



THE STORY OF A FARMER

**BIOSAFETY OF GENETICALLY
MODIFIED CROPS IN SRI LANKA**



This material is produced through the National Biosafety Project (Implementation of the National Biosafety Framework in accordance with the Cartagena Protocol on Biosafety) implemented by the Ministry assigned the subject of environment with technical support from the Food and Agriculture Organization of the United Nations (FAO) and funding from the Global Environment Facility (GEF). The National Science Foundation, Sri Lanka, which is an implementing partner of the National Biosafety Project developed this material.





SUDU IS THE ELDEST DAUGHTER OF FARMER KUMARA. SUDU IS 17 YEARS OLD AND IS IN GRADE 12 AT THE CLOSE BY CENTRAL COLLEGE.

SHE WILL BE SITTING FOR THE GCE A/L EXAM NEXT YEAR IN THE SCIENCE STREAM.



THATHTHA! I'M BACK FROM SCHOOL. HOW WAS YOUR DAY?



OH SUDU, IT WAS A HECTIC DAY, BUT NOT SO PRODUCTIVE.

**WHY? YOU LOOK SO SAD TOO?
PLEASE TELL ME WHAT IS BOTHERING
YOU. IS THERE ANYTHING I CAN DO?**

**FOR MONTHS WE HAVE NOT
RECEIVED A GOOD INCOME
FROM OUR CROPS.**

**LOOK AT OUR FIELD! ONE SIDE IS COMPLETELY
FLOODED DUE TO HEAVY RAIN, AND INSECTS
AND PESTS HAVE DESTROYED MOST OF OUR
VEGETABLES.**

**I DON'T KNOW HOW WE ARE GOING TO SURVIVE
WITH ALL THESE ISSUES.**





WHAT A COINCIDENCE. PROF. BIOSAFETY, AN EXPERT IN AGRICULTURE WILL BE VISITING OUR SCHOOL TOMORROW.

OUR BIOLOGY TEACHER TOLD US THAT SHE GIVES ADVICE TO SOLVE FARMERS' PROBLEMS.



LET US GO AND MEET HER TOMORROW. NOW PLEASE HAVE YOUR LUNCH WITHOUT WORRYING.

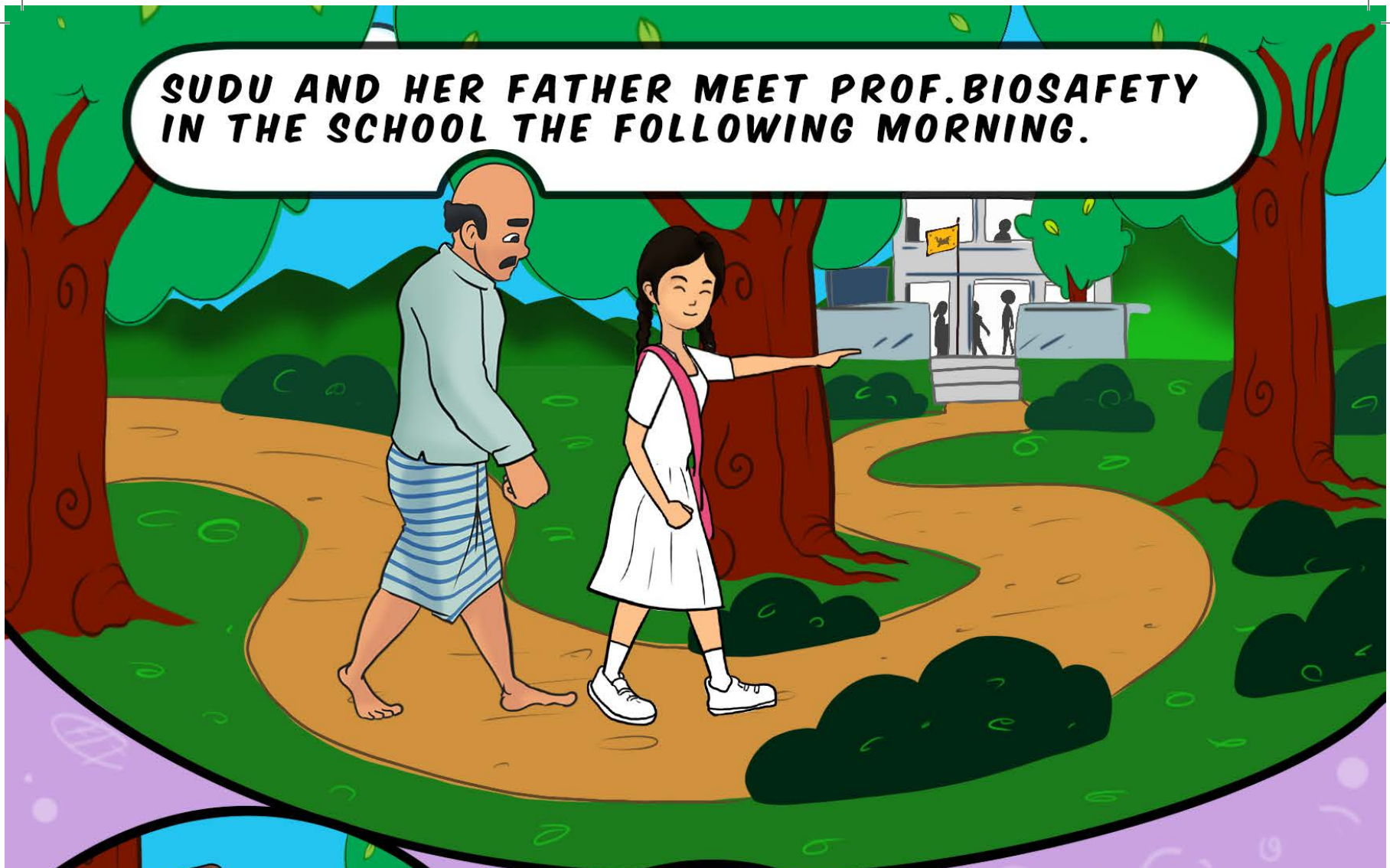


THAT'S GREAT SUDU, LET US MEET HER TOMORROW. HOPE WE CAN GET SOME ADVICE.

PROF. BIOSAFETY IS AN EXPERT IN BIOTECHNOLOGY AND BIOSAFETY, CURRENTLY ATTACHED TO A NATIONAL UNIVERSITY.

