



Special picnic on World Soil Day

Jully Gabriela Retzlaf de Oliveira
Claudio Lucas Capeche
Lygia de Oliveira Ribeiro
Milena Pessoa Pagliacci
Alexandre Abrantes Cotta de Mello



Embrapa

**Brazilian Agricultural Research Corporation
Embrapa Soils
Ministry of Agriculture and Livestock**

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Foreword

This book aims to show children and all soil lovers, in a playful and fun way, the importance of soil as a food producer. The work highlights that, for this to happen, the soil must be healthy, conserved, and full of life, that is, rich in biodiversity, which help to maintain and replace essential nutrients for plant growth, securing food provision to animals and people.

The book also addresses the commemoration of World Soil Day, December 5th, and seeks to sensitize children to the functions of the soil and its role in people's lives, as well as to act in the popularization of Soil Science among society, thus, contributing to Soil Education.

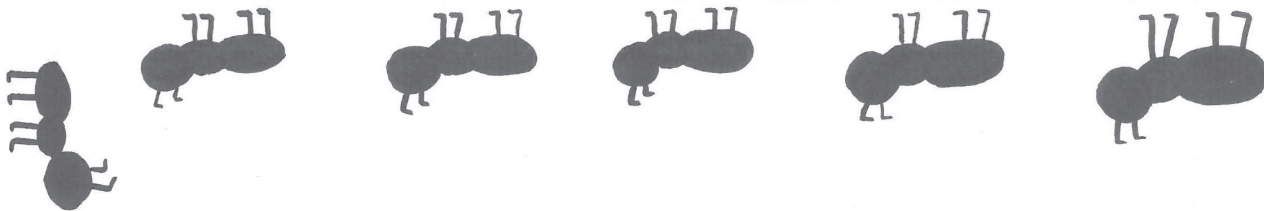
The story highlights the affectionate and educational family interaction between grandson Gabriel and his grandparents Tico and Nina, who encourage Gabriel to learn about the relationship between the soil and food origin. Another important character is the teacher at the school where Gabriel studies, teacher Ana. It is a simple tribute to the great scientist of ecological soil management, Ana Primavesi, who has always underscored that a healthy soil generates healthy food and healthy human beings.

Finally, the authors wish that the book encourages readers to adopt sustainable behaviors and respect for the soil, therefore, allowing to produce healthy food, contributing to an effective reduction of hunger, malnutrition, and poverty on planet Earth.

This work is part of the scientific book contest for children whose theme is SOILS: ORIGIN OF FOODS, which is an initiative of the Food and Agriculture Organization (FAO) of the United Nations, its World Soil Alliance (GSP) and the International Union of Soil Science (IUSS) for the 2022 commemoration of World Soil Day, December 5th.

This book contemplates many of the sustainable development goals (SDG) In particular, the goals 2.4, 4.7, 5.b, 12.8, 15.3 e 17.7 and it aims to contribute with sustainable production systems of food and to implement agricultural resilient practices, that help to increase the productivity and the production, that helps to maintain the ecosystem, that will enhance the capacity of adaption to the various changes in climate, the extreme meteorological conditions. Drought, floods and other disasters, and that progressively improve soil, water and agrobiodiversity quality, aiming the water, energy and food security.

Maria de Lourdes Mendonça Santos Brefin
Head of Embrapa Soils



Preface



When reading this excellent story about Gabriel's picnic, organized by his Aunt Ana, a loving tribute to my mother Ana Primavesi, I remembered she used to say that, when I was little, I loved eating raw onions grown in the garden, which are delicious, medicinal. She always made us eat vegetables, legumes and other foods grown in living soil. I even used unconventional food plants; which can only be found in backyards, and not in the grocery stores, like the "serralha" (*Sonchus oleraceus*), which could be made into a delicious salad, mixed with sliced bananas.



My mother showed that a living soil cannot be without plants, or without the remains of plants, on its surface. Organic matter is the source of energy for living beings. All creatures are made of energy. Even our thoughts and our ideas are energy. Plants are the ones that can capture energy from the sun to produce food, which provides energy for us to play, study, work, think.



All living beings have to collaborate, in some way, so that the soil (which many call earth, or even dirt) is rich in organic matter, and so that it can be macroporous (having aeration and water drainage pores), so that plant roots can find water and nutrients to grow strong, healthy, and produce food.



