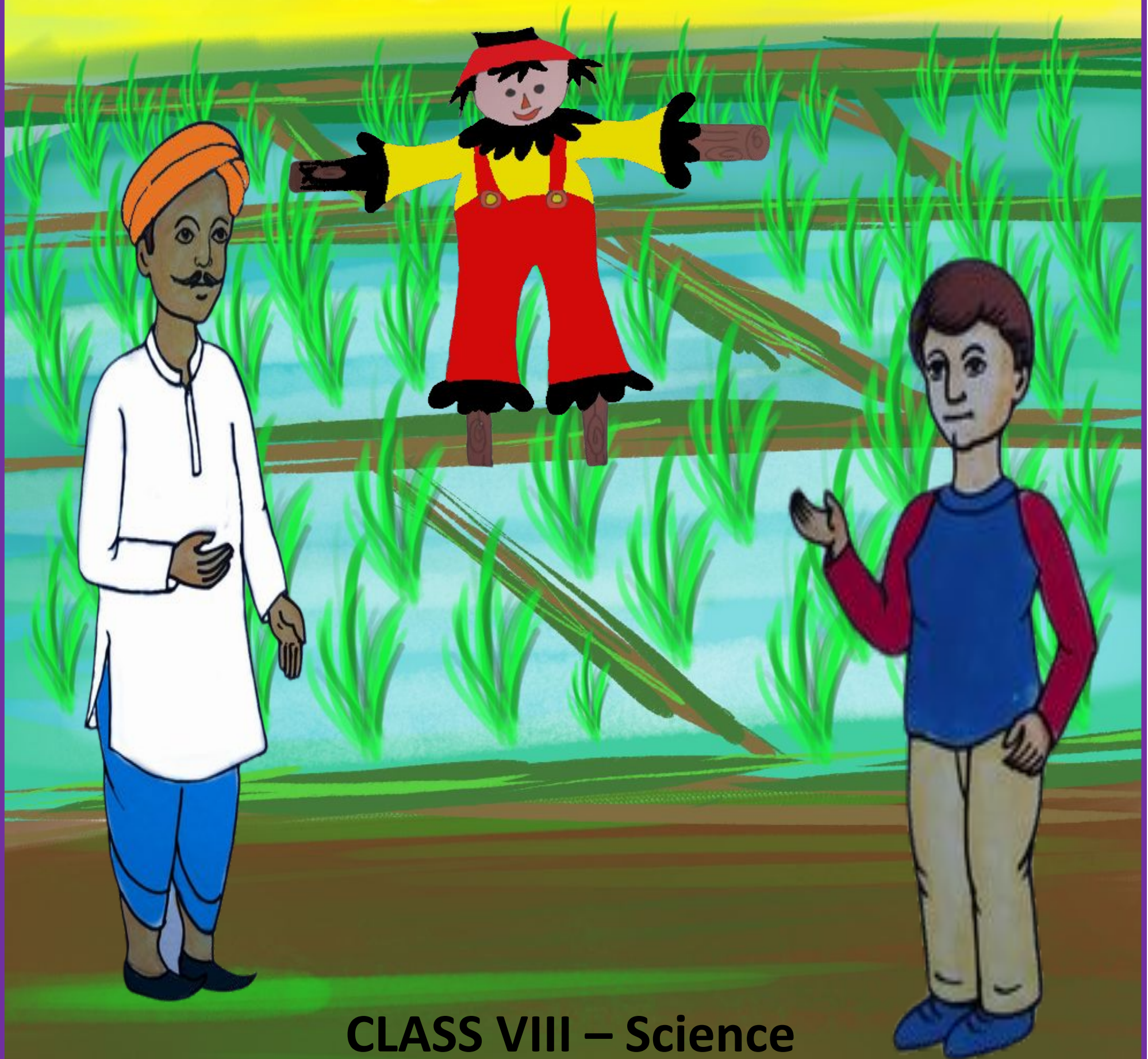


THE STORY OF CROP PRODUCTION



CLASS VIII – Science

**SRI SATHYA SAI VIDYA VIHAR, INDORE
(AFFILIATED TO C.B.S.E.)**

ACKNOWLEDGEMENT

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Disclaimer

The purpose of this book is to help students understand crop production and management in a better way. The information in this book is for educational and informational purpose only.

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Preface

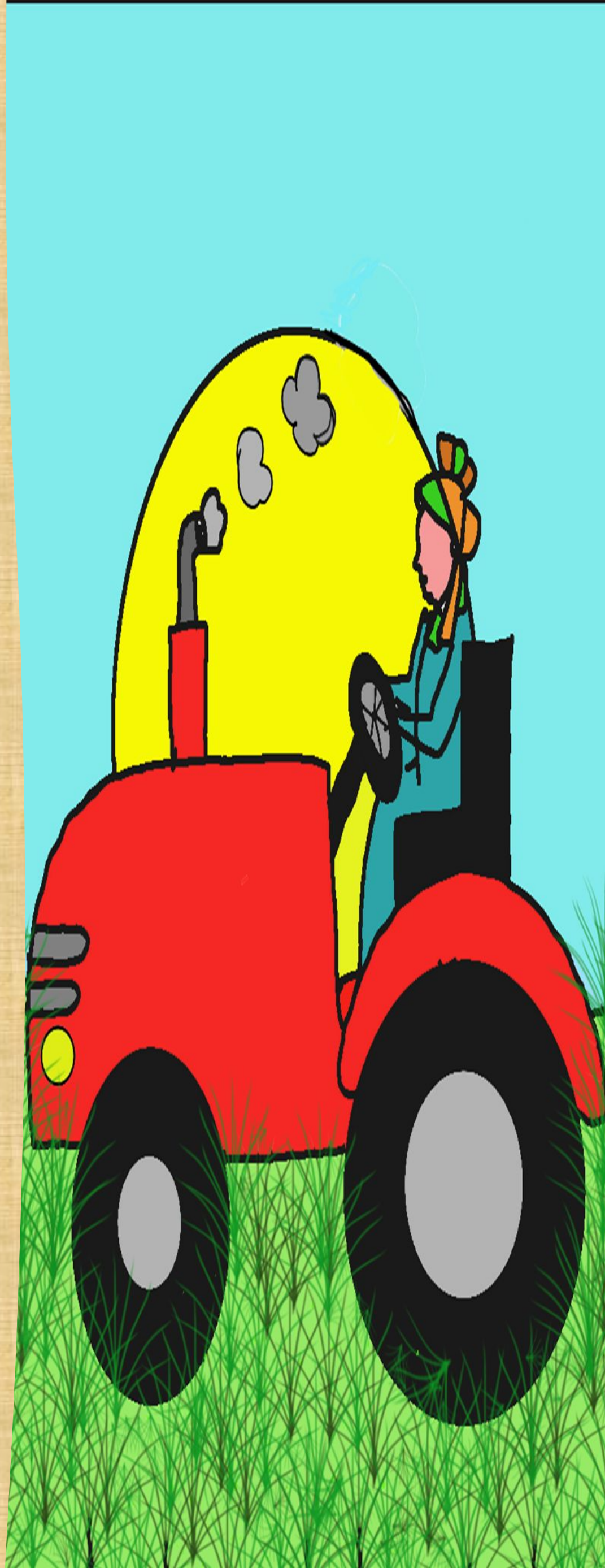
This graphic novel mainly deals with the diverse processes and methods used for cultivating different varieties of plants in the field of agriculture.



LEARNING OUTCOMES

The students
will be able to -

- summarize the preparation of soil for a crop.
- categorise the crops and their types according to seasonal changes.
- mind map the various types of activities farmers do for cultivation of crop and agricultural implements used.
- co-relate the agricultural practices.
- link the importance of irrigation with various sources of irrigation.
- examine the weeds and state the effective use of weedicide, pesticides and insecticides.
- assess how to improve crop and perform organic farming.
- apply different ways of storing grains.
- implement the agricultural practices and determine the types of food products obtained from animals.



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SECTION - 1

4-15

CROP PRODUCTION

- Types of crops
- Preparation of Soil
- Sowing of seeds



SECTION - 2

16-28

CROP PROTECTION

- Replenishment of soil
- Irrigation
- Protection



SECTION - 3

29-40

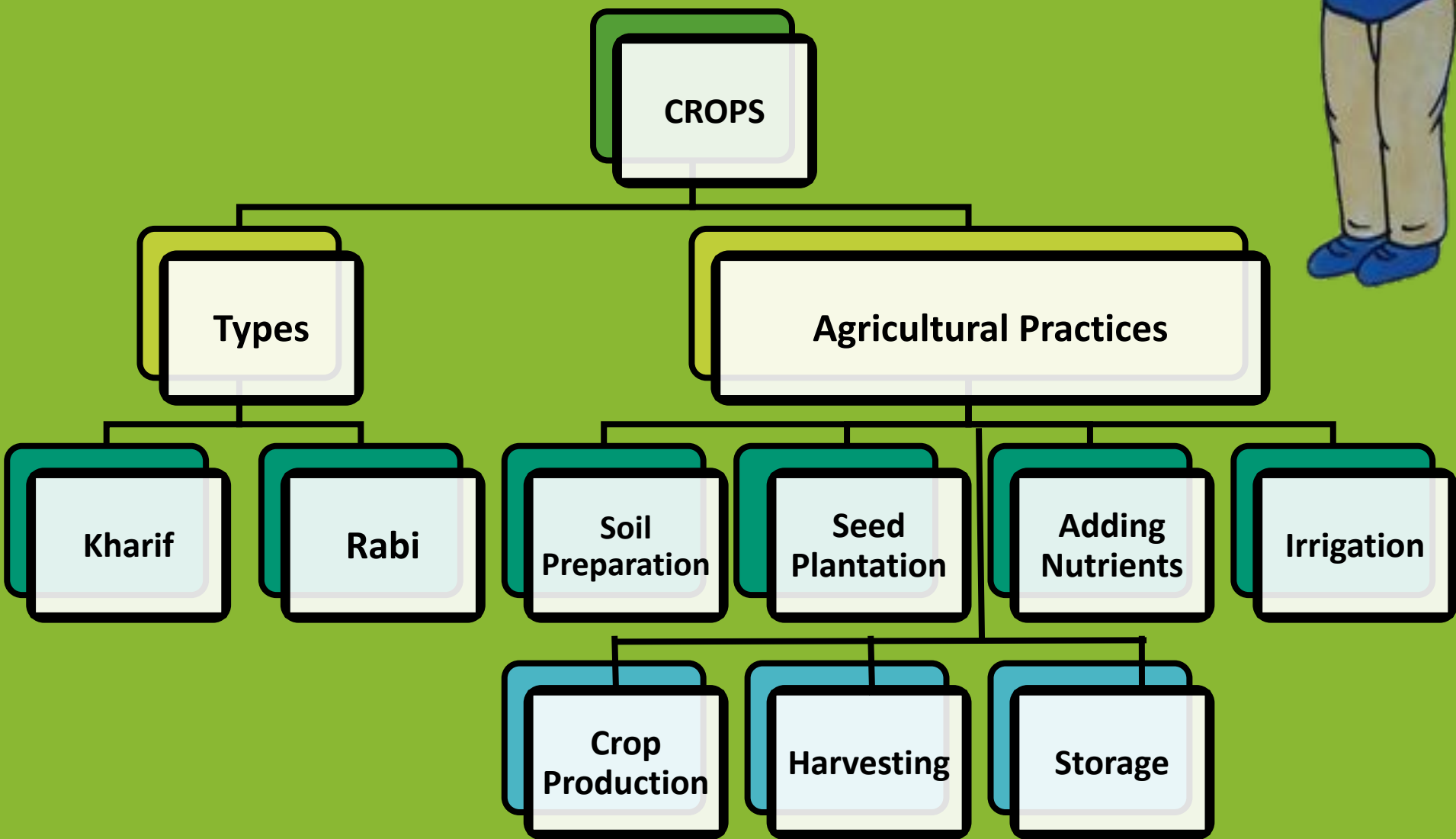
CROP MANAGEMENT

- Harvesting
- Storage
- Animal Husbandry

Check your knowledge
AT A GLANCE



STORY BOARD



CHARACTERS



Hello! I am Gyan Prakash.
I am a farmer. I have a large farm in the village of Gariha Chhattisgarh. I am 65 years 'young'! My wife is Jamuna Devi.



Hi ! I am Rahul.
I study in Sri Sathya Sai Vidya Vihar, Indore in class 8. I am 13 years old. I am planning to visit my dadaji at Gariha village for my vacations. Join me on my trip.



Hi ! I am Rahul's younger sister Radha.
I study in Sri Sathya Sai Vidya Vihar, class 6. I am accompanying Rahul to my dadaji's village Gariha.



Hello! I am Suresh.
I am Rahul and Radha's father. I am a software engineer and work with IMPETUS at Indore. I am 40 years old.



I am Madhu.

I am Rahul and Radha's mother. I am a homemaker, This pandemic has given us an opportunity to visit our parents. I am 38 years old.

Namaste! I am Jamuna Devi.

I am Rahul and Radha's dadi. I am used to the village life and I enjoy it. I am 60 years 'young'!



Johar! I am Mohan.