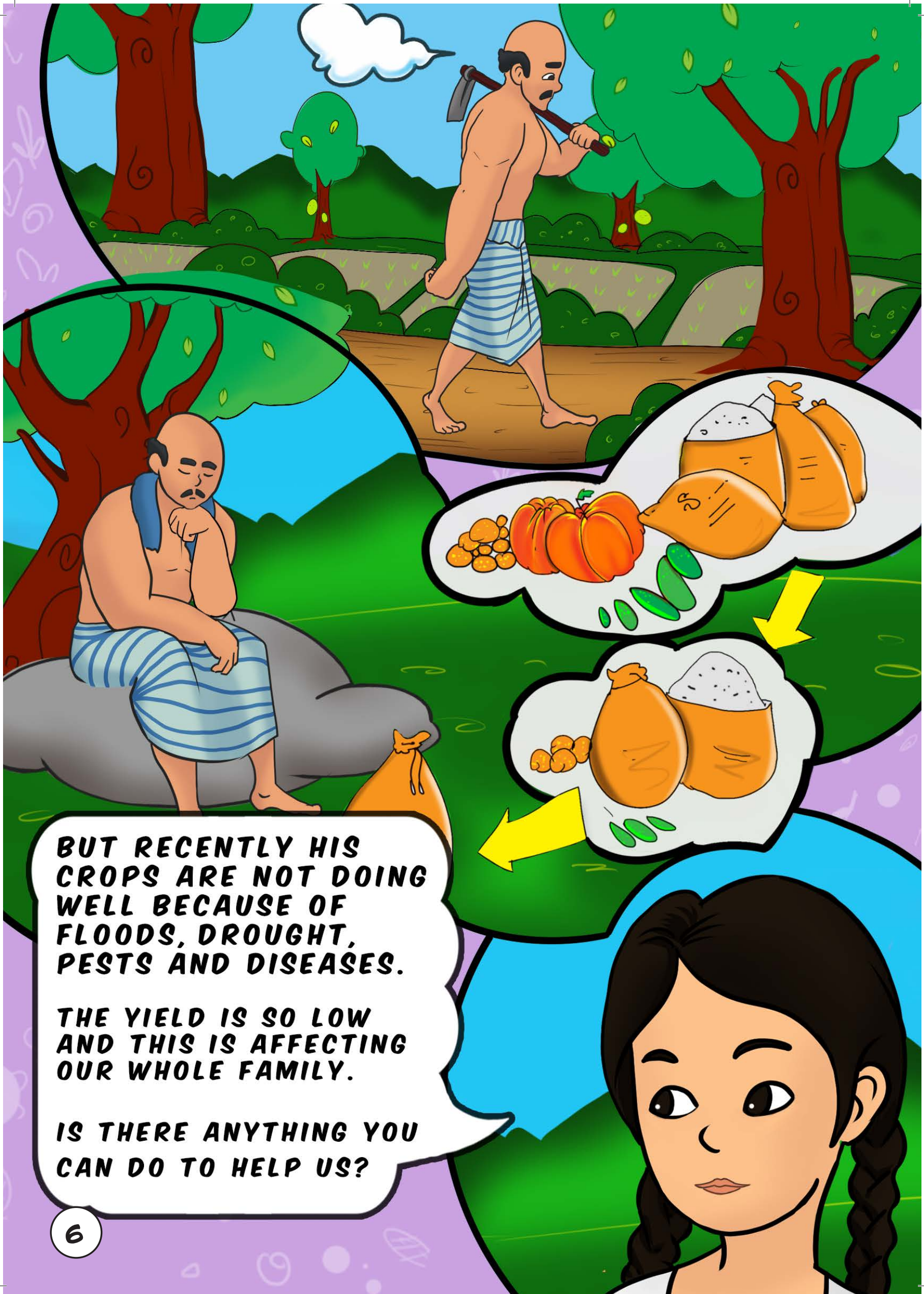


SUDU AND HER FATHER MEET PROF. BIOSAFETY IN THE SCHOOL THE FOLLOWING MORNING.



GOOD MORNING PROF. BIOSAFETY. THIS IS MY FATHER, AND HE IS A FARMER.





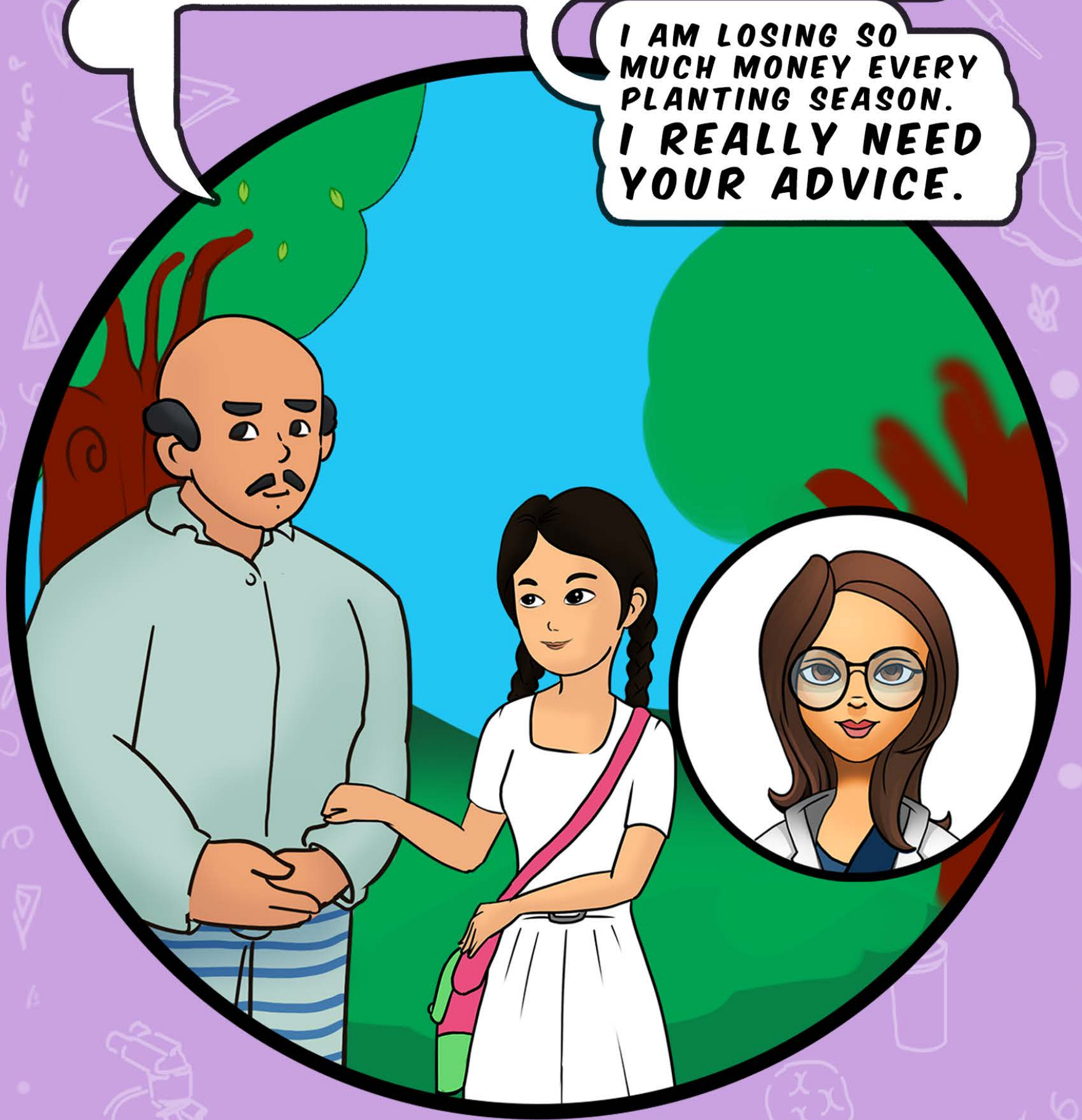
BUT RECENTLY HIS CROPS ARE NOT DOING WELL BECAUSE OF FLOODS, DROUGHT, PESTS AND DISEASES.

