



Perfilito

A very lucky boy

Laura Bertha Reyes Sánchez

Illustration: Aldo Alfredo Hernández Huerta



International Union of Soil Sciences



**International
Decade of Soils**
2015-2024



Dr. Laura Bertha Reyes Sánchez
Professor at the National Autonomous University of Mexico

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® Thus are the Soils of my Nation!



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On December 5, 2020, celebrating World Soil Day and spreading among children the importance of soil in their lives and the urgent need to protect it, the educational projects **®Thus are the Soils of my Nation!** and **“THE IUSS GOES TO THE SCHOOL”** give this book to all children, inviting them to take care of the soils of their nation and teach their parents and teachers to do so.

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International Union of Soil Sciences



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SLCS



® Thus are the Soils of my Nation!

It is the educational project of the Latin American Soil Science Society.

Being our priority to educate and raise awareness among school-age children, as of December 5, 2020, we join the educational project of the International Union of Soil Sciences (IUSS)

“THE IUSS GOES TO THE SCHOOL”





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Foreword

To the digital version (2020)

Dear children, dear readers of the book “Perfilito ... A very lucky boy”:

Soils are the basis of our life, and they are most beautiful and dynamic as living systems under our feet and in our hands, which we need to maintain in order to support also the life of the next generations.

Our Soils contain uncounted organisms like earthworms, bacteria, or fungi but they also provide air and water which all are needed to produce enough to eat, to give us clean drinking water, or protect us against climate changes. It is our main duty to maintain the soil functions and to protect our soils as “Perfilito” does, he invites not only Alejandrina but also you to help him and to be fascinated of our Soils like AGRICULTURAL SOILS which are VERYYY IMPORTANT for food production, or for animals like cows and the production of milk or pigs for meat production.

Dear children, dear soil scientists, I hope you are not only fascinated by this very nicely prepared information about soils and the uncounted functions which they have but you become, also, very interested in spread Soil Science as you are our best teachers of your families and friends, and you can support the urgent need to use soils but in the same moment to also protect The Earth forever.

I wish that you find much interesting information in the book, enjoy reading, discovering, and learning more about the SOILS OF OUR NATIONS.

Dr. Rainer Horn
Former President of the International Union of Soil Sciences

Foreword

To the first print edition (2009)

Dear reader:

This work you are about to read represents the idea and the pursuit of many years of its author. Convinced that the love of nature, and soils as part of it, is better learned and instilled in children from a young age, Dr. Laura Bertha leads us by the hand of a child and his little friend to a simple but excellent explanation on a subject we tend to forget: our dependence on soils.

If you are a girl or a boy, I hope you read it and discuss it with your friends and teachers. If you are an adult, I hope you transmit it in the correct way to the girls and boys that make up your sphere of affections or responsibilities.

Remember that the love of nature is returned to us in many ways as we treat soils, forests, rivers, deserts, and seas, so will we be treated. If you like to look at the sky and the clouds, if you enjoy the natural landscapes that abound in our Nation, if you rejoice in the fresh air and cool shade, if you delight in a tasty fruit or a glass of water to quench your thirst, then you are living and enjoying what the soils offer us.

Now I invite you to travel with Perfilito and observe the soils, look at them carefully; they are full of surprising things.

Dr. Adalberto Benavides Mendoza
President of the Mexican Society of Soil Science

To children's parents and teachers

Latin America faces many serious problems, but among all of them, the most important is the conservation of its non-renewable and indispensable resources in the production of food. Achieving the production of the last that allows guaranteeing both the supply of our populations and their nutritional requirements - that is, life itself; the latter, although they are also a global concern, for Latin American countries constitute a priority and are a problem of national sovereignty. (Reyes-Sánchez, L. B., 2006).

Solving these two problems: the production of sufficient food and the devastation of natural resources; as a way to build development, it is not possible without an education that allows us both; revalue the natural resources that we possess as nations and to practice a science whose priority be the solution of the biggest national problems.

For this reason, and in order to guarantee sustainable development, it is urgent to both educate and create in children and young people a collective awareness in each of our countries of the need to develop a science that responds to a national project for the protection of natural resources, and that this, in turn, is integrated into a joint Latin American project.

It is a task that cannot be postponed, and that responds to the need to form individuals who build their knowledge for family and social well-being, with human dignity, fairness, and respectful balance with nature.

