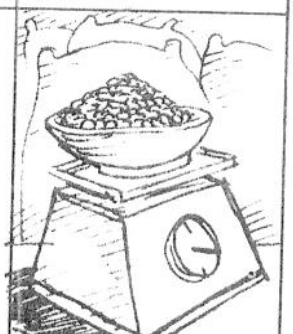
# Step 5 Select the correct planting time

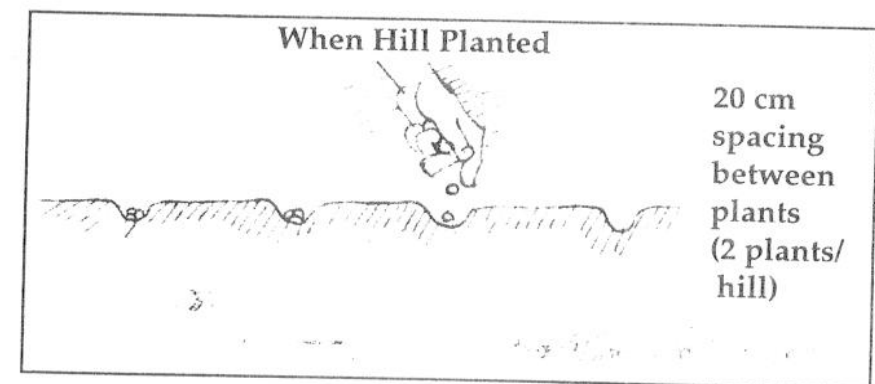
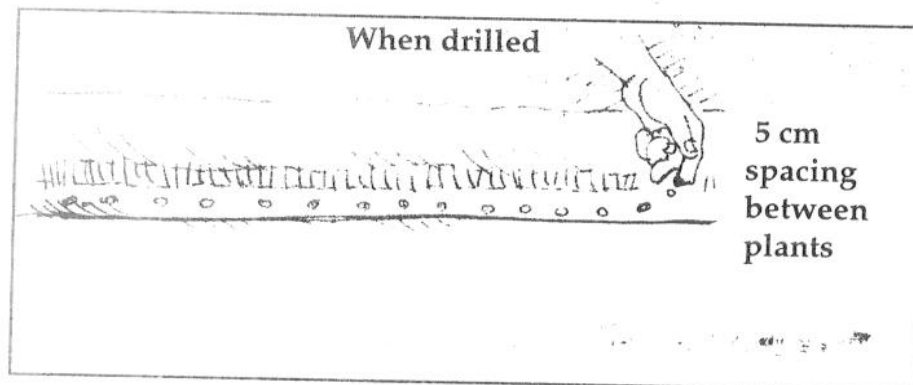
Soybean should be planted such that maturity coincides with the end of the rains

## MEDIUM MATURITY GROUP

Where	When	Seed Requirement
Guinea Savannah	June	
Transition	May	
Forest	May	
Coastal Savannah	July-August	
		40 -50 kg per ha (100-120 margarine cups)

