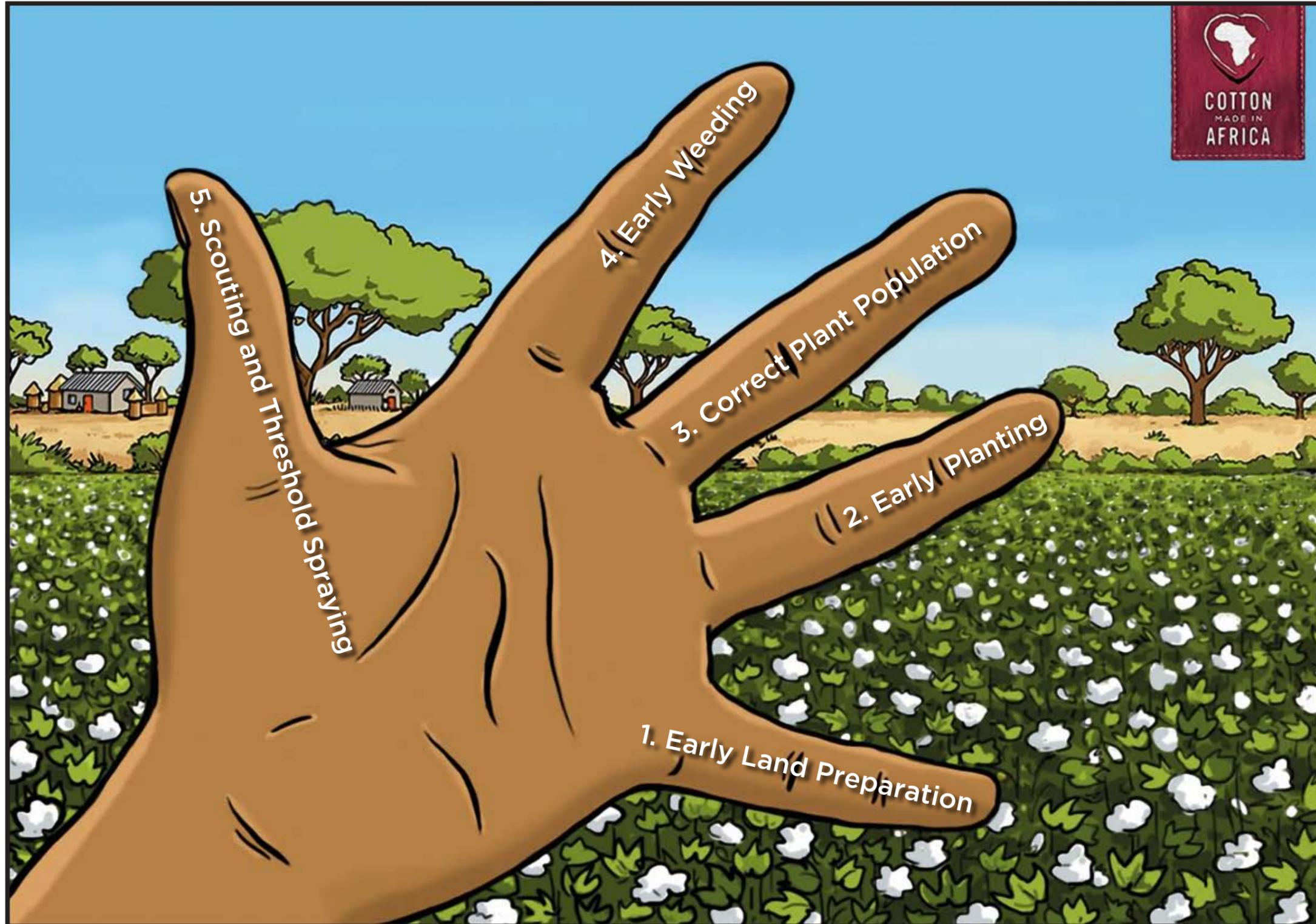


# Five Fingers Picture Block on Good Agricultural Practices



Cotton made in Africa

## FARMING AS A BUSINESS and RECORD KEEPING

**Q1. What do you see in the picture?**

- A1.**
- A man, a woman, a boy and a girl. **Name the man. Name the woman. Name the boy (son). Name the girl (daughter).** (these names should be maintained throughout)
  - Different crops: cotton, maize, soybean, groundnuts
  - Inputs: seed, fertilizer, pesticides
  - 2 school children
  - The man and woman going into a bank
  - A book in the man's hands

**Q2. What are the man, the woman, the boy and the girl doing?**

- A2.** The man and the woman are planning their farming activities – which crops to grow in their rotation, and what inputs they need. They are also planning that the children have to go to school, and if they can save some money in the bank. The kids are doing school homework.

**Q3. What is a good time to do such planning?**

- A3.** Before the start of the season, that is, before land preparation starts.

**Q4. What is income?**

- A4.** Money earned, for example through the farming activities – Money IN

**Q5. What is expenditure?**

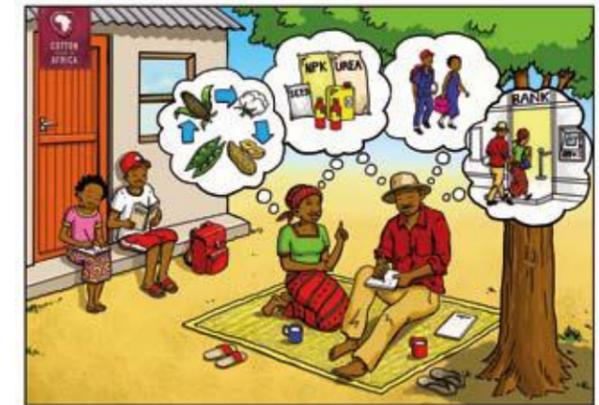
- A5.** Costs involved in running a business, e.g. the cost of farming inputs – Money OUT

**Q6. What is the term used to describe the money left over when you subtract expenditure from income?**

- A6.** Profit

**Q7. What term is used to describe a situation where expenditure is higher than income?**

- A7.** Loss



**Q8. What records must a farmer keep?**

- A8.**
- Income record (Money-IN)
  - Expenditure record (Money OUT)
  - A good farmer keeps records of both incomes and expenditures so he/she will know what profit or loss was made. The schoolgoing children can help keep records.