In response to this, the National Autonomous University of Mexico in conjunction with the Mexican Soil Science Society is developing the project **®Thus are the Soil of my Nation!**¹, which has a very strong nationalist base and tries both to educate in natural sciences, using the soil resource as a transversal axis as well as to create a clear conscience of its value and of the need to preserve all the natural resources of our countries, while consolidating the already established National Soil Science's Education and Teaching Network: RENAECS² (its acronym in Spanish).

®Thus are the Soils of my Nation!³

It is a registered educational project that has been developed in conjunction with the Mexican Soil Science Society since the year 2000. It is based on the recognition that, as to achieve the desired development, the soil is an indispensable natural resource on which depends not only on the possibility of having the required food but also the very existence of life on the Planet.

1 **Thus are the Soils of my Nation**. It is a UNAM's Foundation Project, developed in partnership with the **Latin American Soil Science Society**; open to all those who wish to join through **RENAECS**.

2 **® 03-2008-031411423000-01 y ® 1765163**

3 **Thus are the Soils of my Nation**. It is a UNAM's Foundation Project, developed in partnership with the **Latin American Soil Science Society**; open to all those who wish to join through **RELAEECS**.

As part of this project, the **Symposium of Educative innovations on Teaching and Learning Soil Sciences** is held in each of the Mexican Congresses of Soil Science.

As of October 1, 2004, by decision of the Latin American General Assembly, **®Thus are the Soils of my Nation!** is a core part of the **Educational Project of the Latin American Soil Science Society**, so it was created in parallel to this project, the **Latin American Soil Science's Education and Teaching Network: RELAE ECS⁴** (its acronym in Spanish).

With the support of the Latin American Soil Science Society, the **Latin American Symposium of Educative Innovations on Teaching and Learning Soil Sciences** is also developed during its Latin American Congresses.

Now we need you, and we are waiting for you. Join us

<https://www.slcs.org.mx/index.php/educacion-y-ensenanza/asi-son-los-suelos-de-mi-nacion>
<https://www.slcs.org.mx/index.php/educacion-y-ensenanza/red-latinoamericana-de-educacion>



Message to the children

This book was thought, written, and illustrated for you, with the intention that you know why the soil is an indispensable and valuable resource for your life and wellbeing.

Through Perfilito and Alejandrina's adventures, I hope to get you interested in the knowledge of the natural resource soil, to understand all the richness that the soils of your nation hold for you, and to shake the most sensitive fibers of your conscience, to make you commit to the preservation of this indispensable resource for life on Earth.

You are the future of Mexico, Latin America, and the world. In your hands, it will be the destiny of your country and the definition of yours. Since the citizens' wealth or poverty will depend on the preservation of all the natural resources of our countries.

Wherever you live, remember that a country without fertile soils to cultivate is a country without a future.

Today is a day in which the sun shines with splendor, the birds sing, butterflies of a thousand colors flutter around the front garden of Perfilito's house that is full of flowers, and it has a beautiful tree full of nests.

Perfilito leaves his house very happy, dressed in his country boots, backpack on his back, cap and field guide in hand, walking fast, and with lots of energy.

From the neighboring house, his friend Alejandrina greets him: "Hello Perfilito, come, let's play!"



- Hi, Alejandrina! I can't stay to play with you today.

- Why? Come and tell me where you are going so happy and with those sooo...weird clothes?

- I am going to the country with my grandfather.

- ¡Aaah, how nice, a good day in the country with lots of flowers, a river to play all day long, and delicious food to taste! How lucky you are, Perfilito!...

- Nothing like that Alejandrina, I go to the country to work with my grandfather Edaphologist!



- Eda.....what????!!!!!!!!!!!!

- EDAPHOLOGIST!!!

- What's that?! Or what do you eat with it...?!!!!!!

- Edaphologists or Soil Scientists are the people who study soils.

- The soils....?! But Perfilito, what is there to study about the soil? If the soil is only for fun, to play to make little cakes, and to get dirty to be scolded.

Although well..., it's also great for playing war games!

- Alejandrina, now I'm really going to get scolded!!!!!!



- Don't be angry, Perfilito, come, I'll clean you up, take off that ugly face, and better explain to me, what is this about studying the soils?

Wow, who can think of such things? If the soil is not very useful!

