

The Soil's Secret Life



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NARI IS A SWEET AND A VERY CURIOUS GIRL. SHE'S FRIENDS WITH LISI, WHO IS VERY SHY AND SMART. NARI AND LISI ARE INSEPARABLE FRIENDS, AND THEY LIVE IN A BIG CITY. DURING THE SCHOOL HOLIDAYS THEY WENT TO A FARM OWNED BY NARI'S GRANDPARENTS. NARI'S GRANDMOTHER WAS CALLED MRS.CEMA, AND SHE WAS MISSING HER GRANDDAUGHTER A LOT. ALONG WITH THE GRANDMOTHER, THERE WAS ALSO ANOTHER GUEST IN THE HOUSE: A BOY NAMED RODRIGO. HE WAS MRS.CEMA'S NEIGHBOUR, AND HE'D ALWAYS BEEN A VERY KIND KID. SOON, THE THREE OF THEM WOULD BECOME FRIENDS, AND THEN SPENT THEIR DAYS PLAYING TOGETHER ON THE FARM.



ON A SATURDAY MORNING, MRS.CEMA ASKED THE KIDS TO BRING SOME VEGETABLES FROM THE GARDEN. IT WAS THEN WHEN NARI HARVESTED A CARROT AND SAW A CURIOUS ANIMAL RISING FROM THE SOIL. THE THREE KIDS WERE ASTONISHED WITH THE BOUNCY ANIMAL. MRS.CEMA WAS WORRIED ABOUT THE DELAY AND WENT AFTER THE KIDS. WHEN SHE ARRIVED AT THE GARDEN SHE UNDERSTOOD THE SITUATION.

— WHAT ARE YOU DOING? -
ASKED MRS.CEMA.

— WE ARE TAKING A LOOK
AT THIS SMALL ANIMAL THAT
Arose FROM THE EARTH,
GRANDMA. WHAT IS IT? I
HAVE NEVER SEEN THIS IN
THE CITY.



MRS.CEMA THEN EXPLAINED: — MY SWEETHEARTS, THIS IS AN EARTHWORM. THE EARTHWORMS EAT THE LEAVES THAT ARE ON THE SOIL AND THEY MAKE TUNNELS, HELPING PLANTS TO GROW. BECAUSE OF IT, THE EARTHWORMS ARE KNOWN AS THE ENGINEERS OF THE ECOSYSTEM.

GLOSSARY:

SOIL: NATURAL BODY, COMPOSED OF MINERALS, NUTRIENTS, WATER, LIVING BEINGS AND GASES.



THEY GOT THRILLED WITH THE DISCOVERY! NARI WAS AMAZED WITH HER GRANDMA'S ANSWER. LISI AND RODRIGO WERE THOUGHTFUL. RODRIGO STARTED ASKING QUESTIONS TO MRS.CEMA, AND SHE QUIETLY ANSWERED HIS CURIOSITIES.

MRS.CEMA ANSWERED: — RODRIGO, IN YOUR FATHER'S FARM THERE IS ONLY ONE CROP. WHEN THIS HAPPENS, THE EARTHWORMS ARE NOT ATTRACTED AND THEY DON'T EAT THE RESIDUALS OF THE PLANTS THAT FALL INTO THE GROUND.

IN MY GARDEN THERE ARE CARROTS, LETTUCE, TOMATOES AND STRAWBERRIES. THE EARTHWORMS BECOME ACTIVE AND THEN THEY EAT THE RESIDUALS FROM THE PLANTS THAT FALL TO THE GROUND.

THE SAME THING HAPPENS IN OUR LIVES: — WE USUALLY PREFER A RESTAURANT THAT HAS A LOT OF OPTIONS IN THE MENU, INSTEAD OF JUST ONE, ISN'T IT? BESIDES, THE EARTHWORMS' ACTIVITY PROVIDES NUTRIENTS FOR THE PLANTS, AND ALSO CREATES TUNNELS BENEATH THE GROUND, ENHANCING THE SOIL'S LIFE AND HEALTH. SO, IF YOU FIND EARTHWORMS IN THE GROUND, IT IS BECAUSE THE SOIL IS HEALTHY, FERTILE AND HAS A LOT OF LIFE ON IT.



