The Central American Cacao Project (PCC) at CATIE (Tropical Agricultural Research and Higher Education Center) aims to increase the productivity, diversity and financial and environmental value of the cacao plantations of at least 6,000 Central American families.

Working closely with cacao farming families, the Project creates alliances with other partners in the region in order to enhance the social interactions, competitiveness and business capacity of the producers' organizations and improve the living conditions of their members.

The Project promotes efforts to increase the knowledge and skills of farming families and students at agricultural schools, technical colleges and agronomy faculties, for the sustainable production of cacao.

The Project also offers equal opportunities as well as economic, social and cultural responsibilities for men and women of all ages and from different ethnic groups in all its spheres of action.

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Central American Cacao Project

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the six steps

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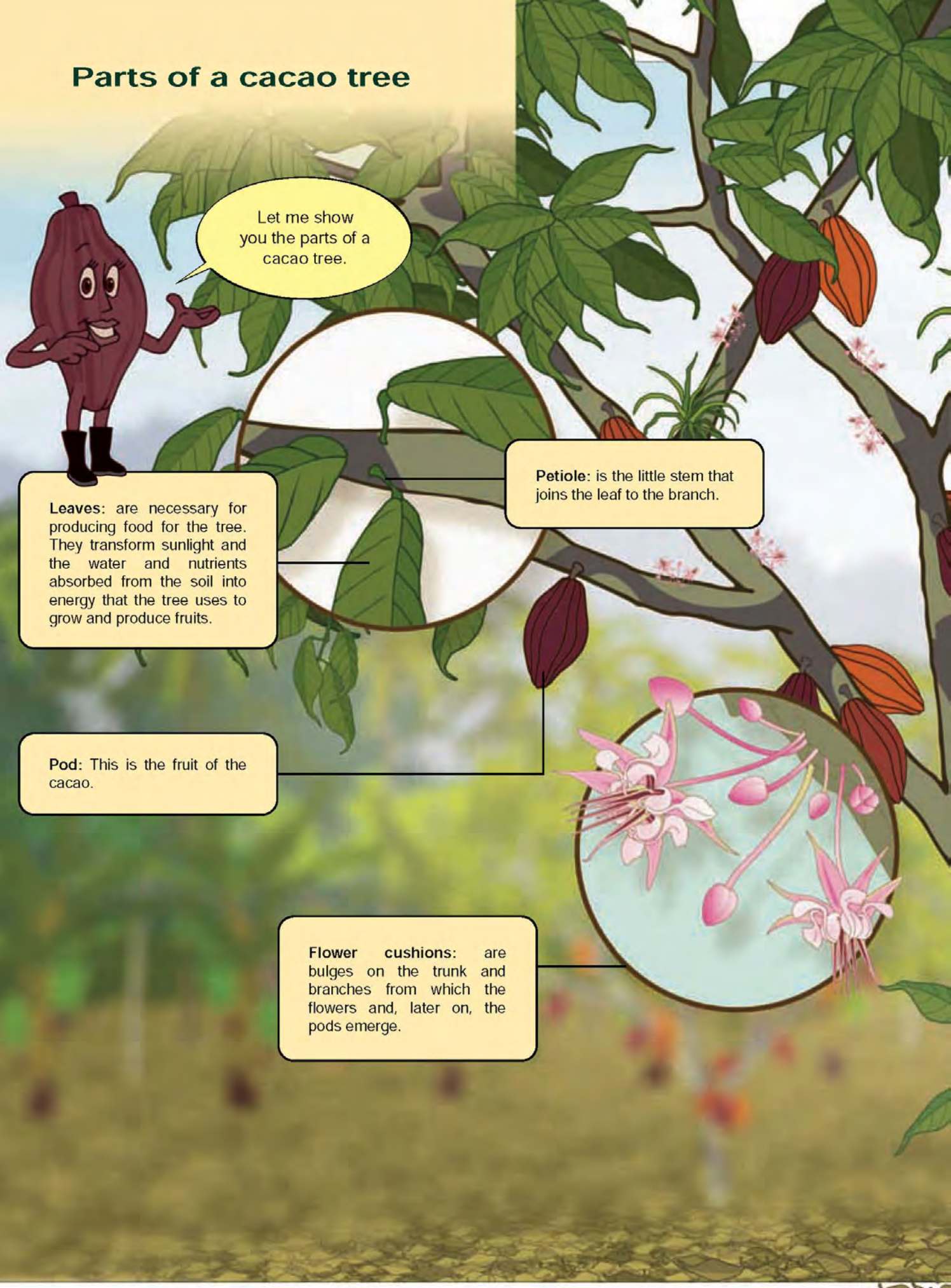
Several friends and neighbors who produce cacao have decided to meet regularly to share what they know and to work in their cacao farms. Today the families have met to work on the farm that belongs to Eliseo and Flory, and they will do the same on the farms of others in the group. Filadelio will be the local facilitator since he has received technical training in sustainable management of cacao. Today the families will learn how to prune their cacao farms and will apply the method on Eliseo and Flory's farm.
Welcome, everybody. It's great to have you here.
Yes, we're excited to see whether you can help us get better production on our cacao farm.
If we manage the farm well, Eliseo, controlling shade, planting good varieties, pruning often,
keeping the soil fertile and controlling diseases, I guarantee you that before long we will see cocoa production go up.


Come over here, Marinita. Stay with us.
I hope you will keep bringing your kiddos to these meetings-they learn so quickly.
Our cacao farm covers 2 hectares, and I know it needs a good pruning.
Pruning is so important to our producing better.
Actually our cacao farm produces very little, barely 150 kilos of dry cacao per hectare each year, equivalent to about 230 pounds per manzana.