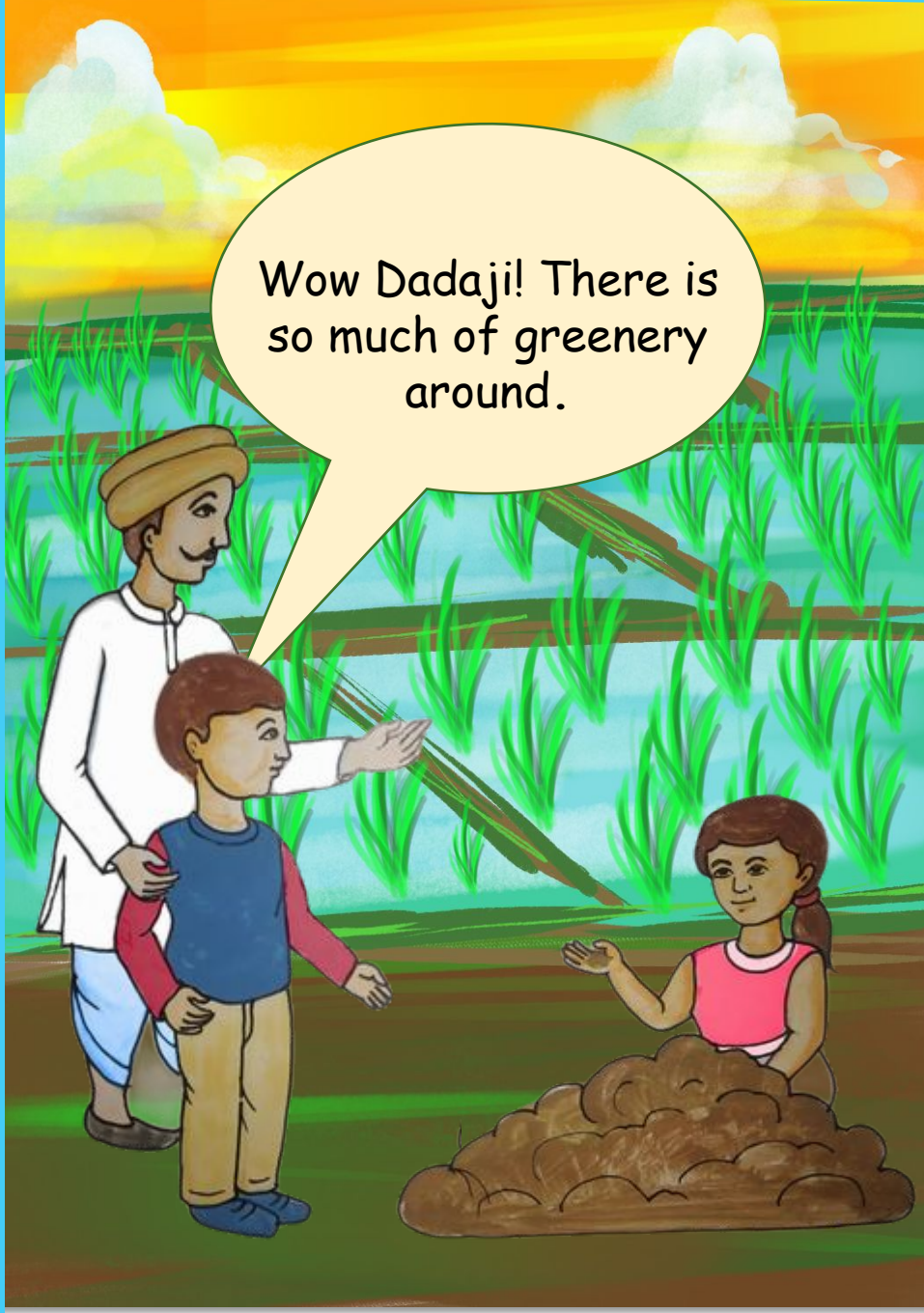
I am a close friend of Suresh and I live close to Shri Gyan Prakash's house. I am passionate about farming and I use modern and organic methods of farming to get a good yield.

****Johar** is the word used for greeting in Chhattisgarh.

This year in the summer holidays Rahul visited his grandfather's farm in village Gariha of Chhattisgarh.



Hello Friends! This is dadaji's farm. It is fun to learn about crops. Would you like to join me?



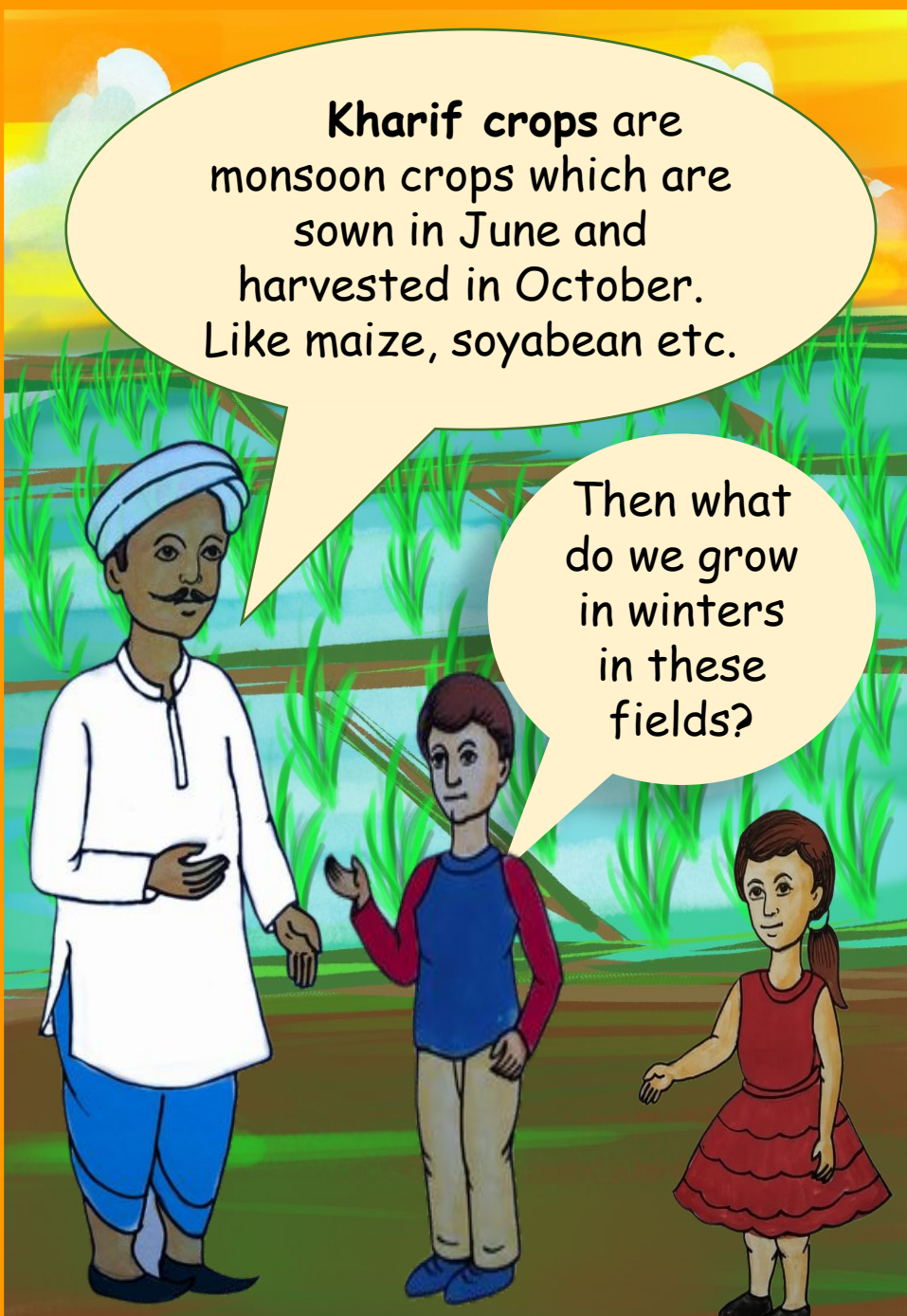
Wow Dadaji! There is so much of greenery around.



But why are these plants growing in a waterlogged field?

This is Paddy. It is grown in lots of water.





Kharif crops are monsoon crops which are sown in June and harvested in October. Like maize, soyabean etc.

Then what do we grow in winters in these fields?



In winters we grow wheat, gram, mustard, etc. These are sown in November and harvested in March-April. They are called **Rabi crops**.

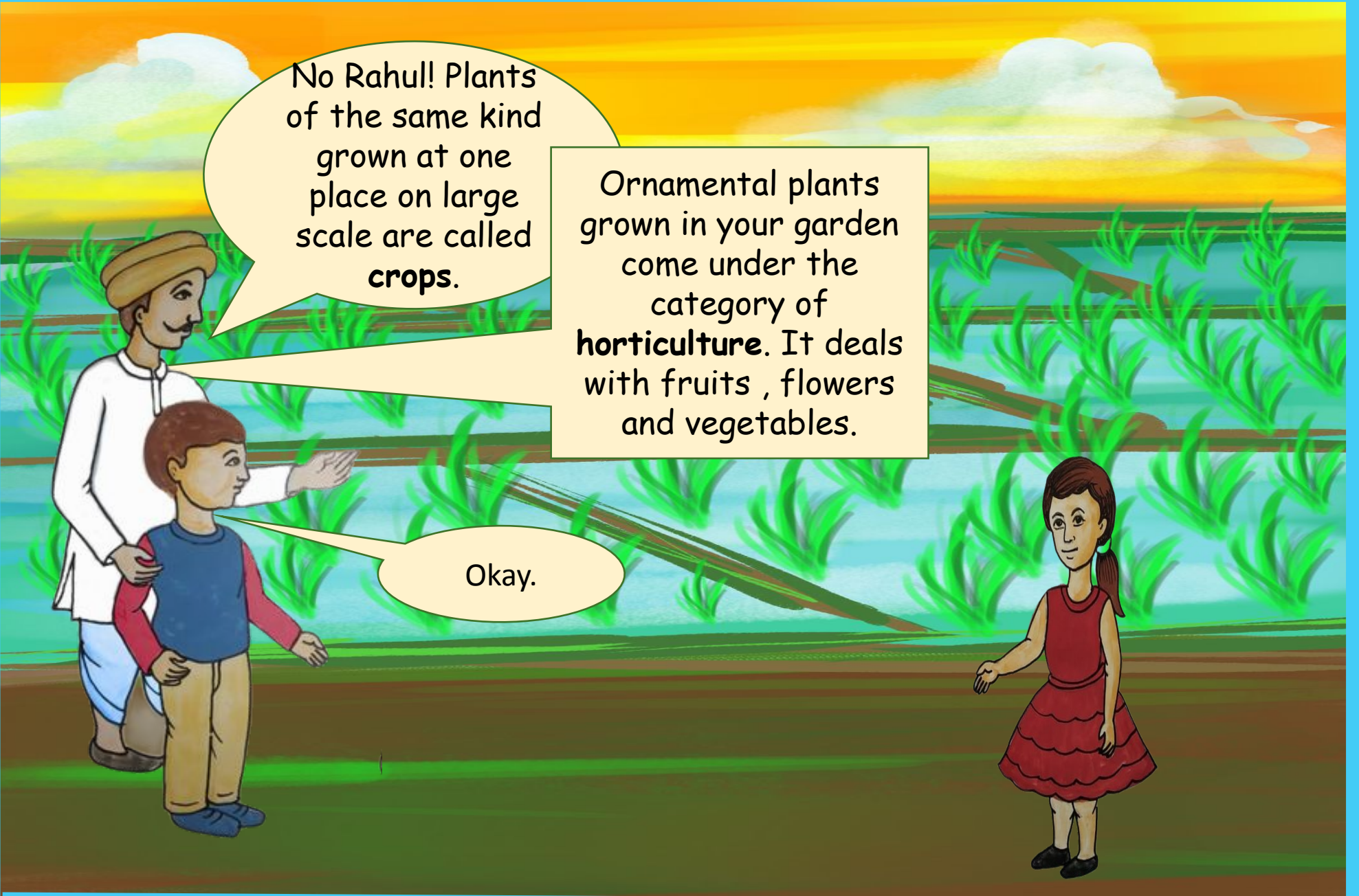
OK! Now I understand.



Rahul, agriculture is a science that deals with mass production of crops, plants and animals useful to human beings.



Dada ji! I also grow so many crops in my garden.



No Rahul! Plants of the same kind grown at one place on large scale are called **crops**.

Ornamental plants grown in your garden come under the category of **horticulture**. It deals with fruits, flowers and vegetables.

Okay.

On returning home...

Suresh, did you get the tractor repaired? Our neighbor Mohan needs it for preparing his fields.

Ji Babu Ji! I got it repaired. He can use it now.



Papa! Can we also go and see the preparation of the fields?

Okay my princess, I will take you to his fields tomorrow.



It is so dusty!

