Turning an article into a SHE test question.

1. Find an article that shows some SHE key concepts.



The Global Initiative for Honey bee Health (GIHH)

The Global Initiative for Honey bee Health (GIHH) is an international collaboration of researchers, beekeepers, farmers, industry and technology companies set up to research the threats to bee health in order to better understand bee colony collapse and find solutions that will help secure crop pollination.

It is not possible for a single research group or organisation to mount a program aimed at protecting honey bee health alone. In response, CSIRO is leading the GIHH – a tightly-focussed, well-coordinated national and international effort that is addressing the challenges facing honey bee health globally.

CSIRO is well placed to lead this initiative. Our scientists can contribute core capability, knowledge and technology along with expertise in biosecurity, bee pathology, pollination and landscape ecology, and micro-sensing technologies and systems.

The GIHH aims to protect and improve the health of honey bees, ensure sustainable production of crops dependent on honey bee pollination, and increase productivity through coordinated management of pollination. In doing so, we can increase the environmental and economic benefits for farmers and beekeepers while making a valuable contribution to sustainable farming practices and food security.

Smart sensor technology

Integral to the research effort are high-tech micro-sensors (also known as backpacks) that are manually fitted to bees. These sensors work in much the same way as a vehicle e-tag system, with strategically placed receivers identifying individual bees and recording their movements.

This tiny technology allows researchers to analyse the effects of stress factors including disease, pesticides, air pollution, water contamination, diet and extreme weather on the movements of bees and their ability to pollinate.

Each “sensing kit” consists of hardware, software, data and experimental protocols which can be integrated into behavioural, biological and ecological studies and applied on a global scale to increase our knowledge of honey bee health.

The GIHH will unite the efforts of scientists, beekeepers and farmers conducting experiments, providing and sharing information, publishing joint-reports, and advancing our knowledge on bee health to identify management responses which support industry and government to secure the one third of our food supplies that rely on honeybee pollination.

Source: Global Initiative for Honey bee Health. 2020. *The GIHH - Global Initiative For Honey Bee Health*. [online] Available at: <https://research.csiro.au/gihh/about/> [Accessed 7 September 2020].

1. Cut out unnecessary info. Keep it shorter to allow students to read key points without spending too long (or allowing those with low literacy to cope).

*Refer to the text below.*

The Global Initiative for Honey bee Health (GIHH) is an international collaboration of researchers, beekeepers, farmers, industry and technology companies set up to research the threats to bee health in order to better understand bee colony collapse and find solutions that will help secure crop pollination.

The GIHH aims to protect and improve the health of honey bees, ensure sustainable production of crops dependent on honey bee pollination. In doing so, we can increase the environmental and economic benefits for farmers and beekeepers while making a valuable contribution to sustainable farming practices and food security.

Integral to the research effort are high-tech micro-sensors (also known as backpacks) that are manually fitted to bees. These sensors work in identifying individual bees and recording their movements. This tiny technology allows researchers to analyse the effects of stress factors including disease, pesticides, air pollution, water contamination, diet and extreme weather on the movements of bees and their ability to pollinate.

Source: Global Initiative for Honey bee Health. 2020. *The GIHH - Global Initiative For Honey Bee Health*. [online] Available at: <https://research.csiro.au/gihh/about/> [Accessed 7 September 2020].

Discuss two examples of how the extract illustrates one or more of the Science as a Human Endeavour key concepts.

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(4 marks)

1. Identify SHE key concepts

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| --- | --- |
| The Global Initiative for Honey bee Health (GIHH) is an international collaboration of researchers, beekeepers, farmers, industry and technology companies set up to research the threats to bee health in order to better understand bee colony collapse and find solutions that will help secure crop pollination.The GIHH aims to protect and improve the health of honey bees, ensure sustainable production of crops dependent on honey bee pollination. In doing so, we can increase the environmental and economic benefits for farmers and beekeepers while making a valuable contribution to sustainable farming practices and food security.Integral to the research effort are high-tech micro-sensors (also known as backpacks) that are manually fitted to bees. These sensors work in identifying individual bees and recording their movements. This tiny technology allows researchers to analyse the effects of stress factors including disease, pesticides, air pollution, water contamination, diet and extreme weather on the movements of bees and their ability to pollinate. | Communication and CollaborationInfluenceDevelopment |

**Suggested Answers;**

For 4 marks I would expect at least 2 SHE key concepts identified and explained.

Aim for

* Evidence (from article)
* SHE link
* Impact (importance)

The GIHH has been set up due to the potential ***influence*** bees have on our environment and economy. Bees are vital for the pollination of plants, including crops. Without bees, crops would not pollinate which would affect the production of crops. Crops are vital to Australia for both food security for the growing population, but also our export, benefiting our economy.

The ***development*** of high tech micro-sensors will be vital in identifying individual bees and their movements. Researchers will be able to use this data to analyse the impact of many factors including pollution, weather and diet. The data provided by this development will lead to a greater understanding of how we can protect our bees, which are required for the ongoing environmental and economic benefits that bees provide.