NARI BECAME EVEN MORE AMAZED WITH HER GRANDMA, WHO KNEW A LOT ABOUT EARTHWORMS.

— "IS THE SOIL ALIVE?", LISI ASKED HERSELF IN HER THOUGHTS. SOON LISI TOOK COURAGE AND ASKED MRS.CEMA.

— IS THE SOIL ALIVE LIKE US?

MRS.CEMA BECAME EXCITED AND STARTED TO EXPLAIN: — THE SOIL IS ALIVE, LISI. THE SOIL IS THE HABITAT OF MANY LIVING BEINGS, OR, AS YOU CALL, SMALL ANIMALS. WE DON'T SEE THESE ORGANISMS BECAUSE THEY ARE BELOW OUR FEET. THE EARTHWORMS, ANTS AND TERMITES MAKE THEIR HOMES IN THE SOIL AND WE CAN SEE THEM WHEN WE MESS WITH THE GROUND. BUT ALSO THERE ARE A LOT OF ORGANISMS THAT ARE SO SMALL THAT WE CAN'T SEE. FOR INSTANCE, THERE ARE MILLIONS OF BACTERIA AND FUNGUS THAT ARE SO SMALL THAT THEY ARE NAMED MICROORGANISMS. IN THE SOIL, ALL THE LIVING ORGANISMS ARE INTERACTING AMONG THEM AND WITH THE PLANTS. ALL THESE ORGANISMS REPRESENT THE LIFE OF THE SOIL.

GLOSSARY:

SOIL AS HABITAT: MANY LIVING BEINGS SUCH AS EARTHWORMS, SPIDERS, ANTS AND TERMITES LIVE IN THE SOIL. THESE ORGANISMS USE THE SOIL AS SHELTER AND ALSO AS A FOOD SOURCE. THE LIVING BEINGS ARE ALWAYS INTERACTING WITH OTHER LIVING BEINGS, INCLUDING PLANTS.



THE KIDS WERE SO EXCITED THAT THEY KEPT ASKING MORE AND MORE QUESTIONS.

— BUT HOW DO YOU KNOW ALL THIS STUFF? - RODRIGO ASKED. BEFORE MRS.CEMA COULD ANSWER, NARI ASKS: — AND WHEN WE STEP ON THE GROUND, DO WE HURT THESE LIVING BEINGS? AND LISI, ALSO EXCITED, ASKS MRS.CEMA: — ARE ALL THE LIVING BEINGS GOOD FOR PLANTS?

MRS.CEMA WAS ASTONISHED WITH THESE KIDS' CURIOSITY. AFTER A WHILE SHE STARTED TO SPEAK: — CALM DOWN, MY DEARS, ONE QUESTION AT A TIME. I KNOW ALL THAT, RODRIGO, BECAUSE I AM AN AGRONOMIST. I HAVE WORKED WITH AGRICULTURE FOR YEARS AND I HAVE LEARNED ABOUT HOW IMPORTANT THE LIFE OF THE SOIL IS. I HELPED FARMERS TO IMPROVE THEIR FOOD PRODUCTION, AND THE BEST WAY TO DO IT IS TAKING CARE OF THE SOIL. AND ANSWERING YOUR QUESTION, LISI, MOST OF THE LIVING BEINGS IN THE SOIL ARE IMPORTANT TO AGRICULTURE. BUT NOT EVERY LIVING BEING IN THE SOIL IS GOOD FOR THE PLANTS. SOME ORGANISMS CAN ATTACK THE PLANTS. THAT'S WHY WE NEED TO KEEP THE SOIL HEALTHY.