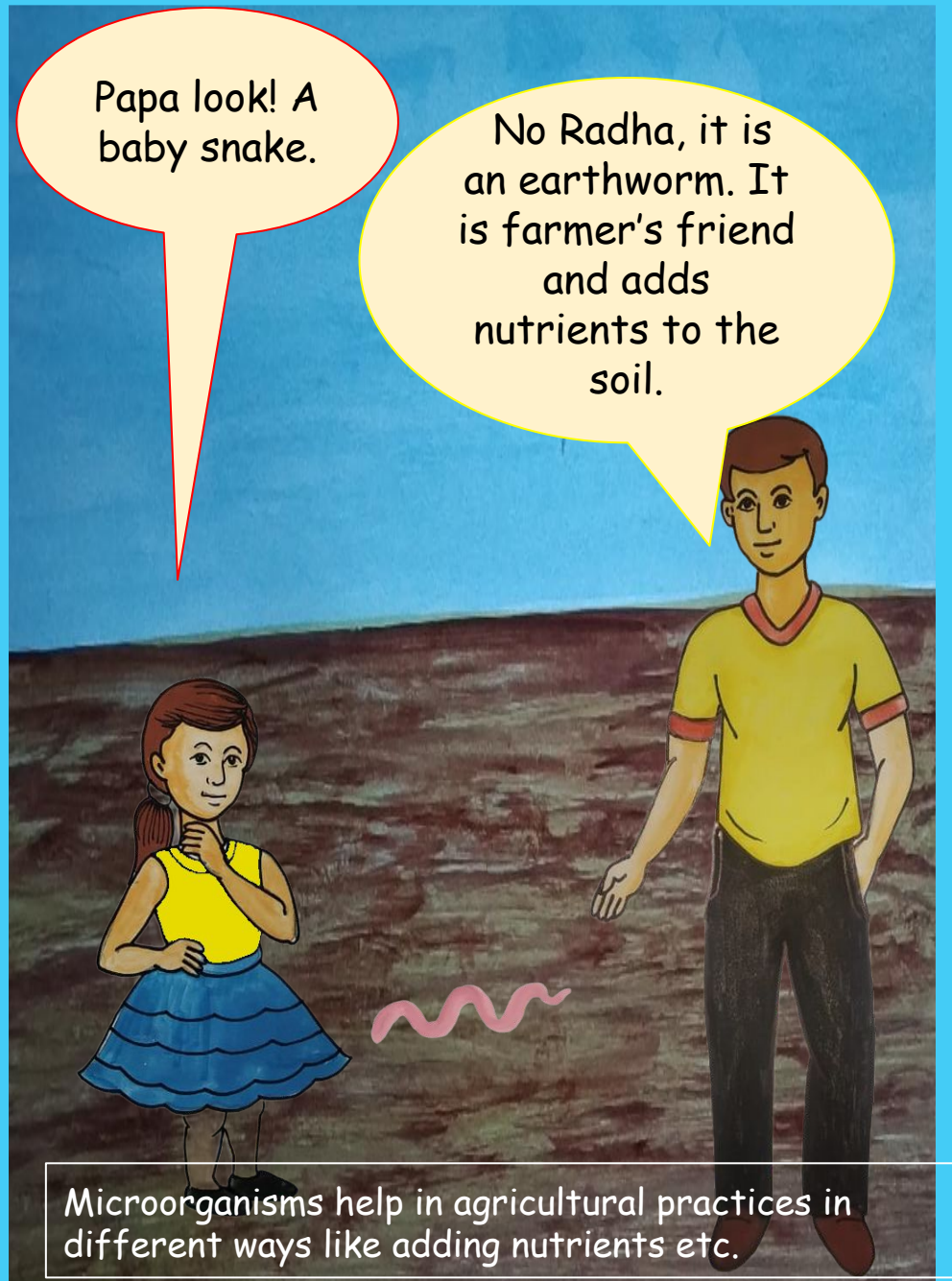
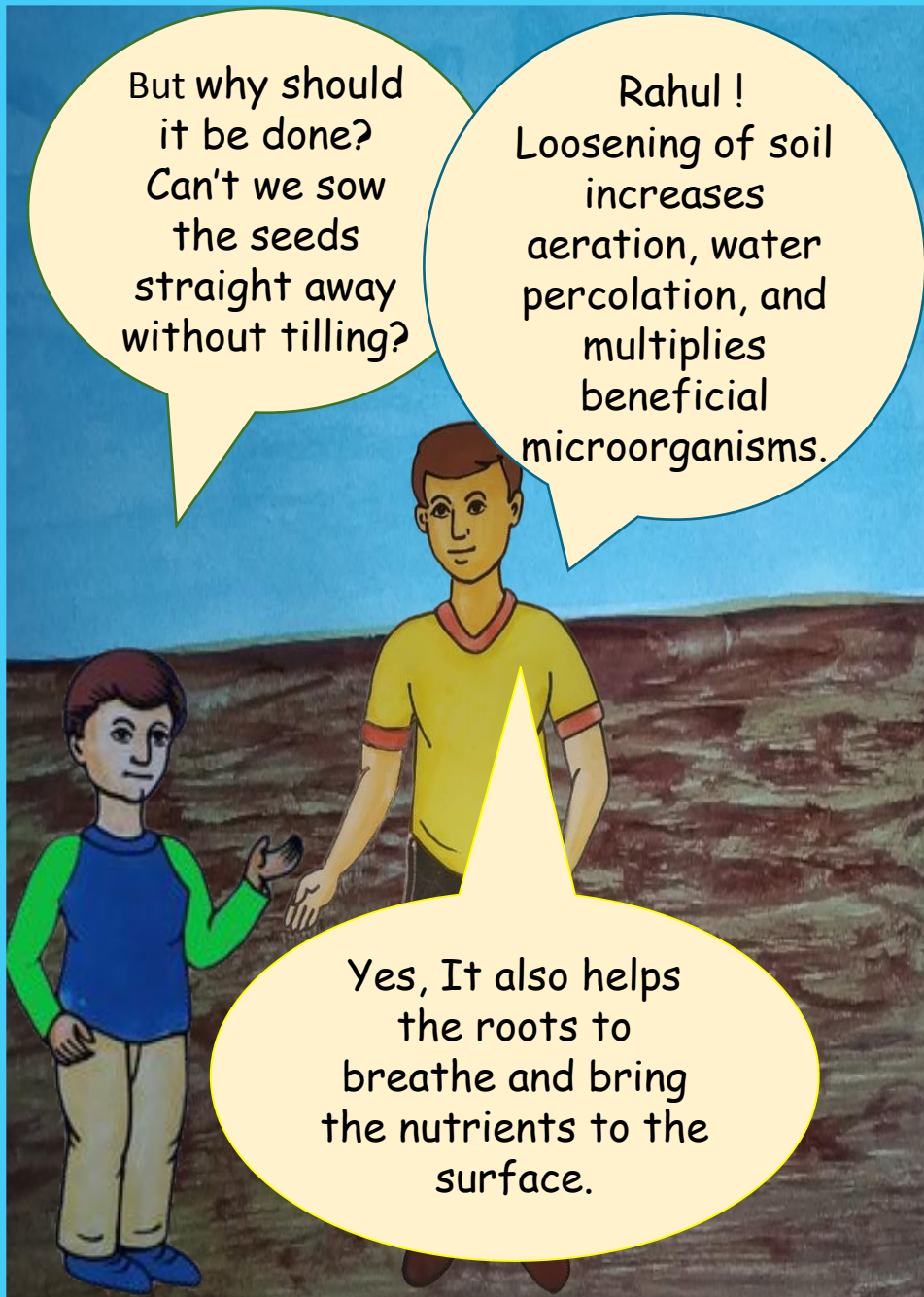
Yes because Mohan Kaka is ploughing and tilling the soil.

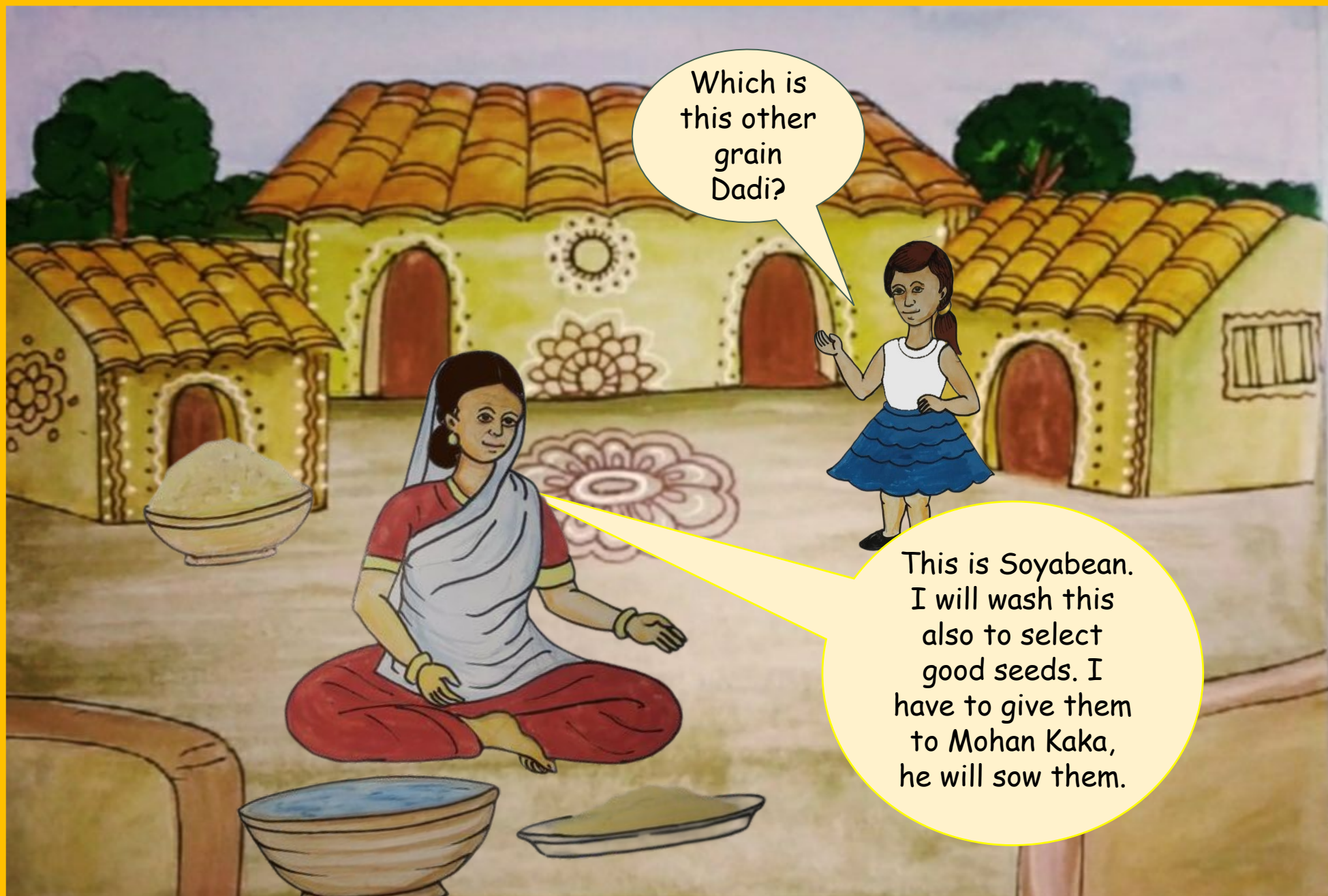


What does that mean?

Tilling is the act of digging the soil turning and loosening it.. After this the soil will be leveled and made plain.

Ploughing is the process of tilling the soil. It helps to aerate the soil, mixes manure and fertiliser, helps in holding more water and promotes the growth of useful microbes.



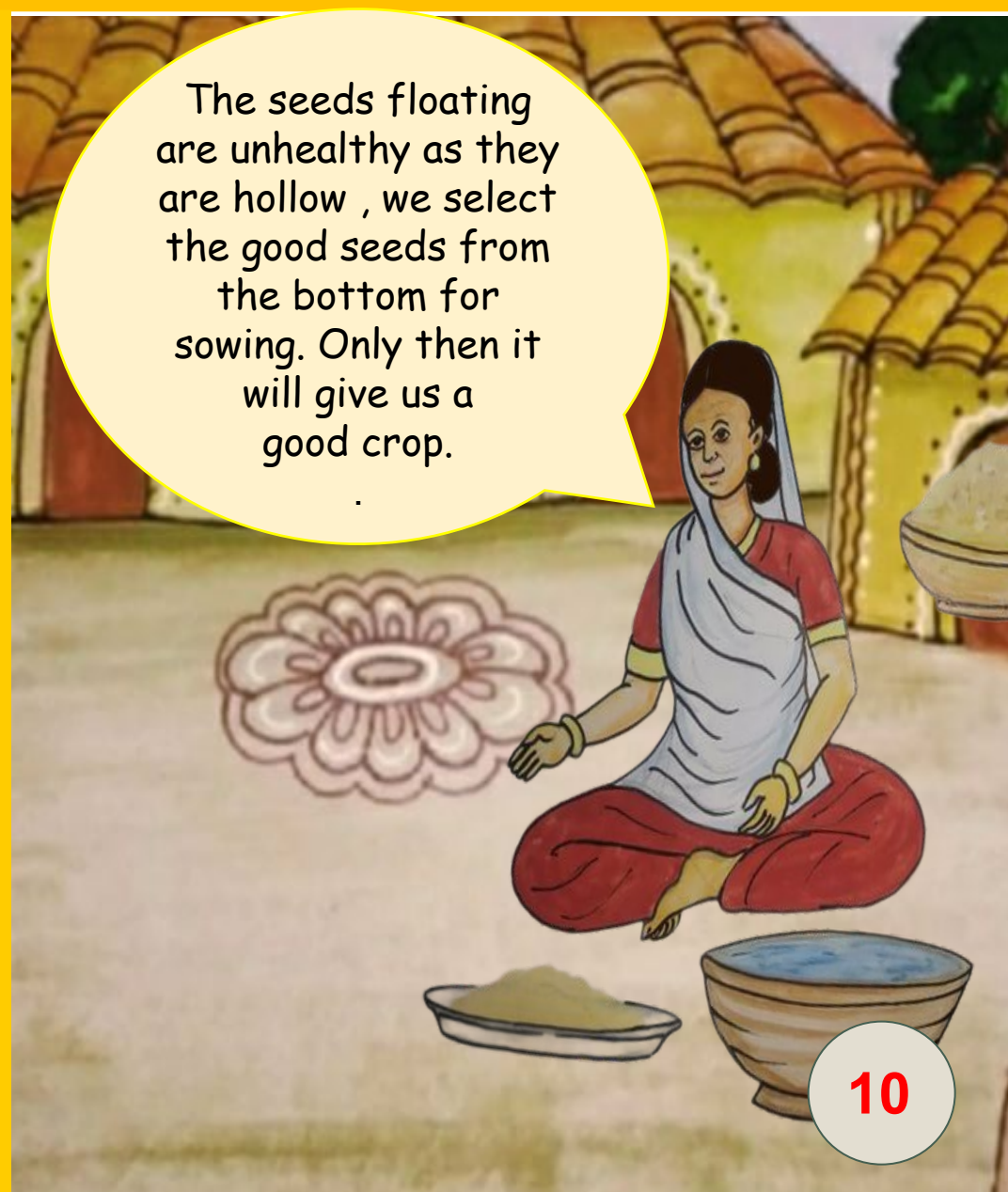


Which is
this other
grain
Dadi?