Soil without organic matter dies, has no life, becomes hard - almost like a stone - and cannot sustain life. Have you ever seen those cracked crusts on the surface of the soil, after the water from puddled rain dries up, that look like chocolate chips or ceramic shards? There is degraded soil there.



Degraded soils, without pores, without protection against heat and erosion, without organic matter and diverse life, will have difficulty producing food, as the plants that manage to grow will be weak and subject to attack by insects and diseases, having low nutritional value for living beings, animals and humans.



But not all is lost: degraded or dead soils can be recovered and can return to life with regenerative agricultural and environmental practices, using syntropic processes, which are organized, and promote a rich life, and diverse and vital ecosystem services.

We should always remember that soils need a triple layer of protection: the first – the aerial part of the plants (leaves, branches, flowers and fruits); the second - the straw layer, also called litter, originating from fallen, cut or mowed leaves (which many people end up burning, without knowing of their importance); and, the third - of plant roots, that must be deep and well developed. This is why the diversity of healthy plants in agriculture and the environment can guarantee great soil protection.

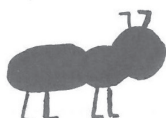
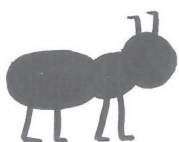
Unfortunately, some adult humans think they are smarter than mother nature and leave the surface of the soil burnt, turned over and bare in rural areas (naked, unprotected, while saying they leave the land clean), or they cover the cities with cement and asphalt.

So, little brothers and young readers, as you read this incredible story about Gabriel's picnic, you may drool over the delicious foods offered for the stomach, which are good for your health and also for your brain (healthy foods called knowledge, for life).

Remember: yours and future generations need to act so that everyone can have a healthy diet and a preserved environment, aiming for the well-being of your nation and the planet. So, try to teach the adults about the importance of living soil in healthy and sustainable food production, or guide them to find out more about the subject.

Odo Primavesi

Retired scientific researcher from the Brazilian Agricultural
Research Corporation - Embrapa.



At the school where Gabriel studies, his teacher, Ana, had an excellent idea on Friday:



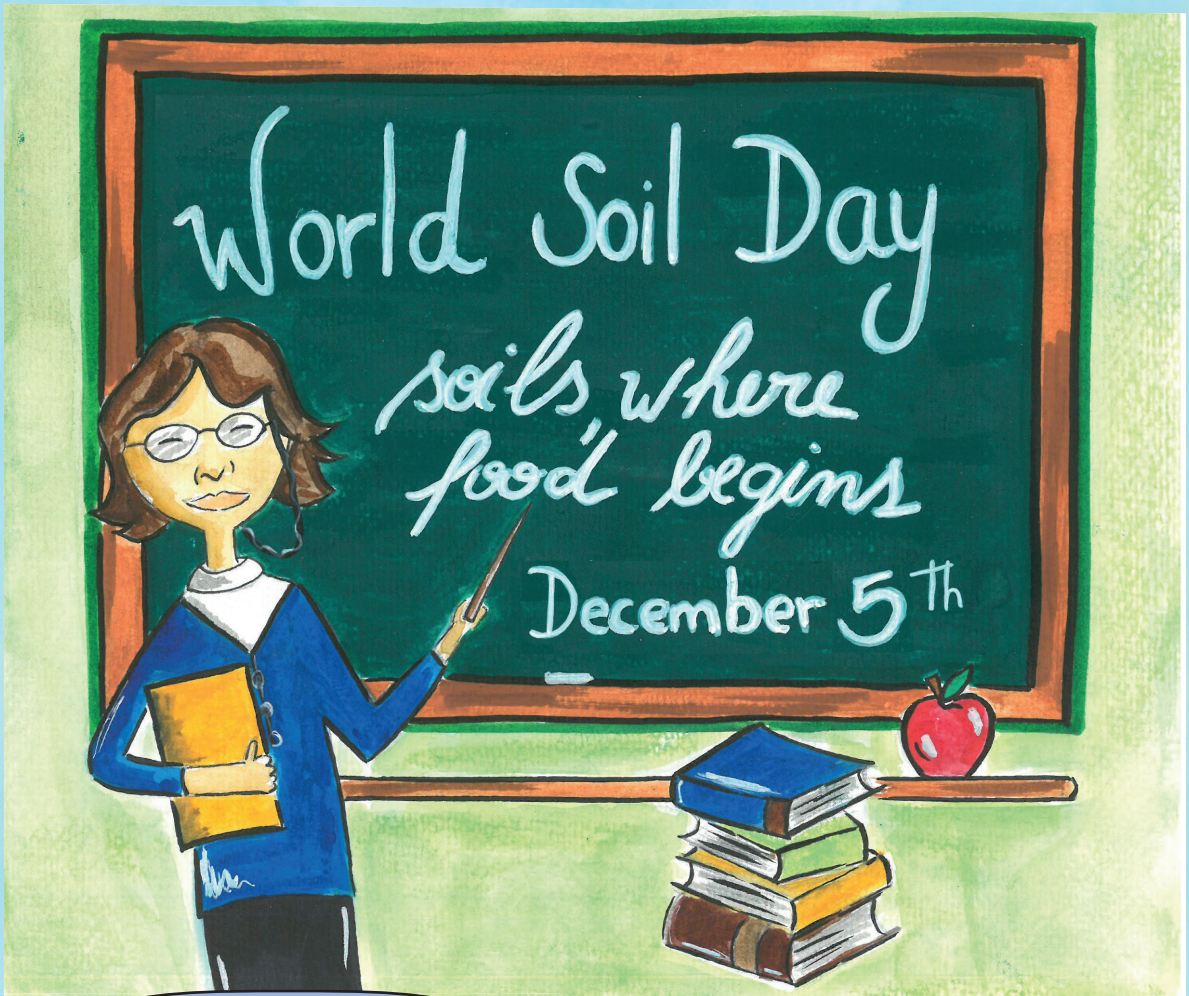
Hello, dear students, you remember I talked about soils and their different functions on our planet, right? How about we talk about one of these functions: production of the food we consume, such as fruit, vegetables, grains, eggs, breads, meats, cakes, juices, among many others?