FOR INSTANCE, THE ROOTS OF PLANTS ARE HOME FOR MANY FUNGI THAT HELP PLANTS IN EXCHANGE FOR FOOD. WE CALL THEM MYCORRHIZAL FUNGI. OH, I CAN'T FORGET ABOUT YOU, NARI. WE DON'T HURT THESE LIVING BEINGS WHEN WE STEP ON THE SOIL. BUT WHEN WE THROW AWAY GARBAGE IN THE GROUND, WHEN WE DESTROY FORESTS AND DISCARD CHEMICAL PRODUCTS IN THE GROUND WE CAN HARM THE LIFE OF THE SOIL.

GLOSSARY:

AGRONOMY: IS THE SCIENCE THAT STUDIES AGRICULTURE.

AGRONOMIST: IS THE PROFESSIONAL THAT HELPS FARMERS IN THE FOOD PRODUCTION. THE AGRONOMIST STUDIES THE INTERACTIONS AMONG PLANTS, SOIL AND CLIMATE.

MYCORRHIZAL FUNGI: ARE BENEFIC FUNGI THAT LIVE IN THE PLANTS' ROOTS. THESE FUNGI HELP IN THE NUTRITION AND PROTECTION OF THE PLANT. THE PLANTS PROVIDE SUGARS (FOOD) TO THE FUNGI IN EXCHANGE OF THE SERVICES PROVIDED BY THESE MICROORGANISMS.

THE THREE KIDS WERE IMPRESSED WITH ALL OF MRS CEMA KNOWLEDGE. AFTER LUNCH, RODRIGO WENT BACK HOME AND TOLD HIS PARENTS ALL HE HAD LEARNED ABOUT THE SOIL'S LIFE. HIS PARENTS NOTICED HIS EXCITEMENT AND HAD AN IDEA.

— WHAT DO YOU THINK OF VISITING YOUR AUNT MARIA IN THE BOTANIC GARDEN THIS WEEKEND? - SAID RODRIGO'S FATHER.

— YEAH, SHE'S A BIOLOGIST AND WORKS AS A TOURIST GUIDE. SHE CAN TEACH YOU MANY THINGS ABOUT THE SOIL'S LIFE. YOU CAN TAKE YOUR NEW FRIENDS. WHAT DO YOU THINK? - SAID RODRIGO'S MOTHER.

RODRIGO GOT REALLY HAPPY AND INVITED HIS FRIENDS RIGHT AWAY. THE TIME PASSED AND SOON CAME THE WEEKEND. THE THREE LITTLE FRIENDS WERE VERY EXCITED WITH THE VISIT. WHEN THEY ARRIVED AT THE BOTANIC GARDEN THEY MET MARIA, THE GUIDE. SHE WAS WITH ANOTHER CHILD, VERY SWEET AND INTELLIGENT CALLED

INSERT YOUR NAME

AFTER THEY ALL GOT TO KNOW EACH OTHER, MARIA GUIDED EVERYONE THROUGH A WALK UNTIL THE FOREST.

MARIA AND THE KIDS WERE CLOSE TO A LARGE TREE THAT WAS CLOSE TO A BEAUTIFUL RIVER. THE KIDS SOON HEARD A BIRD SINGING AND STARTED TO LOOK UP, SEARCHING FOR THE SOURCE OF THE HUMMING. THEY WERE ALL IN SILENCE, LISTENING TO NATURE. BUT SOON MARIA STARTED TALKING.



— MY DEARS, I KNOW LIFE IN THE WOODS IS BEAUTIFUL AND EVERY TIME WE THINK OF NATURE WE IMAGINE A BIRD, A MONKEY OR AN OUNCE. BUT I WOULD LIKE TO INTRODUCE YOU TO A SECRET WORLD. I CALL IT THE SECRET OF SOIL'S LIFE. DO YOU KNOW WHY? - ASKED MARIA, BUT NO ONE KNEW HOW TO ANSWER.

— THEN LET ME EXPLAIN - SHE CONTINUED - I WANT YOU TO LOOK IN ANOTHER DIRECTION. I WANT YOU TO LOOK AT THE GROUND. WHAT ARE YOU SEEING?