- On the contrary, Alejandrina, look, I'm going to explain; the word **EDAPHOLOGIST** comes from the Latin roots **edaphos**, which means plowed soil, and **logos**, which means study or treaty of what is going to be studied.

Therefore, **EDAPHOLOGISTS** or **Soil Scientists** are the people who **dedicate themselves to the study of soils** and that is VERYYYY



IMPORTANT, because agricultural soils are the ones that produce all those foods with which our mothers prepare the delicious meals that we love to enjoy.

- But how?!! Does that mean that if there is no Agricultural Soils, there is no food?

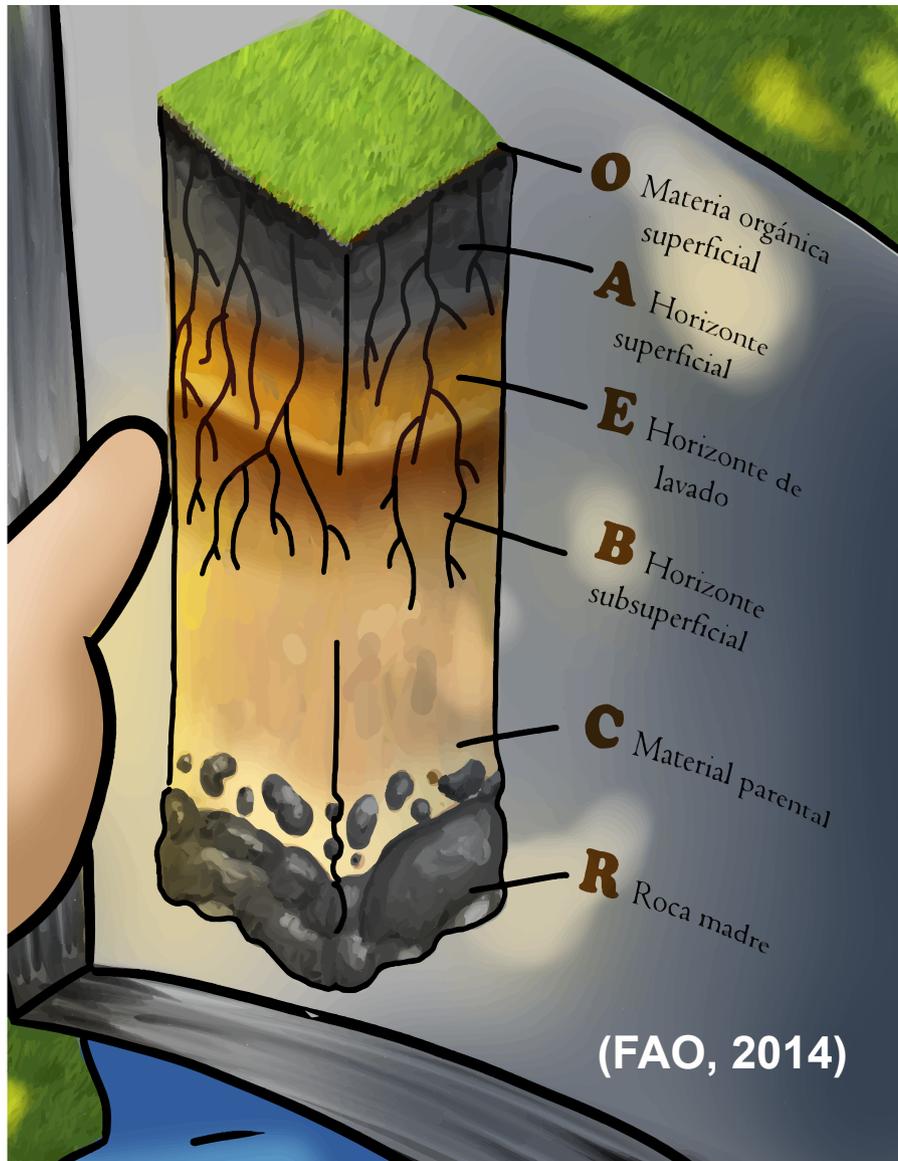


- That's it, Alejandrina, and not only that, look, I'll show you in my notebook...

