Episode 32

Evergreen Earth: Combating Desertification

This episode will briefly touch upon what is desertification, why it happens, and what are the consequences. It will elaborate on what can be done to stop desertification. National and International efforts will be mentioned as well as what individuals can do.

List of Characters

Teacher aunty	**:**	**Adult female.**
Ramu	**:**	**Adult male**
Kripa	**:**	**Adult male**
Vishnu	**:**	**Young boy**
Shanti/Panchayat Pradhan	**:**	**Adult female**
Dr. Ravi. Expert	**:**	**Adult male**

Morning. Sounds of bicycle bells, crows cawing, light traffic...one or two buses on the roads. The door bell rings.

Teacher-aunty: (softly as if talking to herself) It must be Ramu with the milk....he is just in time. Let me get the pot. (***Sound of metal vessel being handled***). (***Loudly)*** Coming, Ramu, just one minute.

Sound of door being opened.

Teacher-aunty (*surprised tone*) : Array, Vishnu...why have you come to deliver the milk? Don't you have school today?

Vishnu: Papa has gone to our village Teacher- aunty. My Uncle has said that for the last few years crop yields have been falling and this year it is so bad that they have invited a government expert to come and see what is wrong. Tuntuni's father, Dipen's father and Harish's father are from our village too...they have all gone with him.

Teacher-aunty: So, Ramu has rushed to the village...when will he be back?

Vishnu: He will be back tonight...(***Sounds of milk being poured***)... here you are Teacher -aunty. I will see you in school later. I won't be late...I only came to deliver milk to you. Bye.

Teacher-aunty: Thank you, Vishnu. Ask Ramu to come and meet me tomorrow. Low yields for a long time may mean there is something wrong with the soil. Maybe I can help. I have friends in the Agriculture Department. But hurry now or you will be late for school.

MUSIC

Village: ***Sounds of cows. Pumps irrigating the fields. Birds chirping. One or two motorcycles. Sounds of whispering and people moving as they gather.***

Suddenly the mike makes a loud screeching noise and then a voice can be heard saying Hello...hello Mike testing.

Ramu: Oh Good... the Panchayat Pradhan is here and the other man on the dais must be the government expert.

Kripa: **(*Laughs*) S**such a young man in a nice suit...what can he teach us about farming? We have been farmers for generations and now city folks are going to teach us farming.

Ramu: **(*in a philosophical tone*)** Who knows? But he looks like an educated young man...may be he will tell us something new ...something scientific. After all, I never went to school and these days I do not do any active farming also.

Kripa: I have left active farming to my brother, just as you have and moved to the city. But the land is still mine and I want it to produce more. So I tell him to use lots of fertilizers.

Ramu: That's not a good idea and you know it...but what to do, the population is rising so rapidly...more mouths to feed plus if the land yields more there is more profit too. I need money for my children's education. We chopped down a couple of trees last year to extend our fields, you know.

Kripa: But those trees had been there for generations!

Sound of the mike...as if someone is tapping on it to check if it is working. Sounds of wind blowing, crows and the odd tractor or bicycle bell can be heard in the background from time to time...this is a rural open air gathering.

Shanti: Namaskar, everybody...can you all hear me?

General chorus: Yes

Shanti: Good. I am glad you have all assembled here. As many of you know I have called this meeting to discuss the issue of falling crop production because our soil is becoming dry. Dr Ravi is here to tell us about this issue...he calls it desertification! I will not take any more of your time. Over to you, Dr Ravi.

Dr Ravi: Good morning everyone and thank you for coming...(***slight pause***).. I can see that many of you are elder to me. And definitely all of you are more experienced about farming....may be you represent generations of farming experience!

Ravi and Kripa (***whisper laughingly***): Very right, young man.

Dr Ravi: But I am here to talk about a rather more recent development...a problem called desertification.

General hub-bub as people repeat the word Desertification.

Dr Ravi: The term desertification may be new to you. But I am certain you have been seeing it happen, little by little, over the last few decades. Very simply, Desertification is the process by which fertile land becomes arid or dry and desert-like.

Ramu: My Lord! He is right. Haven't we been commenting on how water sources are drying up and our lands are becoming semi-arid!