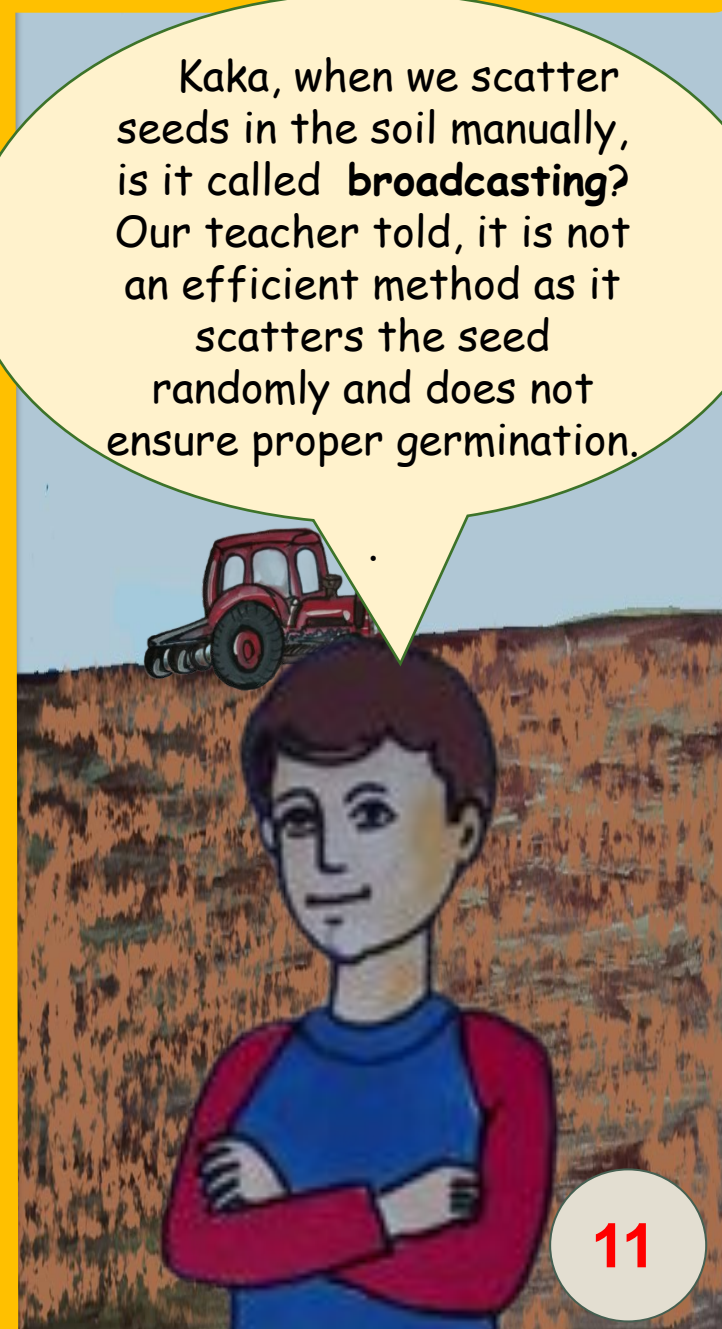
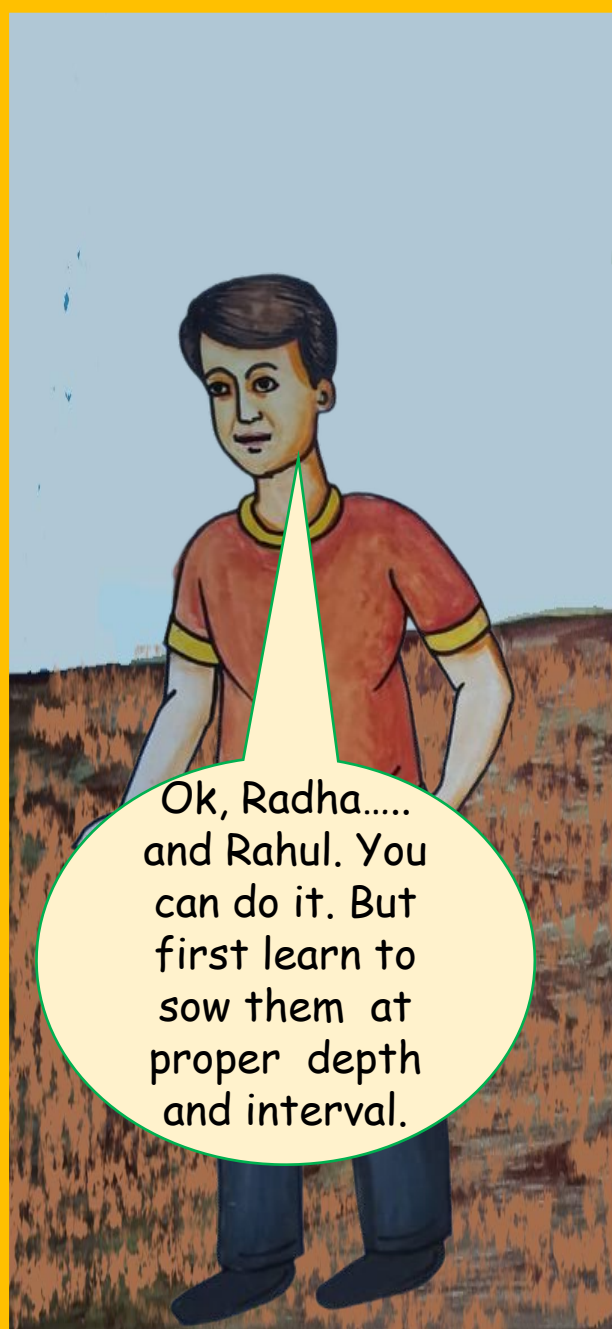
This is Soyabean.
I will wash this
also to select
good seeds. I
have to give them
to Mohan Kaka,
he will sow them.



Why are
some seeds
floating on
water?



The seeds floating
are unhealthy as they
are hollow , we select
the good seeds from
the bottom for
sowing. Only then it
will give us a
good crop.



Yes ! you are right. I use a seed drill, With this the seeds are sown at the right depth and interval. This ensures the proper growth of the plant and avoids the competition for sunlight,nutrient,space and water.

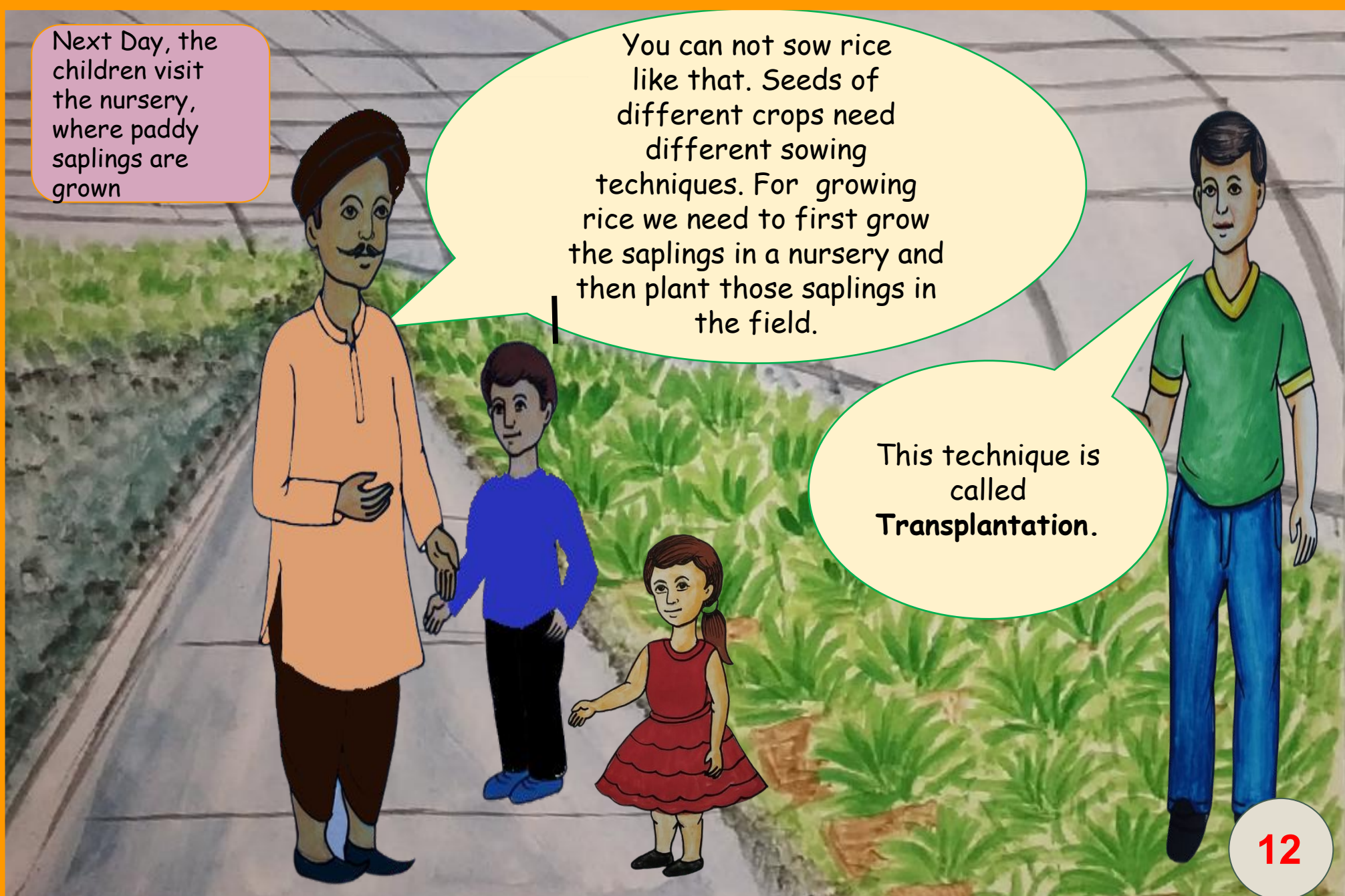


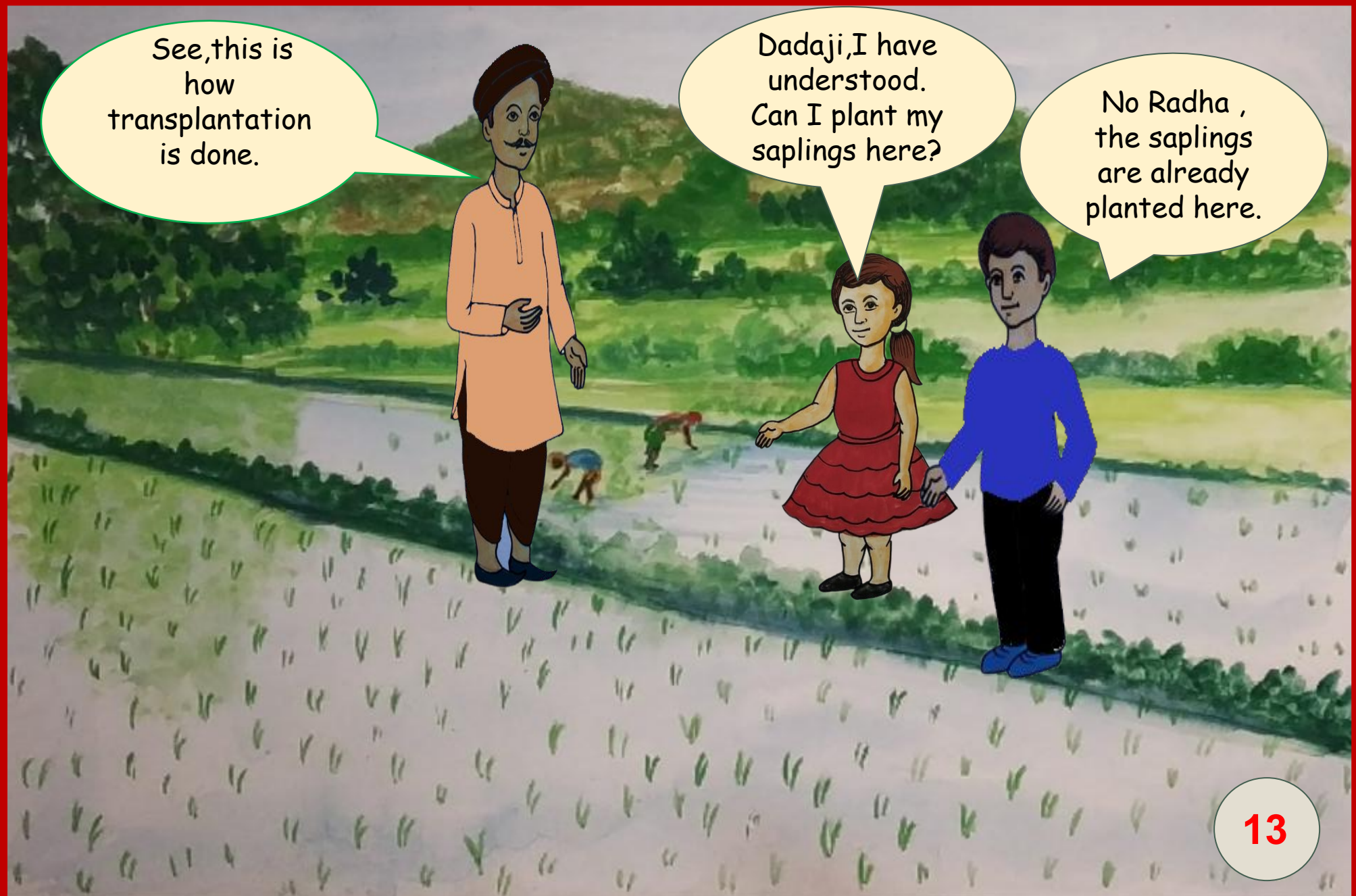
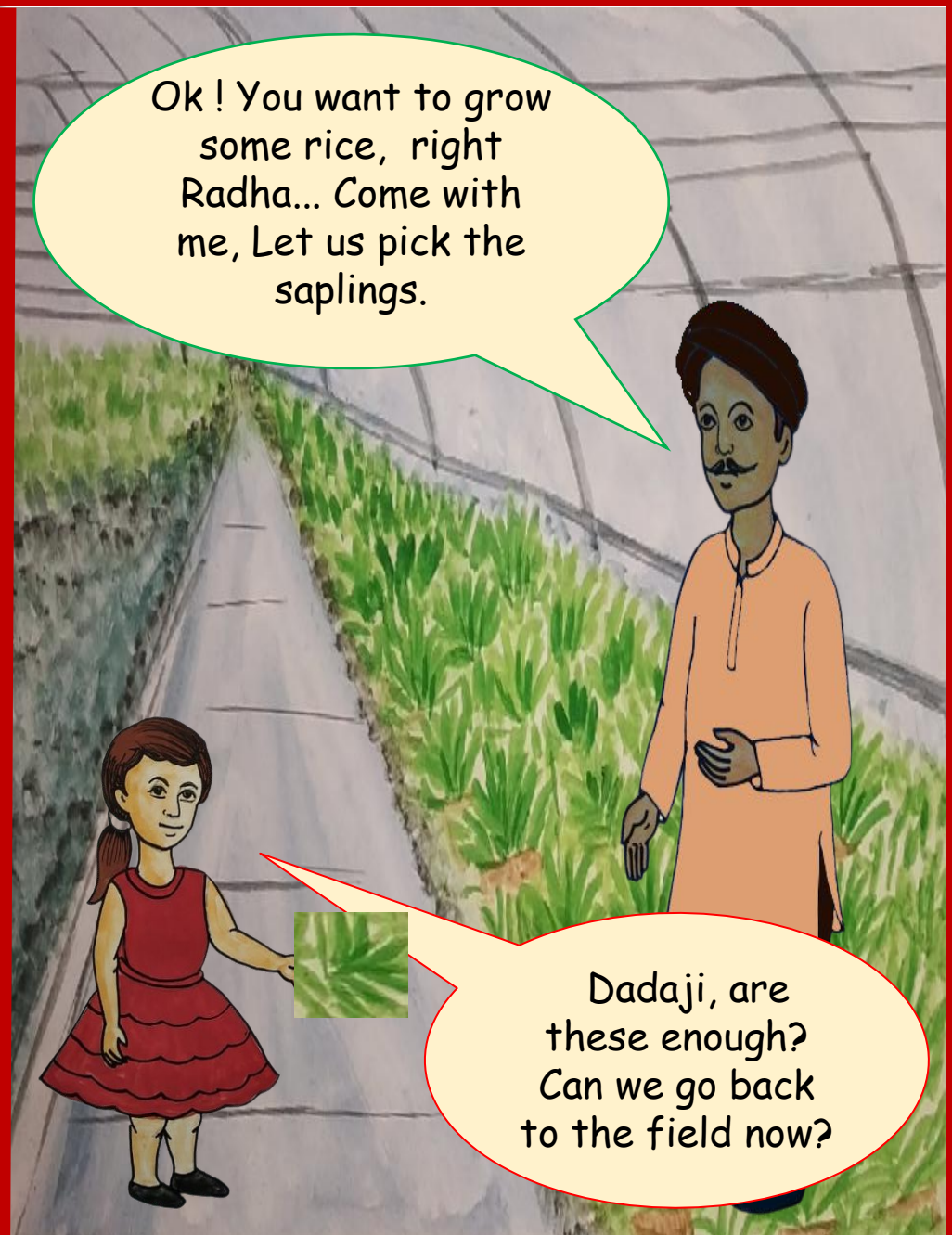
I will ask dadaji, did he sow rice in the same way?

