

What's Bioethanol!?

Sorya sorya boom boom



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Let's make bioethanol from uneatable "trees and grass"!

Yep, and that's why we decided.

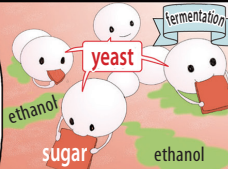
At current stages, bioethanol is created mainly from food people eat, like corn and sugarcane. This leads to an increase in food, making people's lives more difficult in developing countries.

How brilliant! My lovely wife has a unique perspective.

Can anything be done?!

what all of a sudden?

but before that, you need an important step known as saccharification.



Ethanol is created through a process known as fermentation, using yeast,

If you could, they won't be using corn in the first place, huh?

But how?

Right.

Saccharification?

we can also create things that we used to make from oil such as plastic and synthetic fabric.

Furthermore! From trees and grass,

The only thing is, unlike "starch" contained in corn, the sugar in trees and grass—cellulose—is surrounded by stiff structures called lignin, making it difficult to saccharify if not broken down.

Saccharification is the breaking down of sugar so that the yeast can ferment.

Have a feast, yeast!

monosaccharide

Yes, growing them is the first step!

We have to plant more if we cut them.

But we won't have trees in our forest if we use 'em up!

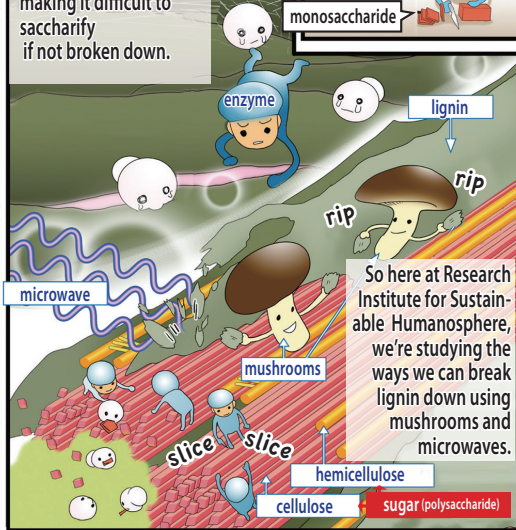
Let's all try to come up with ways our whole entire planet and communities stay wealthy.

We must construct a human society that is in harmony with the rhythms of nature.

They're pretty at night too!

sorry...

I didn't realize so much time passed...



So here at Research Institute for Sustainable Humanosphere, we're studying the ways we can break lignin down using mushrooms and microwaves.

By the way Do you know that corns are used for purposes other than food?

So sweet and yummy!

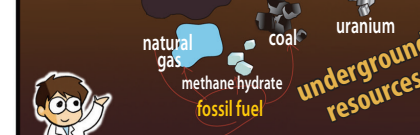
Hey you guys, wanna eat those?

The drums speak to my heart.

They're so cool...!

Fuel used to always come from buried matter such as oil and gas...

But once they're used, they aren't so reusable



I've heard of that, "renewable energy" right?

aha

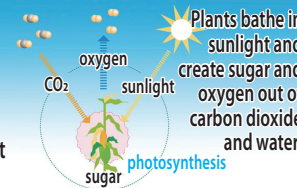
For fuel!

no idea...

Hey, what's "renewable energy"?

For producing bioethanol.

Yes, therefore even if we use bioethanol made from plants, we're only emitting CO₂ that was once in the atmosphere. The CO₂ in the air doesn't increase.



Plants bathe in sunlight and create sugar and oxygen out of carbon dioxide and water.

You learned about photosynthesis in class?

So that's where the corn comes in.

The recent global warming is said to have been caused by the great amounts of CO₂ emitted from burning fuel like oil.

Shock!

But if you make bioethanol from corn, there'd be none left for us to eat...

The recent diminishing of fossil fuel is making the development of renewable resources an immediate goal.



continuous decrease

Hence "renewable resources" huh?