We should produce between 400 and 500 kilos per hectare per year.
In other words, hmmm...let me figure this out. Aha! We should produce between 600 and 750 pounds per manzana. If you want it in quintals, remembering that a quintal is 100 pounds,
we should produce between 6 and 7 1/2 quintals per manzana. A manzana is smaller than a hectare, covering only 7,000 square meters.
Did you hear that, Eliseo! We could produce between 6 and 7 1/2 quintals per manzana per year.
By pruning the cacao at least once a year, we stimulate flowering and keep the tree short and give it a proper shape.
Yes, Filadelio, and that brings up another point: it's easier to harvest the mature pods and eliminate diseased pods in a short tree than in a tall one.
You're right, Cecilia. But before we start talking about pruning cacao, let's first we go over the parts of a plant.

Parts of a cacao tree

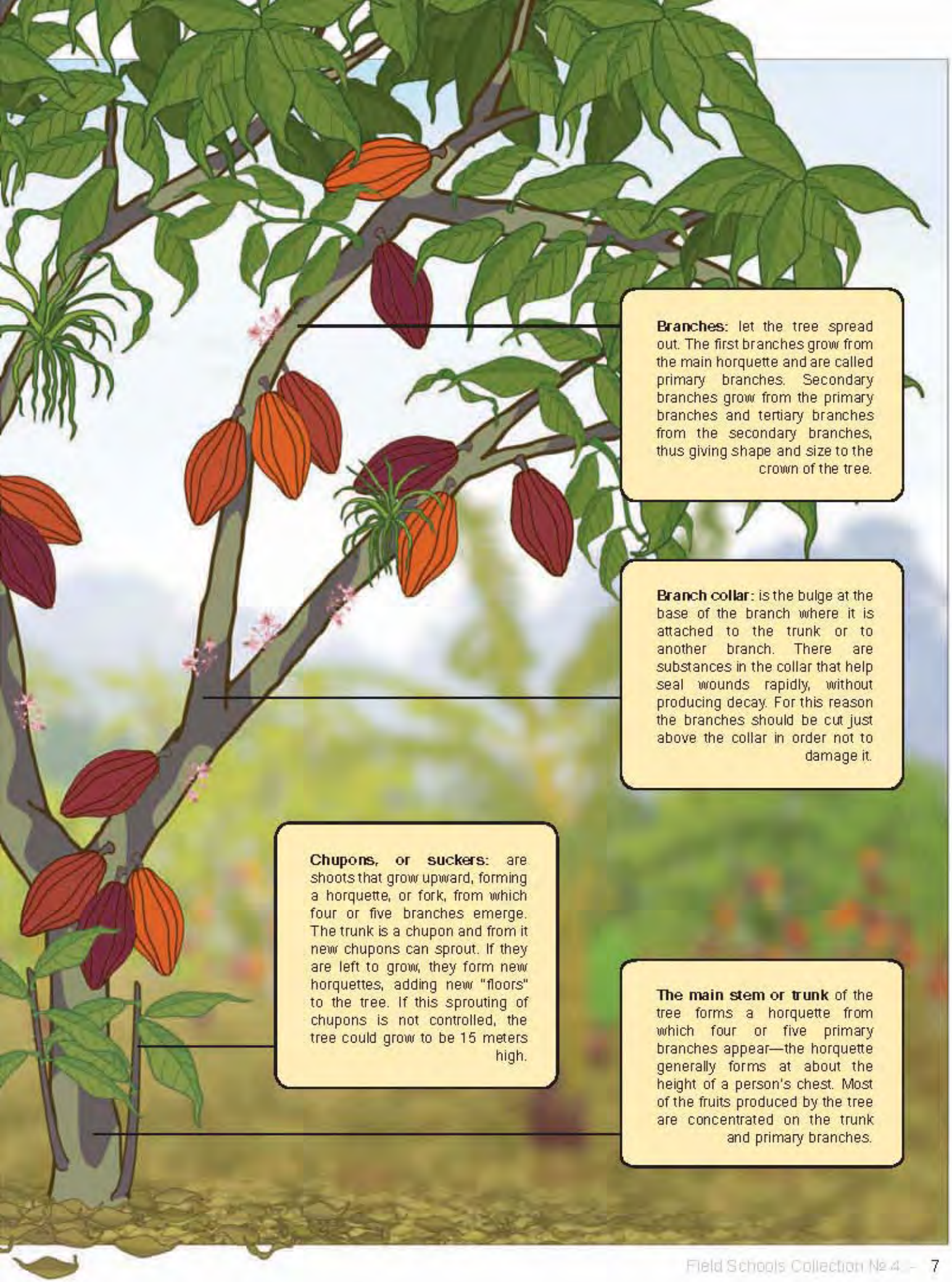


Leaves: are necessary for producing food for the tree. They transform sunlight and the water and nutrients absorbed from the soil into energy that the tree uses to grow and produce fruits.

Petiole: is the little stem that joins the leaf to the branch.

Pod: This is the fruit of the cacao.

Flower cushions: are bulges on the trunk and branches from which the flowers and, later on, the pods emerge.



Branches: let the tree spread out. The first branches grow from the main horquette and are called primary branches. Secondary branches grow from the primary branches and tertiary branches from the secondary branches, thus giving shape and size to the crown of the tree.

Branch collar: is the bulge at the base of the branch where it is attached to the trunk or to another branch. There are substances in the collar that help seal wounds rapidly, without producing decay. For this reason the branches should be cut just above the collar in order not to damage it.

Chupons, or suckers: are shoots that grow upward, forming a horquette, or fork, from which four or five branches emerge. The trunk is a chupon and from it new chupons can sprout. If they are left to grow, they form new horquettes, adding new "floors" to the tree. If this sprouting of chupons is not controlled, the tree could grow to be 15 meters high.