THE YIELD IS SO LOW AND THIS IS AFFECTING OUR WHOLE FAMILY.

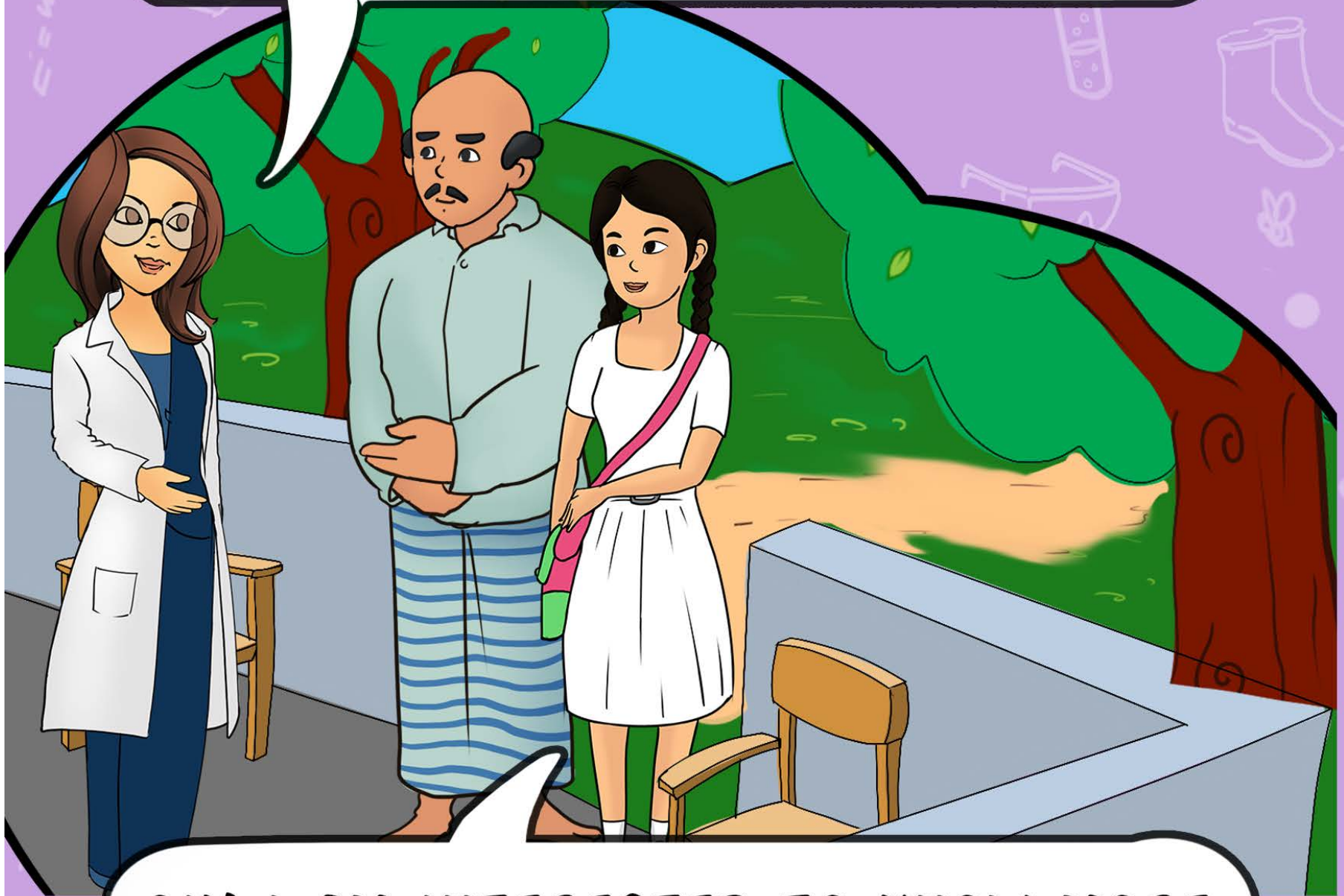
IS THERE ANYTHING YOU CAN DO TO HELP US?

YES PROF. I HAVE TRIED MANY METHODS TO REDUCE PESTS AND DISEASES. I USED SMOKE AND INSECTICIDES. BUT NOTHING HELPED.

I AM LOSING SO MUCH MONEY EVERY PLANTING SEASON. I REALLY NEED YOUR ADVICE.



**PLEASE DON'T PANIC. SIT DOWN.
THERE ARE NO IMMEDIATE SOLUTIONS BUT THERE
ARE TECHNOLOGIES THAT MAY HELP IN THE FUTURE.**



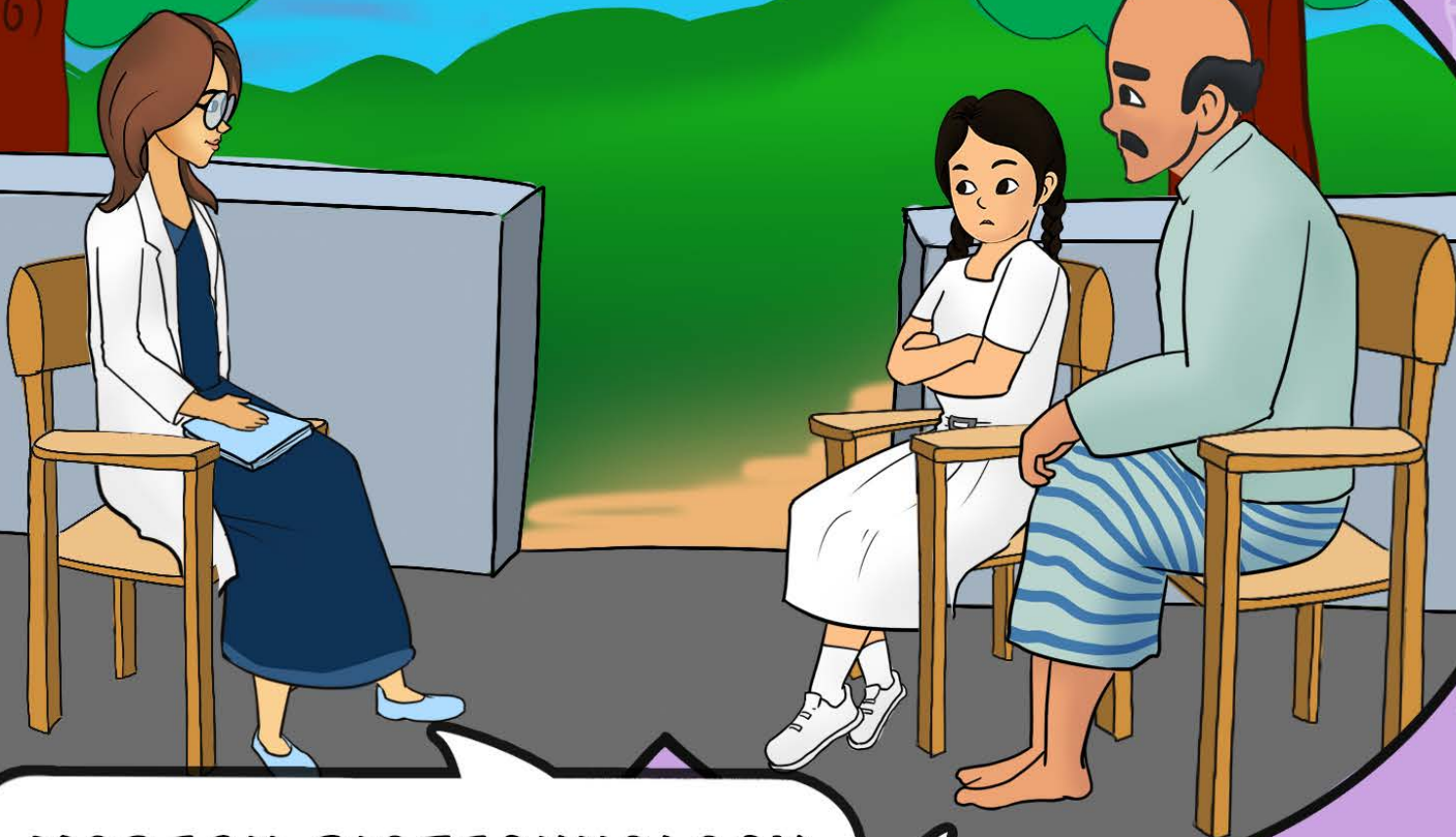
OH! I AM INTERESTED TO KNOW MORE.