**Q9. Why are records important?**

- A9.** Records help the farmer to keep track of the business activities and how the business (farming) is running – the farmer's expenses, incomes and profits or losses.

**Q10. Who should keep records?**

- A10.** Every farmer (business person). Farming is a business, so every farmer must keep good records.

**Q11. When should the farmer take records?**

- A11.**
- Every time when activities are undertaken
  - Whenever money is spent or received
  - Whenever inputs are received
  - Whenever the crop is harvested or sold



# FINGER 1 - EARLY and PROPER LAND PREPARATION, CROP ROTATION, CONSERVATION AGRICULTURE and SOIL FERTILITY

## Q1. What do you see in the picture?

- A1.
- A man and a woman (refer to their names) who are clearing the field by cutting the old maize plants.
  - The children are bringing water and fruits for the parents to drink and eat.
  - The maize stalks are left on the ground and cut to smaller pieces.

## Q2. If you look at the sky, in which period of the season you think they are clearing the field?

- A2. In the dry season, because the skies are clear.  
The best time is shortly after harvest of the maize.

## Q3. Why do you think it is a good idea to do this practice soon after harvest?

- A3. The crop residue has time to decompose.

## Q4. Why are the cut maize stalks left in the field?

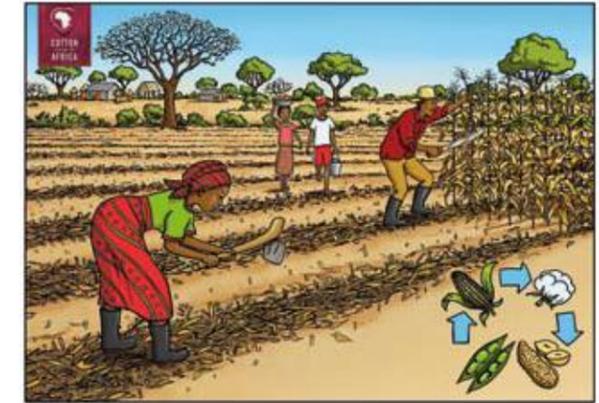
- A4.
- The cut maize stalks provide a cover and protect the soil from erosion.
  - The crop residue acts as mulch (and helps conserve moisture) It puts organic matter back into the soil as it decomposes, maintaining and improving soil fertility and soil aeration.
  - The organic matter is food for soil organisms such as earth worms, which help to maintain a good soil structure.

## Q5. What do you see in the bottom right of the picture?

- A5. Crop rotation – that is, growing different crops on the same piece of land from one year to the next.

## Q6. Why is crop rotation important?

- A6. Crop rotation helps to maintain and improve soil fertility.
- To avoid build-up of pests and diseases
  - To spread the risk in case of crop failure
  - To enhance food availability



## Q7. What happens in your field if you plant the same crop annually on the same piece of land?

- A7.
- The land fertility deteriorates
  - There is build-up of pests and diseases in the soil
  - Yields decrease

## Q8. What other methods can you think of to maintain and improve soil fertility?

- A8.
- Applying compost or manure
  - Planting Ferdhabia, the fertilizer tree
  - Liming
  - Application of mineral fertilizer

## Q9. What would be a good crop rotation?

- A9. Maize, followed by cotton, followed by a leguminous crop such as soybean or groundnuts. The cotton crop will benefit from any residues of fertilizer that had been applied to the maize crop.

## Q10. What is the importance of a legume in the rotation cycle?

- A10. Legumes fix nitrogen in the soil, and help to maintain or improve soil fertility.

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## FINGER 1 - EARLY and PROPER LAND PREPARATION, CROP ROTATION, CONSERVATION AGRICULTURE and SOIL FERTILITY

**Q1. What do you see in the picture?**

- A1.**
- A man and a woman (refer to their names)
  - A pair of oxen pulling a piece of equipment.

**Q2. Who is the woman waving to?**

- A2.** To their children who are off to school.

**Q3. What are the parents doing?**

- A3.** They are preparing the land, using the piece of equipment.

**Q4. What tool or equipment are they using?**

- A4.** A ripper

**Q5. What is the practice of using a ripper called?**

- A5.** Ripping

**Q6. What are the advantages of ripping compared to ploughing?**

- A6.**
- With ripping only that part of the land is being prepared where the crop will be planted.
  - Ripping takes less time than ploughing.
  - Ripping breaks the hard pan – helps water retention.
  - Ripping can be done in the dry season, not having to wait until the rains have come.
  - Ripping is less heavy for the oxen.

**Q7. What if the farmer does not have a pair of oxen and a ripper?**

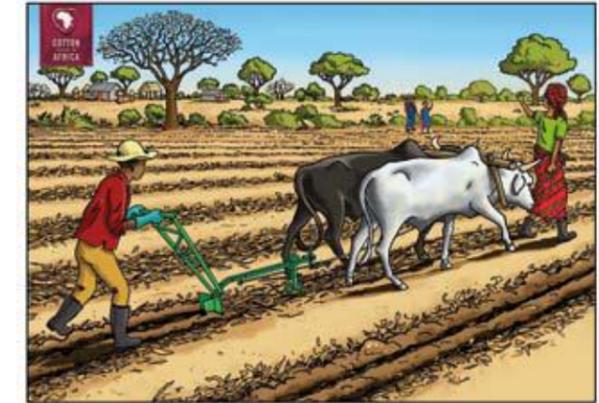
- A7.** He/she can hire a tillage service provider to do the land preparation.

**Q8. What types of tillage service providers are there?**

- A8.**
- Oxen tillage service providers
  - Tractor tillage service providers

**Q9. What would be a good time to prepare the land?**

- A9.** Soon after harvest of the previous crop



**Q10. Why would this be a good time?**

- A10.**
- The animals (oxen) are likely to be healthy and strong.
  - The soil is still moist and therefore easy to work with.
  - To avoid having large soil clods which interfere with planting and germination.
  - It affords the farmer enough time to complete land preparation.
  - It affords time to apply manure / lime to the soil.
  - It enables the farmer to achieve early planting.