Dr Ravi: I can see that at least on person in the front row has been able to connect the dots. Yes Sir, do you have a question for me?

Ramu: Not one but two...Why does desertification happen and can we reverse it?

Dr Ravi: Excellent questions. Well, a major reason behind desertification is human activities that pollute or degrade land. This includes over-cultivation, overgrazing and cutting down the tree cover...we call it deforestation. These activities can convert arable land into desert.

Shanti: I see that many of my brothers who were forced to move to the city are here today...maybe they will appreciate the fact that when this happens, food production diminishes, water sources dry up and people are forced to move to more hospitable areas.

Dr Ravi: The answer to the second question is that it is difficult to reverse desertification once the process has taken hold. The key tools lie in strengthened community participation and co-operation at all levels. It is best to have sustainable practices that take care of the land for the present and future generations, alike.

Ramu: Sustainable practices? What does sustainable mean?

Dr. Ravi: Basically sustainable means a practice that can be continued indefinitely in the same way and at the same rate. But in the context of development, sustainability is development that meets present needs without compromising the ability of future generations to meet their own needs. For this to happen

individuals, local agencies and global organizations and governments must all work together...do their own bit and also act in tandem.

Shanti: Dr Ravi, desertification is definitely not an issue limited to just our village. How can we strengthen community participation and co-operation at all levels?

Dr Ravi: All over the world, scientists and leaders are aware of the problem. That by itself is a major hurdle overcome.

Shanti: Indeed, how can any nation ignore such a huge and growing problem?

Dr Ravi: See, 2.6 billion people depend directly on agriculture, but 52% of the land used for agriculture is moderately or severely affected by soil degradation. Land degradation affects 1,5 billion people globally. Each year 12 million hectares are lost ...land on which 20 million tons of grain could have been grown.

Shanti: Global action therefore must be immediate and massive! But has anything actually been done?

Dr Ravi: This issue came to the centrestage as early as in 1992 at the Rio Earth Summit.

Kripa: But this is 2017!!! What has been done in the interim period?

Dr Ravi: The United Nations Convention to Combat Desertification (UNCCD) was established in 1994. It is the only legally binding international agreement linking environment and development to sustainable land management. India is one of the signatories to UNCCD.

Shanti: What is its agenda...I mean what is it working on?

Dr Ravi: It specifically addresses the arid, semi-arid and dry sub-humid areas...what we call drylands.

Ramu: What sort of work does it do?

Dr Ravi: It works to restore land and soil productivity, and to mitigate the effects of drought. It encourages the participation of local people in combating desertification and land degradation. It also facilities cooperation between developed and developing countries.

Shanti: What is the aim of this facilitation?

Dr Ravi: It is for knowledge and technology transfer aimed at sustainable land management. Without adequate knowledge how can one be aware of the issues leading to desertification or even how to address its consequences?

Kripa: If you had to sum up the ill-effects of desertification what would you say?

Dr Ravi: The effects are far-ranging and cannot be summed up in brief...but yes, desertification reduces the land's resilience to natural variations in climate. It disrupts the natural cycle of water and nutrients. Desertification can lead to prolonged episodes of famine. It intensifies strong winds and duststorms. It is a threat to biodiversity...I can go on and on. But I better stop here.

Shanti: There is a poster exhibition explaining the activities of the Convention in combating desertification I invite all of you to please visit it.

MUSIC

(*Background soft sitar sounds continue to indicate venue change*)

Kripa: Ramu bhaiya look...it says that the convention has a 10 year strategy running from 2008 to 2018.

Shanti: Hello Kripaji good to see you in the village ...I see you are reading about the 10 year strategy...let's read what it is, (**Reads loudly**) One goal of the Parties to the Convention is

"...to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas in order to support poverty reduction and environmental sustainability..."

Ramu: The goal is noble. Look they even have a day designated to raise awareness. It is June 17th. I shall ask Vishnu if he knew about this! If not I will request Teacherji to have a seminar in school to raise awareness.

Kripa: See, It says that the World Day to Combat Desertification has been observed since 1995 to promote public awareness relating to international cooperation to combat desertification and the effects of drought.