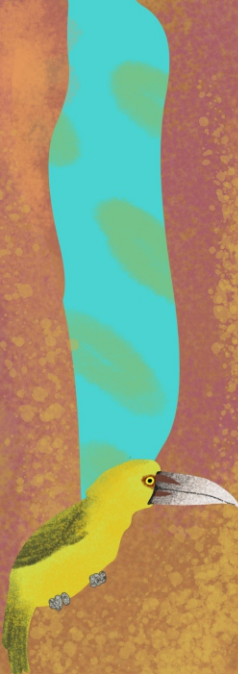
— WELL, THE SOIL - SAID _____ - AND
(insert your name here)

ALSO A LOT OF ROTTEN WOOD AND LEAVES ON THE GROUND.

— EXACTLY! UNDER OUR FEET IS THE SOIL. BUT DO YOU KNOW WHAT THE SOIL IS? - ASKED MARIA.

— OH, I KNOW - SAID RODRIGO, SMARTLY - THE SOIL IS SOMETHING BENEATH OUR FEET THAT HAS LIFE. I WAS MRS. CEMA WHO TOLD US THAT.





— PERFECT, GOOD ANSWER - SAID MARIA - THE SOIL IS ALIVE. IN FACT, THE SOIL IS MADE OF LIVING BEINGS AND NON-LIVING BEINGS. IN THE SOIL WE HAVE MINERALS, WHICH ARE SOLID AND CRYSTALLINE. ON THE SURFACE WE HAVE ROTTEN WOOD AND DEAD LEAVES, THAT WE CALL LITTER, WHICH SERVES AS SHELTER AND FOOD SOURCE FOR THE LIVING BEINGS. ALSO, IN THE SOIL THERE ARE THE NUTRIENTS THAT PLANTS NEED. THERE IS WATER TOO AND MANY GASES THAT ARE RELEASED WITH THE BREATHING OF THE SOIL. YES, THAT'S IT, KIDS: THE SOIL BREATHES TOO! THE ROOTS OF THE PLANTS AND THE LIVING ORGANISMS USE OXYGEN AND RELEASE CARBON MONOXIDE TO THE ATMOSPHERE, JUST LIKE WE DO WITH OUR LUNGS. ALL OF THESE, THE MINERALS, WATER, NUTRIENTS AND GASES ARE THE NONLIVING PART OF THE SOIL. ON THE LIVING PART OF THE SOIL WE HAVE A LOT OF LIVING BEINGS. THESE ORGANISMS COME IN DIFFERENT SIZES AND SHAPES. ALL OF THESE ORGANISMS THAT LIVE IN THE SOIL, WELL, I CALL THEM "THE SOIL'S SECRET LIFE", BECAUSE WE CAN'T SEE THEM THE SAME WAY THAT WE SEE BIRDS, JAGUARS AND ALL THE ANIMALS THAT ARE ABOVE THE GROUND.

GLOSSARY:

LITTER: THE LITTER IS THE SUPERFICIAL LAYER OF THE SOIL, MADE OF VEGETABLE RESIDUE AND ANIMALS. THE LITTER SERVES AS SHELTER AND FOOD SOURCE FOR THE LIVING BEINGS THAT LIVE IN THE SOIL.



THE KIDS WERE THOUGHTFUL WITH WHAT MARIA HAD JUST SAID. THEN _____
(insert your name here)
ASKED:

— MARIA, WHICH LIVING ORGANISMS LIVE IN THE SOILS OF THE FORESTS? DO ALL SOILS HAVE THE SAME LIVING ORGANISMS?