GLOBALLY, FARMERS ARE FACING SIMILAR ISSUES. MODERN BIOTECHNOLOGY MAY BE ABLE TO SOLVE SOME OF THESE PROBLEMS.

WAIT A SECOND.

I HAVE LEARNT ABOUT BIOTECHNOLOGY IN MY BIOLOGY CLASS. I KNOW IT HELPS US TO PRODUCE FOOD, MEDICINE AND EVEN DEVELOP TESTS TO DIAGNOSE DISEASES.

BUT WHAT IS MODERN BIOTECHNOLOGY?

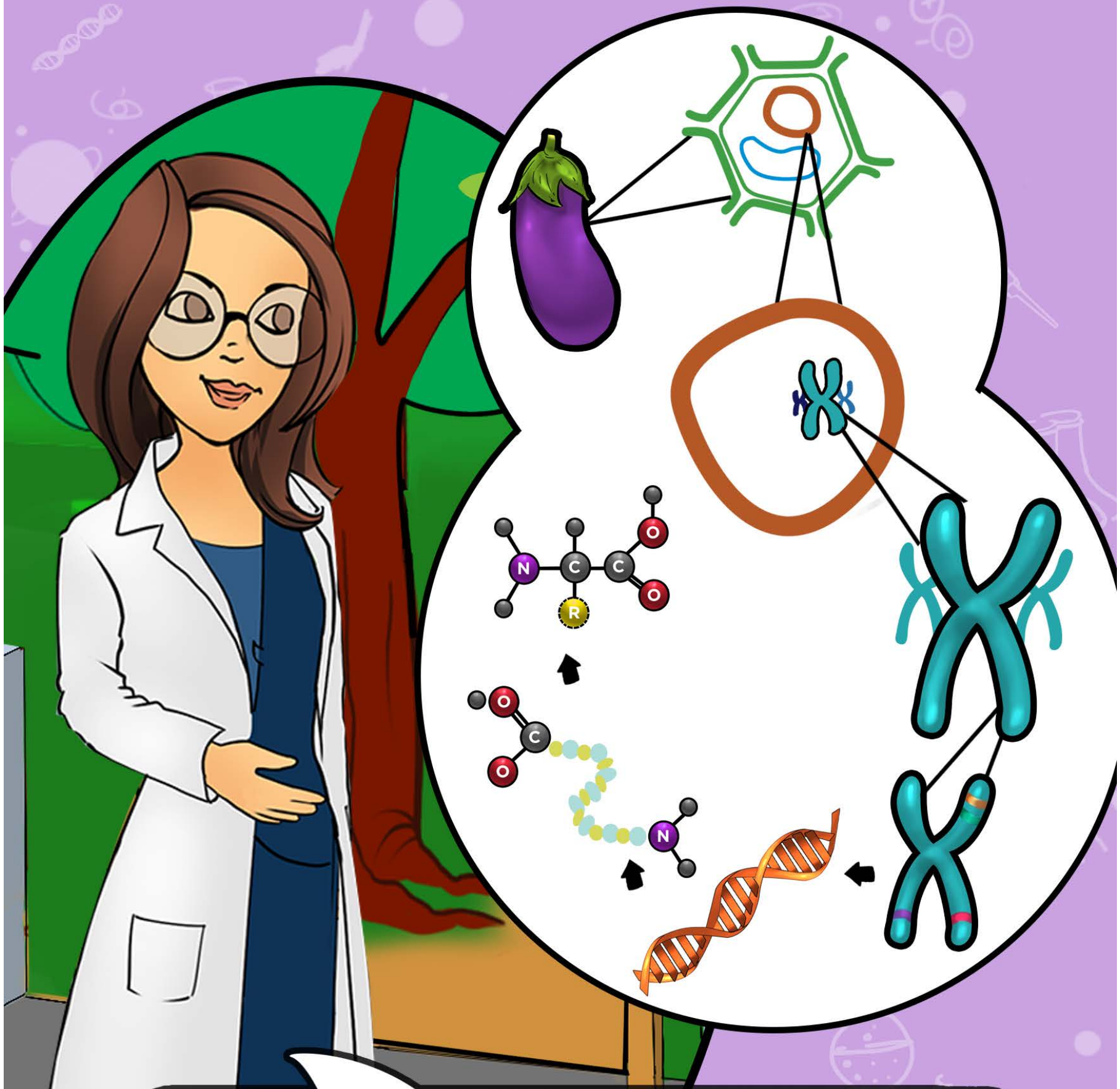


MODERN BIOTECHNOLOGY IS A TECHNOLOGY WHICH INVOLVES GENETIC MODIFICATION WHERE GENES ARE MODIFIED TO IMPROVE THE TRAITS OF CROPS, ANIMALS OR EVEN BACTERIA.

I AM CONFUSED, WHAT ARE GENES?

WHY DO WE HAVE TO CHANGE THEM?

HOW IS THIS DONE?



LET ME EXPLAIN. GENES ARE RESPONSIBLE FOR ALL OUR CHARACTERS SUCH AS HAIR TYPE, SKIN COLOUR AND HEIGHT, AND IT IS THROUGH THESE GENES THAT THE TRAITS ARE TRANSFERRED FROM ONE GENERATION TO ANOTHER.

**NOW I UNDERSTAND,
BUT HOW CAN THIS BE HELPFUL TO SOLVE OUR
PROBLEMS?**



**JUST LIKE US, CROPS HAVE GENES TOO. THEY
CONTROL THE TRAITS OF THE CROPS. YOUR
PLANTS ARE DYING NOW BECAUSE OF DROUGHT.
BUT HAVE YOU OBSERVED THAT SOME PLANTS
CAN BE GROWN IN DRY LAND WITH VERY
LITTLE WATER?**



YES. CACTUS CAN GROW IN THE DESERT WITHOUT WATER, BUT RICE AND VEGETABLES CANNOT.