**Q11. When should land preparation be completed?**

- A11.** Latest just before the rains come so that the farmer immediately can start planting.

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## FINGER 2 - EARLY and PROPER PLANTING

### Q1. What do you see in the picture?

- A1. • A man and a woman (refer to their names)  
• Rip lines  
• Planting rope  
• The woman is holding a bag of seeds

### Q2. What are the man and woman doing?

- A2. • They are planting, following the rip lines  
• They are using a planting rope fitted with knots / bottle tops to make sure that they plant the correct distance

### Q3. What is the colour of the clouds?

- A3. Dark clouds

### Q4. What do the dark clouds show?

- A4. It has rained / the rainy season has started

### Q5. When should planting be done?

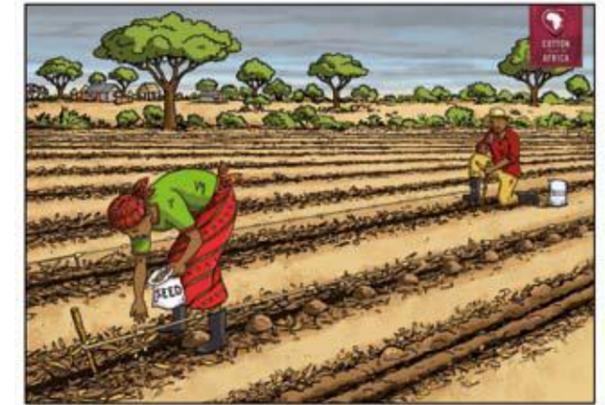
- A5. Immediately after the first heavy rains

### Q6. When do you normally receive the first rains?

- A6. By mid-November (But onset of rains is unstable)

### Q7. Why is it important to plant early?

- A7. • Early planting affords the crops enough time to benefit from full season and mature fully  
• The crop benefits from the naturally occurring nitrogen at the start of the rainy season.  
• Early planting is part of improved pest management practices.



### Q8. How many seeds should be planted per planting station?

- A8. • Cotton: 4-5 seeds per planting station  
• Maize: 1-2  
• Soyabeans: 1-2  
• Groundnuts: 1-2  
• Sunflower: 1-2

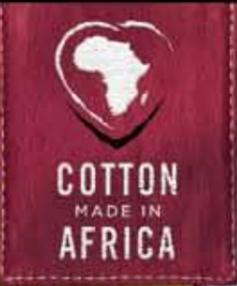
Respecting individual specific crop spacing and depth.

### Q9. How deep should the seed be buried?

- A9. About 2.5cm

### Q10. What is the correct plant spacing?

- A10. 90 cm between rows and 30 cm between cotton plants



## FINGER 3 - CORRECT PLANT POPULATION (THINNING AND GAP FILLING)

**Q1. What do you see in the picture?**

**A1.** A man and a woman (refer to their names)

**Q2. What is the woman in the picture doing?**

**A2.** She is planting in the gaps where there was no germination – this is called gap filling.

**Q3. Why is she gap filling?**

**A3.** Gaps reduce the plant population in the field, resulting in lower yields.

She is gap filling to make sure that there is an optimum plant population.

**Q4. What is the man in the picture doing?**

**A4.** He is pulling out excess plants – this is called thinning.  
(Thinning is a practice applicable to cotton growing only.)

**Q5. How many plants is he leaving per planting station?**

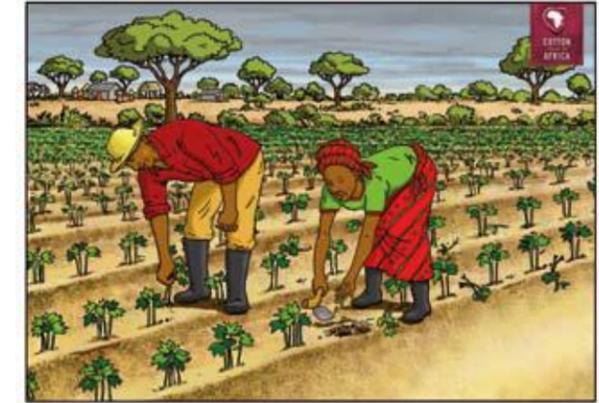
**A5.** He is leaving 2 plants per planting station, following spacing of 90 cm between rows and 30 cm between cotton plants.

**Q6. Why is it necessary to thin the cotton?**

**A6.** When leaving more plants per planting station the extra cotton plants become like weeds and compete for nutrients, water and sunlight.

**Q7. When is the right time for gap filling and thinning of the cotton?**

**A7.** Both activities should be done within 7-10 days after germination.



**Q8. Why should the farmer not wait to thin until the plants are bigger?**

- A8.**
- If you wait too long it becomes harder to remove the plants because the roots have developed more.
  - The plants compete for nutrients and have less room for branch formation.
  - The roots of the remaining plants may get disturbed or damaged and their development is affected.
  - Early thinning and leaving only 2 plants per planting station facilitates quicker development of side branches.
  - Delaying thinning until after 14 days will result in a yield loss of 20 kg/ha for every day of delay.



## FINGER 4 - EARLY AND REGULAR WEEDING

**Q1. What do you see in the picture?**

**A1.** A man and a woman. (refer to their names)

**Q2. What are they doing?**

**A2.** They are weeding their field.

**Q3. Why is it important to weed the field?**

**A3.**

- Weeds compete with crops for nutrients, water and sunlight.
- Weeds harbour pests.
- Weeds make operations such as spraying and harvesting difficult.
- Quality is compromised

**Q4. When should weeding be done?**

**A4.**

- As soon as weeds appear in the field
- The first weeding should be done within 14 days after germination.