— GREAT QUESTIONS! - SAID MARIA - IN THE FOREST'S SOIL THERE IS A LARGE LIFE DIVERSITY. THERE ARE VERTEBRATE ANIMALS, LIKE OURSELVES, THAT MAKE SHELTERS IN THE SOIL, SUCH AS THE ARMADILLOS, RATS AND THE MOLES. BUT THE INVERTEBRATE ORGANISMS ARE THE ONES THAT REPRESENT MOST OF THE ORGANISMS THAT LIVE IN THE SOIL AND THAT ARE VISIBLE TO THE NAKED EYE. IN THE INVERTEBRATE GROUP THAT LIVE IN THE SOIL THERE ARE THE EARTHWORMS, THE ANTS, THE TERMITES, THE SPIDERS, THE CENTIPEDES, THE SNAILS, THE BEETLES, AND MANY MORE. IN THE SOIL THERE ARE ALSO THE MICROORGANISMS. BESIDES BEING THE SMALLEST LIVING ORGANISMS, THE MICROORGANISMS ARE THE MOST NUMEROUS AND DIVERSE OF ALL. DID YOU KNOW THAT IN EVERY GRAM OF SOIL THERE CAN BE MORE THAN 1 BILLION OF THESE LITTLE ANIMALS? THIS LIFE DIVERSITY IS WHAT WE CALL BIODIVERSITY. BUT NOT ALL PLACES HAVE THE SAME SOIL BIODIVERSITY. THIS HAPPENS BECAUSE THERE ARE MANY DIFFERENT SOILS IN THE WORLD, WITH DIFFERENT CLIMATE AND VEGETATION. IN THIS WAY, THERE ARE SOILS THAT ARE SANDY, UMID, DEEP, FROZEN, AND MANY OTHERS. AND TO EACH KIND OF SOIL THERE ARE DIFFERENT GROUPS OF ORGANISMS THAT ARE ADAPTED TO THE SPECIFIC CONDITIONS OF THE ENVIRONMENT. AND THE MOST IMPORTANT, EACH ORGANISM IN THE SOIL HAS A DIFFERENT FUNCTION AND DOES SERVICE FOR THE ECOSYSTEM.

GLOSSARY:

VERTEBRATE ORGANISMS IN THE SOIL: THESE ARE THE ORGANISMS THAT HAVE AN INTERNAL BONE SKELETON (THE ARMADILLOS, RATS AND MOLES).

INVERTEBRATE ORGANISMS IN THE SOIL: THESE ARE THE ORGANISMS THAT DO NOT HAVE AN INTERNAL BONE SKELETON (INSECTS, SUCH AS ANTS AND TERMITES).

BIODIVERSITY: IT IS THE DIVERSITY OF LIVING ORGANISMS. THE BIODIVERSITY IS COMPOSED OF ALL LIVING ORGANISMS.

WHILE THEY WERE WALKING IN THE WOODS, THEY WERE THINKING ABOUT MANY LIVING BEINGS WALKING BELOW THE GROUND THEY WERE STEPPING ON. BUT SOON, NARI STARTED TO SPEAK:
— MARIA, WHAT IS AN ECOSYSTEM? AND WHAT SERVICES DO THE ORGANISMS DO?

THEN, MARIA STARTED TO EXPLAIN.

— OH YES, LET ME EXPLAIN TO YOU. ECOSYSTEM IS A PLACE WHERE MANY GROUPS OF LIVING BEINGS INTERACT WITH THE ENVIRONMENT. THIS MEANS THAT THE LIVING BEINGS INTERACT AMONG THEM AND ARE AFFECTED BY THE CHANGES IN THE TEMPERATURE AND MOISTURE OF THE PLACE. THE FOREST IS A TERRESTRIAL ECOSYSTEM. THE OCEAN, FOR INSTANCE, IS AN AQUATIC ECOSYSTEM. THE SOIL CAN BE CONSIDERED AS AN ECOSYSTEM, BECAUSE IT SHELTERS A BIG BIODIVERSITY. THIS BIODIVERSITY OF THE SOIL IS ALSO AFFECTED BY THE TEMPERATURE, MOISTURE AND SUBSTANCES IN THE ENVIRONMENT. AND EACH ORGANISM PROVIDES SERVICES TO THE SOIL. THIS MEANS THAT ALL THE ORGANISMS HAVE DIFFERENT AND NECESSARY ROLES. FOR INSTANCE, MANY ANTS ARE RESPONSIBLE FOR DIGGING TUNNELS AND TAKING PLANT REMNANTS INSIDE THE SOIL. THESE TUNNELS THAT THE ANTS MADE HELP WATER AND ATMOSPHERIC AIR TO ENTER THE SOIL EASILY.