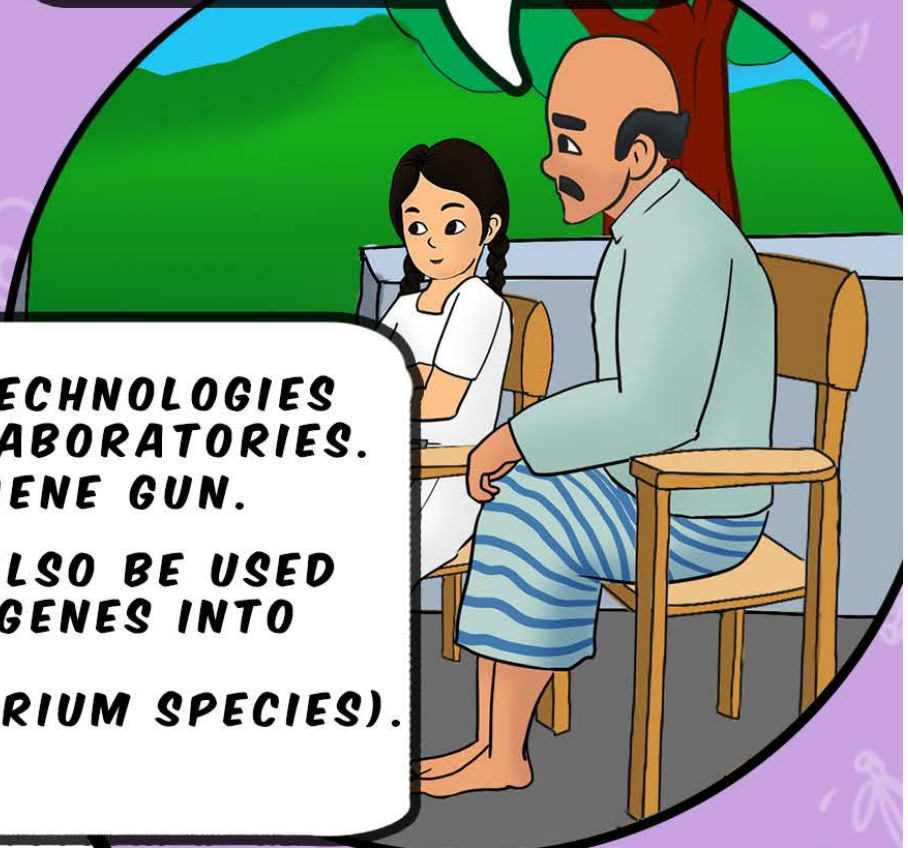


YOU ARE RIGHT. CACTUS HAS GENES THAT HELP THEM TOLERATE DROUGHT. WITH MODERN BIOTECHNOLOGY WE CAN INSERT DROUGHT RESISTANT GENES INTO FOOD CROPS TO MAKE THEM ALSO TOLERATE DROUGHT. WE CAN ALSO INSERT GENES INTO VEGETABLES OR RICE VARIETIES SO THAT THEY CAN WITHSTAND HEAVY RAIN OR EVEN RESIST VARIOUS PESTS AND DISEASES.


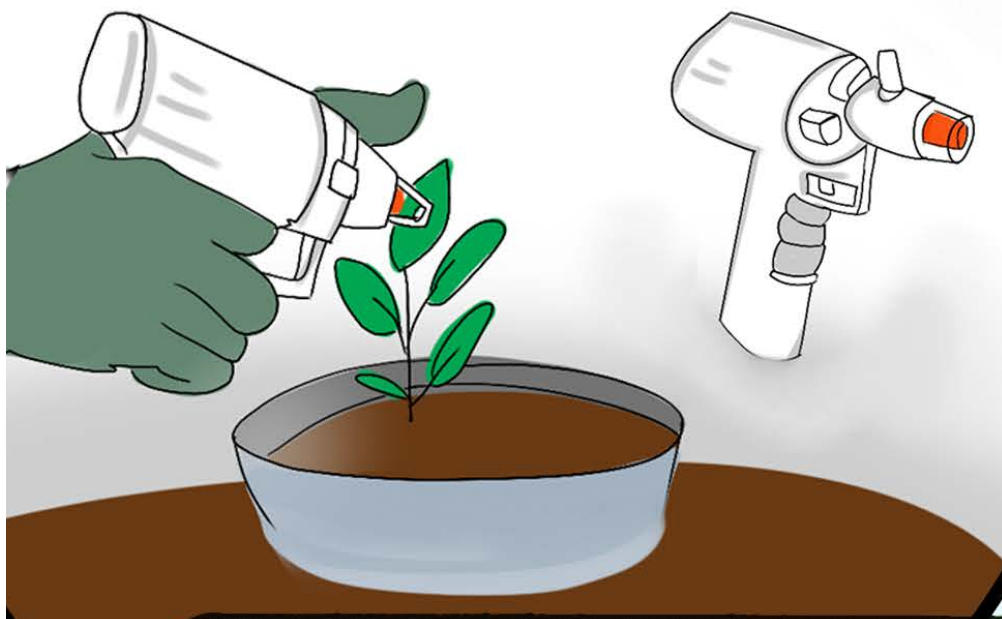




OH REALLY, BUT HOW DO WE DO THIS?