The main stem or trunk of the tree forms a horquette from which four or five primary branches appear—the horquette generally forms at about the height of a person's chest. Most of the fruits produced by the tree are concentrated on the trunk and primary branches.

Branches

- Grow to the side. Some branches grow upward quite vigorously, and it is better to cut them. If we don't, the tree gets very tall.
- Chupons almost never sprout on branches.

Chupons

- Grow upward.
- They only come out of the trunk or other chupons.
- The leaves come out in an upward spiral from the chupon, shaped something like the shell of a snail.
- The petiole in chupons is short and thick, while it is long and thin in branches.

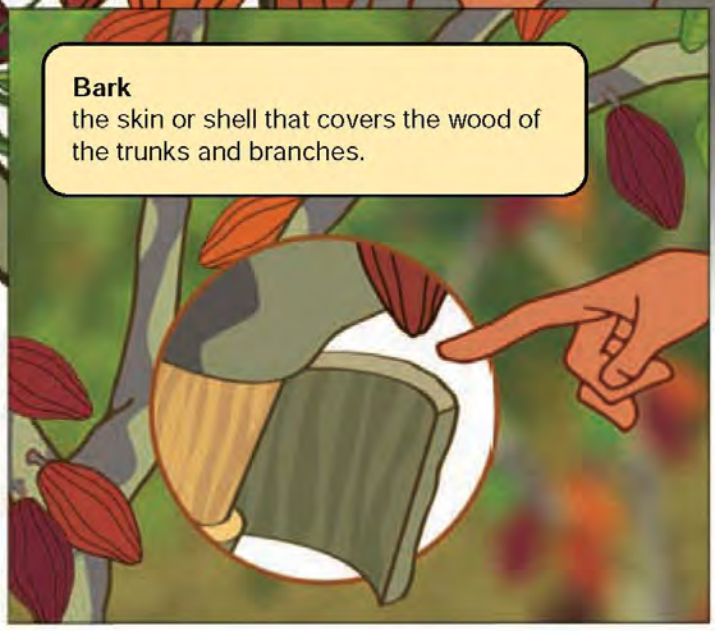
Now to the pruning

We also need to review some of the activities and tools that we use in pruning cacao.

I am going to try really hard to memorize these words. It's just that sometimes my tongue gets tied up in knots and I get mixed up.

OK, my little friend, just pay close attention. You'll get it.

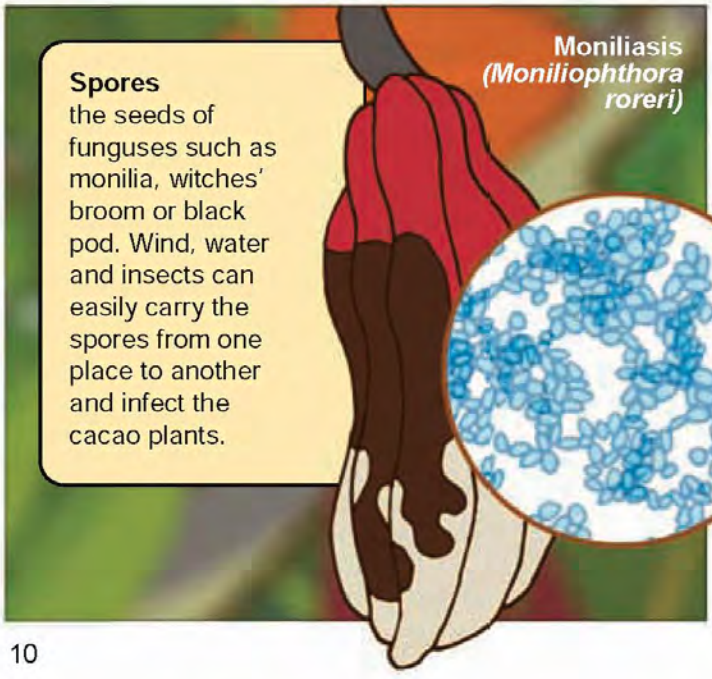
Bark
the skin or shell that covers the wood of the trunks and branches.



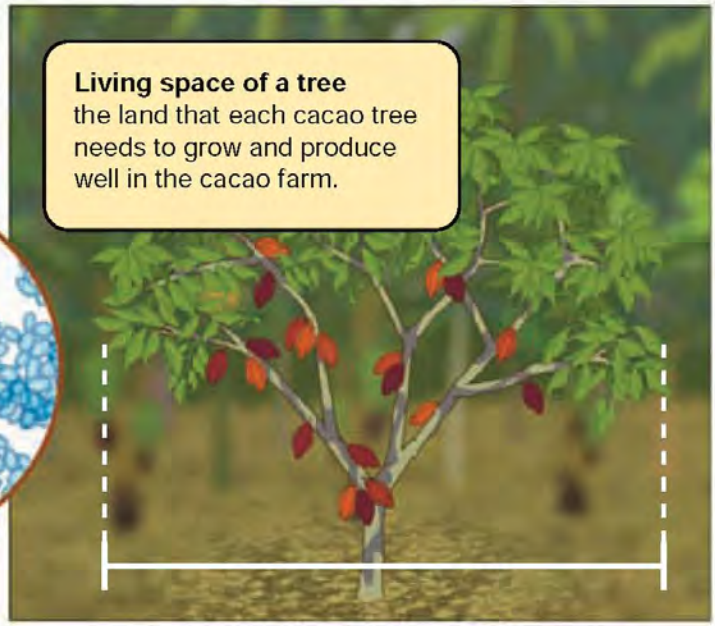
Tip a branch
cut off the tip of the branch.