Ramu: But see this satellite picture of India...it looks as if almost a third of the land is under degradation and almost one-fourth is undergoing desertification. O dear...it says that rate of degradation of agricultural areas is increasing. We must **REALLY** (***loudly***) do something about this alarming trend.

Dr. Ravi: India intends to achieve land degradation neutral status by 2030. One of the first steps is to know how much damage has been done and calculate the rate of progression per year. Last year, India released an Atlas of Desertification and Land Degradation. India is committed to combat desertification and land degradation.

Shanti: Come here and see this poster on Dryland Farming practices...it has listed some practices for farmers. By following these recommendations, we can collect and also, retain more moisture in the soil.

Ramu: Oh! These are is a simple thing to do...placing stones around the bases of plants to collect rain and dew. This will help retain soil moisture. Grooves can also be dug to collect and channel rainfall. Strict weed control to ensure that soil moisture is not consumed by weeds. There must be wide spacing between individual plants to provide a larger bank of moisture for each.

Kripa: These are simple traditional practices that are innovative and workable.

MUSIC

Teacher-aunty: Hello Ramu, Hello Vishnu...so Ramu, back from your village I see. So, is everything Ok?

Ramu: No, Madamji, everything is not OK. I did not understand everything...but I did understand that the expert said that because of our practices, desertification is happening and the land is producing less crops every year.

Vishnu: Teacher-aunty, you taught us about geographical zones and habitats and said that in India, desert is found in Rajasthan...but we are not even near Rajasthan...so how is the desert taking over our village? I am so confused.

Teacher-aunty: Oh Vishnu, desertification doesn't mean that an existing desert is advancing and taking over villages and cities...although sand dunes may definitely advance. It refers to the persistent degradation of dryland by human activities and by climate change.

Vishnu: What sort of human activities are responsible?

Ramu: The expert said unsustainable farming, mining, overgrazing and cutting down large tracts of trees all encourage desertification.

Vishnu: Why? What happens when we do all this?

Teacher-aunty: Cutting down large forested areas has multiple ripple effects which can range from decrease in rainfall to soil infertility.

Vishnu and Ramu: But how? (***Then Ramu speaks***) If I cut down forests why will rains decrease? What is the connection?

Teacher-aunty: It has been found that large-scale deforestation in tropical rainforests can greatly reduce rainfall rates. This effect is experienced both locally and thousands of kilometres away. It happens because deforestation reduces the natural recycling of moisture from soils, through vegetation, and into the atmosphere...which is where moisture condenses to return as rain.

Vishnu: And does the soil in deforested areas become dry because rainfall is less?

Teacher-aunty: Mmmm...plus other factors too. You know that plant roots bind the soil...when trees are cut down the roots no longer hold the soil. Usually land is

cleared for cattle ranching....when bushy vegetation is eaten away by too many cattle grazing in a small area, the topsoil is exposed.

Ramu: And worse! The hooves of the cattle erode the top soil. Wind and water carry away the fertile topsoil. What is left behind is an infertile mix of dust and sand. It is no good for agriculture.

Teacher-aunty: According to one estimate, the world loses 24 billion tons of topsoil annually.

Vishnu: (***In amazed tones***) I never realized how inter-related everything is in nature! Papa, did you know?

Ramu: I knew a little bit...like I have to admit that intensive farming depletes the nutrients in the soil.

Teacher-aunty: Prolonged periods of drought can impact the land. War or conflict can force people to move into environmentally fragile areas. This puts extra pressure on the land. Mining can cause Damage. So, you see Vishnu it is a combination of many factors that transforms degraded land into desert.

Vishnu: Papa said desertification is a global phenomenon and not limited to our village alone...where else is it happening...I mean which are the countries affected?

Teacher-aunty: No continent, except Antarctica, is untouched by the process of desertification. Africa is badly affected...it has 37 per cent of the world's arid zones. About 66 per cent of its land is either desert or drylands. Asia's situation is no better...as it holds 33 per cent of the world's arid zones.

Vishnu: Teacher-aunty, what can we do?

Teacher-aunty: Vishnu...I keep telling you in school don't I, that a stitch in time saves nine? So too creation of a culture of prevention is helpful. If we can prevent desertification from starting or we can stall its progression in areas where it is just beginning it will be a major step.