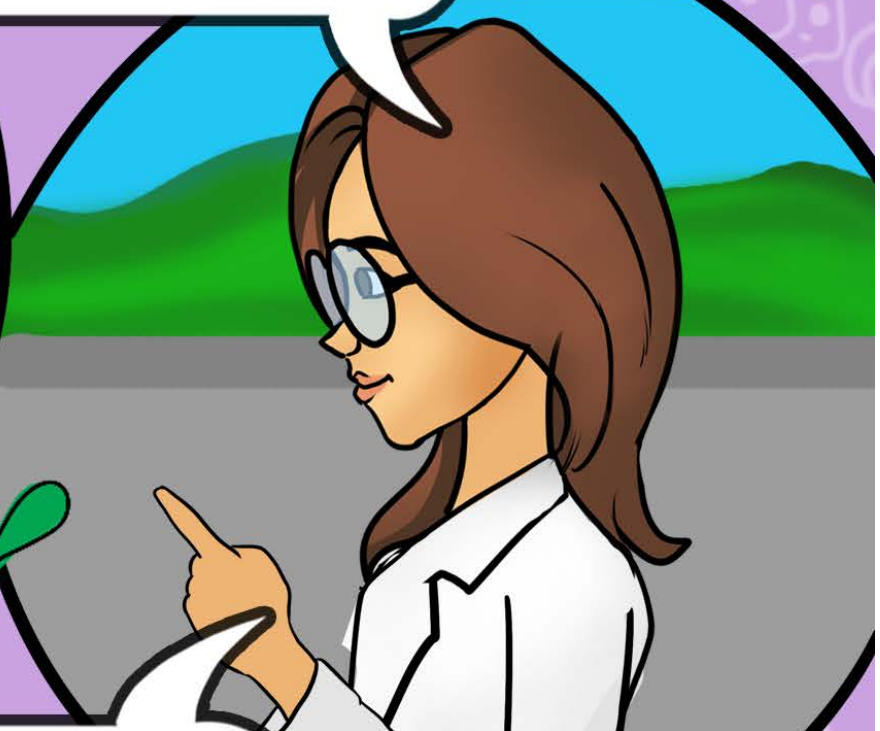
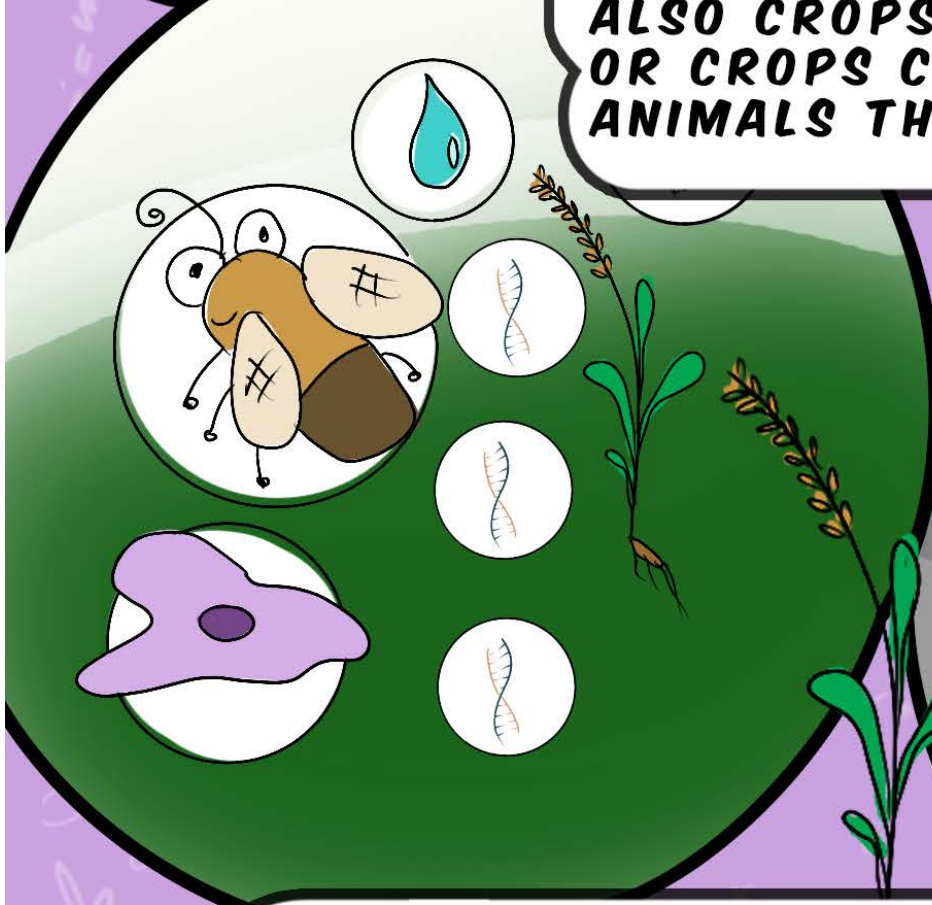
WE HAVE THE TECHNOLOGIES TO DO THIS IN LABORATORIES. WE CAN USE A GENE GUN. BACTERIA CAN ALSO BE USED TO INSERT NEW GENES INTO CROPS (EG. AGROBACTERIUM SPECIES).



HMM...
THIS IS INTERESTING. BUT USING A GENE FROM ANOTHER ORGANISM? DOESN'T THAT POSE A RISK TO US WHEN WE CONSUME FOOD? CAN IT HARM THE ENVIRONMENT?



GENETICALLY MODIFIED ORGANISMS (GMOS) MAY HAVE SOME RISKS. THEY COULD CAUSE TOXICITY AND ALLERGIES IN SOME PEOPLE. ALSO CROPS COULD BECOME WEEDY OR CROPS COULD BECOME TOXIC TO ANIMALS THAT ARE NOT PESTS.



BUT THE GOOD NEWS IS THAT GM MATERIAL CANNOT BE RELEASED TO THE MARKET OR TO THE ENVIRONMENT WITHOUT A MANDATORY RISK ASSESSMENT.

ALL COUNTRIES ASSESS RISKS AS AN ESSENTIAL PROCESS BEFORE APPROVING GM CROPS. THIS IS IN THE REGULATIONS FOR BIOSAFETY.



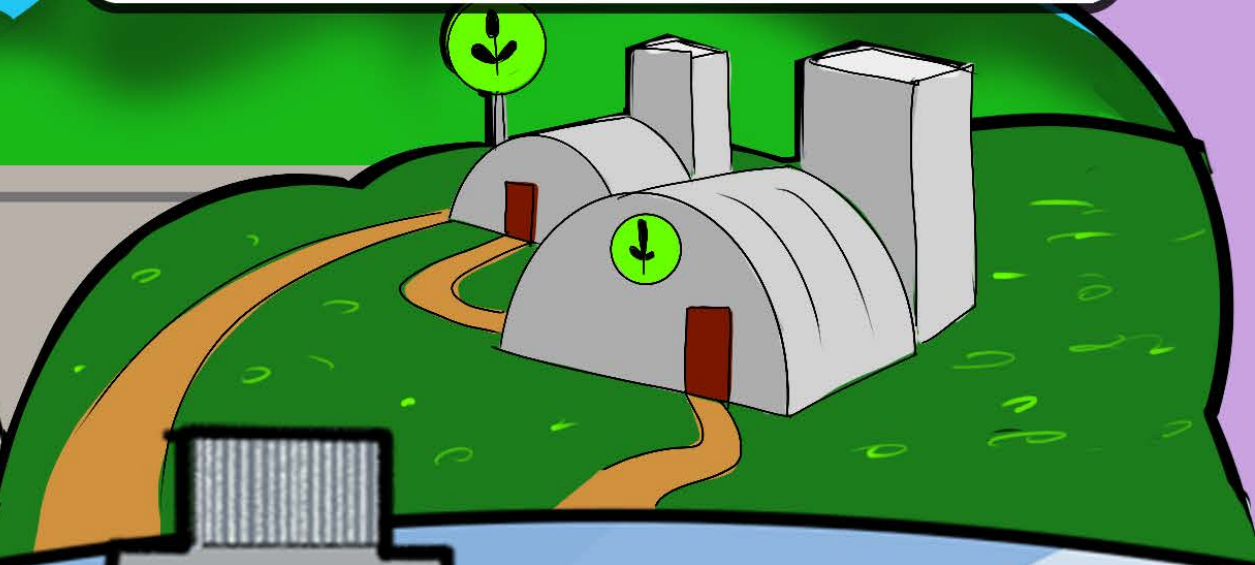


WHAT IS THIS RISK ASSESSMENT PROCESS?