Spores
the seeds of funguses such as monilia, witches' broom or black pod. Wind, water and insects can easily carry the spores from one place to another and infect the cacao plants.

Moniliasis
(Moniliophthora roreri)



Living space of a tree
the land that each cacao tree needs to grow and produce well in the cacao farm.




Lop off a branch
cut the branch in the middle, somewhere between the tip and the base.
Purge, or clean, the cacao farm
cut all the pods that remain after the harvest, even those that are green. If the cacao farm is not purged, then some of the remaining pods can contract diseases and contaminate the healthy pods in the next harvest.
Stumps
the pieces of branches or trunks that are left when we don't cut evenly.
Mummy
a pod, healthy or diseased, that is not harvested and stays attached to the tree until it becomes dry and black. Mummies cannot exist if we purge the cacao farm.
Stumping
cutting the tree trunk from the base, a little above the soil line (about 30 centimeters), so that it puts out new chupons and we can begin to reconstruct the crown. Since chupons can put out roots, select the one nearest the ground and put some dirt at the base so that it produces its own roots and can live on its own, without depending on the roots of the stumped tree.

Tools used in cacao pruning

The short machete are used to make clean cuts, like a knife.

The mallet can be made with a piece of hardwood, coated and protected with a metal tube.

Speaking of pruning, let's to talk about tools. Here are the main tools that are used to prune and harvest cacao.

1) Many producers prune the cacao using a long machete, cutting freehand, without the mallet. But the cut often misses the mark and causes wounds on the branches or leaves small stumps that cause decay in the tree and reduce the harvest.

2) The cacao tree should be pruned with a short machete and a mallet, so that all the cuts are clean and perfect and heal quickly.

A curved pruning saw
is good for cutting branches and thick chupons, especially when other branches make it difficult to use a straight machete.

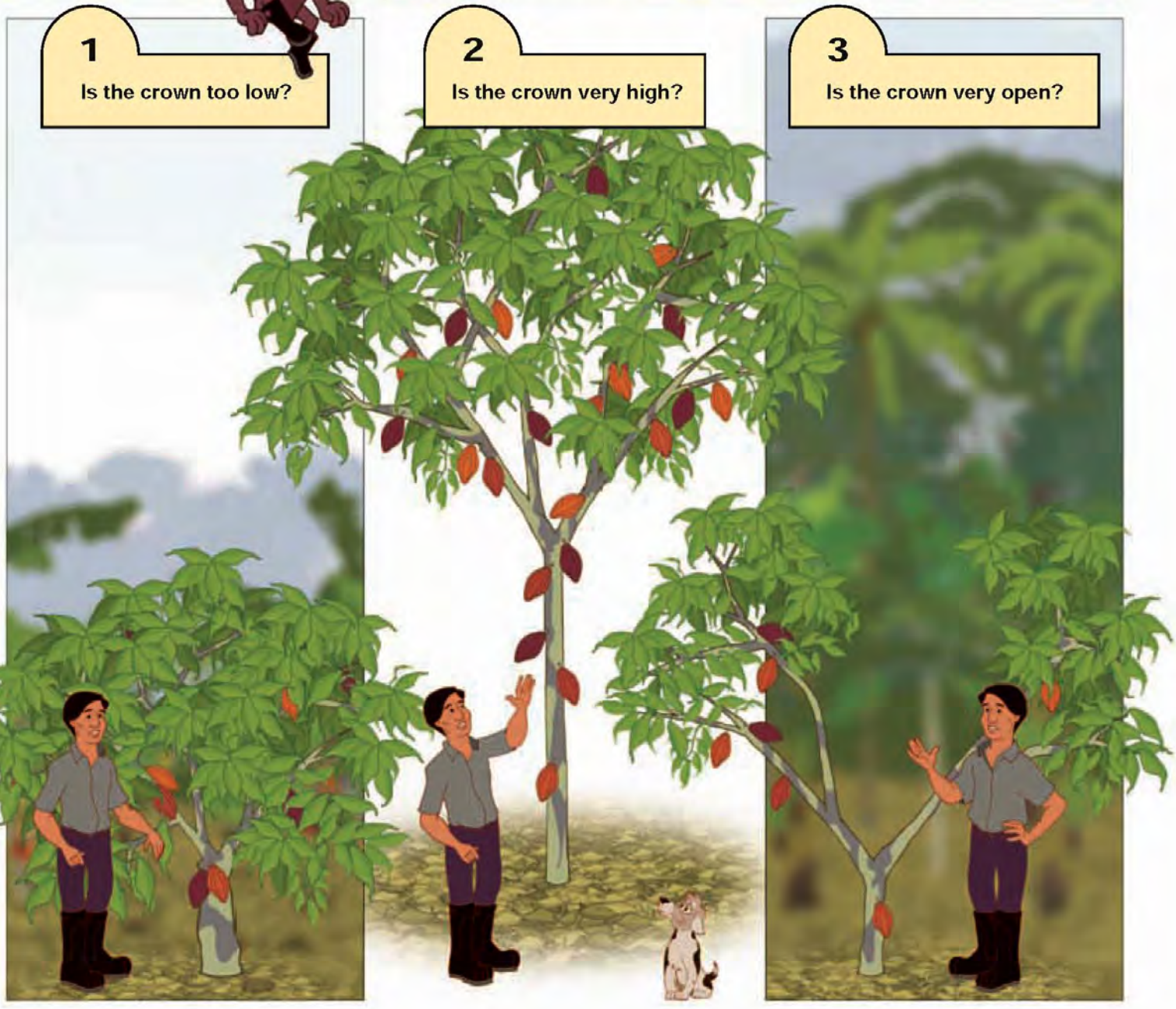
Pruning shears
are perfect to cut thin stems and mature pods, both healthy and diseased.