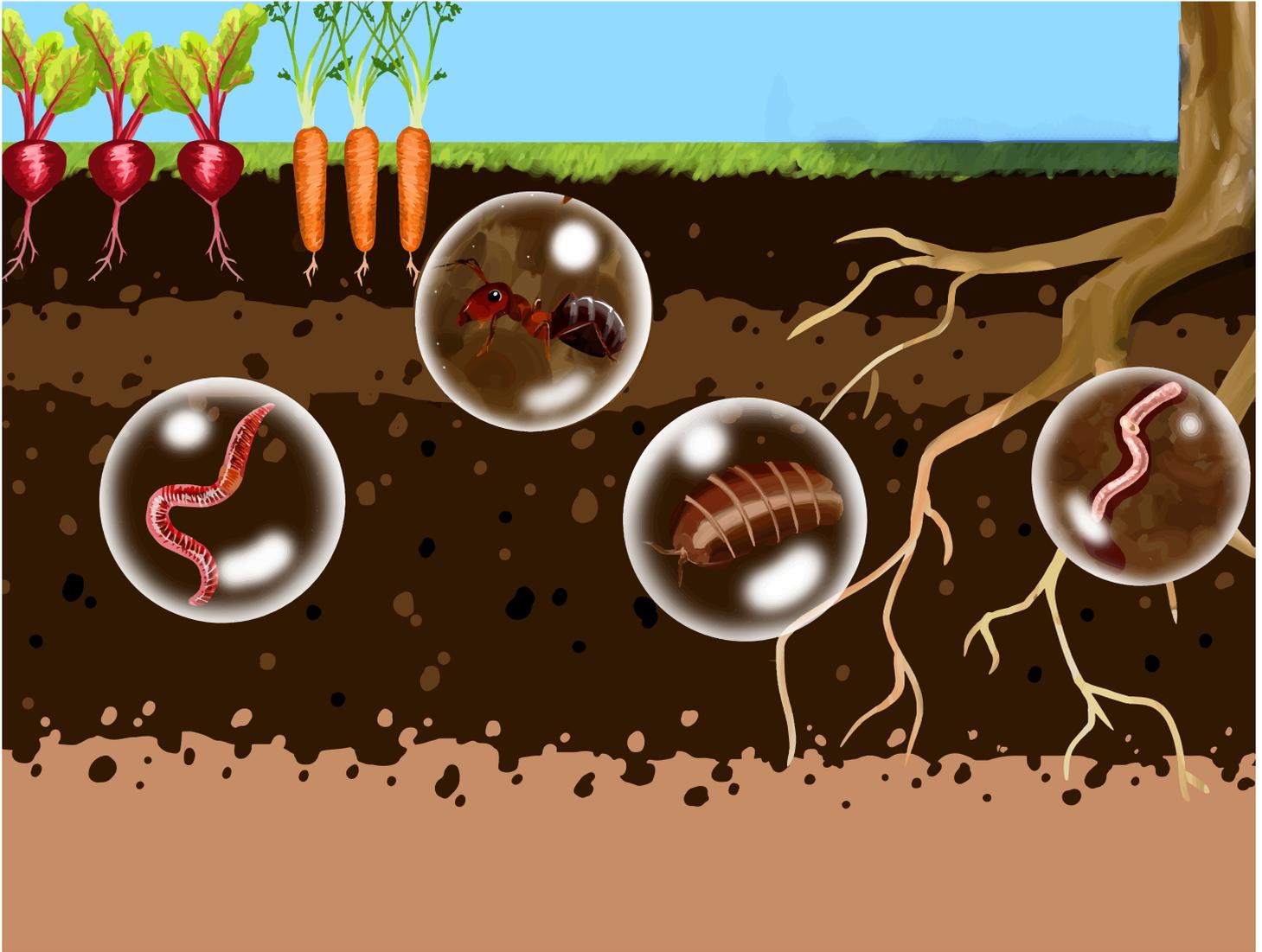
If we dig and make a vertical cut in the soil, we see that there are several layers in it, and also that they are not all the same; the darkest layers are where the soil has stored the necessary



nutrients to produce food, and therefore the plants, through their roots, take those nutrients from there.



And if we could see inside it, you would observe that inside it live a large number of organisms that are responsible for its fertility.



That's why my grandfather told me that if the soils didn't produce food for animals and men to eat, we wouldn't have any fruits, vegetables, or cereals to eat, the animals wouldn't have grass, grains, or fodder to eat. Also, if there weren't any food for the animals, then we couldn't eat the meat, eggs, or milk that they produce.



