# Plants respond to bee buzzing by boosting nectar production and sweetness



Recent scientific research has uncovered a remarkable ability within the plant kingdom: some plants can “hear” the buzzing of bees and respond by producing more nectar. This intriguing phenomenon, spearheaded by Professor Francesca Barbero and her team at the University of Turin, challenges traditional perceptions of the passive nature of plants in their relationships with pollinators.

The study suggests that plants may serve as more active partners in their symbiotic interactions with pollinators, particularly bees, as they appear to preferentially favour them over nectar robbers—those insects that siphon nectar without contributing to pollination. “There is growing evidence that both insects and plants can sense and produce, or transmit, vibro-acoustic signals,” Prof. Barbero explained during a presentation of the findings at the joint 188th Meeting of the Acoustical Society of America and 25th International Congress on Acoustics in New Orleans. This complexity indicates a sophisticated level of communication and interaction that may play a pivotal role in the evolutionary development of plant-pollinator relationships.

The research primarily focused on snapdragon plants and their interaction with snail-shell bees, known scientifically as Rhodanthidium sticticum. By playing recordings of bee buzzing near these flowers, the team observed a marked increase in nectar production. Specifically, the snapdragons not only amplified the volume of nectar but also enhanced its sugar content, while simultaneously altering genes responsible for nectar transport. This rapid response, occurring within mere minutes, suggests that plants possess advanced mechanisms to distinguish between helpful pollinators and non-beneficial visitors.

Such findings align with earlier studies indicating that flowers like Oenothera drummondii can increase sugar concentrations in their nectar when exposed to the sounds of flying bees. In one notable example, those flowers displayed a significant increase—up to 20%—in sweetness shortly after detecting the buzzing, indicating that many species of flora may share this capability. The underlying mechanism could be related to the presence of mechanoreceptors, which allow plants to perceive vibrations from their environment, underscoring how plants can respond actively to stimuli in ways previously unrecognised.

Additionally, the implications of this research extend beyond botanical curiosity into agricultural applications. The ability for plants to utilise sound as a cue for nectar production could pave the way for innovative farming practices. It raises the possibility of employing buzzing sounds in crop environments to boost pollination rates, thereby fostering a more sustainable agricultural ecosystem. As Barbero noted, “If this response from insects is confirmed, sounds could be used to treat economically relevant plants and crops, and increase their pollinators’ attraction.”

This significant development adds to the already rich tapestry of interactions in our ecosystems, illustrating a web of relationships where every participant plays a critical role. The adaptive advantages for plants that can respond to the vibrational cues of specific insects offer fascinating insights into the evolutionary pressures dictating plant development, especially in environments where pollinator health is paramount.

In conclusion, these findings redefine our understanding of plant behaviour by showcasing their capacity for sensory awareness and responsive actions in the presence of beneficial pollinators. As research in this area continues to evolve, we may find transformative applications that support both ecological and agricultural goals—fostering a future where harmonious interactions between plants and their pollinators thrive.

### Reference Map

1. Paragraphs 1, 2, 3, 4 (1)
2. Paragraph 3 (2)
3. Paragraph 4, 5 (3)
4. Paragraph 5 (4)
5. Paragraph 5 (5)
6. Paragraph 5 (6)
7. Paragraph 5 (7)

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://www.theguardian.com/environment/2025/may/21/plants-produce-more-nectar-when-they-hear-bees-buzzing-scientists-find> - Please view link - unable to able to access data
2. <https://www.theguardian.com/environment/2025/may/21/plants-produce-more-nectar-when-they-hear-bees-buzzing-scientists-find> - An article from The Guardian reports on a study led by Prof. Francesca Barbero at the University of Turin, which found that plants can 'hear' bees buzzing and respond by producing more nectar. This behavior suggests that plants are more active partners in their symbiotic relationship with pollinators, potentially favoring bees over nectar robbers. The study also indicates that plants may use mechanoreceptors to detect vibrations, and that buzzing noises could be used to enhance crop pollination in an environmentally friendly manner.
3. <https://pubmed.ncbi.nlm.nih.gov/31286633/> - A study published in Ecology Letters demonstrates that Oenothera drummondii flowers exposed to the sound of a flying bee or similar frequencies produce sweeter nectar within three minutes. The flowers vibrate mechanically in response to these sounds, suggesting they serve as auditory sensory organs. This rapid response to pollinator sounds could have implications for plant resource allocation and the evolution of flower shape and pollinator sound.
4. <https://www.newscientist.com/article/2189875-flowers-hear-bees-and-make-sweeter-nectar-when-theyre-buzzing-nearby/> - New Scientist reports on research showing that evening primrose flowers can detect approaching bees and quickly increase the sweetness of their nectar. The study found that within three minutes of exposure to bee sounds or similar frequencies, the flowers increased the sugar concentration of their nectar by 20%. This suggests that flowers can respond to pollinator sounds in an ecologically relevant way, potentially enhancing pollination success.
5. <https://www.nationalgeographic.com/science/article/flowers-can-hear-bees-and-make-their-nectar-sweeter> - National Geographic discusses research indicating that plants, specifically evening primrose flowers, can 'hear' the buzzing of bees and respond by making their nectar sweeter. The study found that within minutes of sensing vibrations from pollinators' wings, the plants increased the concentration of sugar in their flowers' nectar. This ability may help plants attract more pollinators, increasing the chances of successful cross-pollination.
6. <https://www.smithsonianmag.com/smart-news/flowers-sweeten-when-they-hear-bees-buzzing-180971300/> - Smithsonian Magazine reports on a study where evening primrose flowers exposed to bee sounds or similar frequencies increased the sugar content of their nectar by 12 to 20 percent within three minutes. The flowers' petals vibrated in response to these sounds, suggesting they serve as auditory sensory organs. This rapid response to pollinator sounds could have implications for plant resource allocation and the evolution of flower shape and pollinator sound.
7. <https://www.telegraph.co.uk/gardening/how-to-grow/groundbreaking-research-reveals-plants-hear-pollinators-using/> - The Telegraph reports on research showing that plants, specifically evening primrose flowers, can 'hear' the buzzing of bees and respond by making their nectar sweeter. The study found that within three minutes of exposure to bee sounds or similar frequencies, the flowers increased the sugar concentration of their nectar by about 20%. This suggests that plants can rapidly respond to pollinator sounds in an ecologically relevant way.