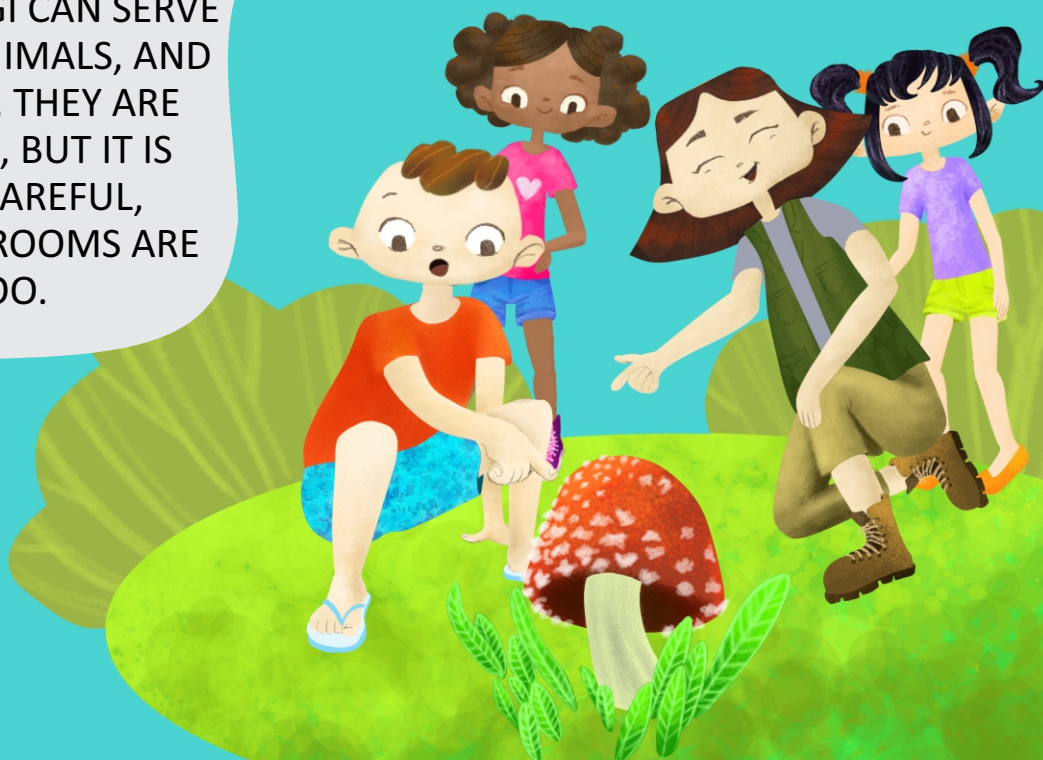
THE VEGETABLE REMNANTS THAT ANTS CARRY INSIDE THE SOIL CAN BE A FOOD SOURCE FOR OTHER LIVING BEINGS, SUCH AS FUNGI AND BACTERIA, THAT WILL HELP TO PRODUCE THE SOIL'S ORGANIC MATTER. THIS ORGANIC MATTER THAT STAYS IN THE SOIL IS VERY IMPORTANT, BECAUSE IT IMPROVES THE QUALITY OF THE SOIL, IT SERVES AS A FOOD SOURCE TO MANY MICROORGANISMS, AND IS ALSO A FOOD SOURCE FOR PLANTS. THESE ROLES ARE WHAT WE CALL ECOSYSTEM SERVICES.



AFTER A FEW MINUTES OBSERVING THE LITTLE ANDS IN THE SOIL OF THE FOREST, EVERYONE KEPT FOLLOWING AND LOOKING FOR SOMETHING DIFFERENT. SOON RODRIGO WATCHED A BEAUTIFUL MUSHROOM IN THE GROUND OF THE FOREST AND CALLED EVERYONE TO SEE IT.

— THIS IS A MUSHROOM, AM I RIGHT, MARIA? - ASKED RODRIGO.