- So your grandfather Edaphologist studies the soils that produce all our food?

- Exactly, Alejandrina!

But my grandfather, like all **edaphologists** or **Soil Scientists**, not only studies the soil to produce food but also to know its differences.

- What differences if I see them all the same, and they all serve the same purpose, or not?!

- No Aleandrina, if you look and observe the soil of your garden or mine well and then compare them with the neighbors' or other soils in the field, giving free rein to your senses, you will see that you can inhale their rich aroma and also enjoy their different textures when you take them between your fingers.





Come, look, let's observe, smell and touch, the soil of our gardens, as well as that of the different pots, and then you will understand me easily.

- You are right, Perfilito, I hadn't realized that some are very soft, and others are rougher. And what about their colors, eh?

Because now that I remember, when I leave the city to go for a walk with my parents, I have seen them brown, reddish, black, light, dark and even dun.



- Now you understand that they are not all the same, right? And that is why you have to study them to make better use of them, but above all, to understand how to preserve them.
- Well, we don't have to worry about preserving them because there are a lot of soils everywhere.
- You are mistaken, Alejandrina, every centimeter of soil that we step on took 100 to 300, or even 1000 years to form, and yet, in a single rainfall, the water can wash away a layer of several centimeters of fertile soil that it is lost.

Thus, if we do not take care of it, over several seasons of rain, the holes left by the soil that was washed away and lost FOREVER become deeper and deeper.

If you look closely, that is why the water that was dragged away by the soil is not transparent, but the same color as the soil that is being carried away by its current, and thus, we lose not only soil but also clean water.



We can also lose the soil with a strong current, and although some of them are very poor, there are other very fertile soils that we need to preserve to produce our food, but also to sustain the vegetation on Earth.

- So can we lose soil because it is washed away by water or blown away by the wind?



- EXACTLY! And that loss of soil is known as EROSION.

When the soil is carried away by the water current, it is WATER erosion, but when the wind takes the soil away, then it is WIND erosion.

- So if we lose soil.....

-If we lose fertil soils, we lose the means to produce our food and conserve



the planet's natural vegetation too.

And we are also losing a natural resource that is indispensable for the existence of other resources, such as water, for example.

When we lose soils and the vegetation that lived in it, we also lose all the organisms that live in the fertile soils, and with it, the biodiversity of our planet decreases.



Therefore, our constant concern must be how to preserve them, and make better use of our fertile soils for the common good.

- Now, I understand how important it is to know the Soils of our Nation.

Hey, Perfilito, and how do you know so much, huh?



- Well, I have learned all this from my grandfather **Edaphologist**, and that is why I love to go to the countryside with him, and learn about the Soils of Mexico **because Mexico is My Nation** and when I grow up, I will be an **EDAPHOLOGIST** like my grandfather, **to take care of the Soils that produce our food!**

- It's good that there are Edaphologists, right? What a pity I don't have a grandfather from whom to learn how the Soils of My Nation are!!!!

- Don't worry, Alejandrina, I will teach you **EVERYTHING** I learn with my grandfather. And when we both grow up, we will **take care and defend the soils of our Nation** so that Mexico will always have enough food for its population, preserve its vegetation and have the clean water that is indispensable for us to live.