**Q5. Why is it important that the first weeding is done so early?**

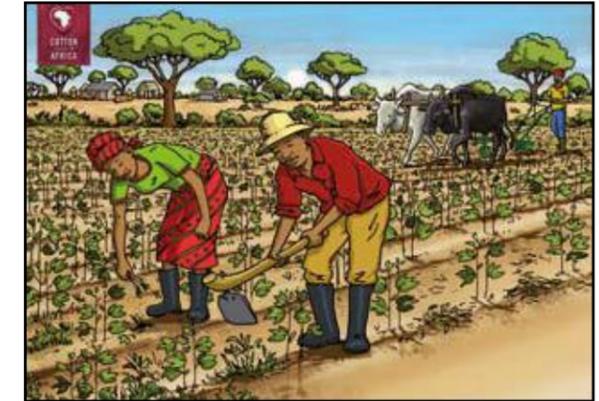
**A5.** Delaying the weeding until after 14 days causes a loss of 20 kg/ha of seed cotton for every day of delay.

**Q6. What methods of weed control can be applied in the field?**

**A6.**

- Mechanical methods (use of hand hoes, tractor and ox drawn implements)
- Herbicides (use of selective and non-selective herbicides)
- Cultural methods such as crop rotation

(Farmers should be encouraged to attend technical training on the use of herbicides)



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## FINGER 5 - IPPM: SCOUTING and THRESHOLD SPRAYING

**Q1. What do you see in the picture?**

**A1.** A man. (refer to his name)

**Q2. What is he doing?**

**A2.** The farmer is inspecting the cotton plants.

**Q3. What is the farmer inspecting the cotton for?**

**A3.**

- He is checking to see if there are pests in the field.
- He is checking the plants to identify what type of pests there are on the cotton plants and how many.

**Q4. Why is the farmer checking the plants for insects?**

**A4.** He is checking the plants so that he can make a decision whether he should spray his cotton or not.

**Q5. What is the term used to describe checking the cotton plants for insects?**

**A5.** Pest scouting

**Q6. What is the man wearing around his neck?**

**A6.** It is a pegboard – this is a simple tool to help the farmer decide if he has to spray and against which insect pest.

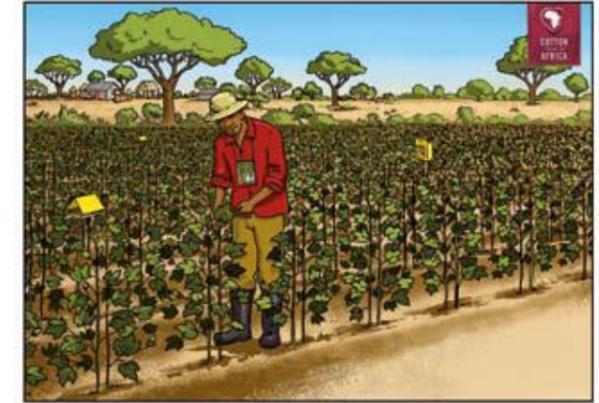
**Q7. Why is pest scouting important?**

**A7.**

- It helps the farmer to decide if to spray and what chemicals to use.
- Knowing against which pest to spray the farmer can make sure he uses the correct chemical.
- Spraying the correct chemical at the right time for the pest which needs to be controlled reduces expenses.

**Q8. How many plants must the farmer examine during scouting?**

**A8.** The farmer must examine 24 plants in a random manner in a field (up to 12 hectares) from the tip down.



**Q9. When does the farmer decide to spray against bollworms?**

**A9.** When there are six bollworms damaged fruit parts or eggs found on 24 plants.

**Q10. When does the farmer decide to spray against aphids?**

**A10.** When there are at least 15 colonies found on 24 plants.

**Q11. What groups of pests are found in cotton? Give some examples for each category.**

**A11.**

- Bollworms: Red bollworms, American bollworms, Spiny bollworms, Pink bollworms.
- Sucking pests: Aphids, Jassids.
- Other pests: Cotton stainers, white fly, elegant grasshoppers, red spider mites.

**Q12. Are all insects pests?**

**A12.** No, there are also beneficial insects / friendly insects.

**Q13. Give examples of some beneficial / friendly insects**

**A13.** Ladybird beetle, lace wing, parasitic wasps, stink bugs, Hover fly, predatory spiders.

**Q14. What are the yellow objects seen in the field?**

**A.14.** They are molasses traps to capture bollworm moths.



## FINGER 5 - SAFE USE OF PESTICIDES

**Q1. What do you see in the picture?**

- A1.**
- A man (refer to his name) who is spraying a cotton field.
  - Pesticide bottles, a bucket with water, a measuring cup.

**Q2. Before he can start spraying, what should the farmer do?**

- A2.** He/She must read the label on the chemical bottle to make sure that he applies the correct dosage.

**Q3. What chemicals can the farmer use to spray his field against bollworms?**

- A3.** Pyrethroids (ask farmers to give examples of pyrethroids)

**Q4. What is the farmer wearing?**

- A4.** He is wearing protective equipment – overall, rubber gloves, gumboots, goggles, filter mask.

**Q5. Why does the farmer need safety clothing?**

- A5.** To protect himself from coming into direct contact with the chemicals.

**Q6. What type of sprayer is the farmer using?**

- A6.** ULVA + sprayer

**Q7. What are the advantages of using the ULVA + sprayer?**

- A7.**
- It is safer in that the pesticide is sprayed at a distance from the operator.
  - The smaller droplets end up on the leaves, thus there is little spillage to the ground.
  - It achieves conservation on time, energy and water

**Q8. In the picture a man is spraying. Can a woman also do the spraying?**

- A9.**
- Yes, unless she is pregnant or breast feeding.
  - Children under the age of 18 should never be allowed to do spraying.



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## FINGER 5 - SAFE DISPOSAL OF EMPTY PESTICIDE CONTAINERS

### Q1. What do you see in the picture?

- A1. • A man and a woman (refer to their names)  
• A hole in the ground, sprayer, bucket, shovel, empty and  
• destroyed pesticide containers.

### Q2. What are they doing?

- A2. The man is burying used empty pesticide containers in a hole in the ground.  
The woman came to help him carrying the bucket back home.