## LATE MATURITY GROUP

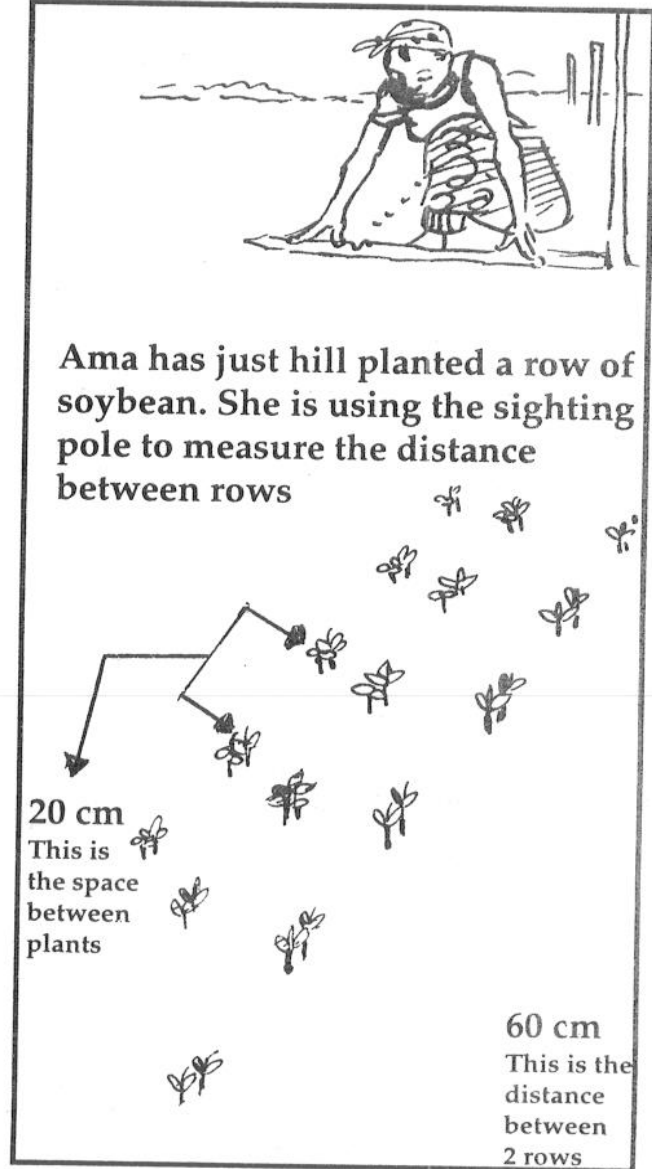
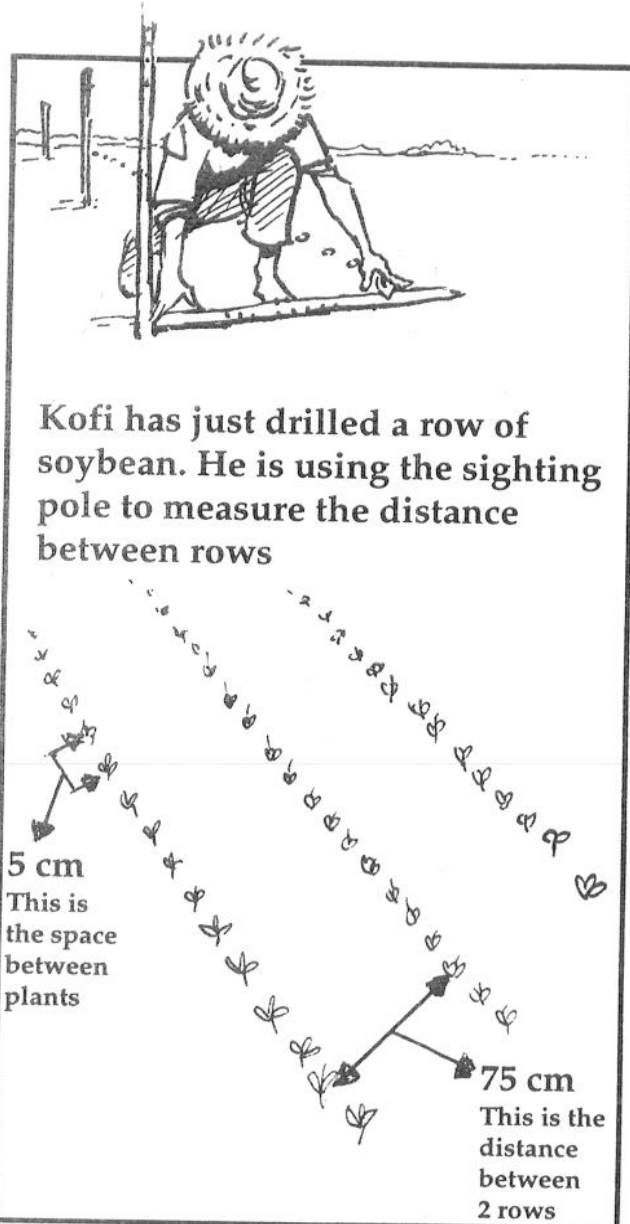
Where	When	Seed Requirement
Guinea Savannah	June	
Transition	May	
Forest	May	
Coastal Savannah		
		40-50 kg per ha (100-120 margarine cups)