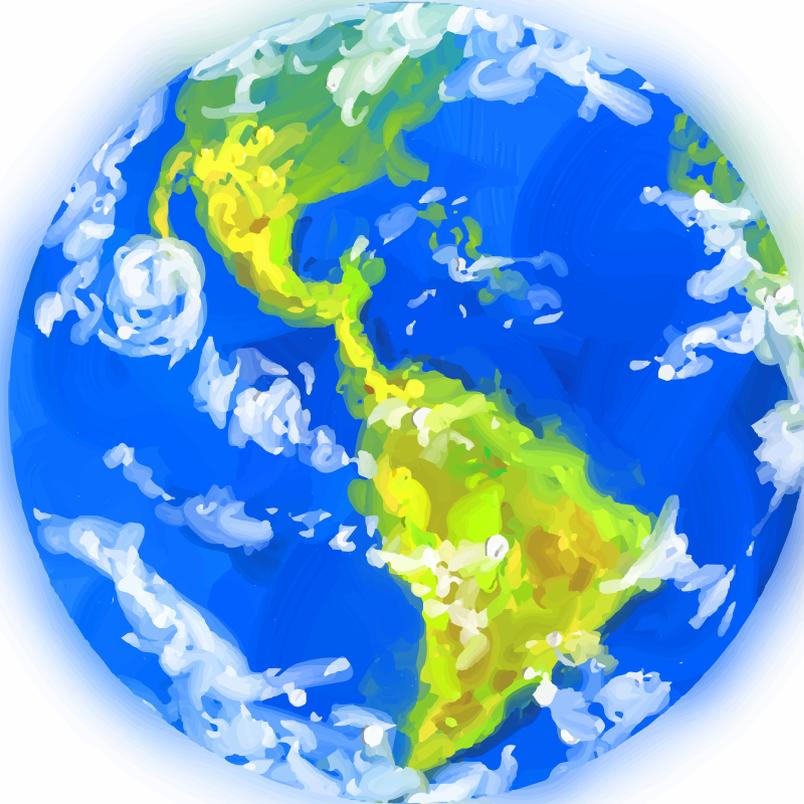


- Okay, but then..... Don't you think Perfilito, that all children in Latin America also need to know what their nation's soils are like, because if we are all part of the same region, then we must all take care of our soils to produce our food?



- Of course, we do, Alejandrina, because only in this way will there be less hunger, more honest work, and less poverty in Latin America.

Therefore, all Latin American **EDAPHOLOGISTS** or **Soil Scientists** share the great responsibility of teaching children HOW THE SOILS OF THEIR NATION ARE, to preserve them and think about a better future for the region.



But looking after the soils that produce our food is EVERYONE'S task and ALL OVER THE PLANET. That's why scientists that study the soils have THAT THE SAME GREAT RESPONSIBILITY in their hands, and they all work together with the Latin American Soil Science Society:

SLCS (its acronym in Spanish), and with the **International Union of Soil Sciences** (IUSS), striving to achieve it.

- Listen, Perfilito, but what about the water?..... What does the soil have to do with water? You have to explain it to me, because I have been told at school that without water we cannot live, so I want to know everything about it.

- Well, Alejandrina, that will be another time, because my grandfather is coming and I want to go with him to learn more about agricultural soils.



Goodbye, Alejandrina, it's getting late, and I don't want my grandfather to go to the countryside without me!

- Goodbye, Perfilito, don't forget to write down everything so you can show it to me!

- None of that, can't you see I'm carrying my field notebook with me? I'll write down everything I learn in it, and then I'll tell you about it.

- Take care not to get too much sun, don't get sick!

-Ofcourse,Alejandrina,Ialreadyhavewithmemycapof **EDAPHOLOGIST FROM MEXICO.**

The End



I need an **EDAPHOLOGIST** grandfather to tell me how to take care of my nation's soils, but most importantly, I also need many, many friends who want to take care of them and help me preserve Mexico's soils for the greater good of ALL! Don't YOU want to be one?

If you are a child like me, I invite you to participate in the Project **®Thus are the Soils of my Nation!** to learn how to preserve the natural wealth of Mexico. Look for the announcements at www.slcs.org.mx and help Perfilito and me to know and preserve the soils of Mexico.

Participate with us!



If you are an **EDAPHOLOGIST**, I invite you to join the “**National Soil Science’s Education and Teaching Network: RENAE ECS**” and participate with the Mexican Soil Science Society, in this educational project essential to sustainability.