### Q3. What has the farmer done to the empty pesticide containers?

- A3. He has broken the empty pesticide containers.

### Q4. Why is the farmer damaging the empty pesticide containers, and burying them?

- A4. To prevent the containers from being re-used.

### Q5. Why is it important to prevent the empty pesticide containers from being re-used?

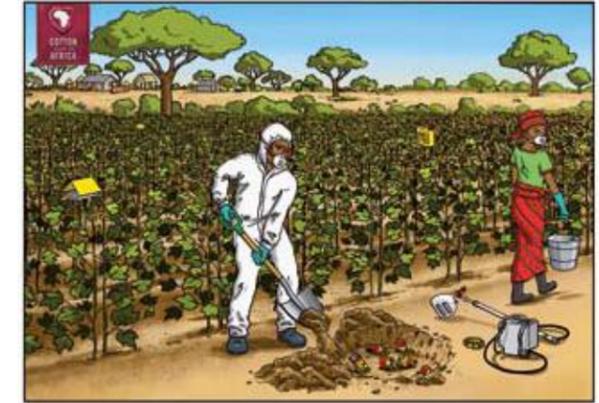
- A5. When pesticide containers are being re-used there is a risk that someone will get the pesticide into his/her body and become seriously ill.

### Q6. What other methods do you know to safely dispose of empty pesticide containers?

- A6. • Burning  
• Throwing into a pit latrine

#### Additional information

Stored pesticides should be stored away from water sources and out of reach of children. Left over chemicals in the sprayer should be sprayed on edges of the field.



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## FINGER 5 - HYGIENE

### Q1. What do you see in the picture?

- A1
- The man is having a bath, using clean water and soap.
  - The woman has washed the clothes the man was wearing during the spraying.
  - The sprayer has been washed out.

### Q2. Why is it important that the man has a bath?

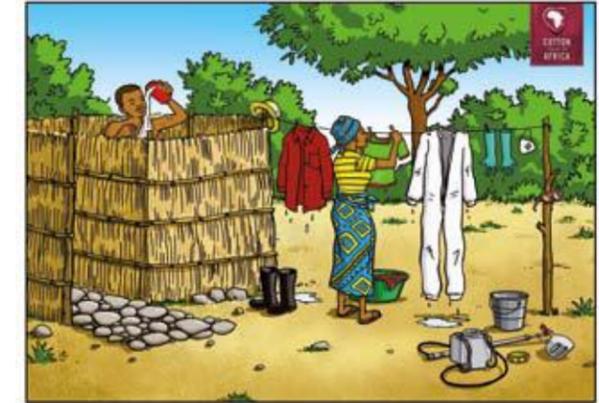
- A2.
- There is always a chance that he got in contact with the pesticides, even when he was wearing protective clothing.

### Q3. Why is it important that the clothes and gloves he was wearing during spraying are washed?

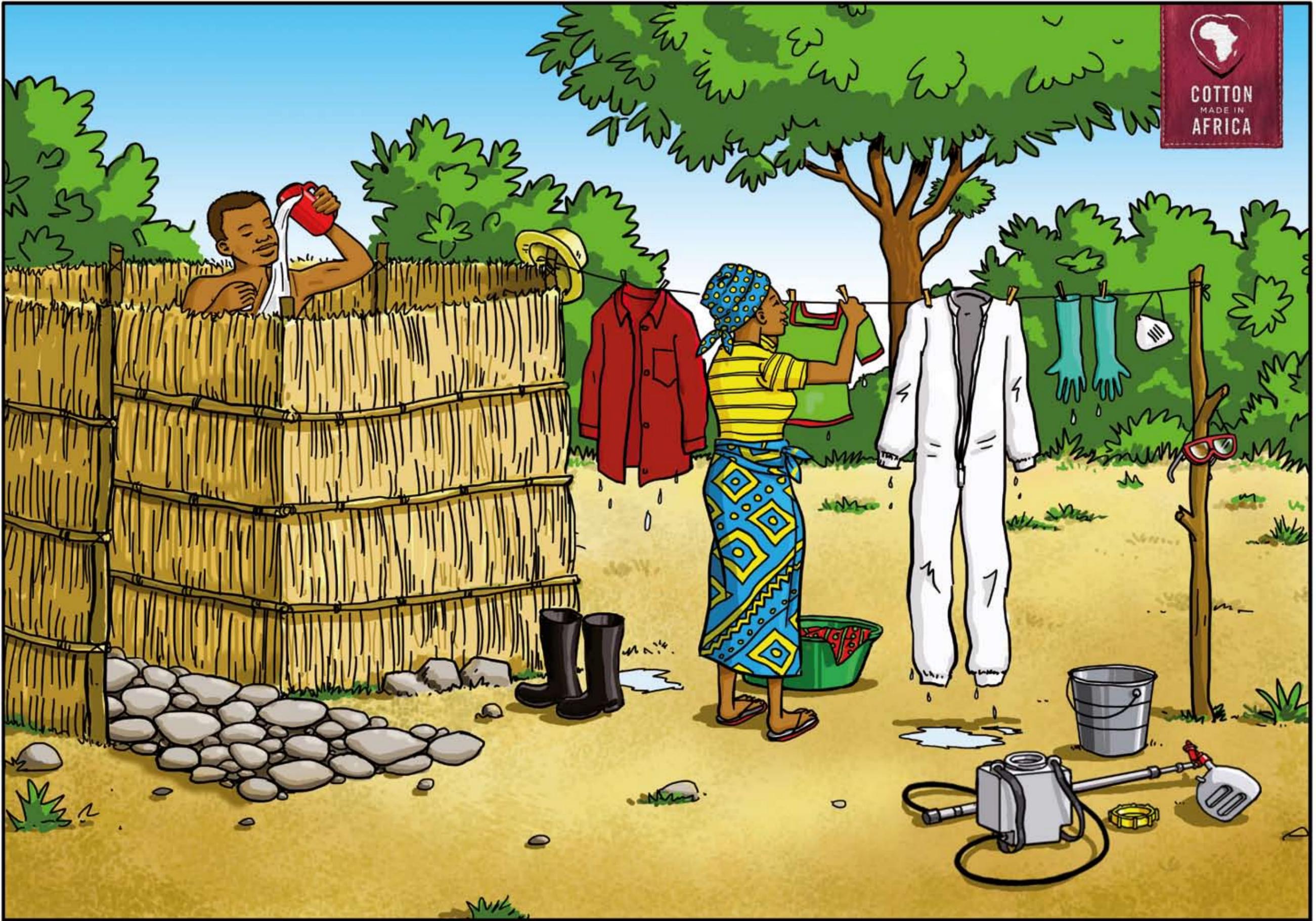
- A3.
- Some pesticide may have spilled onto the clothes or gloves. During the spraying some of the pesticide may have ended on the clothes or gloves.