# Step 6 Plant in rows

Planting in rows makes weeding, fertilizing and harvesting easier



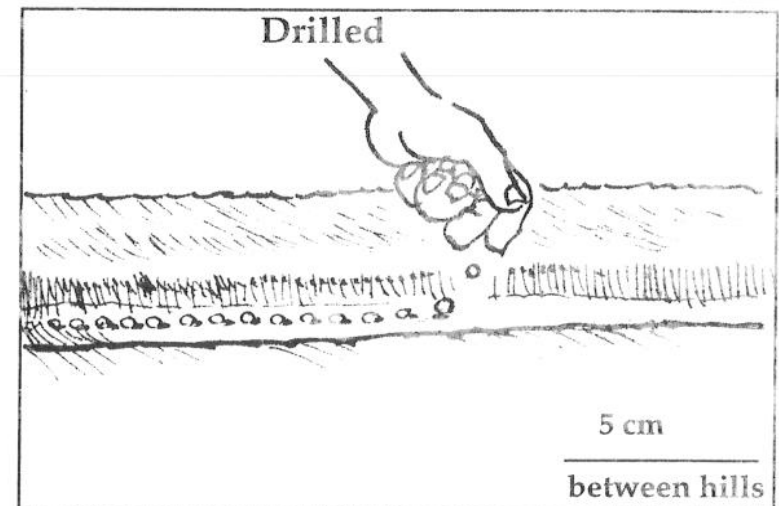
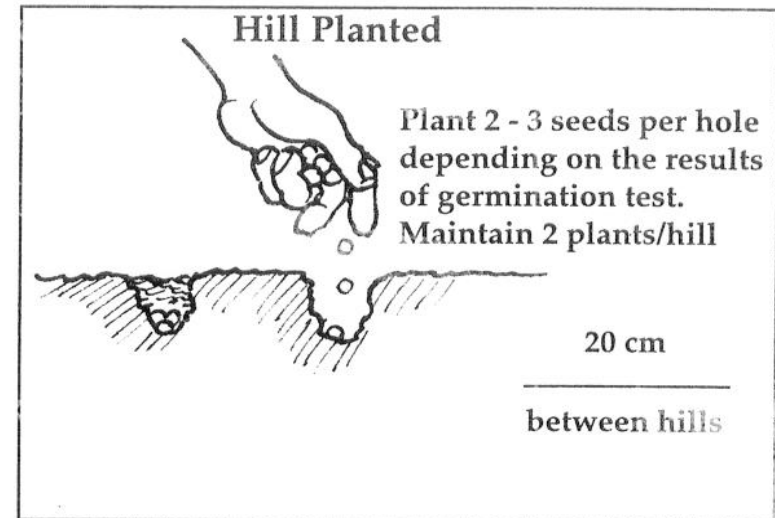
# Step 7 Plant at proper depth

Planting at the proper depth ensures high germination rates

Make holes 2 - 3 cm deep.  
For clayey soils which crust easily, 2 cm is recommended. For lighter soils (loamy or sandy), 3 cm is recommended.



Soybean must be sown at the proper density (spacing) to obtain high yields. Proper planting procedure produces a good canopy which reduces weed problems.