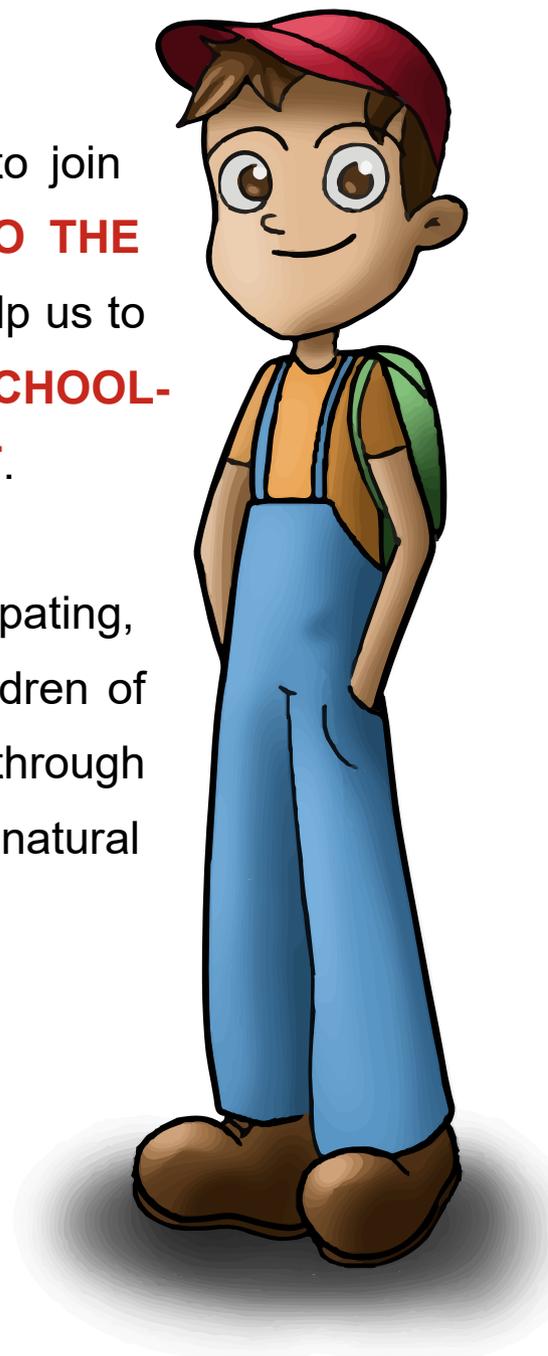
If you live in Latin America, sign up for the “**Latin American Soil Science’s Education and Teaching Network: RELAE ECS**,” and participate with the Latin American Soil Science Society to make our region not only an example of natural resource preservation but also to improve our food, health, and economy to achieve greater social welfare.

Look for the notifications at www.slcs.org.mx



If you live on another continent, I invite you to join the Educational Project **“THE IUSS GOES TO THE SCHOOL®”** through which we hope you will help us to **STOP SOIL DEGRADATION and EDUCATE SCHOOL-AGE CHILDREN AND YOUTH TO ACHIEVE IT.**

If you are a teacher and are interested in participating, please sign up; your students and we, the children of the world, need you to educate all who pass through your classroom in a culture of preservation of natural resources indispensable to life on Earth.



REFERENCES:

Gardi, C., Angelini, M., Barceló, S., Vargas, R. *et al.* 2014. Atlas de Suelos de América Latina y El Caribe. Comisión Europea -Oficina de Publicaciones de la Unión Europea, L-2995 Luxembourg, 176 pp.

Reyes-Sánchez L. B. 2006a. La enseñanza de la ciencia del suelo en el contexto del desarrollo sostenible. (Teaching Soil Science in the context of sustainable development). *TERRA Latinoamericana*. 24, 3, 431-439.

Reyes-Sánchez Laura Bertha, Irazoque Reyes Alejandra, *et al.* 2006b. The Mexican Bajío: Yesterday the grain growing country; today, degraded soils, polluted waters and human poverty. http://www.torba-soil-society.org/docs/Reyes_Sanchez_et_al_article.pdf

Reyes-Sánchez, L. B. 2012. Enseñanza de la Ciencia del Suelo: estrategia y garantía de futuro. (Teaching soil science: an strategy and warranty towards the future). *Spanish Journal of Soil Science*. 2 (1), 87-99,

Reyes Sánchez L. B. 2016a. La educación como política pública de concientización para la preservación del suelo como recurso natural limitante para la existencia de la vida, en el libro: “*Redescubriendo al suelo y su importancia ecológica*”. FES-Zaragoza UNAM y CONACYT.

Reyes Sánchez L. B. 2016b. Estudiantes de educación básica, media y superior en los Congresos de la Sociedad Latinoamericana de la Ciencia del Suelo, en el *Libro Blanco: Tratamiento de la entrada «suelo» en los libros de texto de enseñanza no universitaria en España*. © Sociedad Española de la Ciencia del Suelo.

Reyes Sánchez L. B. 2016c. La Red Latinoamericana de Educación y Enseñanza de la Ciencia del Suelo, en el *Libro Blanco: Tratamiento de la entrada «suelo» en los libros de texto de enseñanza no universitaria en España*. © Sociedad Española de la Ciencia del Suelo.



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