### Q4. Why is it important that the sprayer is washed?

- A4.
- If the sprayer is not washed some pesticide will stay behind and somebody may get exposed to it.
  - Dried-up pesticide residues may result in blocking of sprayer nozzles.
  - In case someone wants to use the sprayer for herbicides, it is dangerous to mix insecticides (residues) and herbicides (the crop can be crouched).



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# HARVESTING

**Q1. What do you see in the picture?**

- A1.**
- A man and a woman picking seed cotton
  - Picking bags
  - Wool packs

**Q2. When does harvesting begin?**

- A2.**
- 5 to 6 months from the time of planting.
  - When 3 or more bottom bolls per plant are open.

**Q3. Why should the farmer not delay to start picking?**

- A3.**
- The opened bolls are exposed to dew, dust and sunlight, thereby reducing the fibre quality.
  - The seed cotton loses weight.

**Q4. What time should cotton be picked?**

- A4.** After the morning dew has dried up and in the late afternoon before the dew begins to accumulate.

**Q5. What are the correct materials for harvesting?**

- A5.**
- Polythene plastic bags, cotton picking bags and clean wool packs.
  - The use of polypropylene bags (e.g. fertilizer bags) is not allowed, as this will contaminate the seed cotton!

**Q6. How is the harvesting done?**

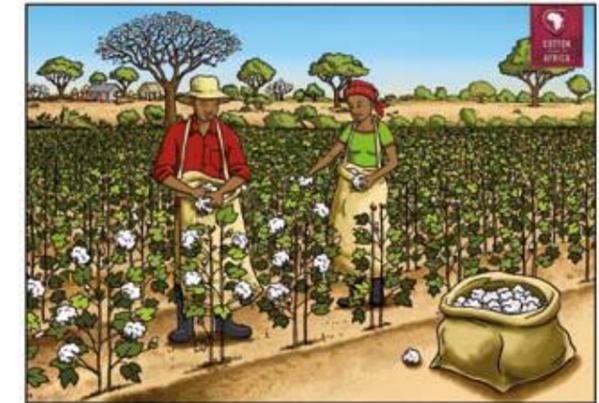
- A6.**
- Use more than one picking bag and separate cotton of different grades.
  - Harvest the two halves parallel rows between two rows.

**Q7. Where should the farmer keep his seed cotton once picking bags are full?**

- A7.** The cotton should be transferred and compressed into clean wool packs.

**Q8. What are the factors that determine the grade of seed cotton?**

- A8.** Colour, maturity, level of foreign matter and insect stain.



  
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# MARKETING

**Q1. What do you see in the picture?**

- A1.**
- A man and a woman (refer to their names)
  - An oxcart carrying woolpacks with seed cotton
  - A buyer

**Q2. What are they doing?**

- A2.** They are transporting the seed cotton to the buying station for sale.

**Q3. There are often different buying stations in a village. At which buying station should they sell the seed cotton?**

- A3.** At the buying station of the company that provided the farmer with inputs on credit and with extension support.

**Q4. What happens if the farmer sells his seed cotton at another buying station belonging to another company?**

- A4.** The company which provided the inputs on credit will not be able to recover the loan. The farmer will be penalized for side selling.

**Q5. What do you think a company will do if it cannot recover the loan from a farmer?**

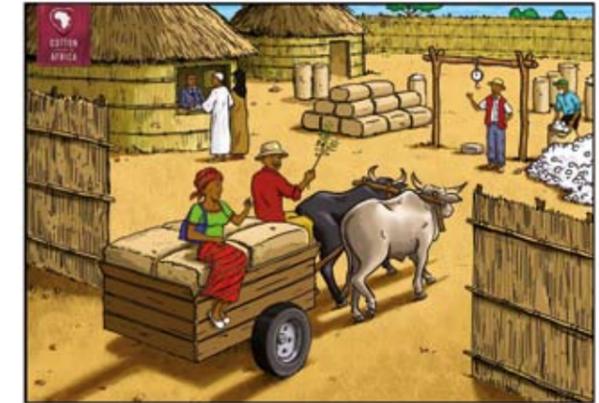
- A5.** The company will not trust the farmer anymore and will not provide him with inputs on credit for the next season. The company will also stop providing extension support to such farmers.

**Q6. If the company decides not to provide inputs on credit and extension services anymore, who will then suffer?**

- A6.** It is the farmer who will suffer.

**Q7. So if a farmer does not sell the seed cotton to the company that has been supporting him, who suffers the most in the end?**

- A7.** The farmer himself.





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## WEIGHING and RECEIPTING

### Q1. What do you see in the picture?

- A1. • A man and a woman (refer to their names)  
• A wool pack hanging on a weighing scale  
• Two other men.

### Q2. Who do you think these other two men are?

- A2. These are people from the cotton company, one is a buyer and the other a cashier.

### Q3. What are they doing?

- A3. One is hanging the wool pack with seed cotton on the weighing scale to determine the weight.  
The other is taking records of the weight of each woolpack in a receipt book.

### Q4. What is the receipt book for?

- A4. The receipt book is documenting seed cotton purchases from each farmer, credits/loans deducted, and the balance paid in cash to the farmer.

