**Pollen and seeds**



Some plants depend upon animals to pollinate them and spread their seeds.

Complete the sentences in the box.

You can only use the words **pollen** and **seeds** to fill the gaps.

|  |
| --- |
| Some animals such as insects are attracted to brightly-coloured flowers. They visit the flowers to feed on nectar.  While the insect feeds on nectar, its body gets covered in ………………………………… .  When the insect visits another flower, it transfers the ………………………………… to that flower.  Inside the ………………………………… is a male gamete. It fertilises a female gamete in the flower.  After fertilisation, parts of the flower develop into a fruit.  Some animals such as birds eat fruit.  The fruit contains ………………………………… .  The ………………………………… can pass through the animal’s digestive system undamaged.  ………………………………… in the animal’s faeces can germinate and grow to make a new plant.  This helps to spread the ………………………………… away from the parent plant.  This reduces competition for space, light, water and nutrients. |

*Biology> Big idea BOE: Organisms and their environments > Topic BOE1: Interdependence of organisms > Key concept BOE1.2: Interdependence within ecosystems*

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| --- |
| **Diagnostic question** |
| **Pollen and seeds** |

**Overview**

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| --- | --- |
| Learning focus: | An ecosystem is made up of interdependent populations of organisms interacting with each other and the environment in which they live. |
| Observable learning outcome: | Recognise that some plants depend upon animals to pollinate them and disperse their seeds. |
| Question type: | Focused cloze |
| Key words: | ecosystem, interdependence, pollination, pollinators, reproduction |

**What does the research say?**

It is important for students to appreciate that the interdependence of organisms within an ecosystem arises from more than just feeding relationships (Driver et al., 1994; Allen, 2014).

All of the organisms in a food chain can depend upon animals that pollinate plants and disperse their seeds, and human food security is critically dependent upon animals that perform these services for food crops (Díaz et al., 2006). Researchers have found that the misunderstanding that plants do not reproduce sexually (because they do not ‘have sex’) is common in teenagers (Okeke and Wood-Robinson, 1980; Hampshire Education Authority, 1986); this misunderstanding could prevent students from appreciating the important role of pollinators in ecosystems.

As frequently reported in news media (e.g. Briggs, 2019), pollinator populations are in decline, at least in part due to human activities that result in habitat loss, bioaccumulation of substances such as insecticides, and climate change (Potts et al., 2010), and learning about the important roles of pollinators in school can help to increase students’ engagement with biodiversity loss and conservation (Schönfelder and Bogner, 2017).

**Ways to use this question**

Students should complete the sentences individually. This could be a pencil and paper exercise, or you could use the PowerPoint presentation with an electronic voting system or mini white boards. Make it clear to students that they can only use the words **pollen** and **seeds** to fill the gaps.

*Differentiation*

You may choose to read the sentences to the class, so that everyone can focus on the science. In some situations it may be more appropriate for a teaching assistant to read for one or two students.

**Expected answers**

While the insect feeds on nectar, its body gets covered in **pollen**.

When the insect visits another flower, it transfers the **pollen** to that flower.

Inside the **pollen** is a male gamete. It fertilises a female gamete in the flower.

The fruit contains **seeds**.

The **seeds** can pass through the animal’s digestive system undamaged.

**Seeds** in the animal’s faeces can germinate and grow to make a new plant.

This helps to spread the **seeds** away from the parent plant.

**How to respond - what next?**

If there is a range of answers, you may choose to respond through structured class discussion. Ask one student to explain why they gave the answer they did; ask another student to explain why they agree with them; ask another to explain why they disagree, and so on. This sort of discussion gives students the opportunity to explore their thinking and for you to really understand their learning needs. Responses often work best when the activities involve paired or small group discussions, which encourage social construction of new ideas through dialogue.

**Acknowledgments**

Developed by Alistair Moore (UYSEG).

Images: pixabay.com/Soorelis (571940)

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