Next Day, the children visit the nursery, where paddy saplings are grown

You can not sow rice like that. Seeds of different crops need different sowing techniques. For growing rice we need to first grow the saplings in a nursery and then plant those saplings in the field.

This technique is called **Transplantation.**







Radha ! Now let me tell you about the various agricultural implements used in the process of agriculture.



1. **Plough** is a farm tool which is pulled by a tractor or by an animal. A plough turns the soil over, loosening it making it ready for the seeds to be planted.
2. **Hoe** is an agricultural tool with a long handle that is used for turning the soil and for removing plants that you do not want.
3. **Seed drill** is a device that sow seeds for crops by positioning them in the soil and burying them to a specific depth. This ensures proper growth of plants.
4. **Sickle** is a curved iron blade, used for reaping cereal crops at harvest time.
5. **Cultivator** is a farm implement or machine designed to stir the soil around a crop as it matures to promote growth and destroy weeds.
6. **Combine** is a complex farm machine that both cuts and threshes crop.



Cultivator



Combine

Check Your Knowledge

Q1. Match the column A with correct option in column B:

A

B

Type of crop

Crop product

i. Cereals

a) Tea, Coffee

ii. Spices

b) Tulsi, Neem

iii. Plantation crops

c) Maize, Bajra

iv. Fibre crops

d) Cardamom

v. Medicinal crops

e) Cotton, hemp

Q2. Unscramble the following words:

i. ctgirauurel

ii. rltehioutucr

iii. gpiluhnog

Q3. Multiple Choice Questions:

i. Horticulture deals with

- a) spices
- c) cereals

- b) timber
- d) flowers

ii. Example of Kharif crop is

- a) rice
- c) gram

- b) wheat
- d) none of these

iii. Rabi is a

- a) summer crop
- c) rainy season crop

- b) winter crop
- d) none of the

iv. Ploughing is a process of

- a) sowing seeds
- c) removing weeds

- b) loosening soil
- d) none of these

Q4. Answer the following:

i. Define broadcasting.

ii. What is transplantation?

iii. What care must be taken while sowing seeds?

iv. How can we separate good seeds from the bad ones?

v. Name the different agricultural implements used in plantation of crops.

vi. Why are earthworms called farmer's friend?

Try
these



On the field...

Mummy! We are going to learn about ways of making our soil better. So exciting!

Oh wow!! These holidays are loaded with fun!!!

Yes Rahul ! I know, fields lose their nutrients. We need to replenish them from time to time for good growth of plants.

To replenish the soil we can use some chemical compounds known as fertilizers which are rich in nitrogen, phosphorus and potassium.

What are we adding to the soil?

Radha ! This is compost. It is added to replenish the nutrients. We can also add **green manure**.

Activity 1

Let's
have
Fun

Let us prepare our own compost.

1. Collect items like vegetable peels, left over food.
2. Dig a pit, layer it with sand and add all the collected items to it.
3. Sprinkle some water. Cover it with a layer of grass.
4. Leave it as such for a few days. Keep sprinkling water on it to keep it moist.
5. All the organic material added to the pit decomposes in the soil. This is called compost. This can be added to the soil to increase fertility.

Manure and compost are natural fertilizers. They do not cause any soil and underground water pollution. They allow the soil to maintain its natural texture and do not harm the natural replenishing capacity of the soil. However, they take up a large storage space and are required in large quantities. Manure is not crop specific.



Activity 2

To study the effect of fertilizers on plants.

1. Select two potted plants. Measure the height of the two plants and record on a sheet. Take few grams of urea and same amount of compost.
2. Add urea to one of the potted plant and compost to other. Take care not to apply the urea close to the roots. Now observe the growth of the plants for next 15 days. Measure the height if the plants at the end of 15 days and record your observation.

Fertilizers are chemical substances prepared in factories. Fertilizers are crop specific so are required in lesser quantity. The amount of nutrients supplied are more as compared to manure. This helps in good growth of plants. They are easy to store and transport. However, they cause soil and water pollution. Excess fertilizers kill the natural microbes found in the soil and hence cause the soil to lose its natural replenishing capacity.

Radha ! Natural methods of replenishment are the best way to do it.

What are the natural methods of increasing the soil fertility?

Mohan Kaka would be able to explain it better.

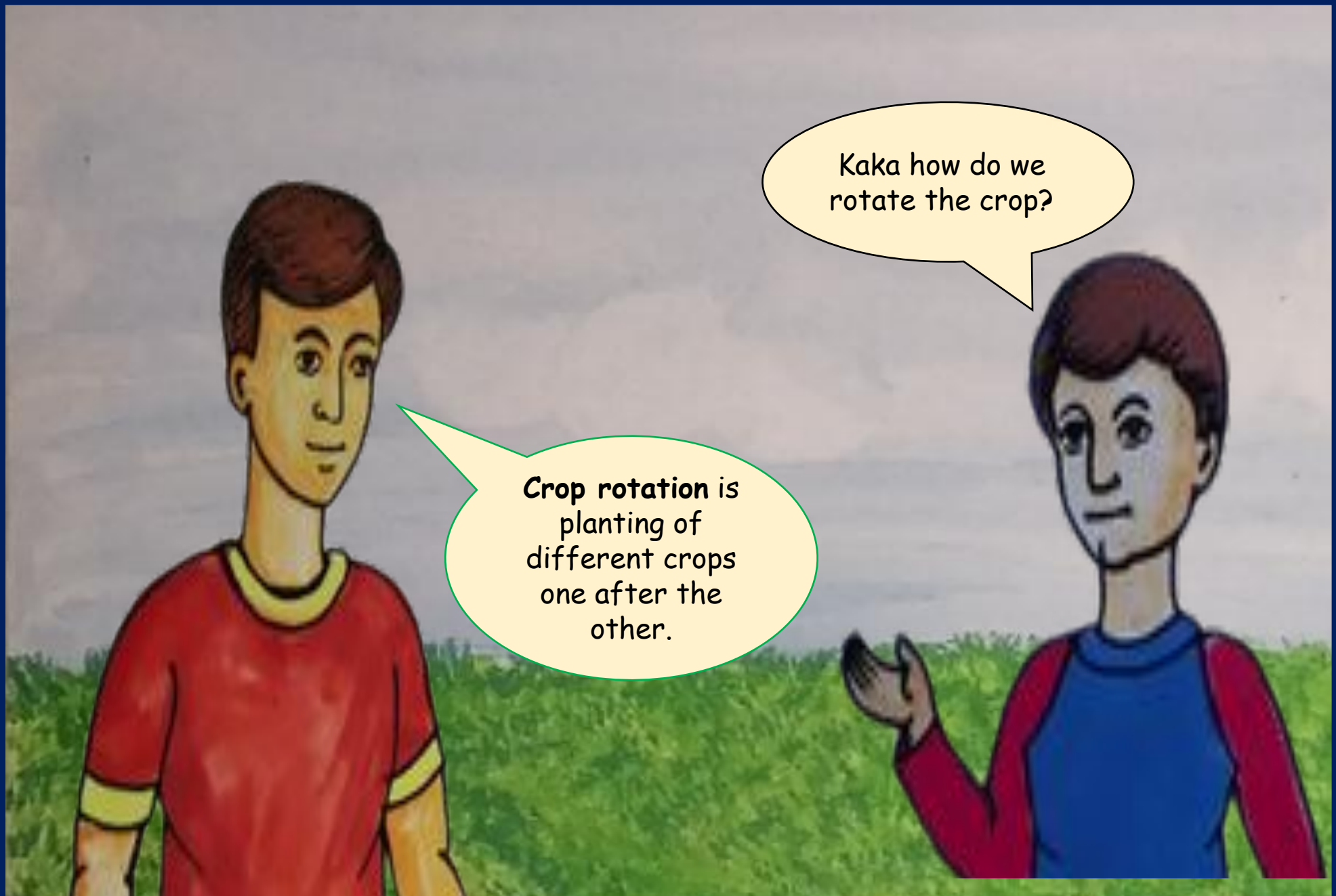
Ok mumma, we will ask Mohan kaka.

On Mohan Kaka's Field....

Kaka Please tell us some natural methods of increasing soil fertility?

Natural methods of replenishment include **crop rotation**, **mixed cropping**, **fallowing**.

Crop rotation !
Does that mean that crops go round and round?





On reaching home.....

Maa...I am thirsty. Can I get some water?

Yes. I will also get you some buttermilk.

Even my plants must be thirsty.

What does this mean dadaji? Do plants also drink water?

Yes dear. They need lots of water. So we have to water the fields.

Ohh!!! How do we water such big fields, Dadaji?.

Do you want to see it? Tomorrow I will show you.

Yeah!

Thank God ! I am tired today.

NEXT DAY...

Ohh! Dadaji
lovely
fountain.

No Radha, this is a
sprinkler. We use them in
our fields for irrigating the
crops. This is a modern
method of irrigation.

Dadaji what
were the old
methods?

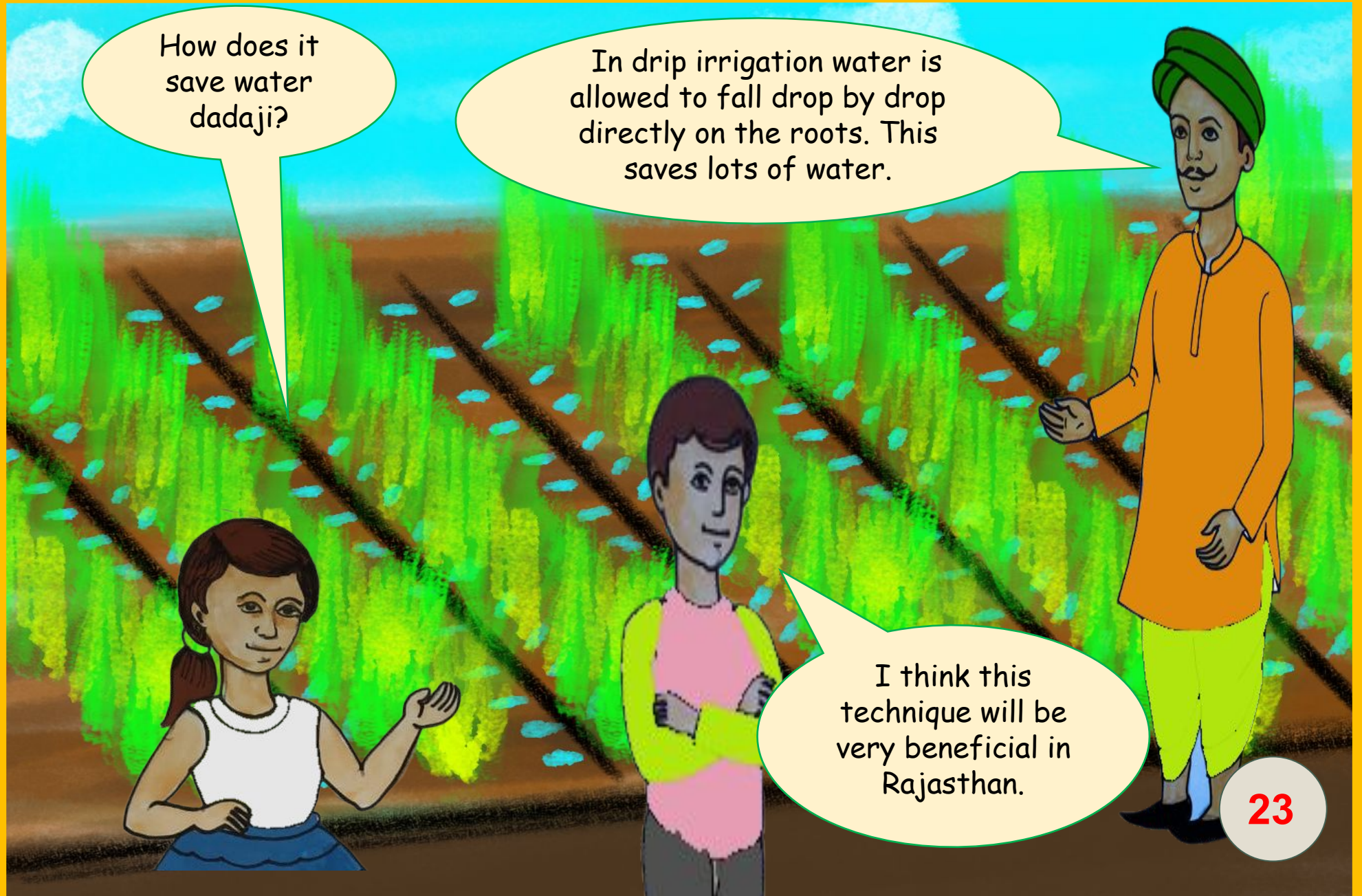
Earlier we used
traditional methods
like dhekli, chain
pulley, rahat etc.

Dadaji I think I
have seen their
pictures in my
book.



Are there any other modern methods that we use in our fields?

Yes , **drip irrigation** is used in places where there is scarcity of water.



How does it save water dadaji?

In drip irrigation water is allowed to fall drop by drop directly on the roots. This saves lots of water.