### Q5. Is this receipt/documentation just for the company?

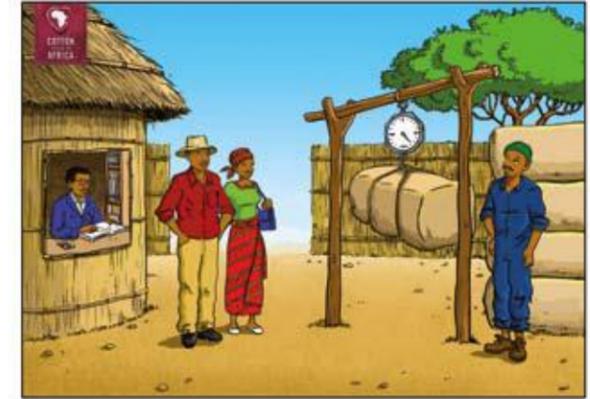
- A5. No, it is also for the farmer.  
The farmer must always get a copy of the receipt!

### Q6. Why is it important that the farmer gets a copy of the receipt?

- A6. It allows the farmer to check that the company man has not made any mistakes and that the cotton price paid is the correct one.

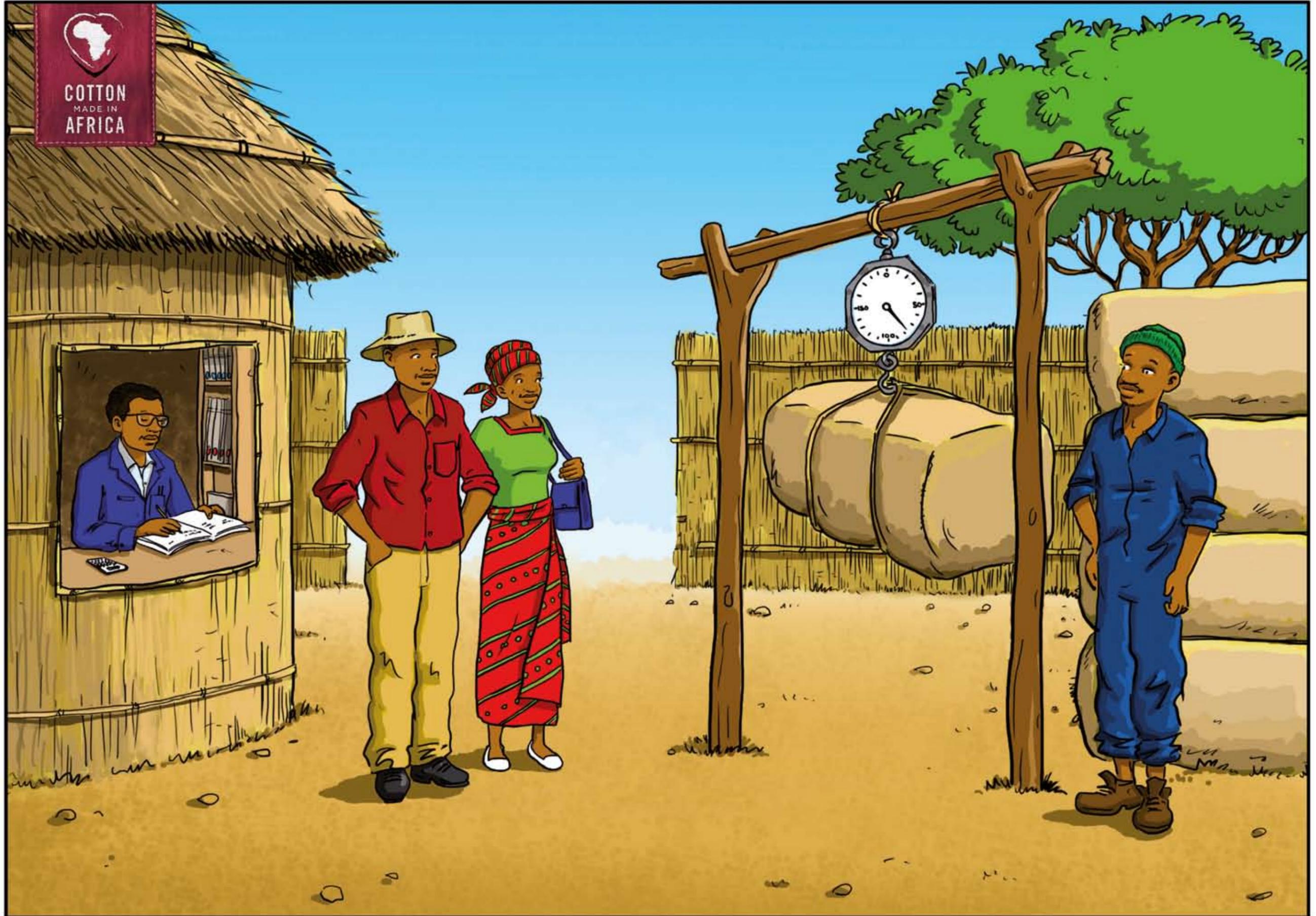
### Q7. What can you do to check that the weighing scale is measuring the weight accurately?

- A7. You can weigh the wool packs yourself before going to the buying station and compare the weights.





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## HAPPY COUPLE

**Q1. What do you see in the picture to the left?**

- A1.**
- A man and a woman (refer to their names)
  - And a man from the company who was writing the receipts.
  - They are holding up the receipt and the money they were paid for their seed cotton.

**Q2. What is happening?**

- A2.** The man from the company is paying the farmers for the seed cotton they have delivered.

**Q3. Why are they smiling so happily?**

- A3.** They had a high yield and got paid a lot of money.

**Q4. Why do you think they had a high yield?**

- A4.** They followed the recommendations (Five Fingers) for growing a good cotton crop, just like we discussed before.

