

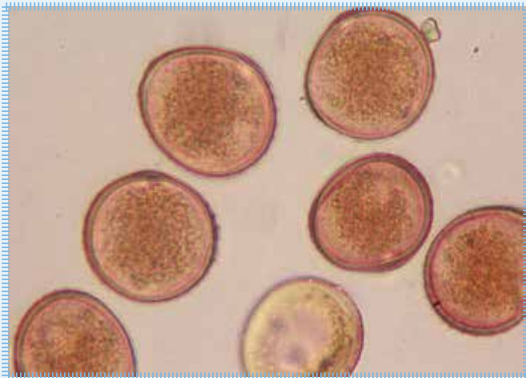
Fact file: Bean Rust Fungus

What does it look like?

Spores

Spores are tiny and they look a bit like seeds. Fungi produce huge numbers of spores to help them spread to new plants. The bean rust fungus has five different types of spores depending on the stage of its life.

Summer spores: Over the summer the fungus produces thousands of rusty brown spores which are carried by the wind to new bean plants.



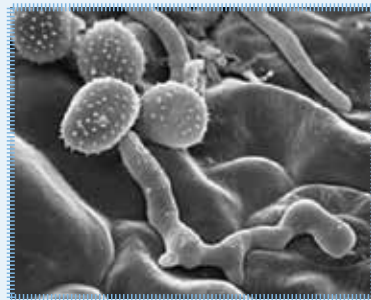
Winter spores: Over winter the fungus produces thick walled black spores, which are resistant to harsh weather and stick to the underside of leaves. This allows the fungus to survive over winter and into the spring.



Q: Can you draw and describe the difference between a summer spore and a winter spore?

Tubes

When a spore lands on a bean plant, and there is enough water, it grows a long tube, called a hypha. Hyphae are able to sense the shape and smell of a plant leaf, and grow towards the plant's breathing holes (stomata). This picture shows the round spore on the leaf and the hypha tube growing along the outside of the leaf.



Q: Can you make a model of this?

Symptoms

Once the fungus has grown inside the bean plant, it bursts back through the leaves and releases its brown spores.



Q: What effect would this have on the plant's beans?

Images

1. Image of *Uromyces viciae-fabae* Uridniospore by © Copyright Malcolm Storey 2011-21126.
2. Image of *Uromyces viciae-fabae* Teliospore by Michael Shaw, University of Reading.
3. Image of *Uromyces appendiculatus* from: H., Hoch, R., C., Staples, B., Whitehead, J., Comeau, E., D., Wolf. Growth Orientation and Cell Differentiation by Surface Topography in *Uromyces*. *Science, New Series*, Vol. 235, No. 4796 (Mar. 27, 1987), pp. 1659-1662 (Full Permission from AAAS)
4. Image of *Uromyces viciae-fabae* infection pustules by Michael Shaw, University of Reading.

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