Cool!



How about, then,
having a picnic in the
school garden to talk about
soils and food and celebrate
World Soil Day, on December
5th, next Monday?

Yay!!!



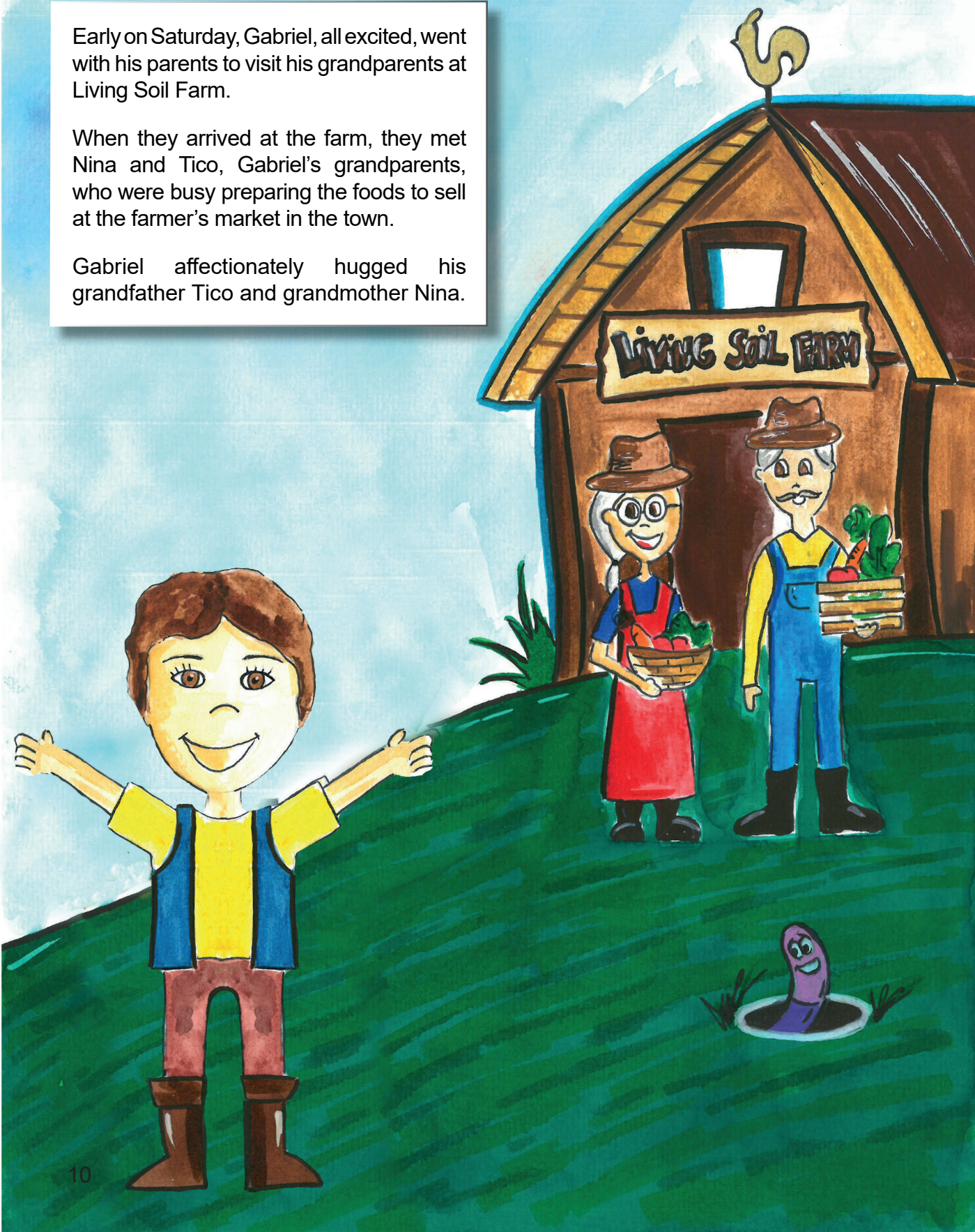
Great!! Then, for our
special picnic, I ask each
student to bring some food,
it can be fresh, such as a fruit, or
homemade, such as bread and
cake, or industrialized, such as
juice, cookie, or jelly.