**Q5. What do you see in the picture to the right?**

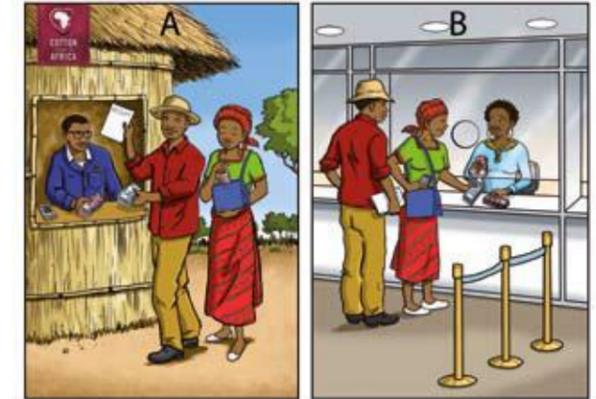
- A5.**
- A man and a woman (refer to their names)
  - Another woman - it looks if she is a cashier

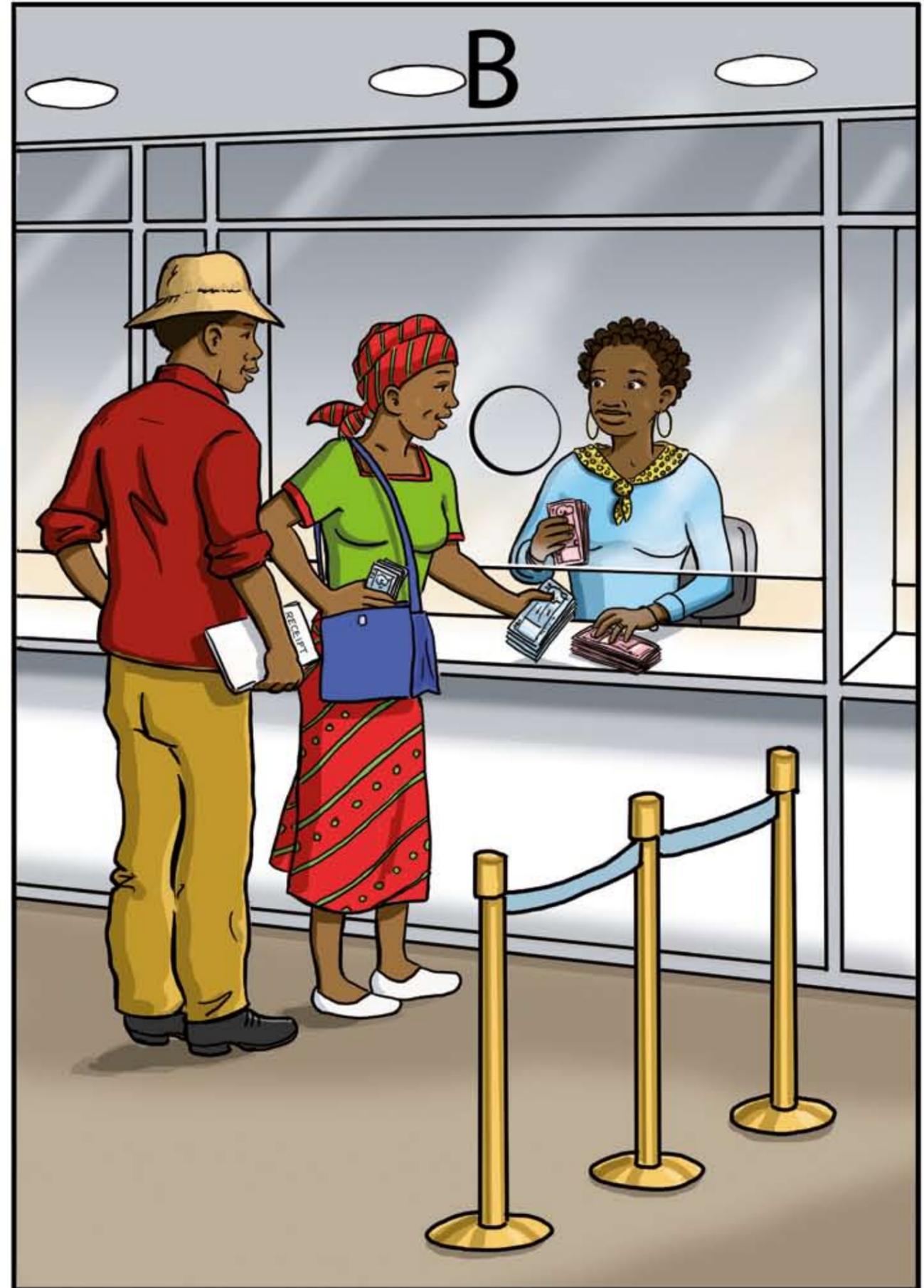
**Q6. What do you think is happening?**

- A6.** The happy couple is depositing the money they received from the sale of the seed cotton into their bank account.

**Q7. Why is it wise to deposit the money into a bank account?**

- A7.**
- If you keep the money with you and take it home it may be stolen.
  - The money is safe when you keep it in a bank account.





## Aid by Trade Foundation

“Cotton made in Africa” (CmiA), an Initiative of the Aid by Trade Foundation (AbTF), aims at improving the social, ecological and economic living conditions of a large number of African cotton farmers and their family members. Together with partnering cotton companies and the COMPACI (Competitive African Cotton Initiative) project, CmiA ensures trainings in modern, efficient and environmentally friendly cotton cultivation methods. Through its independent certification system, it has set up social, economic and environmental criteria to follow the 3 P “people – profit – planet” philosophy.

Good Agricultural Practices (GAP) form the core basis to ensure economic, environmental and social sustainability for on-farm processes, and result in safe and quality agricultural products. The CmiA Standard requires regular training to improve agricultural skills and capacities of smallholder cotton farmers. The Picture Block on the Five Fingers Principle translates’ GAP into tangible measures and thereby aims to ensure a successful transfer from training to practice.

The present picture block is an elaboration of the COMPACI Five Fingers Picture block, which was illustrated by James Kawembe from Malawi. This new edition is the result of an intensive review of the first edition by CmiA partners in Southern Africa and experienced COMPACI consultants for Extension Services, whom AbTF would like to thank for their valuable contributions. Illustrations have been adapted and put in line with the characters in the CmiA Picture Block “Children and Cotton Cultivation – Good Practices and worst forms of child labour”.

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