The Science Source for Food, Agricultural, and Environmental Issues

The Importance of Communicating Empirically Based Science for Society

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Overview:

This paper discusses the crucial factors of what we define as empirically based science (rigorous, proven methodologies, and peer reviewed results), emphasizing that whether science is conducted by a private company, a university, or a government department or agency, it is all the same, requiring that sound methodologies be followed. Scientific research protocols and methodologies have been developed, reviewed and refined, through the application of each scientific method and the peer review of experimental protocols and results, creating global standards on research methods. Empirical science is empirical science, it is not an ice cream flavor, one cannot pick and choose which aspect of the scientific method to support and which to reject. The application of empirical science is consistent, whether applied to climate change, vaccines, or GM crops, and foods. Scientists have an important responsibility to design and execute experiments that are unbiased, and that directly answer a specific question.

Learning Outcomes

- *Explain the scientific process, from hypothesis to a published journal article.*
- *Distinguish the different types of scientific journals.*
- *Identify how misinformation impacts both the media and consumers.*

Resources

Access the Issue Paper, Ag quickCAST, and webinar here: https://www.cast-science.org/publication/the-importance-of-communicating-empirically-based-science-for-society/

"Misinformation Has Created a New World Disorder:" https://www.scientificamerican.com/article/misinformation-has-created-a-new-world-disorder/

"How Misinformation Spreads—and Why We Trust It": https://www.scientificamerican.com/article/how-misinformation-spreads-and-why-we-trust-it/

"How A.I. Could Be Weaponized to Spread Disinformation: https://www.nytimes.com/interactive/2019/06/07/technology/ai-text-disinformation.html

"A Race to Save the Orange by Altering Its DNA": https://www.nytimes.com/2013/07/28/science/a-race-to-save-the-orange-by-altering-its-dna.html

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Assessment Questions

1. Write a summary of this article highlighting 3-5 important facts you learned.

2. Write a paragraph explaining the scientific process, starting with the hypothesis ending with a published journal article.

3. What are the four different types of journal publishing? Briefly describe each one. How are the similar? How are they different?

4. How do journalists and the media impact the perception and adoption of new technologies?

5. What are some benefits of using GM crops over conventional crops?

Student Reflection

1. What are things you can do to stop the spread of disinformation and misinformation in social media? If someone you know shared inaccurate information in social media, will you correct them? Why or why not?

2. Why do you think misinformation posts on social media "go viral?" Give some examples of posts you've seen, such as ones regarding politics, COVID-19, the environment, or any other topic.

3. In your experience, what are the best ways to build trust with someone? How can this be adapted to communicating science?