

FUTURISTIC MYCOLOGY

By now, pretty much everyone is agreed on the fact that climate change is coming and that it's a bad thing. Actually it's a really, really bad thing. As the world's population continues to increase and extra people, with extra mouths supplies will increase dramatically. the next ten years the demand will years after that seeing similar gains. is set to cause a serious problem for estimate that even our current

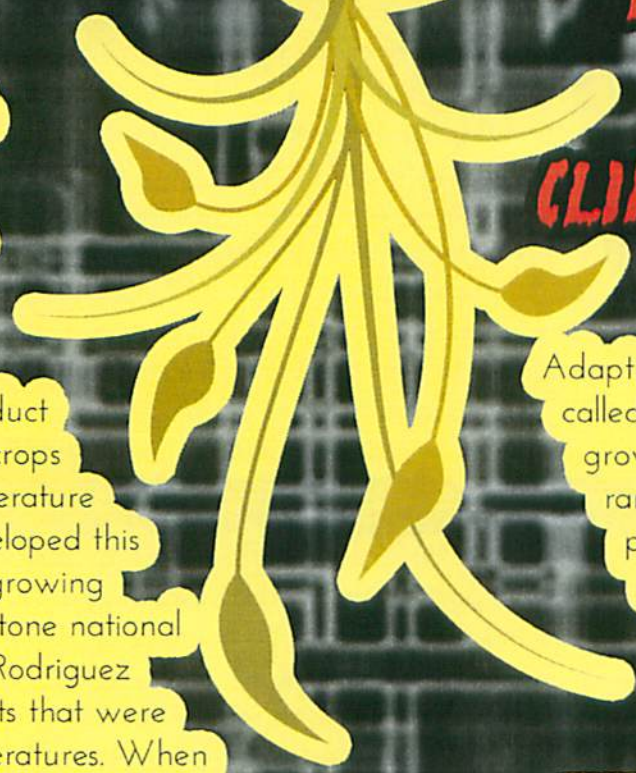
As the world's population continues to increase to feed are born, the demand on food The United Nations estimate that in raise by about 14%, with the ten On the other hand, climate change food production and many scientists production rate is not sustainable.



What we need are tools that allow our crops to become better at dealing with a harsh, changing environment. That's where fungi come in.

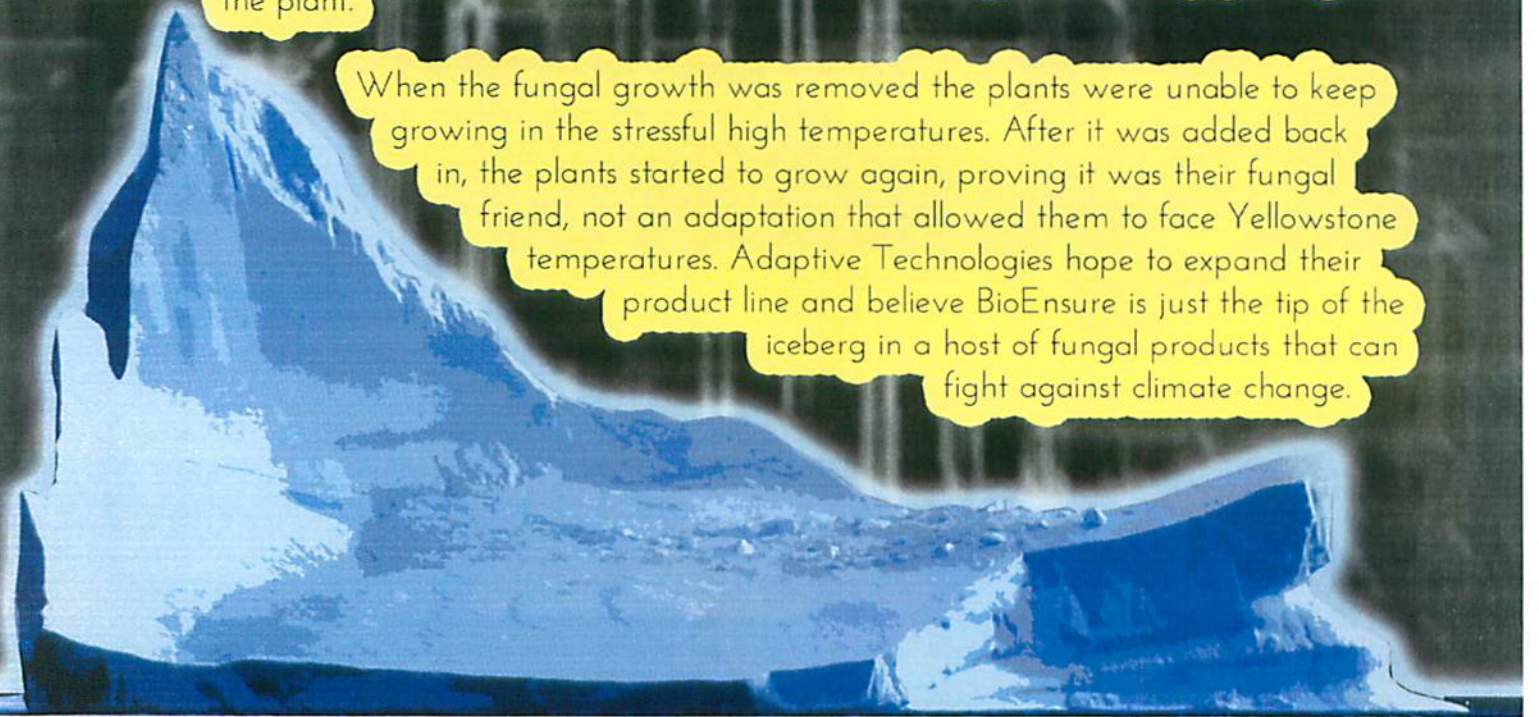
A company called Adaptive Technologies has created a fungal product exactly that, it helps crops of their regular temperature researchers who developed this from plants already growing conditions. In Yellowstone national volcanic activity, Dr. Rodriguez Adaptive found plants that were degree Celsius temperatures. When to the lab they found microscopic the plant.