IT IS THE PROCESS OF ENSURING THAT GMOS ARE SAFE FOR US. THE BIOSAFETY GUIDELINES PROVIDE INFORMATION ON HOW TO CONDUCT GMO RESEARCH SAFELY, WHAT ARE THE PRECAUTIONARY MEASURES, HOW TO MANAGE, ANALYZE AND COMMUNICATE THE RISKS ASSOCIATED WITH GMOS AND OF COURSE THE APPROVAL PROCEDURE.

THOSE WHO PRODUCE OR IMPORT GMOS HAVE TO FOLLOW THESE GUIDELINES AND REGULATIONS. THE NAME OF THE APPROVING BODY MAY DIFFER FROM COUNTRY TO COUNTRY. BUT IT WILL HAVE EXPERTS IN HEALTH, ENVIRONMENT, WILDLIFE AND FISHERIES AND ANIMAL PRODUCTION TO ENSURE SAFETY OF THE GM PRODUCTS.

IN SRI LANKA THE NATIONAL FOCAL POINT FOR BIOSAFETY, COMING UNDER THE PURVIEW OF THE MINISTRY RESPONSIBLE FOR ENVIRONMENT IS THE CONTROLLING AUTHORITY FOR ALL MATTERS RELATED TO BIOSAFETY.



DO ALL COUNTRIES GROW GMOS?



NO. AT THE MOMENT ONLY 29 COUNTRIES ARE GROWING GM CROPS THAT ARE APPROVED BY THEIR AUTHORITIES. SOME COUNTRIES HAVE COMPLETELY BANNED IMPORTATION AND CULTIVATION OF GMOS.

OTHER COUNTRIES ALLOW GMOS TO BE IMPORTED BUT HAVE NOT APPROVED THEIR CULTIVATION.



HOW DO THEY FIND OUT WHETHER THE NEW PRODUCTS ARE SAFE TO THE ENVIRONMENT?



GOOD QUESTION.

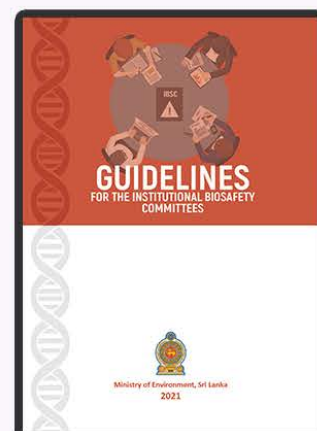
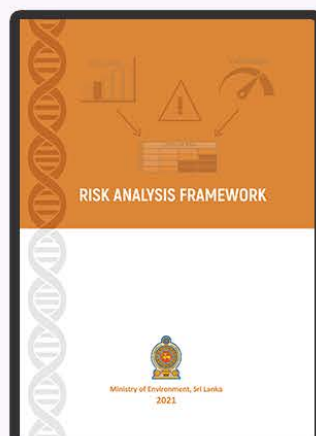
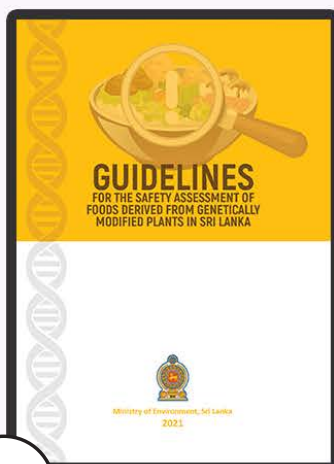
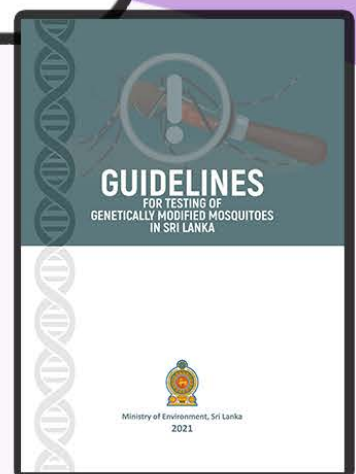
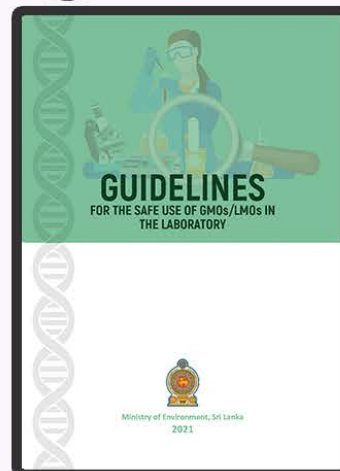
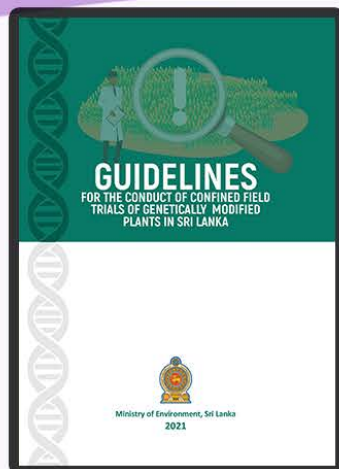
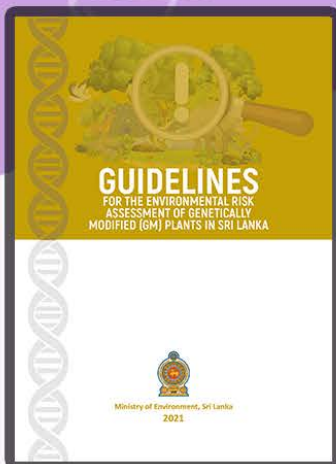
ALL GM CROPS MEANT FOR CULTIVATION MUST GO THROUGH MANDATORY RISK ASSESSMENT TO ENSURE THEIR SAFETY TO ENVIRONMENT. THIS REQUIREMENT IS IDENTIFIED IN THE REGULATIONS FOR BIOSAFETY.



DO WE HAVE GUIDELINES FOR ENVIRONMENTAL RISK ASSESSMENT?

YES. SRI LANKA TOO HAS RISK ASSESSMENT GUIDELINES TO ENSURE THAT GMOS ARE SAFE AS FOOD, FEED AND TO THE ENVIRONMENT.

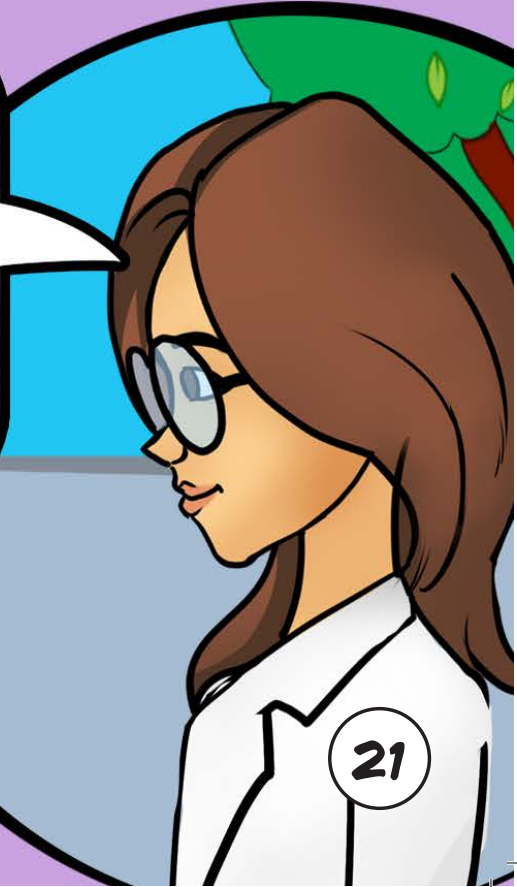
DO ALL COUNTRIES HAVE THE SAME BIOSAFETY REGULATIONS?