Gabriel and his friends loved
the picnic idea, as they felt they
would have fun playing, while
eating delicious things, like
Gabriel's favorite carrot cake.

Early on Saturday, Gabriel, all excited, went with his parents to visit his grandparents at Living Soil Farm.

When they arrived at the farm, they met Nina and Tico, Gabriel's grandparents, who were busy preparing the foods to sell at the farmer's market in the town.

Gabriel affectionately hugged his grandfather Tico and grandmother Nina.





Then Grandpa Tico went to take care of the animals while Grandma Nina asked Gabriel to help organize some foods.

Come here, my grandson, separate the fruits I just picked from the orchard. They're in this big basket.



Grandma Nina, so many delicious fruits are in the basket! There is papaya, melon, pineapple, orange, passion fruit, mango, and acerola!

Gabriel, these fruits are typical of this time of year and are very delicious because they were grown in a soil full of life.

Full of life, grandma? I don't understand.

Let's go to the orchard, my grandson, and I'll explain everything.



Look at the fruit trees! They are beautiful and productive!
Now, look closely at how the soil is full of little animals, that is, full of life.

Yes, grandma
Nina, I see worms,
ants, and millipedes.



Yes, Gabriel, and besides them, there are many other beings in the soil, but we cannot see them because they are really tiny, such as bacteria and fungi. You know, biodiversity in the soil contributes to a soil rich in nutrients, necessary for plant growth. We can even say that the soil is the home of little animals, plants and other animals, including us: humans.

Gabriel, a living and conserved soil provides water, air, and nutrients for the plants to grow strong and healthy and produce quality food for all of us on the farm and for the people of the city.

Grandma Nina, with today's visit, I'm learning a lot about the importance of having a soil full of life and healthy.

That's great, my grandson, I'm very happy! Now, while you're going to sort the fruits I picked in the orchard, I'm going to the vegetable garden to pick some vegetables.



Grandma Nina came back from the vegetable garden bringing another basket, this time with carrots, tomatoes, cucumbers, pumpkins, cassava, okra, lettuce, and cabbage and then she showed them to her grandson.

Wow!! So many foods can be grown in the garden, Grandma!