MYCOLOGY VS CLIMATE CHANGE



Adaptive Technologies has called BioEnsure which does grow in conditions far outside range they can tolerate. The product took inspiration in seemingly impossible park, a site full of and Dr. Redman of able to grow in 65 transported back mycorrhizal fungi growing on

When the fungal growth was removed the plants were unable to keep growing in the stressful high temperatures. After it was added back in, the plants started to grow again, proving it was their fungal friend, not an adaptation that allowed them to face Yellowstone temperatures. Adaptive Technologies hope to expand their product line and believe BioEnsure is just the tip of the iceberg in a host of fungal products that can fight against climate change.



MYCOLOGY ON MARS

For years now people have speculated about a manned trip to Mars. The 'Mars One' project aims to send a crew of four humans to the planet by 2022, however unfortunately for them it would be a one-way trip. The brave four would be expected to begin setting the foundations for a human colony on Mars, including growing their own food supplies. If you thought the idea of growing plants at the bottom of Yellowstone sounded difficult, try growing them on another planet.



NASA

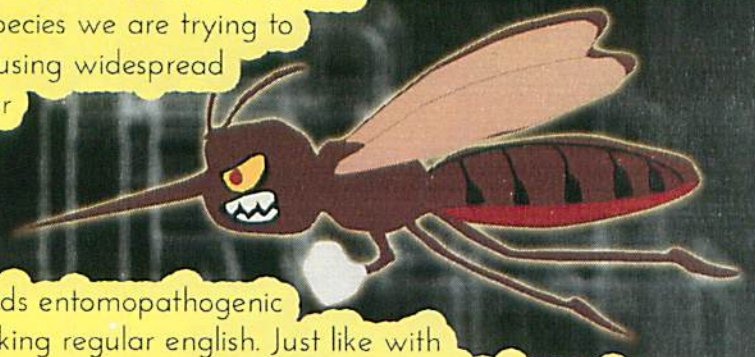
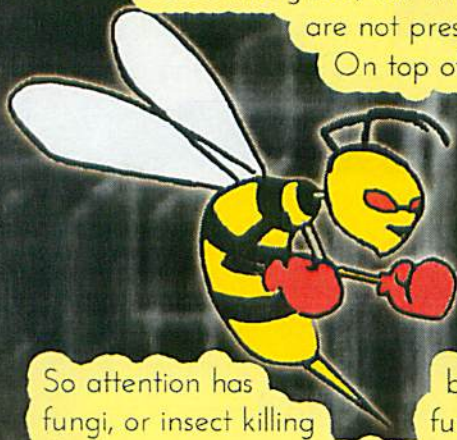
have already run tests

on the ability of fungi to grow in space. Despite the fact fungi usually need water to grow (something Mars has very little of) many of the fungal spores experimented on were able to survive for 5 months in dry conditions. The fungi were also able to do the important job of decomposing dead plant material. This improves the richness of soil for future generations of plants and would act as a perfect natural fertiliser to begin growing crops on Mars. NASA are now searching for a good mycorrhizal (fungus which lives in/near plant roots and often promotes growth) candidate to help plants stand up against the harsh conditions found on Mars. These include an average temperature of -50 degrees celsius and far higher levels of radiation due to the extremely thin atmosphere on Mars.

In England, during the summer, if you asked anyone what their least favorite insect was, they would likely tell you 'wasps'. Yet in certain parts of the world wasps are far from the worst insect you could come across. Mosquitos carrying malaria cause an average of 350 million people each year to suffer from the often deadly disease. Many lengths are taken to reduce insect populations across the globe, but these are often expensive and require foundations which simply are not present in the third world countries where malaria most often strikes.

On top of this many methods of insect control are not

specific to the species we are trying to destroy, thus causing widespread damage to other populations.



So attention has been turned towards entomopathogenic fungi, or insect killing

fungi for those speaking regular english. Just like with

the dinosaurs, some fungi are extremely lethal for insects, such as Metarhizium which is known to decimate populations of cockroaches. The great thing about these fungi is that they are very specific to which species they kill and it is also impossible for the insects to grow resistance. A team based in Ghana are planning on using such fungus in combination with an insect attractant to target breeding groups of mosquitos. The results so far have been outstanding, a recent trial on a similar disease spreading sand fly population saw a 85% death rate using the treatment alone.

MYCOLOGY VS MALARIA