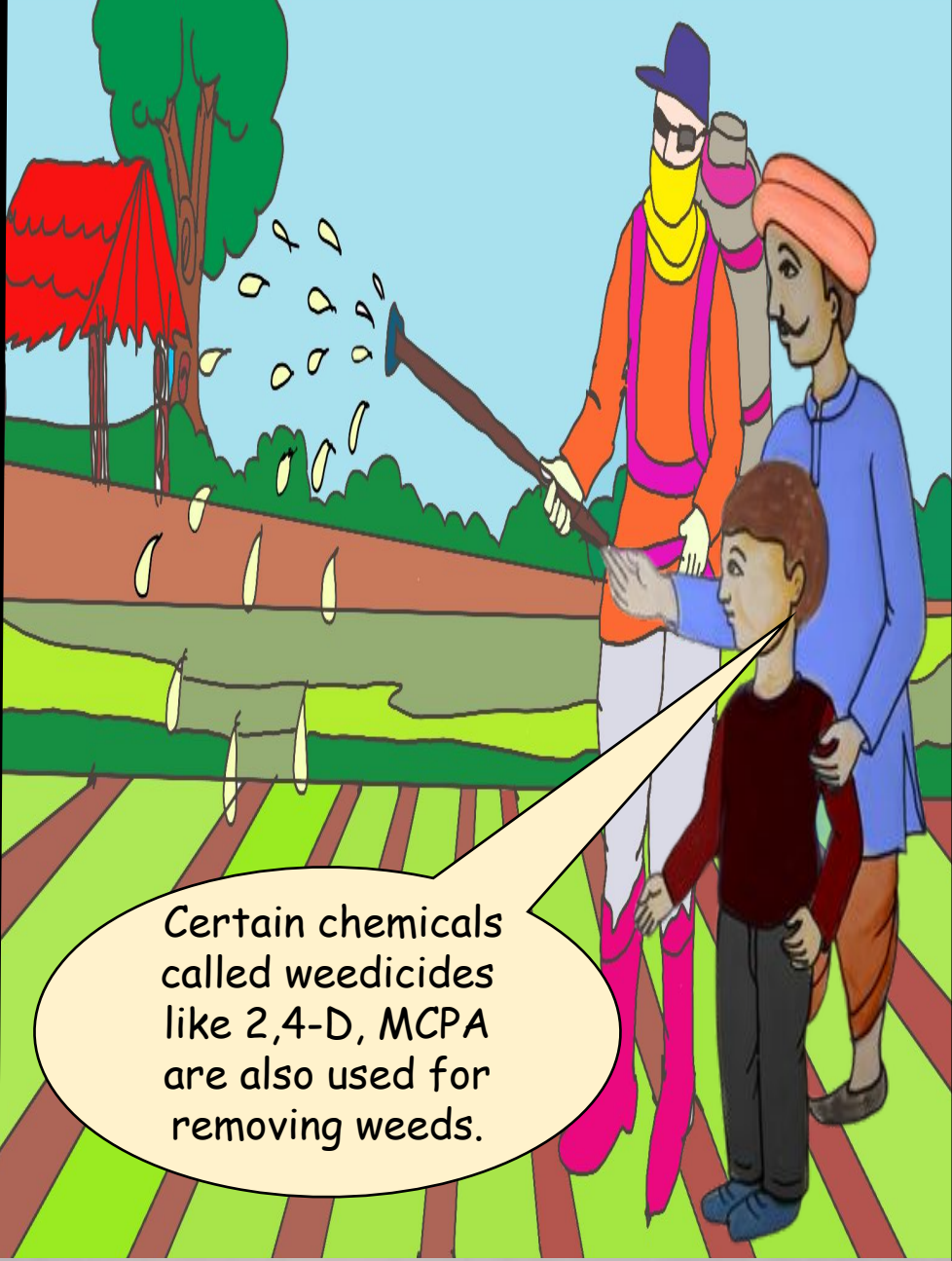
I think this technique will be very beneficial in Rajasthan.



The following day.....



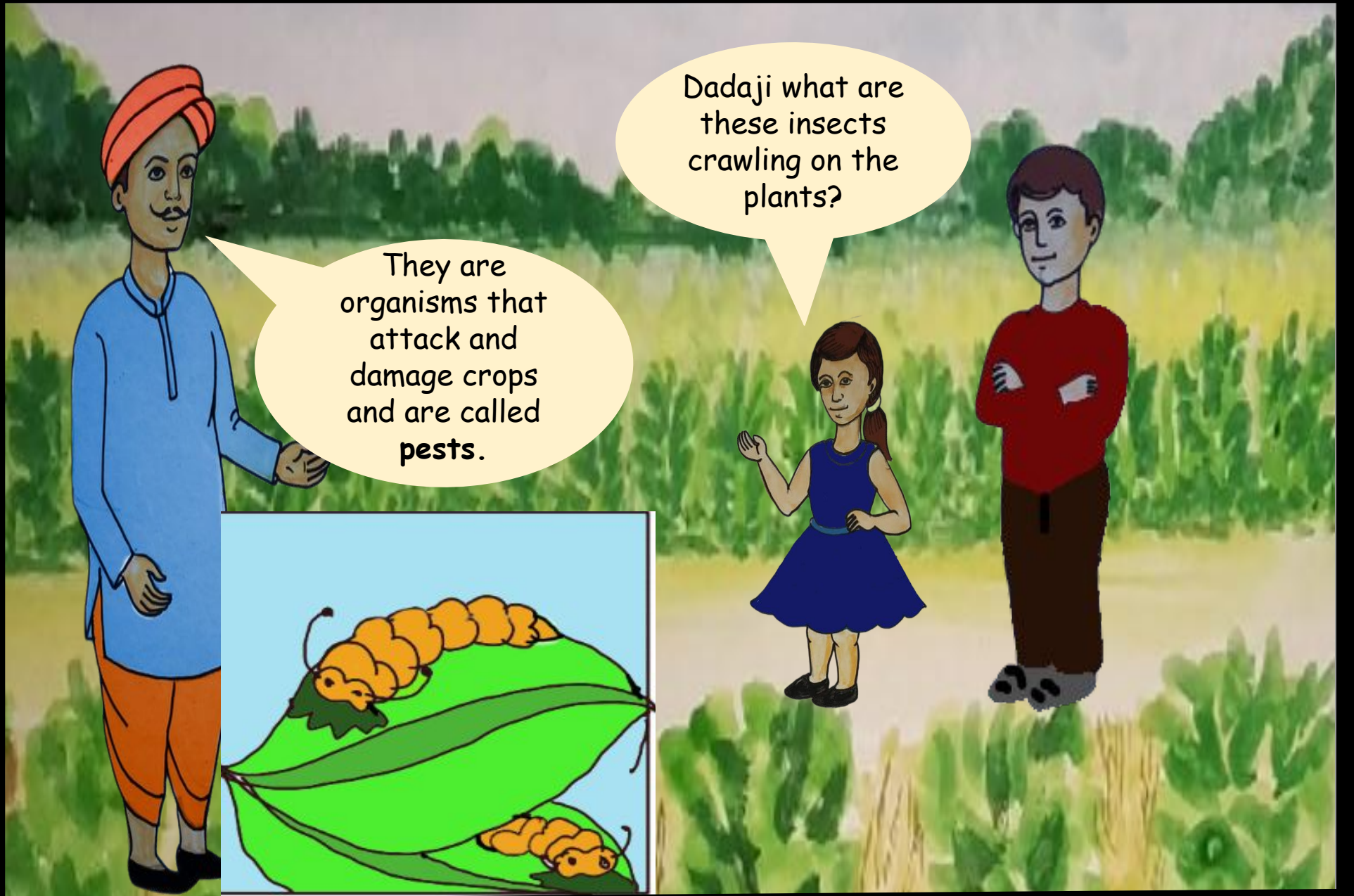
We can also use agricultural implements like seed drills, hoe, harrow and trowel for removing weeds.



Certain chemicals called weedicides like 2,4-D, MCPA are also used for removing weeds.



In the biological methods insects or some other organism that can consume or destroy weed plants, are introduced in the crop fields; like Cochineal insects which feed on Opuntia (cactus plant).



CHECK YOUR KNOWLEDGE

Try to find 20 words related to agriculture from the given word search.



E	D	I	C	I	T	S	E	P	R	A	H	A	T
G	K	G	N	P	A	H	A	R	R	O	W	I	M
N	M	N	B	N	O	I	T	A	G	I	R	R	I
I	M	I	X	E	D	C	R	O	P	P	I	N	G
H	C	W	S	U	T	I	H	E	R	I	O	U	P
S	D	O	S	R	Z	X	M	U	W	O	A	R	P
E	H	N	M	O	E	U	E	E	M	R	W	E	M
R	M	N	B	P	G	L	E	E	R	U	N	A	M
H	O	I	I	E	O	D	K	O	E	T	S	O	S
T	U	W	L	U	R	S	E	N	W	H	C	L	M
M	H	A	R	V	E	S	T	B	I	L	M	C	V
F	A	L	L	O	W	I	N	G	L	R	P	A	P
S	E	E	D	D	R	I	L	L	A	A	P	L	C
A	W	E	S	I	C	K	L	E	N	I	M	S	R

V	M	E	Z	I	C	K	Г	E	И	I	W	Z	B
Z	E	E	D	D	B	I	Г	Г	V	V	Ь	Г	C
Е	V	Г	Г	O	M	I	И	C	Г	В	Ь	V	Ь

Try
these

1. Which of the following is a natural method of restoring soil fertility?
a) group cropping b) fallowing
c) winnowing d) none of these
2. 2,4 - D used for crops is a common :
a) manure b) weedicide
c) farming tool d) rodenticide
3. The 'fountain' seen by Radha in the field was actually a :
a) Sprinkler b) Rahat
c) Moat d) Dhekli
4. Mohan kaka told Rahul about a bacteria that fixes nitrogen naturally. Name of this bacteria is :
a) Meastopium b) Rhizobium
c) Nitrobium d) none of these
5. Seed drill is used for :
a) sowing the seeds b) weeding
c) both (a) and (b) d) none of these



Next morning.....

What do we do after the crop matures Dada Ji?

The crop is cut and gathered. The crop is harvested manually or with the help of machines.

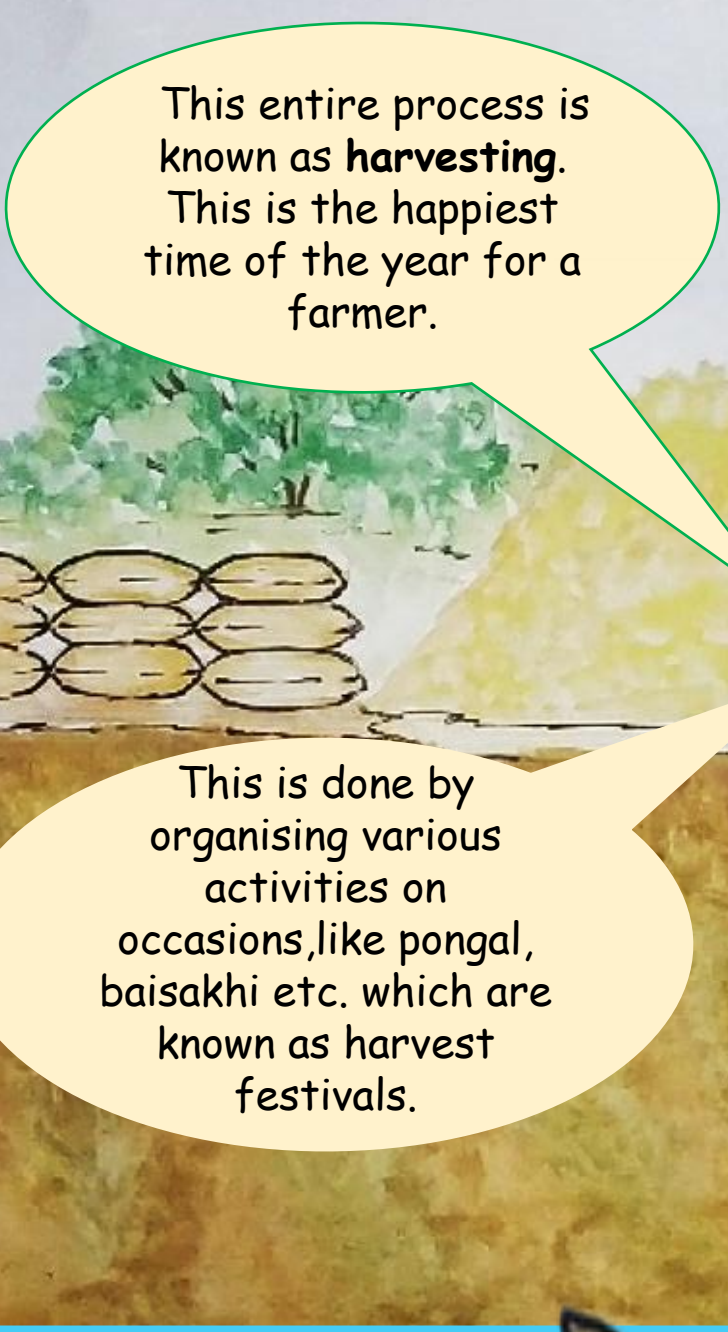
Yes I learnt in class VI that the grains can be separated from the stalk by beating them on a hard surface. This is called **threshing**.

And then what happens?

By winnowing the grain is separated from the husk.. Husk, which is light, is blown away while heavy grain collects at the bottom.

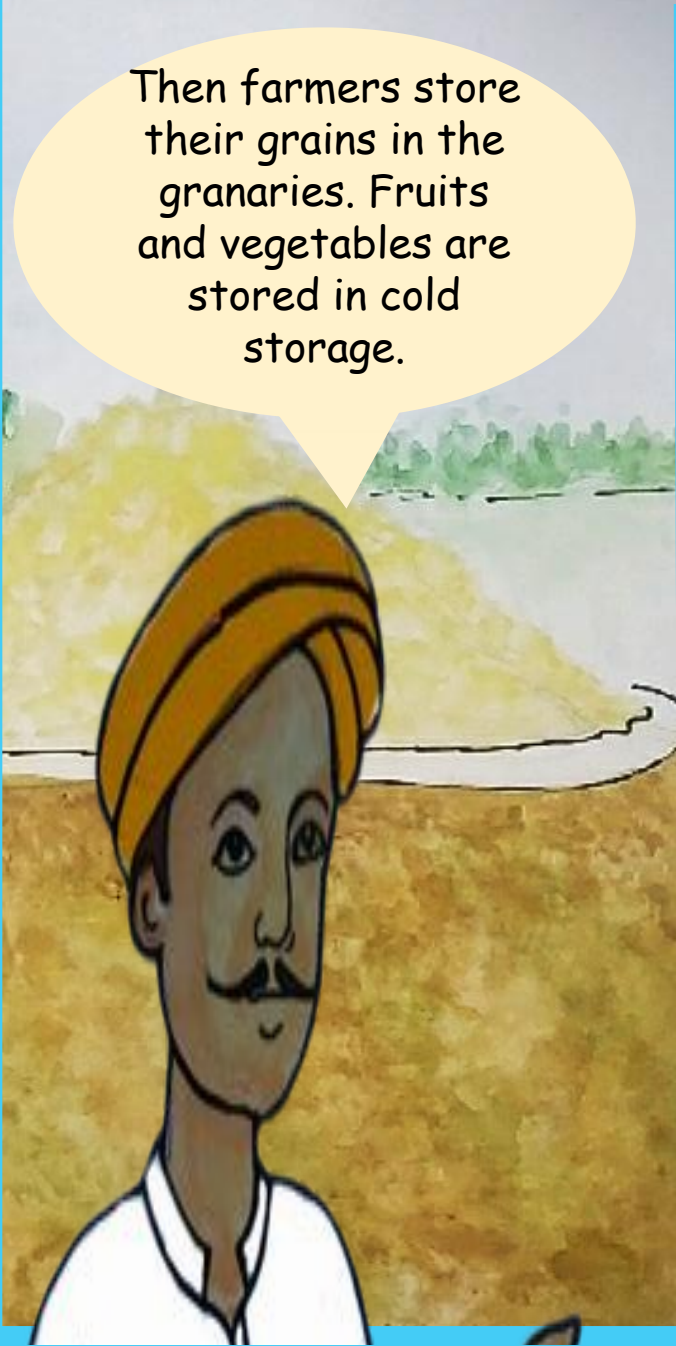


Ohh...wow! How do they celebrate?