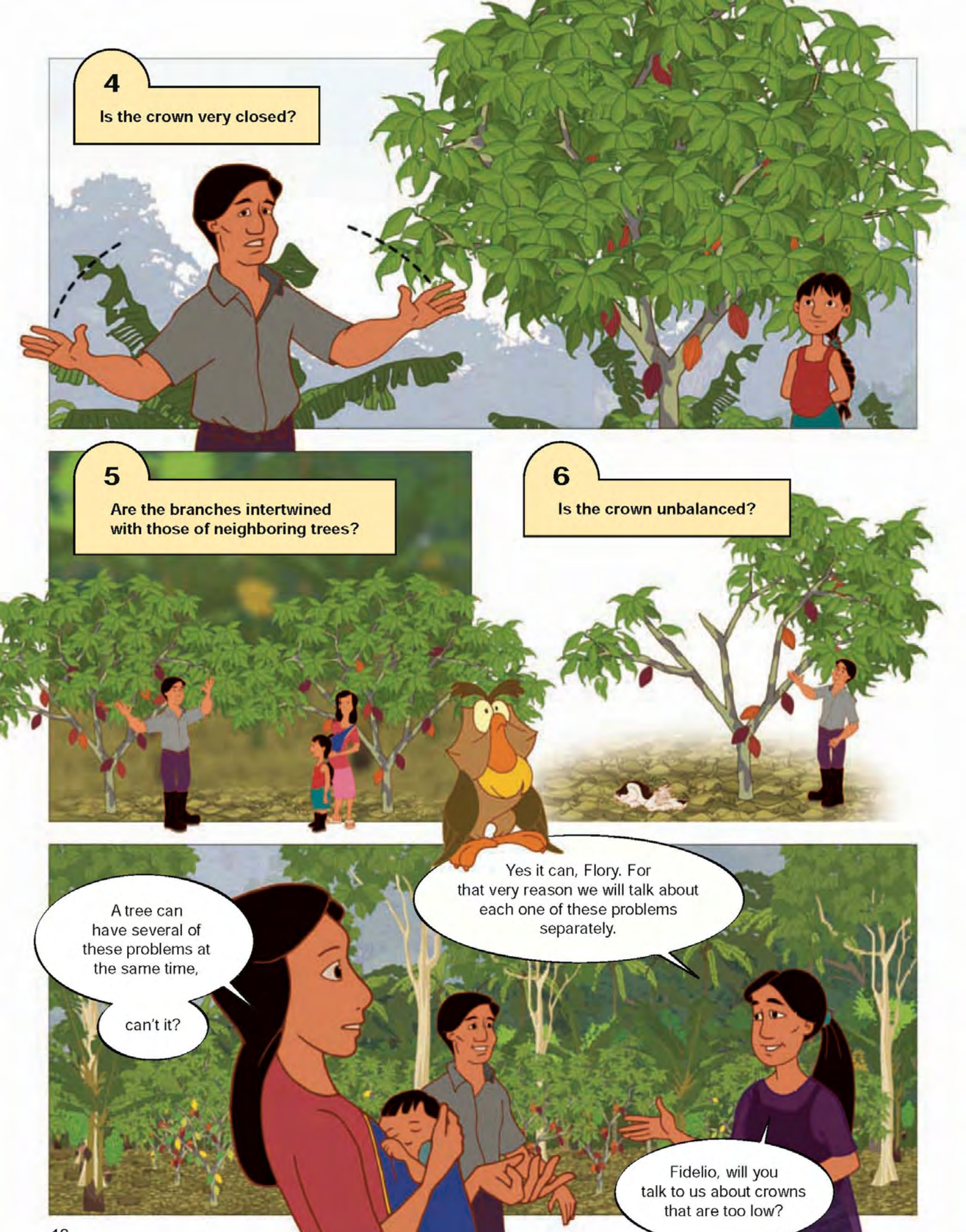
The chuza
a pruning pole with a double-edged blade, is used to harvest mature or diseased fruits that we cannot reach by hand and even to cut high, thin branches-let's say about an inch (2½ centimeters) thick.

The ladder
keeps us from standing in the tree and damaging the flower cushions.

