

What's your favourite fungus?

The One That Produces Agriculture's Leading Fungicide

Fungicides are chemical substances that kill or inhibit the growth of fungi. They are applied to crops such as cereals, rice, potatoes and tomatoes. Farmers need to protect their crops from pathogenic fungi because they are harmful to the plant they infect. Fungi are not able to produce their own food like plants do; this means that the pathogenic fungus steals nutrients from the plant it lives on. Crop plants are especially susceptible to disease because the plants are grown very close together so the disease can spread from one to the next easily.

The most devastating effect caused by a fungal infection was the Irish Famine of 1845. A disease called the potato late blight caused the failure of the whole potato crop in Europe. The Irish peasants were most seriously affected because they relied heavily on potatoes as their main food source. Loss of the crop led to the deaths of one million people in Ireland due to starvation. Another two million were forced to emigrate (many to North America) to escape the devastation at home. The organism that caused such great damage is called *Phytophthora infestans*, and it is still a serious disease of potatoes.

It is important that plants are protected from infections to stop such events occurring again. Fungicides can be applied to plants to give protection. The most widely used fungicides in the world today are a class of chemicals called the strobilurins, which were first discovered in 1977. Azoxystrobin is the most popular one, and is said to be a broad-spectrum fungicide. This means that it is effective against a wide range of fungal species. Strobilurin A was isolated from the pine cone fungus. It was seen that the substance was able to kill other fungal species. Today Strobilurins are produced synthetically. Strobilurins work by inhibiting mitochondrial respiration, by blocking electron transport. This means that the fungus cannot produce energy so can no longer grow and eventually dies.

Because Strobilurins are derived from a natural product, they are considered to be environmentally safe because they are rapidly degraded.