This entire process is known as **harvesting**. This is the happiest time of the year for a farmer.

This is done by organising various activities on occasions, like pongal, baisakhi etc. which are known as harvest festivals.



Then farmers store their grains in the granaries. Fruits and vegetables are stored in cold storage.



Why in a cold storage?

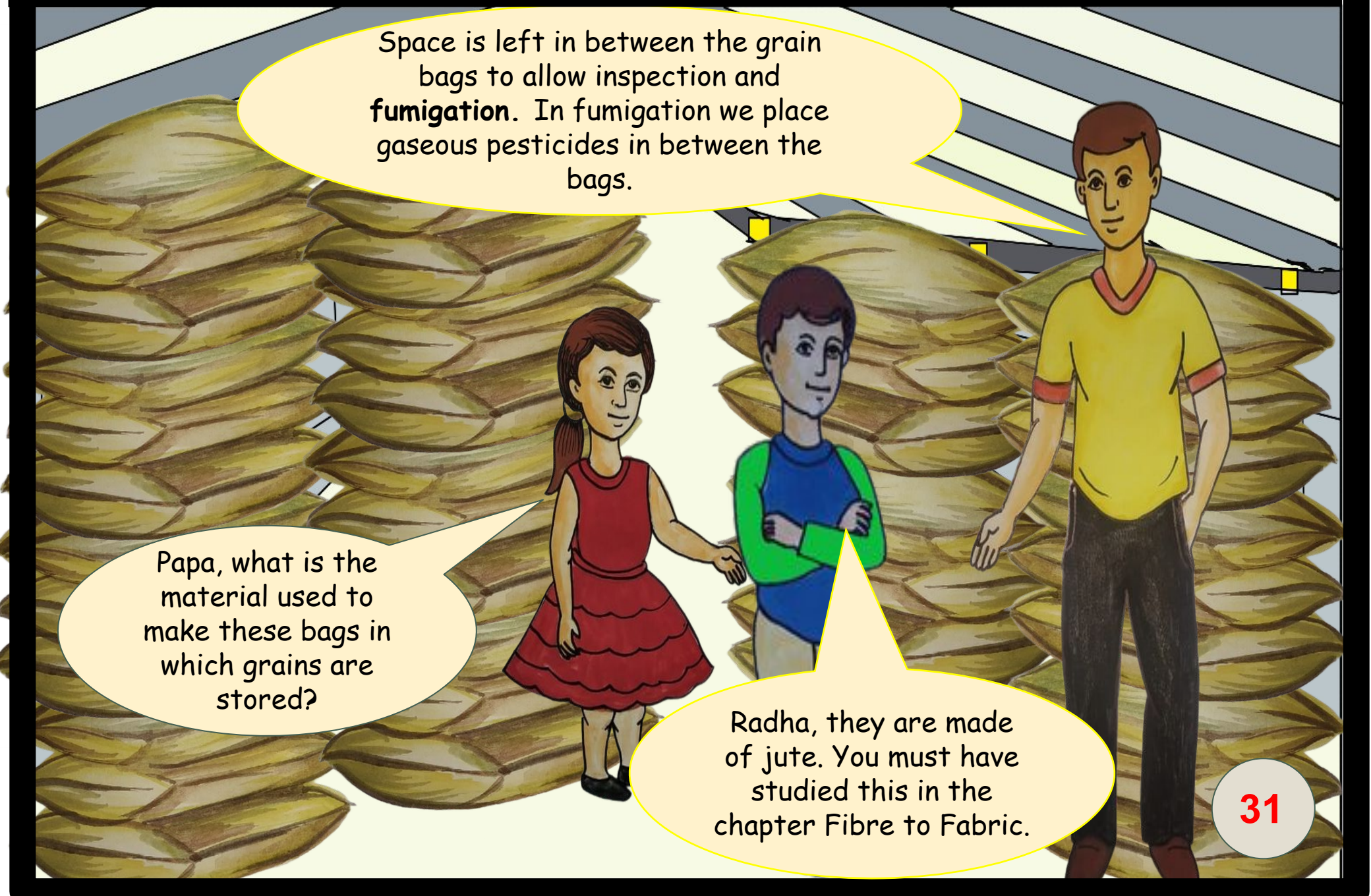


Low temperatures prevent growth of microorganisms and prevent spoilage.



These are granaries where the grains are stored.

Why are these bags kept so far away? We can store more grains if they are kept closer.



Space is left in between the grain bags to allow inspection and **fumigation**. In fumigation we place gaseous pesticides in between the bags.

Papa, what is the material used to make these bags in which grains are stored?

Radha, they are made of jute. You must have studied this in the chapter Fibre to Fabric.

They move out of the granary.

Papa what are these large structures?

These are called **Silos**. These are used for storing large amount of grains at different temperatures.

This has been the most wonderful trip of my life. I have learnt so much.

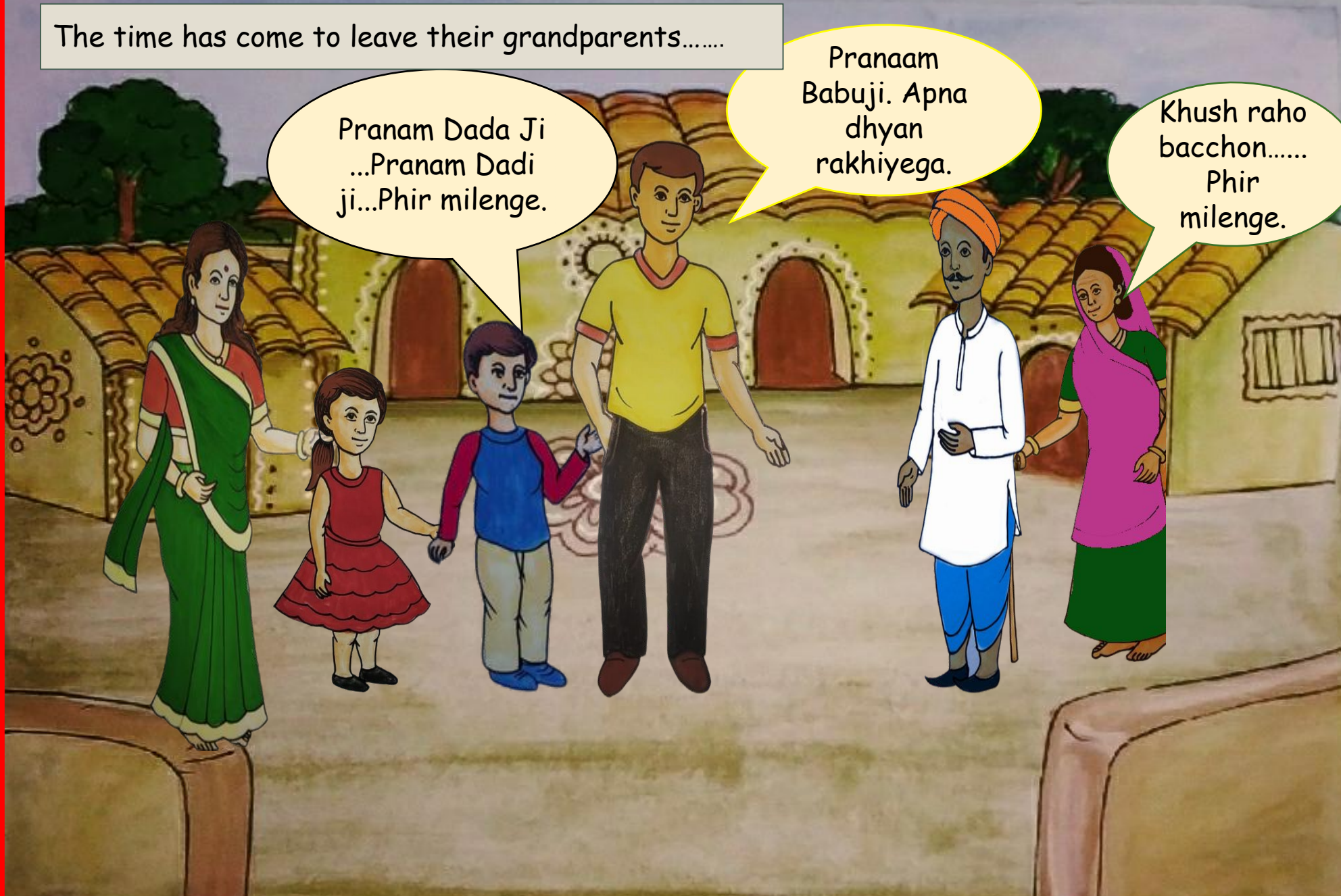
I have learnt a lot too. Hope you all learnt as much as we did.

The time has come to leave their grandparents.....

Pranam Dada Ji
...Pranam Dadi
ji...Phir milenge.

Pranaam
Babuji. Apna
dhyan
rakhiyega.

Khush raho
bacchon.....
Phir
milenge.