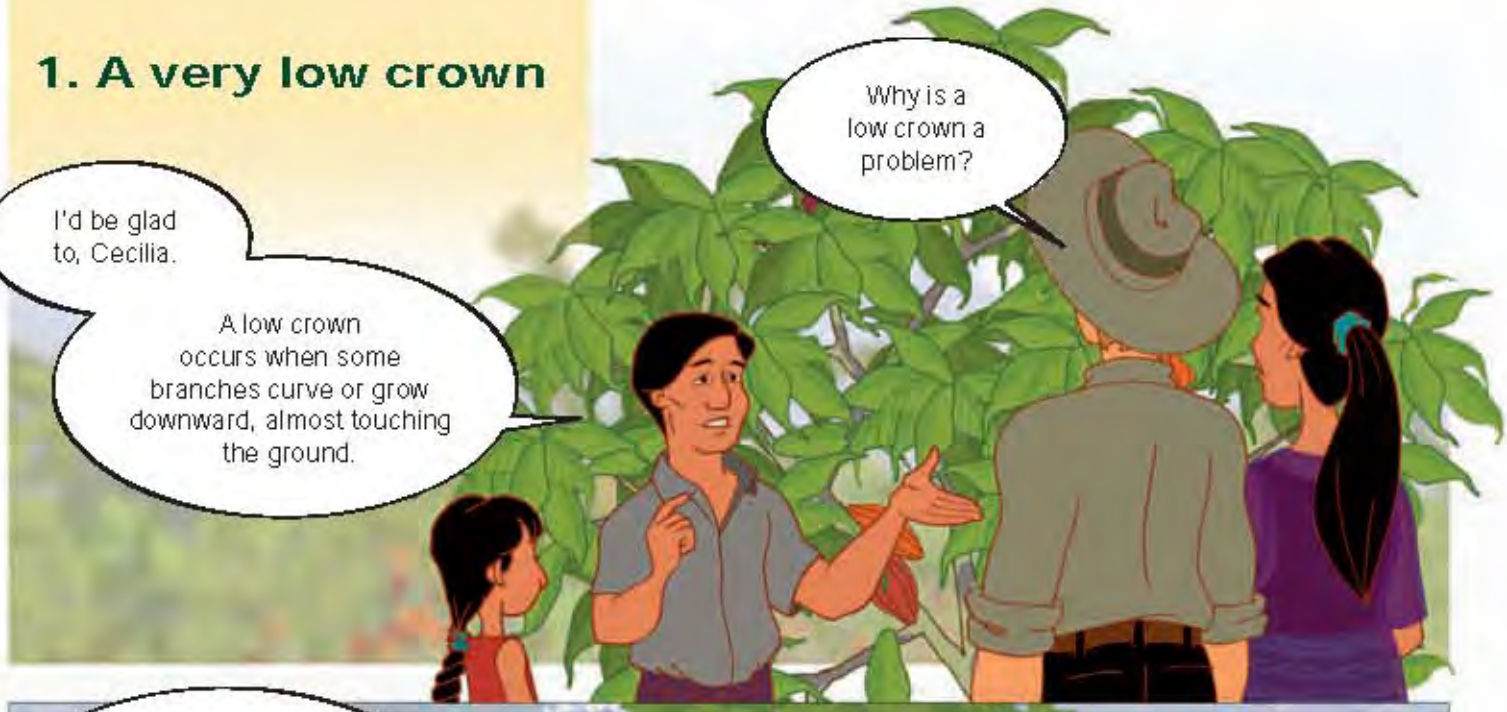

What is that other tool?
The pole pruners
It is a long rod that has pruning shears at the end.
You can cut branches that are high on the crown without using a ladder. To cut a branch with the pole pruner,
just pull the cord and the shears at the end cut the branch. Some pole pruners also have a curved saw at the end.
The chainsaw
is used mainly for stumping or to cut very thick branches or trunks.
We can go together-family members, friends or maybe even other families-to buy a chainsaw and take turns using it.
What a great idea! Count me in.