# Step 8 Use fertilizer

## Fertilizer types

## Chemical

On poor soils, feed your soybean with fertilizer for higher yields

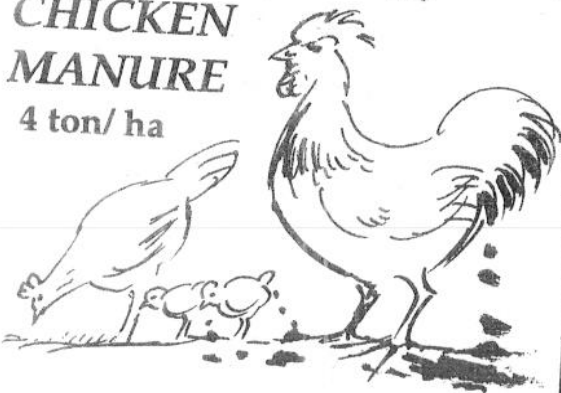
**COW DUNG**

3 ton/acre



**CHICKEN MANURE**

4 ton/ha

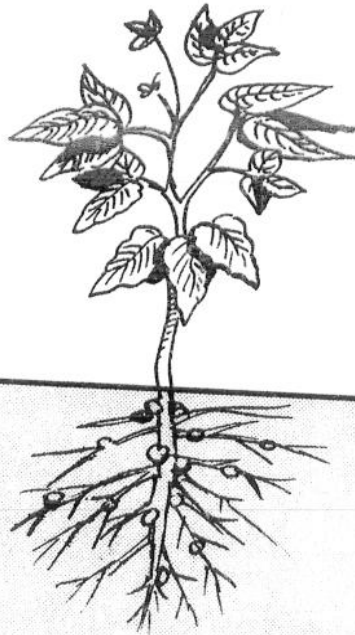


**COMPOST**

5 ton/ha



*Good soil*



- Healthy plant
- Normal nodule growth

*Very poor soil*

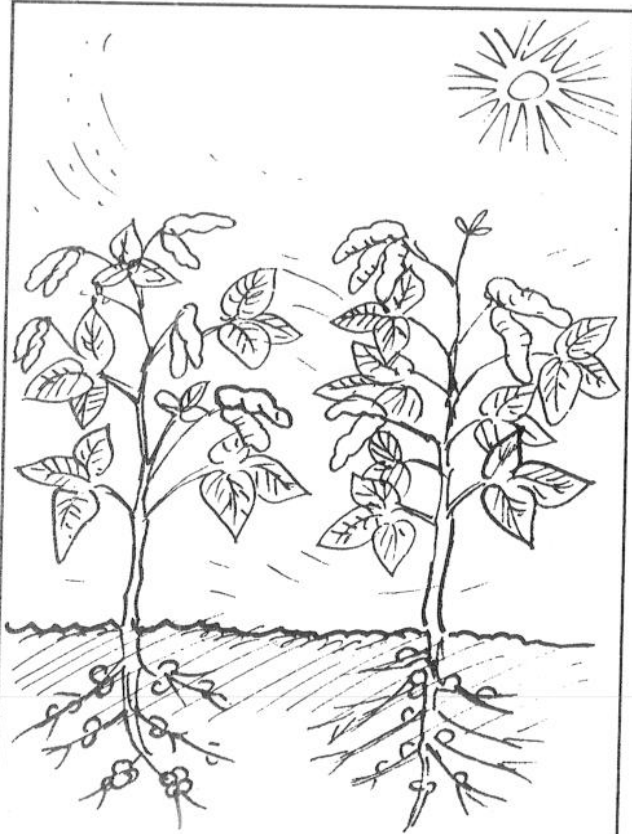


- Add 15 - 30 kg nitrogen/ha  
30 - 60 kg phosphorus/ha  
15 - 30 kg potassium/ha

# Step 9 Control weeds early

It is important that soybean does not have competition from weeds during the first 4 weeks

Why weed early?