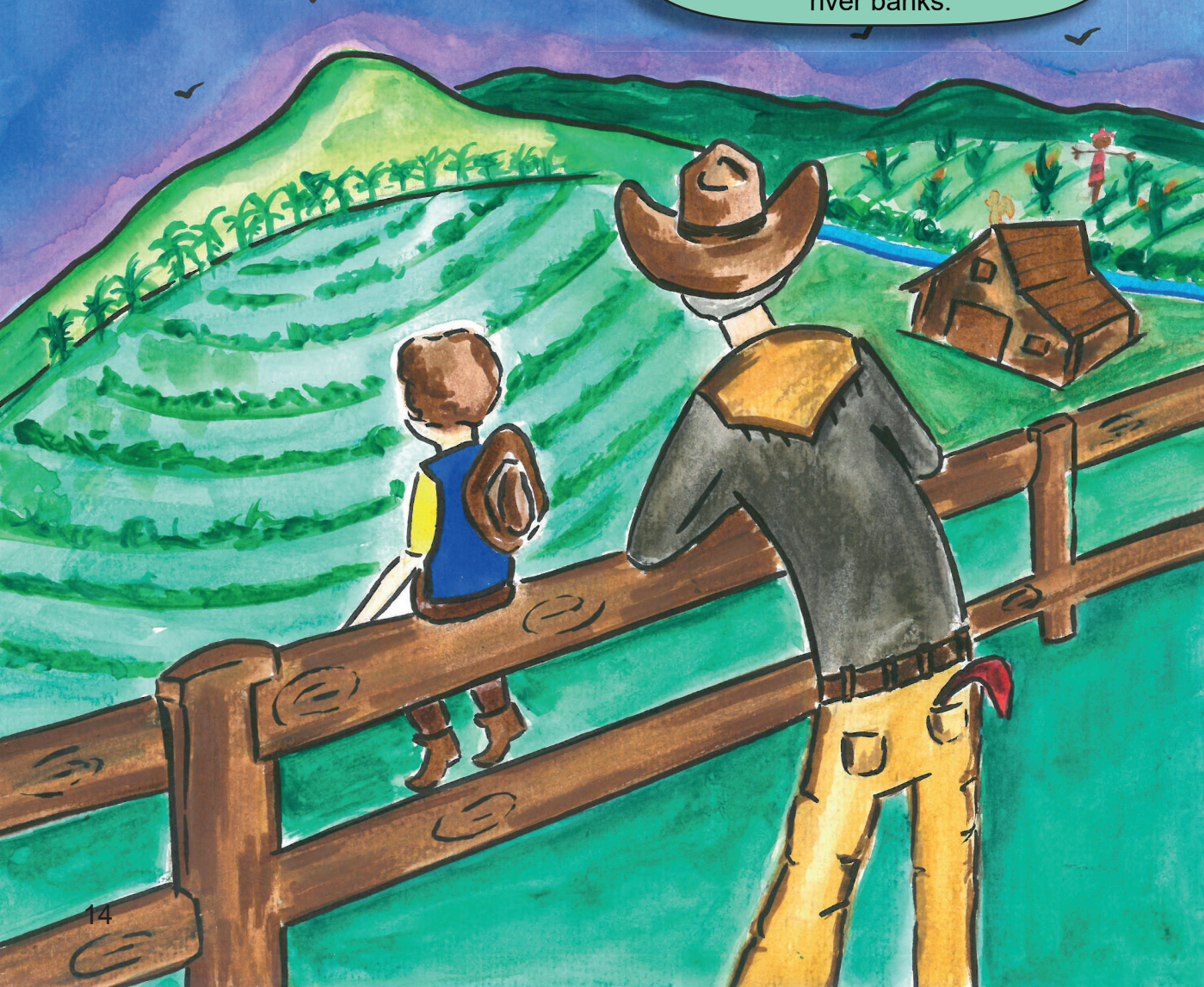


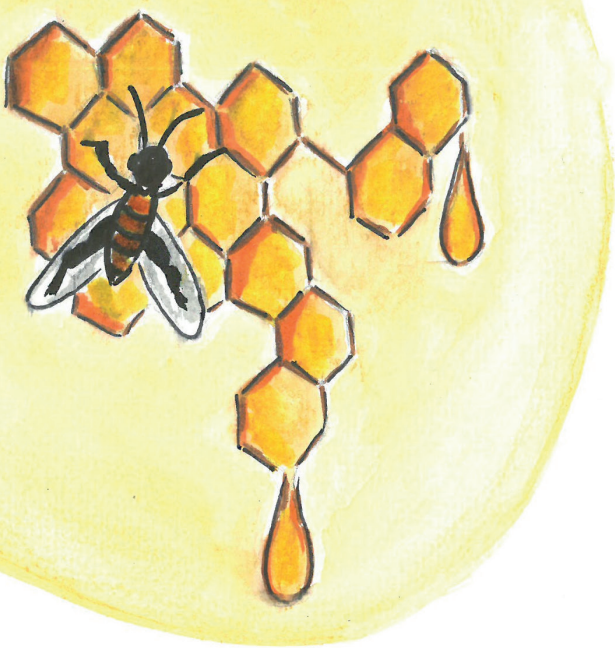
After taking care of the animals and seeing Gabriel's excitement, Grandpa Tico had an idea and asked:

Gabriel, do you want to take a tour around the farm and get to know the other plantations we have here?