The six steps



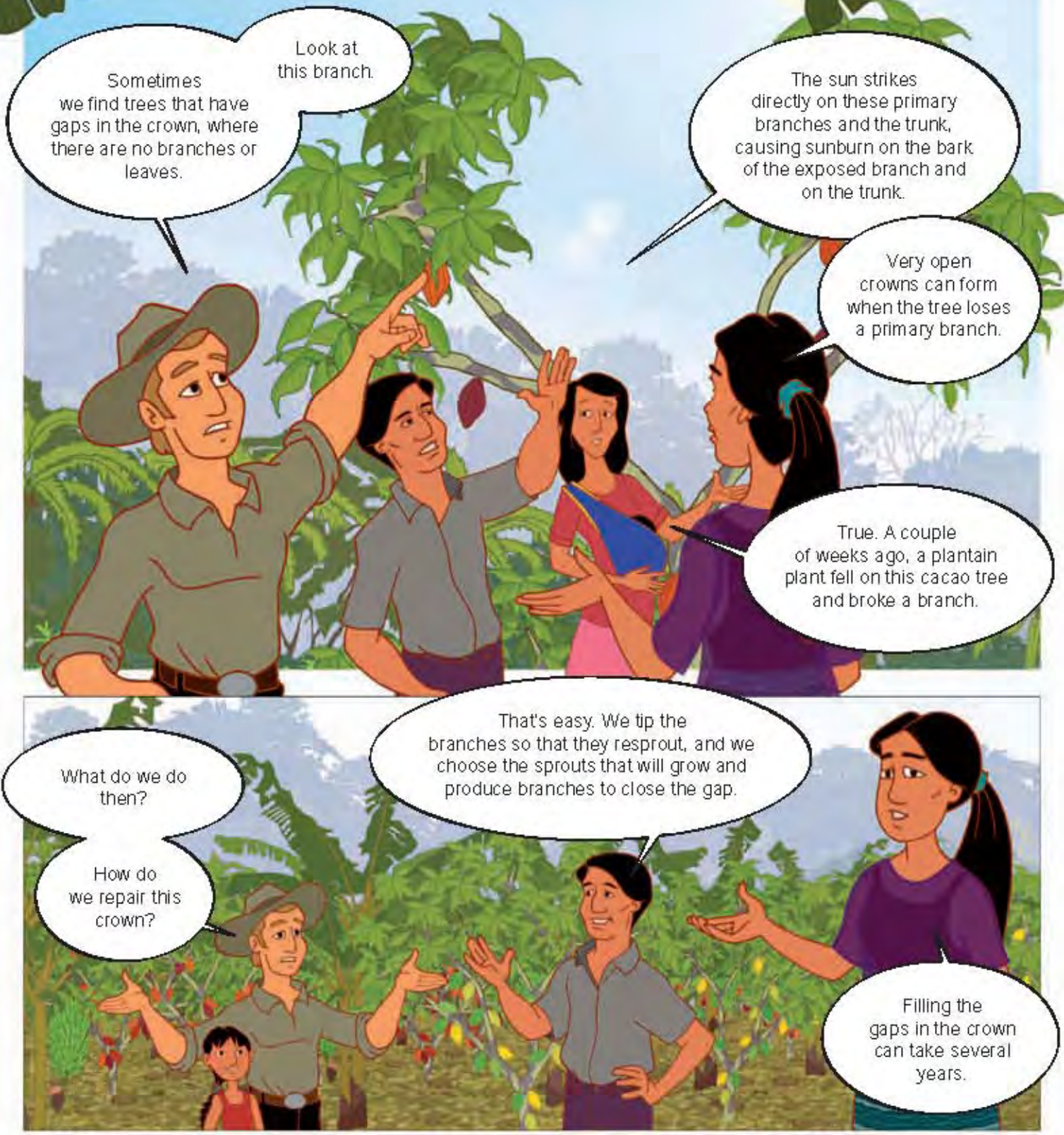

4
Is the crown very closed?
5
Are the branches intertwined with those of neighboring trees?
6
Is the crown unbalanced?
A tree can have several of these problems at the same time,
can't it?
Yes it can, Flory. For that very reason we will talk about each one of these problems separately.
Fidelio, will you talk to us about crowns that are too low?