Ramu: That is all very well...but can you tell us a few concrete steps?

Teacher-aunty: Traditionally people in dryland are poverty stricken, so if we can teach them livelihood opportunities that are not land-based we can take some pressure off the land. Say, eco-tourism could be an option. Instead of chopping trees for firewood, solar energy can be used. And there is an interesting way of culturing fish in deserts!

Ramu and Vishnu: (***Simultaneously***) Culturing fish in deserts...how is that even possible? Has anyone actually done it?

Teacher-aunty: (***Laughs***) Yes, Israel has. They used very poor quality brackish water and filled the lakes dug in the actual desert. Here they raised marine fish...a very good source of protein turning an infertile desert land into an aquaculturist's dream. Israel also harvests and reuses its wastewater extremely efficiently.

Ramu: (***Excitedly)*** We can use drip irrigation that uses less water...I am a farmer and I know it works. And ...and (***more confidently***) we can also grow drought-tolerant varieties of crop plants. Scientists can develop new varieties and the government can establish seed banks at village or district levels...Oh! The battle can still be fought.

Vishnu: Teacher-aunty, can we plant trees in the bare patch of land behind our school? We will take care of the trees.

Teacher-aunty: This is an excellent idea Vishnu. Afforestation is already on our national agenda.

Ramu: (***Encouraging tones***) I used to be a farmer so I know planting trees, perennials, and leguminous plants can make the soil more fertile.

Teacher-aunty: The presence of perennial plants prevents the weeds from taking hold and leguminous plants fix soil nitrogen boosting soil fertility.

Ramu: But just one Vishnu won't be enough to stop desertification. (*Humble voice*) Large scale national and even international efforts will be needed...I think.

Teacher-aunty: India set up the National Afforestation and Eco-Development Board as early as in 1992, but every citizen should plant trees wherever possible... or at least take care of the existing ones

Ramu: Yes a citizen should do that. But what does the Board do?

Teacher-aunty: Many things. Primarily it promotes afforestation and tree planting. It supports ecological restoration and eco-development activities and pays special attention to the degraded forest areas and lands adjoining the forest areas, national parks etc.

Ramu: (***Happy but wistful tone***) So much is being done! I wish I could know more but you are busy.

Teacher-aunty: Never mind Ramu, I will download the brochure of the National Mission for Green India and give it to Vishnu for you. Just remember GIM...short for Green India Mission.

Ramu and Vishnu: Thank you. Good bye.

MUSIC

It is morning. School. Loud happy music is playing. Viksharopan ceremony. In the background there are sounds of children's chatter.

Teacher-aunty: Settle down children, so that we can begin our Tree planting ceremony. We have Dr Ravi with us as the Chief Guest. Let us hear what he has to tell us. But first welcome him, children.

All clap.

Dr Ravi: Thank you for inviting me to the Vrisharopan ceremony. In India, we have always given trees great importance. Did you know that in our ancient texts our forefathers have written that a tree is equal to ten sons? So you can easily understand how much respect we give to trees.

Teacher-aunty: Yes, and they also wrote that those who plant trees in deserted and difficult to reach places give salvation to their future generations. Any practice that allows a resource to be used by present and future generations is a sustainable practice.

Dr. Ravi: So you can understand how our traditional practices were actually sustainable practices that encouraged the planting of trees and also taking care of them. Trees were not just resources but were nurtured like children. Do you promise to take care of the trees you will plant today?

Chorus: Yes

Teacher-aunty: Vishnu, can you tell Dr Ravi what trees we are planting today?

Vishnu: Banana, Mango, Guava, Pear and Bael or stone fruit are the common fruit trees we have chosen. These are hardy trees and will do well. We chose Neem for its medicinal properties. And we have planted a small herb garden for the mid-day meals...there we have also planted tomatoes and brinjals.

Dr Ravi: Excellent. This will provide tree cover for the barren soil. Take care of the diverse saplings you have planted and in a year or two you will see improvement in air quality. Birds, bees and butterflies will come to your garden and you can enjoy the fruits of your labour.

Vishnu: Please come again on June 17th, my father says it is Awareness Day about Desertification.

Dr. Ravi: Thank you for the invitation, I will definitely come.

All clap