Sure, Grandpa!

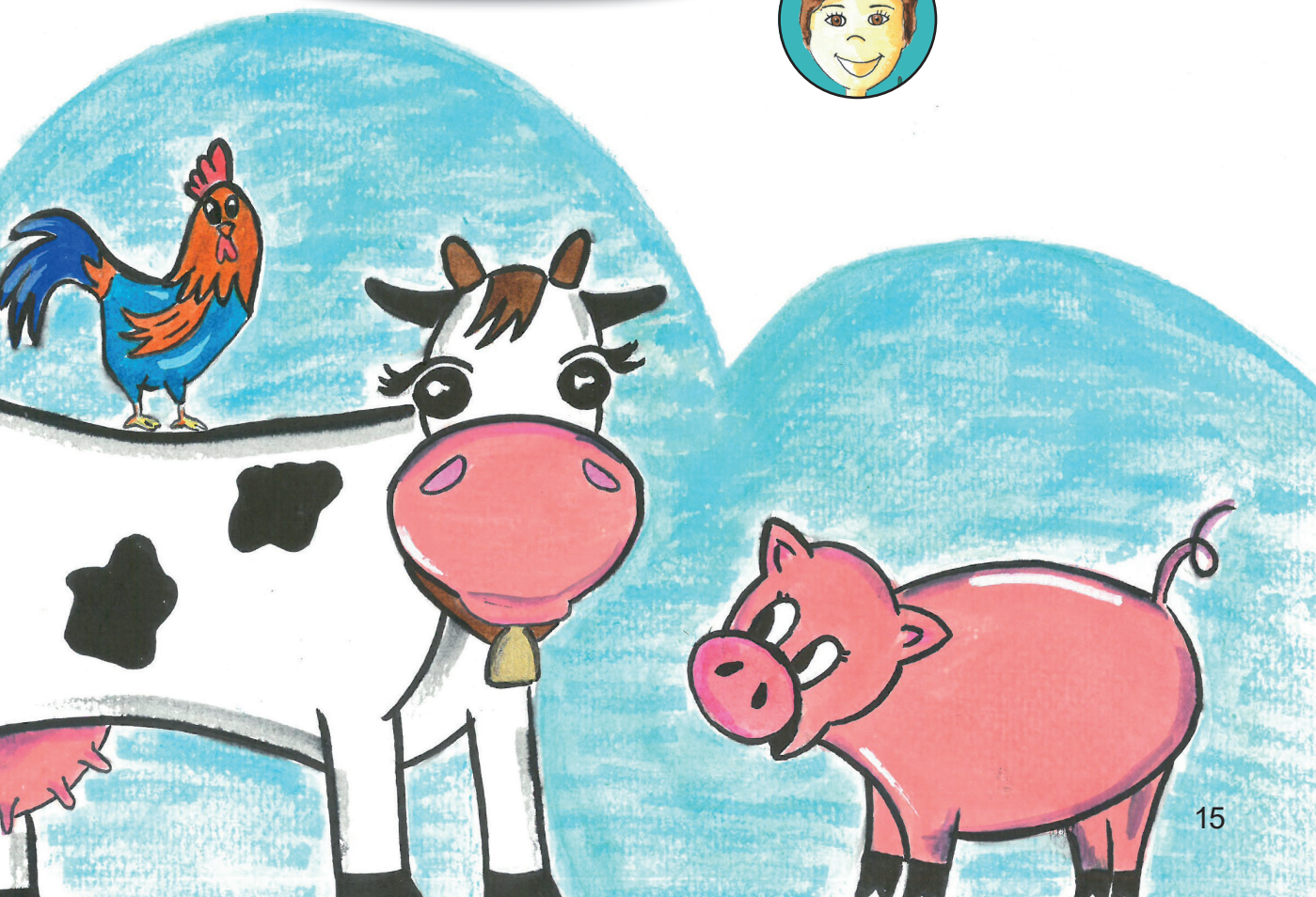
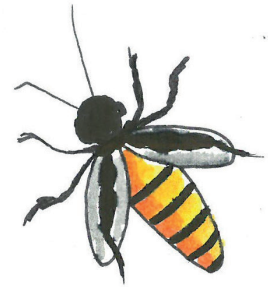
Look, Gabriel, we have bean, corn, sugarcane, and soybean crops and, in the background, there is the riparian forest to protect the river banks.