1. A very low crown

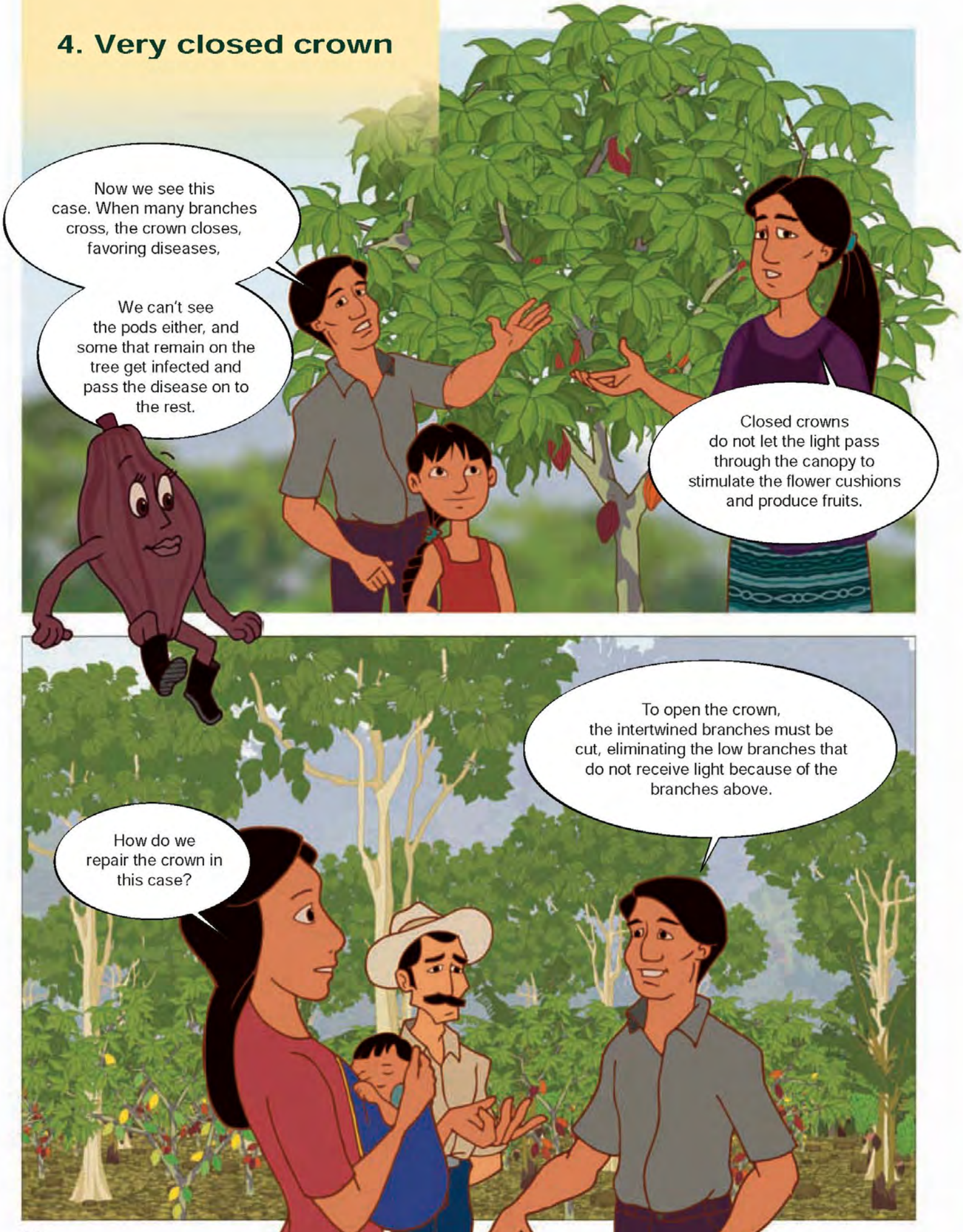


2. Very high crown

3. Very open Crown

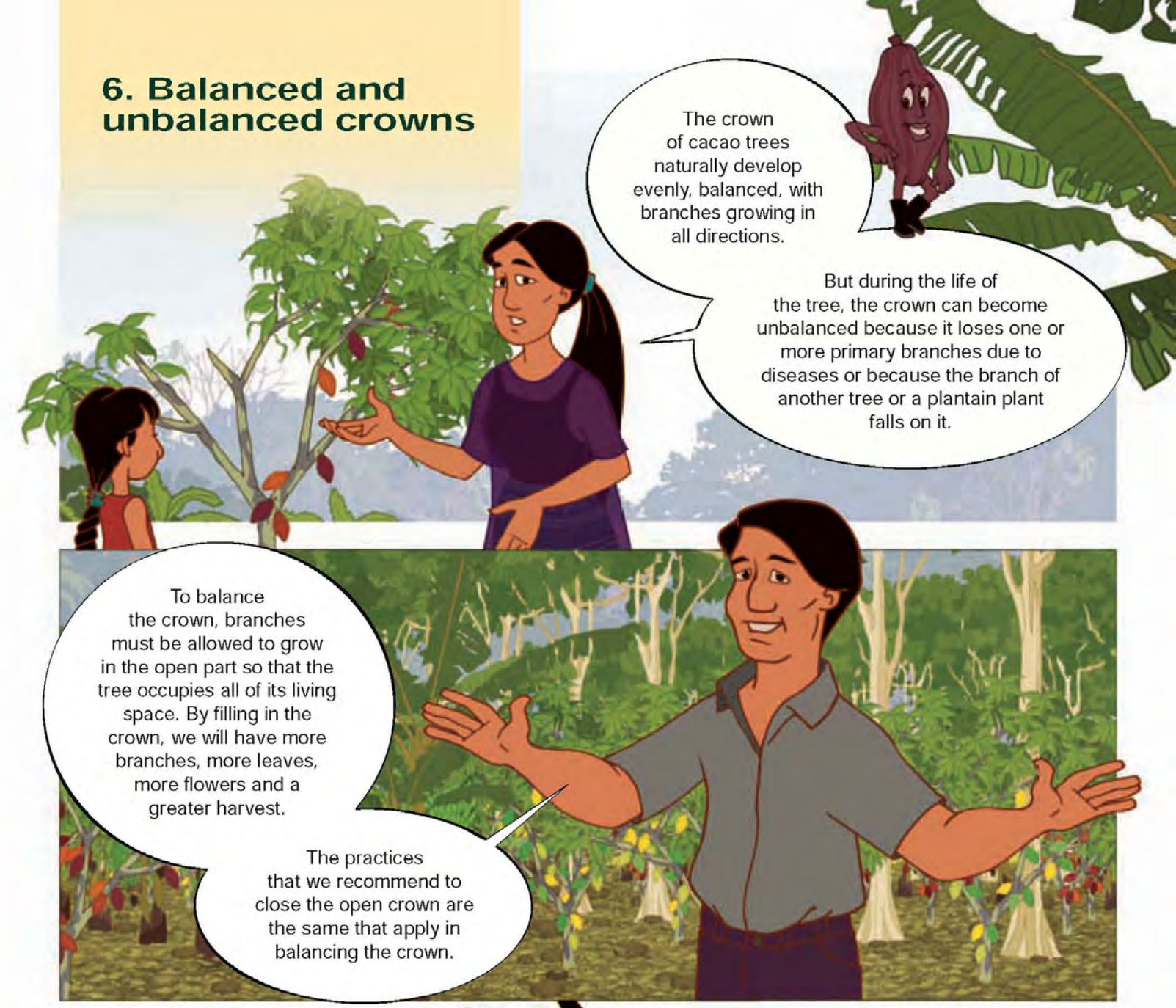


4. Very closed crown



5. Branches intertwined with those of other trees

6. Balanced and unbalanced crowns



Cleaning Up the Tree


My father told me that birds eat the fruit of the parasitic plants and infect cacao and shade trees when they defecate on their branches, and then they deposit the seeds of these plants.
Now it looks like we birds are to blame. Imagine-
now we cannot even defecate on trees! Then I say that bird latrines need to be put in the cacao farm!
This toucan turns out to be a good lawyer and political activist. I side with the toucan.


Let's review what we have talked about today.
We talked about pruning cacao and how it improves the harvests. We saw that there are six steps to follow when pruning a cacao tree.
We also saw that each cacao tree is different and we need to know what to do in each case.
About whether the crown is low or high, whether it is very open or closed, whether it is intertwined with neighboring trees, whether the crown is balanced or not. Wow! Listen to how well I am speaking.


Sometimes we cut to remove parts of the crown, other times we cut so that new branches can sprout or so that a tree can have a completely new crown.
The six pruning steps serve as a guide for us, so that we do not forget any of the details. Now we know that we must make clean cuts, using proper tools such as a short machete and a mallet, a curved pruning saw and pruning shears.
A well-cared-for cocoa farm produces more cacao and better cacao. The secret is to prune after each harvest.
Look how beautiful our cacao farm is now-it looks completely different!


Working so hard pruning this cacao farm has given me an appetite. I am so tired. I think I deserve a week off. After all, I have to take care of myself.
Ha, ha, ha. That's so funny, monkey, I didn't see you cut even one branch!
But you are right. I am hungry too. Let's finish our meeting and go out for lunch!

Glossary

Bark: Skin or shell that covers the wood of the trunks and branches.

Black pod: Cacao disease; scientific name Phytophtora spp.

Branch collar: Bulge at the base of the branch where it is attached to the trunk or the branch from which it sprouted.

Flower cushions: Bulges on the on the trunk and branches from which the flowers emerge.

Living space of the tree: Land that each cacao tree in the farm occupies in order to grow and produce well.

Lop off: Cut off the branches somewhere in the middle, between the tip and the base.

Monilia: Cacao disease; scientific name Moniliophthora roreri.

Mummy: Pod, healthy or diseased, that is not harvested and stays attached to the tree until it becomes dry and black.

Purge the cacao farm: After the harvest, eliminate all the pods that remain, even if they are not mature.

Remove chupons: Cut the chupons.

Spores: Seeds of funguses such as monilia, witches' broom and black pod.

Stumps: Pieces of branches or trunks that are left when we don't cut evenly.

Tip: Remove the tips of the branches.

Witches' broom: cacao disease; scientific name Moniliophthora perniciosa.