Early weeding prevents weeds from competing with the crop for

- nutrients
- water
- light
- space



Too much weed competition means a poor harvest



Two hand weedings at 2-3 weeks and 4-5 weeks after planting is normally

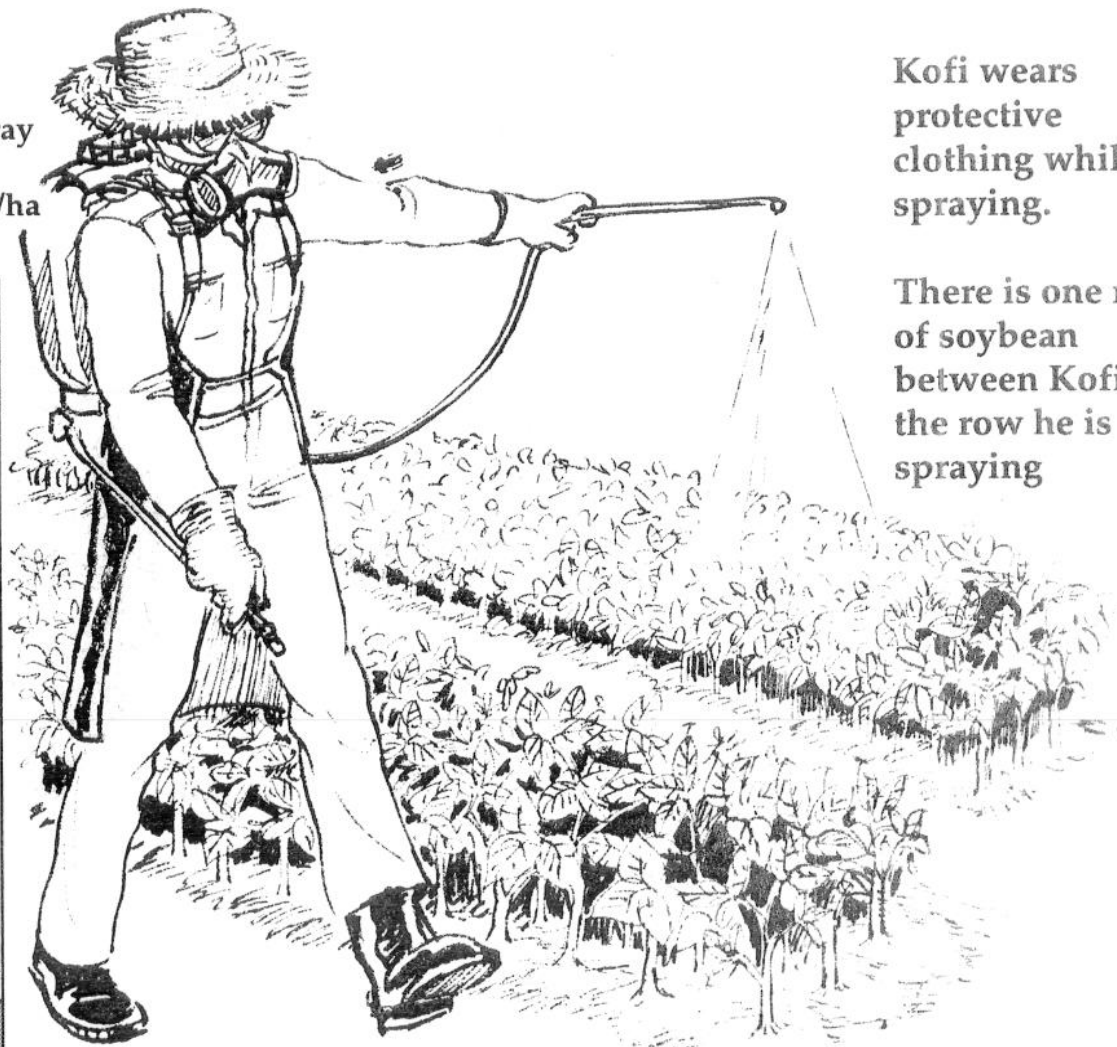
# Step 10 Spray soybean to control insects

## IMPORTANT

Where leaf-eating caterpillars and Pod sucking bugs constitute a major problem, spray either endosulfan (Thiodan or Thionex) or dimethoate (Roxion or Perfekthion) at 2 litres/ha



Ask the Extension Officer to explain how to use the insecticide correctly



Kofi wears protective clothing while spraying.

There is one row of soybean between Kofi and the row he is spraying

## Kofi and Ama have a good crop of soybean

The extension officer visits Kofi and Ama regularly. Today he is admiring Kofi and Ama's successful soybean crop. The extension officer tells Kofi and Ama "I am proud of you and other farmers in Ghana who have adopted improved farming practices. In every region of Ghana progressive farmers are producing bumper crops of soybean . Our families will be prosperous and our children will be healthy".



# Step 11 Harvest under dry conditions

A timely harvest reduces grain shattering

Harvest when 95% of pods are dried (brown or grey in colour).