— EXACTLY. UNTIL A FEW YEARS AGO THE SCIENTISTS THOUGHT THAT THE MUSHROOMS WERE PLANTS. BUT TODAY WE KNOW THAT THE MUSHROOMS ARE, ACTUALLY, FUNGI. WHAT YOU ARE SEEING ABOUT THE SURFACE OF THE SOIL IS JUST A PART OF THE FUNGUS. UNDERNEATH THE SOIL THERE ARE THE HYPHAE OF THE FUNGUS, THAT ARE VERY SIMILAR TO THE ROOTS OF SMALL PLANTS, BUT ARE TYPICAL STRUCTURES OF THE FUNGI. THE FUNGUS ONLY PRODUCES THE MUSHROOM WHEN THEY ARE REPRODUCING. THE REST OF THE TIME IT STAYS HIDDEN IN THE SOIL. SOME FUNGI FEED ON THE REMAINS OF VEGETABLES THAT ARE ON THE SURFACE OF THE SOIL AND THEN RELEASE NUTRIENTS AGAIN TO THE SOIL. THESE FUNGI ARE CALLED SAPROPHYTIC. AND YOU KNOW WHAT IS THE MOST INTERESTING THING? MANY OF THESE FUNGI ARE CONNECTED WITH THE ROOTS OF THE PLANTS AND HELP THE TREES COMMUNICATE WITH ONE ANOTHER. IN A FOREST THE TREES COMMUNICATE AND HELP THEIR NEIGHBORS THROUGH THE ROOTS THAT ARE UNDER OUR FEET. MANY FUNGI PLAY THE ROLE OF MESSENGERS, CONNECTING AND SENDING MESSAGES FROM ONE TREE TO ANOTHER. IF A TREE IS SICK, IT CAN SEND A MESSAGE THROUGH THE FUNGI THAT CONNECT ITS ROOTS TO THE ROOTS OF ANOTHER TREE AND GET SOME HELP FROM THE NEARBY TREES. BESIDES HELPING THE TREES, SOME MUSHROOMS THAT ARE PRODUCED BY FUNGI CAN SERVE AS FOOD FOR OTHER ANIMALS, AND FOR US HUMANS TOO. THEY ARE VERY HEALTHY FOODS, BUT IT IS IMPORTANT TO BE CAREFUL, BECAUSE MANY MUSHROOMS ARE POISONOUS TOO.



WHILE KIDS WERE CHEERFUL WITH MARIA'S SPEECH, LISI SPOKE:
— WOW, I DIDN'T KNOW ABOUT ALL THIS. SO, IN THE SOIL THERE IS
MORE LIFE THAN WE CAN SEE, AM I RIGHT?

MARIA SMILED AND ANSWERED: — THAT'S IT, LISI. THE SOIL SHELTERS
A BIG DIVERSITY OF LIVING BEINGS. BUT THIS BIODIVERSITY IS STILL
HIDDEN, BECAUSE MOST OF THE ORGANISMS THAT LIVE IN THE SOIL
WE DON'T KNOW YET AND WE DON'T KNOW WHAT THEY ARE
CAPABLE OF. FOR INSTANCE, IN THE SOIL THERE ARE MANY
MICROORGANISMS THAT PRODUCE SUBSTANCES THAT KILL OTHER
BACTERIA. THE SCIENTISTS SEEK FOR THAT, AND MANY TIMES THEY
STUDY THESE MICROORGANISMS TO MAKE NEW MEDICINE, SUCH AS
ANTIBIOTICS. MANY MICROORGANISMS HELP IN THE
DECOMPOSITION OF THE ORGANIC MATERIAL IN THE SOIL, AND THEY
RELEASE NUTRIENTS SO THE PLANTS CAN GROW AND BEAR FRUITS.
OTHER MICROORGANISMS PRODUCE SUBSTANCES THAT STIMULATE
THE PLANTS' GROWTH. THE QUALITY OF THE CROPS OF PLANTS LIKE
CORN, RICE, SOY, COTTON, STRAWBERRIES, ORANGES AND MANY
OTHERS IS VERY IMPROVED WHEN THERE ARE BENEFICIAL
MICROORGANISMS IN THEIR ROOTS. BESIDES THAT, IN THE SOIL
THERE MIGHT BE UNKNOWN FUNGI AND BACTERIA THAT PRODUCE
SUBSTANCES THAT CAN HELP AGAINST CANCER AND OTHER DISEASES.
BUT WE TAKE THE RISK OF LOSING ALL OF THIS AND DON'T FIND OUT
THE MYSTERIES AND THE IMPORTANCE THAT THE SOIL'S LIFE HAS.