REGULATIONS MAY BE SLIGHTLY DIFFERENT FROM COUNTRY TO COUNTRY. FOR INSTANCE, LABELING OF GM CROPS MAY NOT BE MANDATORY IN SOME COUNTRIES. BUT, ESSENTIAL ELEMENTS LIKE RISK ASSESSMENT IS MANDATORY, ESPECIALLY FOR COUNTRIES WHICH ARE PARTY TO THE "CARTAGENA PROTOCOL ON BIOSAFETY".

SRI LANKA HAS BEEN A SIGNATORY TO THIS INTERNATIONAL AGREEMENT SINCE YEAR 2000.





**DO WE HAVE APPROVED
GMOS IN SRI LANKA?**



**NO. CURRENTLY SRI LANKA HAS
NOT APPROVED ANY GMOS TO BE USED IN THE
COUNTRY. HOWEVER, IF ANYBODY WANTS
TO GROW OR SELL GMOS,
THEY MUST OBTAIN PERMISSION FROM
THE NATIONAL COMPETENT AUTHORITY (NCA).
THE NCA HAS DRAFTED A SPECIFIC ACT
FOR GMOS CALLED THE "BIOSAFETY ACT".
THIS IS IN THE PROCESS OF BEING ENACTED.**



**DO WE HAVE THE CAPACITY
TO ENSURE BIOSAFETY
IN SRI LANKA?**



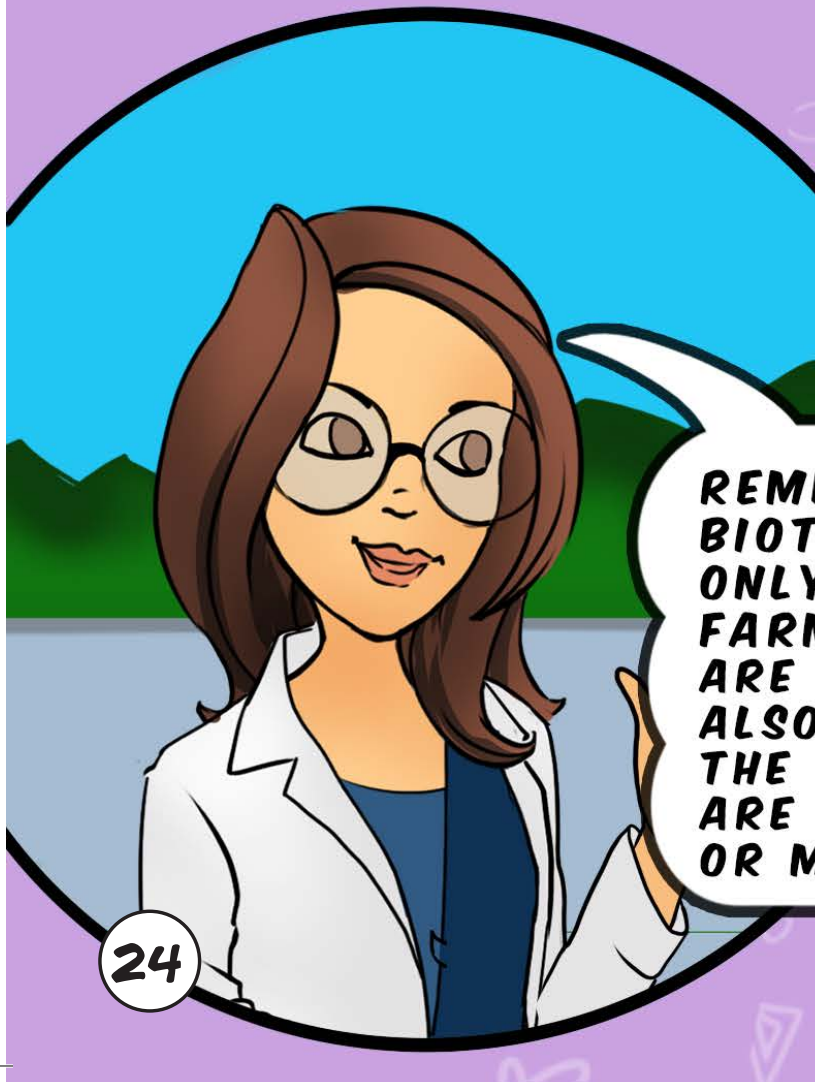
GOOD QUESTION.

THE GOVERNMENT HAS RECEIVED FUNDING FROM GLOBAL ENVIRONMENT FACILITY (GEF) AND TECHNICAL SUPPORT FROM THE FOOD AND AGRICULTURE ORGANIZATION (FAO) OF THE UNITED NATIONS, TO STRENGTHEN LAWS, PREPARE RISK ASSESSMENT GUIDELINES, ESTABLISH GMO TESTING LABORATORIES AND SHARE KNOWLEDGE.




IT IS SO GREAT TO HEAR ALL THIS INFORMATION.

YES. THANK YOU FOR SHARING ALL THIS INFORMATION WITH US. I FEEL RELIEVED AND HOPE SCIENTISTS LIKE YOU WILL HELP US TO DEVELOP BETTER CROP VARIETIES. BUT PLEASE MAKE SURE THAT THEY ARE SAFE TOO.



REMEMBER, MODERN BIOTECHNOLOGY IS NOT THE ONLY OPTION TO SOLVE FARMERS' PROBLEMS. THERE ARE MANY OTHER ALTERNATIVES ALSO, KEEP IN MIND THAT ONLY THE APPROVED GMO PRODUCTS ARE ALLOWED TO BE CULTIVATED OR MARKETED.



THANK YOU PROF. FOR PROVIDING THIS INFORMATION. IS THERE ANY OTHER PLACE WHERE I CAN GET MORE INFORMATION?

GENERAL INFORMATION ABOUT BIOSAFETY CAN BE FOUND BY VISITING THE BIOSAFETY CLEARING HOUSE (BCH) AT [HTTPS://BCH.CBD.INT/](https://bch.cbd.int/)

BIOSAFETY INFORMATION IN RELATION TO SRI LANKA CAN BE FOUND AT [HTTPS://LK.BIOSAFETYCLEARINGHOUSE.NET](https://lk.biosafetyclearinghouse.net)

THANK YOU PROF.

GODDBYE. AND TAKE CARE

BYE PROF. THANKS ONCE AGAIN.

This awareness material is produced through the National Biosafety Project (Implementation of the National Biosafety Framework in accordance with the Cartagena Protocol on Biosafety) that was implemented by the Ministry of Environment (MoE) and the Food and Agriculture Organization of the United Nations (FAO) with funding from the Global Environment Facility (GEF).

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