Cut at ground level



Uproot by hand



Ama threshes and winnows the soybean when the pods are dry





# Questions frequently asked by farmers

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**QUESTION:** *What are the advantages of planting Soybean on last season's cereal field?*

**ANSWER:** This practice is called "Crop Rotation"  
The advantages of this practice are:

- i. The Soybean adds Nitrogen to the soil.
- ii. Diseases, weeds, and insect infestation are reduced
- iii. Crop Rotation improves soil fertility

**QUESTION :** *Why do I have to plant in rows?*

**ANSWER:** By planting in rows, you achieve optimum plant population. Also, it makes management (weeding, spraying, harvesting, etc.) easier.

**QUESTION:** *Is the quality of protein found in soybean as good as that of other high protein foods ?*

**ANSWER:**

The protein in human breastmilk is considered the highest quality of proteins in food. Whole eggs, cow's milk animal meats and fish follow in rank. Soybean comes close in value to these foods and has greater weight than in other foods.

**QUESTION:**

*Will fertilizer increase the soybean crop ?*

**ANSWER:**

Generally you do not need to use fertilizer. Good soil will provide good yields. Poor soil may need to be improved before planting with fertilizer. Add 50-30 kg nitrogen/ha, 30-60 kg phosphorus/ha and 15- 30 kg potassium/ha

# Let's review the 10 steps to a good soybean production



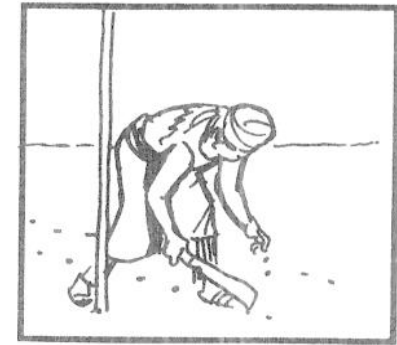
1) Select a good site



2) Prepare the land early



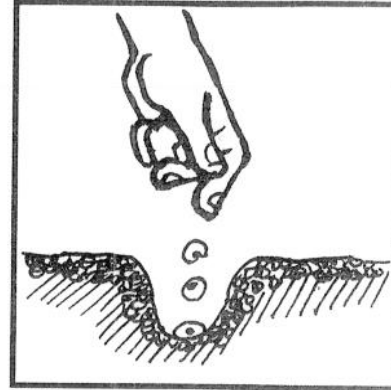
3) Plant improved varieties



4) Select correct planting time



5) Plant in rows



6) Plant at proper depth



7) Weed during 2-3 weeks after planting



8) Spray to control insects



9) Harvest during the dry period



10) Store in a cool dry place

# Let's see what Kofi and Ama invested to have a good yield



# MEASUREMENTS, CONVERSION FACTORS AND COMMON EQUIVALENTS

## Measurements

1 metre (m)	=	3.28 feet (ft)
1 foot	=	0.305 metre
1 centimetre (cm)	=	0.394 inches (in)
1 inch	=	2.54 centimetres
1 hectare (ha)	=	10,000 square metres (m <sup>2</sup> )
1 hectare	=	2.47 acres (ac)
1 acre	=	0.405 hectare
1 kilometre (km)	=	0.621 mile (mi)
1 mile	=	1.61 kilometres
1 kilogram (kg)	=	2.20 pounds (lb)
1 pound	=	0.454 kilograms
1 kg/ha	=	0.89 lb/ac
1 lb/ac	=	0.454 kg/ha

## Conversion Factors

1 t/ha grain	=	approx. 4 maxi bags/acre
1 bag 20:20:0 fertilizer (50 kg)	=	10 kg Nitrogen + 10 kg P <sub>2</sub> O <sub>5</sub>
1 bag 20:20:0 fertilizer (50 kg)	=	25 kg/ha N + 25 kg/ha P <sub>2</sub> O <sub>5</sub>
1 bag ammonium sulphate (50 kg)	=	10.5 kg N
1 bag/acre ammonium sulphate (10.5 kg N / acre)	=	2.5 bags / Ha = (26 kg/ha N)

## COMMON EQUIVALENTS

1 full " Ideal" milk tin	=	180 ml
1 beer bottle	=	600 ml
1 mineral bottle	=	300 ml
1 bottle top	=	5 ml
1 cap from Actellic 25 EC can	=	10 ml



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