And, right there, we have our bee honeycombs, and the pens to raise chickens, pigs and dairy cows.

So much is cultivated in the soil, Grandpa! Now I understand what teacher Ana taught in the classroom that all life on Earth depends on the soil and water and that the soil is the most precious resource on our planet that should receive all attention, care, and love.



Teacher Ana also said that we should take good care of the soil so it doesn't get sick and stop producing healthy food.



deforestation
burnings



erosion
desertification

Gabriel, your teacher is right. With a diseased soil, food production decreases, causing hunger, malnutrition, and poverty, affecting the health of the population, especially the needy people.



Returning from the tour with Grandpa Tico, Gabriel remembered to talk to Grandma Nina about the school picnic:

Grandma Nina, on Monday, Teacher Ana is going to have a special picnic with my class in the school garden to celebrate World Soil Day and asked us to bring food made with ingredients grown in the soil. How about we make a carrot cake?

Of course, my grandson! Your favorite cake! Did you know that carrots are rich in nutrients and vitamins and are very healthy?



Yessss, carrot cake is the tastiest of all! And Grandma, you are the best cook and grandma in the world!

Thank you, my grandson.





And there's more. All the other ingredients of the cake depend on the soil to grow.

Flour comes from wheat, sugar comes from sugar cane, oil comes from soybean, eggs come from chickens that eat the corn and, of course, carrot comes from the vegetable garden.

True, Grandma Nina. Teacher Ana said that most essential nutrients for our life come from the soil.



Well, now that you know that the soil has everything to do with our carrot cake, let's prepare this treat for you to take to your picnic, OK?

Yeah!!
Let's go.



When saying goodbye with affection, Gabriel thanked his grandparents for the teachings and returned home with his parents and his special cake.

On Monday, Gabriel proudly brought the delicious carrot cake that he had helped his grandmother Nina make to the picnic, telling everyone around him what he learned at Living Soil Farm about soil and its importance in food production.



SOILS: WHERE FOOD BEGINS

Concepts of Ana Primavesi

The current decline in soils and their productivity has a common origin: soil degradation.

Soil is not an inert mass consisting of a mineral fraction serving as a simple support for vegetation, but a dynamic system similar to a living organism.

The more intense the life around the root, the greater the availability of nutrients.

Everything is interconnected: land, water, air, plants, and animals.

Healthy soil produces healthy plants and healthy humans.

RECIPE OF CARROT CAKE

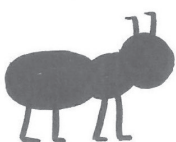
INGREDIENTS

- 4 eggs
- 3/4 cup of soy oil (143ml)
- 2 cups of sugar (320g)
- 3 medium raw carrots (250g)
- 2 cups of wheat flour (280g)
- 1 pinch of salt (2g)
- 1 tablespoon of baking powder (15g)

PREPARATION

1. Add the eggs, oil, sugar, and chopped carrots in a blender and beat until creamy.
2. Mix the flour, baking powder, and salt in a bowl. Then add the cream from the blender and stir gently.
3. Grease the baking pan with butter or margarine and pour the cake dough.
4. Bake in the oven at medium temperature (180°C) for 35 minutes or until golden.

After removing from the oven, apply a chocolate topping.



Soil ink

Hello little fellows! We have a surprise for you. Did you know that you can make paint for coloring using different types of soil? Have you seen that the soils can be yellow, pumpkin colored, red, brown, gray, black, white, pink and more? Cool, huh? Let's learn how to make soil paint?

Preparing the soil:

1. Pick up the soil
2. Put to dry in the sun
3. After it is dried, break the clods
4. Sieve and store

Preparing the paint:

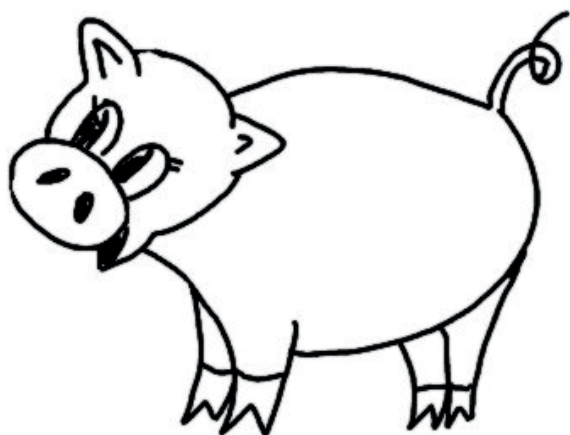
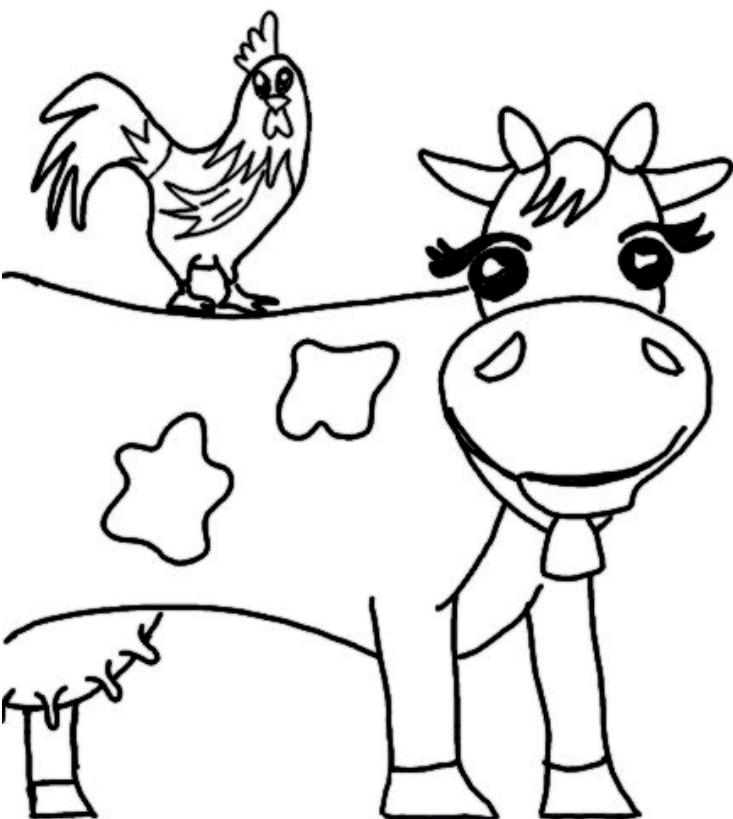
The paint is made by mixing two quantities of sieved soil, a quantity of white glue and a little water until it dissolves well. After painting, wait to dry.

That's it... Now just have fun with the soil ink.

Collect soils of different colors, make soil ink and paint here whatever your imagination wants.



Let's
paint!



Let's paint!





Draw here what you liked most about the story and color it.

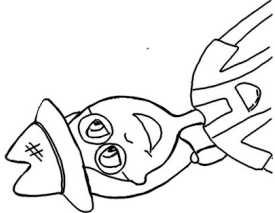
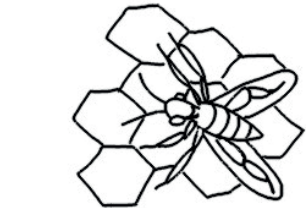
Hunting words

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

- Bee
- Water
- Lettuce
- Foods
- Students
- Ana
- Bacteria
- Cake
- Carrot
- School
- Bean
- Hunger
- Ant
- Fruits
- Fungi
- Gabriel
- River
- Health
- Farm
- Chickens
- Vegetable garden
- Riparian forest
- Honey
- Corn
- Worm
- Nina
- Bread
- People
- Picnic
- Orchard
- Pig
- Teacher
- Recipe
- Cow
- Vegetables
- Tico
- Tomato
- Living soil



Paint and connect



Teacher

Ana

Granpa

Tico

Granma

Nina

Gabriel

Cake

Rooster

Worm

Basket of

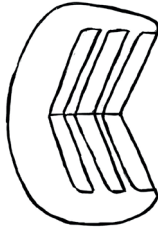
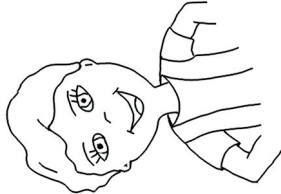
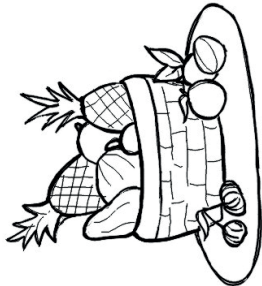
fruits

Bee

Cow

Pork

Basket of
vegetables





CGPE 18549