NARI, FULL OF CURIOSITY, ASKED:

— BUT WHY IS THE SOIL'S LIFE IN DANGER?

RODRIGO WAS ASTONISHED, AND ASKED TOO:

— CAN'T WE DO ANYTHING TO PRESERVE THE SOIL'S LIFE?

MARIA NOTICED THE KIDS' CONCERN, AND ANSWERED:

— THE SOIL'S LIFE IS IN DANGER BECAUSE OUR HABITS ARE DESTROYING BIODIVERSITY. WE ARE DEFORESTING AND BURNING FIELDS AND FORESTS. WE ARE BUILDING HOUSES IN INAPPROPRIATE PLACES. WE ARE THROWING AND ACCUMULATING TRASH IN THE SOIL. WE ARE USING TOO MANY PESTICIDES THAT ARE DANGEROUS TO THE SOIL'S LIFE. ALL OF THIS HARMS THE SOIL'S LIFE AND WE CAN LOSE THIS BIODIVERSITY. BUT WE CAN DO MANY THINGS TO AVOID IT. OUR DAILY ACTIONS MUST BE MORE SUSTAINABLE. WE CAN SEPARATE AND RECYCLE OUR GARBAGE. WE CAN BUY FOOD FROM FARMERS THAT PRESERVE NATURE. THE MOST IMPORTANT THING IS TO SHOW OUR PARENTS, FRIENDS AND NEIGHBORS THE IMPORTANCE OF THE SOIL'S LIFE. MANY PEOPLE DON'T KNOW ALL OF THESE THINGS YOU KNOW NOW. BUT IF YOU TELL THE WORLD THAT, PEOPLE WILL SURELY CARE ABOUT THE SOIL'S LIFE TOO.

THE FRIENDS NARI, LISI, RODRIGO AND _____

(insert your name here)

GOT SO EXCITED WITH THE TOUR THAT THEY NEVER FORGOT WHAT THEY LEARNED. FROM THAT DAY ON, THE FOUR FRIENDS BECAME INSEPARABLE AND TOLD ALL THEIR FRIENDS AND FAMILY ABOUT THE SOIL'S SECRET LIFE.

PRESENTATION

HELLO, MY FRIENDS!

BE WELCOME TO THIS CHARMING STORY. WE ARE FIVE BIG KIDS THAT LIVE IN BRAZIL. NARIANE IS 24 YEARS OLD, RODRIGO IS 25 AND ARTUR IS 26 YEARS OLD, ALL AGRONOMISTS AND ARE DOING MASTERS' DEGREES IN SOIL SCIENCE. LISIANE IS 24, IS AN AGRONOMIST AND CURRENTLY A DOCTORAL STUDENT IN SOIL SCIENCE. NAYA IS 21, SHE'S AN ART STUDENT AND SHE GAVE LIFE TO OUR STORY DRAWING IT.

WE LOVE THE SOIL AND THE LIFE THAT EXISTS IN IT. THAT'S WHY WE ARE WRITING THIS BOOK, SO YOU CAN START TO SHARE THIS LOVE FOR THE SOIL WITH US. IN THIS BOOK, WE ARE CHARACTERS AND WE WANT YOU TO TAKE PART IN THIS STORY. ALONG THE BOOK THERE ARE BLANK SPACES FOR WRITING AND THERE YOU SHOULD WRITE YOUR NAME, HAVE FUN!

**LET'S GO IN THIS STORY
TOGETHER AND DISCOVER
THE SOIL'S
SECRET LIFE?**

World Soil Day

Keep soil alive,
protect soil biodiversity