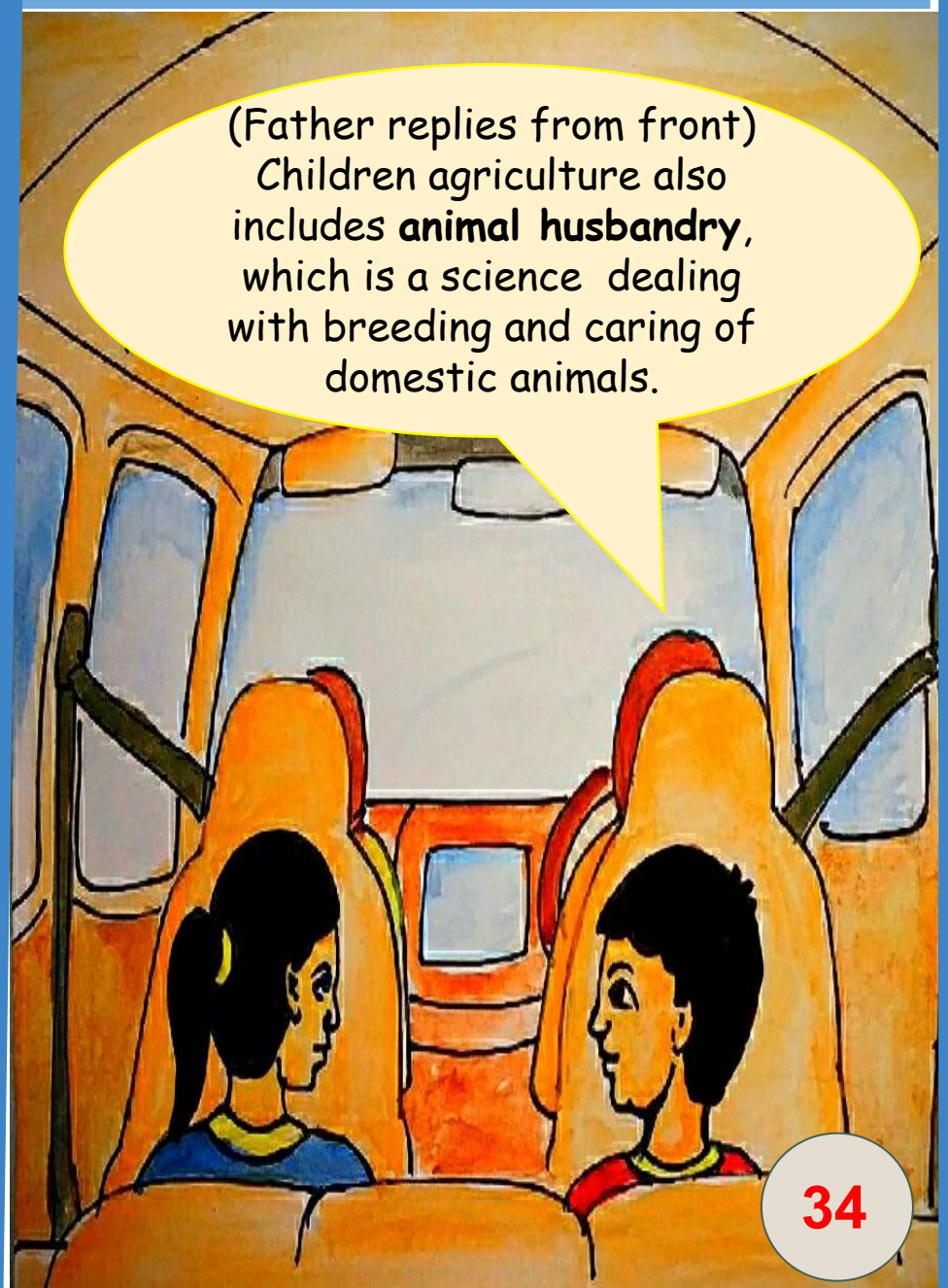


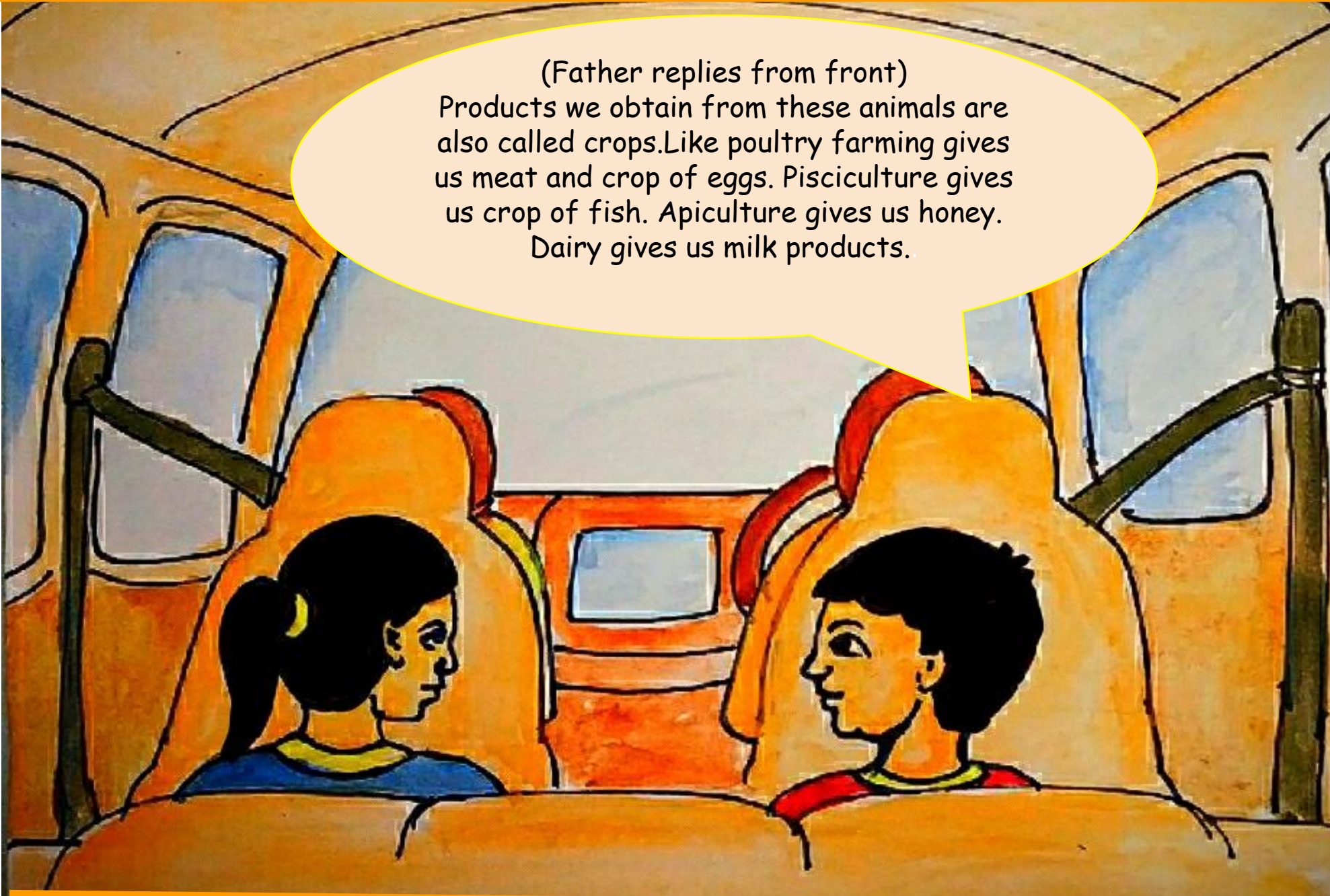
On the drive home...

Ok ! I don't
mind. Let's play.

Radha now that we
have learnt so
many things about
agriculture, let's
see how much we
remember.





A colorful illustration showing a family of four inside a yellow car. The father is in the driver's seat, and the mother is in the front passenger seat. Two children are in the back seats, looking out the windows. The car is moving along a road.

(Father replies from front)
Products we obtain from these animals are also called crops. Like poultry farming gives us meat and crop of eggs. Pisciculture gives us crop of fish. Apiculture gives us honey. Dairy gives us milk products.

A colorful illustration of a family standing in front of their home. A red car is parked on the street. The father is on the left, arms crossed. The mother is in the center, holding the hand of a young girl. A young boy is on the right. They are all smiling. In the background, there are tall apartment buildings and green trees.

And they reach home...

This was learning
in a joyful way.
See you again on
our next trip.

Bye for now !

Check your Knowledge

On his return from his native place, Rahul's father is assessing the knowledge that Rahul has acquired. If he gets all the correct answers he will get a new football.... Help Rahul win the football, by classifying these questions as True and false. Maybe, he lets you play with him!



- a) Excessive use of fertilizers is harmful.
- b) Rice, maize and soya bean are Kharif crops.
- c) Winnowing involves the separation of grain from husk.
- d) Crossing between two same varieties of crops is called hybridisation.
- e) Granaries are used to store small amount of grains.

Riddle Time!

Help Radha crack this riddle:

- a) I make your crop more healthy
- b) I make your crop full with nutrients. Who am I?
- c) I am used in large quantity and can be made at home easily, though I am not crop specific.



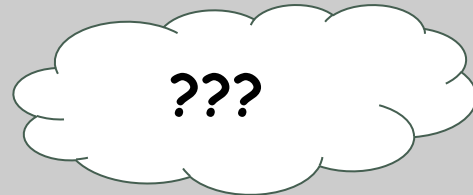
DADAJI'S BRAIN TICKLERS

Enlist the following activities related to cultivation of crops in the correct order

- a) Adding manure and fertilizers
- b) Irrigation
- c) Sowing
- d) Preparation of soil
- e) Harvesting
- f) Protection from weeds
- g) Storage



Radha does not know all the answers. Can you help her fill all the blanks:



- a) The science which deals with the mass production of crops, plants and animals useful to human beings is called_____.
- b) Plants of the same kind grown in one place on a large scale are called_____.
- c) The branch of agriculture which deals with the production of vegetables, fruits and ornamental plants is called_____.
- d) Crops that are grown in the rainy season are called_____ crops.

Match The Column

a) Combine



b) Hoe



c) Plough

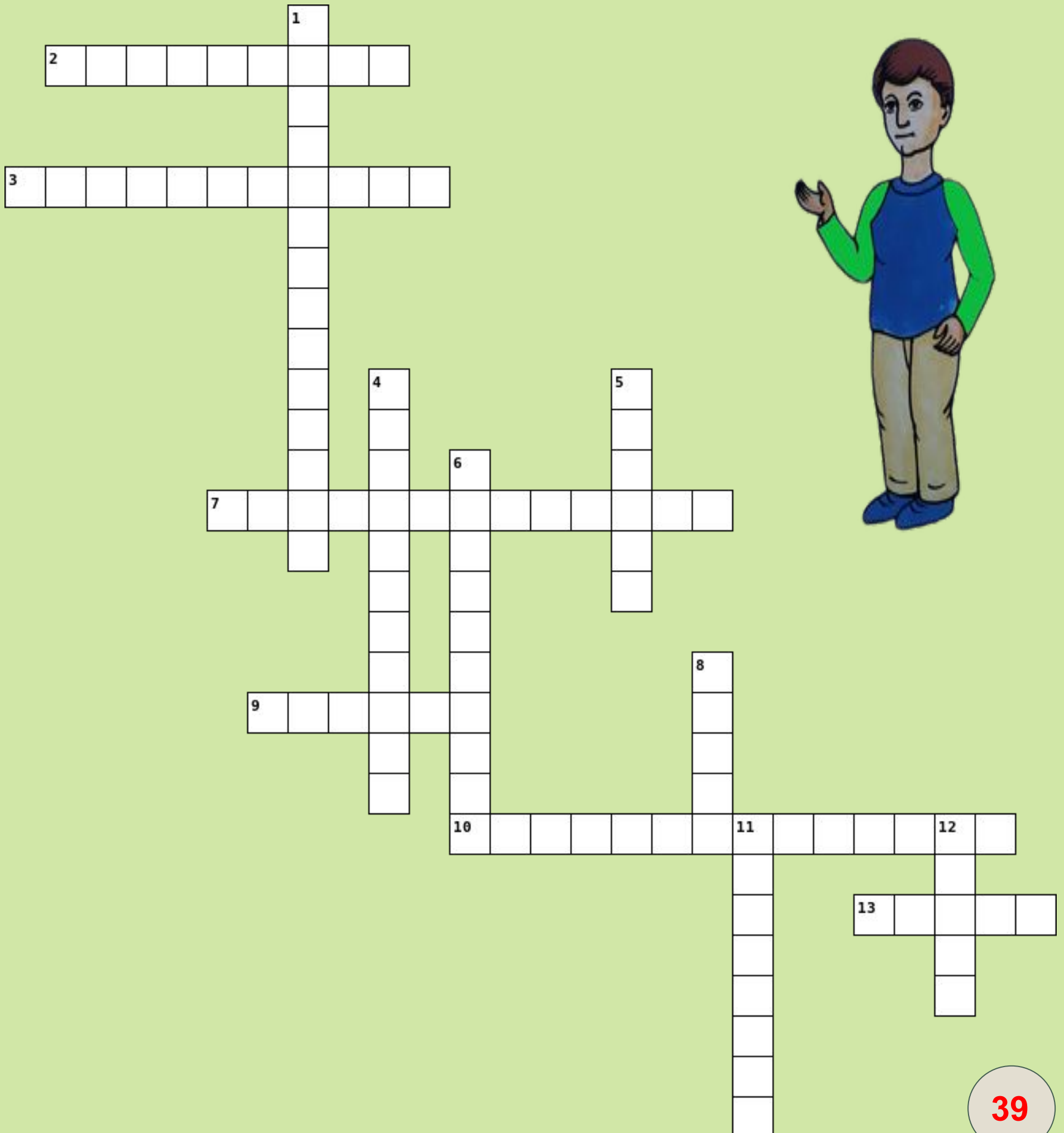


d) Seed Drill



CROSSWORD

Hi! Will you like to have some fun.....research these questions and find the answers.



CROSSWORD CLUES

ACROSS

2. Once the crop is grown birds find their way to the fields in search of food. What is the best method to scare them?
3. A farmer grows sesbania in the field before sowing the seeds. He ploughs them back when seedlings are young. This increases the fertility of soil. This kind of manure is called
7. Name a software application which uses text to speech software to receive SMS containing agriculture related advice to solve farming problems.
9. When green revolution was introduced in India the high yielding variety of wheat was called from
10. Manil is a farmer in north India. He has observed he is not getting healthy crop. He wants to get his soil tested. His friend advised him to obtain SHC from government of India. What is the full form of India.
13. Name the Harvest festival of Punjab which is celebrated in the month of January. During this festival small children visit each other's houses and ask for donations to celebrate it.

DOWN

1. In modern times farmer uses bio pesticides, manures or bio fertilizers. This kind of farming is called
4. Shyama's grandmother puts dried neem leaves while storing food grains. She is using it as
5. Chenopodium is a weed plant but it is used in Indian Rasoi in winters as it is highly rich in iron. Ask your mother about its hindi name.
6. A soybean growing farmer in Madhya Pradesh feels his soil needs nourishment. He does put fertilizers in the soil. Which element should specific fertilizer which may help him. Farmer should choose the fertilizer rich in which nutrient?
8. Jodhpur is a dry city in the state of Rajasthan. What crop can be grown there in kharif season?
11. Rahul helped Mohan Kaka in levelling the soil. He stood on a wooden plank which was being driven all around the field. This implement is called
12. Radheyshyam is an old farmer and follows traditional agricultural practices. He is making gullies in his farm alongside each row of crop. Which system of irrigation do you think he is using?

AT A GLANCE

Agriculture:	An applied science which deals with mass production of plants and animals useful to human beings.
Crop:	Plants of same kind grown and cultivated at one place on a large scale.
Kharif Crop:	Crops that are sown in rainy season and harvested in September/October.
Rabi Crop :	Crops grown in winter season and harvested in March/April.
Agricultural Practices	Activities taken up in a particular sequence by farmers over a period of time.
Ploughing:	Process of loosening the soil.
Manure:	Organic compounds rich in nutrients like nitrogen, phosphorus and potassium.
Fertilizers:	Man made chemical substances rich in nutrients like nitrogen, phosphorus and potassium.
Crop Rotation:	Method of growing different crops alternately on the same field. This helps in soil replenishment.
Broadcasting:	Method of sowing seeds by scattering them over the fields by hand.
Seed Drill:	A funnel shaped seed bowl used for sowing seeds.
Irrigation:	Watering crops at different intervals through sources other than rain is called irrigation.
Weeds:	Unwanted plants which grow along with a cultivated crop in a field are called weeds.
Weeding:	Process of removing the weeds from a crop field is called weeding.
Weedicides:	Chemicals sprayed on weeds to kill them.
Harvesting:	Process of cutting and gathering crops.
Threshing:	Separating grains from stalk by beating them on a hard surface.
Combine:	A machine which performs harvesting as well as threshing.
Animal Husbandry:	Science which deals with breeding, feeding and caring of domestic animals.



From the Principal's Pen

Sairam !



We invite the students to join us on an enjoyable voyage of discovery and learning through the graphic novels.

To keep pace with the changing scenario in the field of education, it's time to think out of the box, evolve and adopt a variety of strategies to make pedagogy engaging and interesting. In the time and age, when children are widely exposed to a plethora of visual mediums, presenting content in the form of a graphic novel will not only ensure student engagement but also make learning enjoyable and easy to understand.

The novels are a result of the dedicated and diligent efforts of the subject teachers, the Art department and the IT department. In spite of the challenges faced due to online classes and no physical contact, students too rose to the occasion and contributed to the project. The willingness and proactive support from the alumni is truly noteworthy.

We are grateful to the CBSE for thinking about presenting content in a graphic format, such that it is accessible to all- regardless of economic and geographical disparity. A heartfelt thanks to all the concerned authorities for providing the schools a platform for creative expression of their knowledge and skill. We thank Mr. Sandeep Sethi for his consistent guidance and support through the making of the novels. Moving forward, this concept may well prove to be a game changer!

Science as a subject is a plethora of unending information. It develops curiosity and logic which makes the students understand the world in a better way. Learning about crops will connect them better to the basic food management.

We hope this novel will prove to be helpful for students and make learning fun!



SUMMARY

The **Story of Crop Production** deals with the journey of agriculture to produce food for the human kind. As the journey progresses it teaches us about the types of crops, the agricultural practices. It also teaches us about the practices that we should imbibe to attain a better crop produce. Better crop produce ensures a country's economic development. This book also includes whatever can be considered as crop. It is a beautiful book to teach us about how the food reaches on our tables.



To access the comic book and additional interactive digital content, download DIKSHA app from Google Play Store on your Android smart phone or tablet.



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