How Technology Improves Food Insecurity

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Food Insecurity

What is Food Insecurity?

Food insecurity describes an absence of healthy, affordable, good quality food[1]

Why Make the Transition?

Current industrial methods of agriculture are not sustainable

They lead to soil erosion and pollution[2]

How Does Technology Help?

Technologies used in precision agriculture increase production at lower costs

If it costs less to produce it will cost less for consumers

[1] Food Forward. (2019, October 18). What is food insecurity? Food security? foodforward.org. [illegible]

[2] Trautmann, N. M., Porter, K. S., & Wagenet, R. J. (n.d.). Modern Agriculture: Its Effects on the Environment. Retrieved July 24, 2020, from [illegible]

[3] Cook, D. C., Fraser, R. W., Paini, D. R., Warden, A. C., Lonsdale, M., & De Barro, P. J. (2011, October 12). Biosecurity and Yield Improvement Technologies are Strategic Complements in the Fight Against Food Insecurity. Retrieved July 24, 2020, from https://journals.plos.org/plosone/. doi:10.1371/journal.pone.0026084

Precision Agriculture

- Utilizes technology such as sensors and drones to precisely monitor crops and resources in order to maximize production while reducing resource waste and pollution.[1]
- Soil erosion is one of the biggest issues farmer's face.[2]
- Efforts should be focused on finding long-term solutions instead of short-term quick fixes.[3]

[1]Withgott, J., & Laposata, M. (2019). Essential environment: the science behind the stories. Pearson.

[2]Trautmann, N. M., Porter, K. S., & Wagenet, R. J. (n.d.). Modern Agriculture: Its Effects on the Environment. Retrieved July 24, 2020, from http://

[3]Kipkemoi, P. (2019, January 27). The Pros and Cons of Drones in Agriculture. Retrieved July 24, 2020, from https://www.droneguru.net/the-pros-and-cons-of-drones-in-agriculture/

Technology: Sensors

- In ground sensors give farmers crucial data about their crops' needs and allow them to respond to those needs with precision.[1]

- Being able to respond quickly and precisely prevents pollution caused by over irrigation and fertilization.[2]

[1]Mitchell, L. (2016, February 19). Wireless sensors in the field: When the agriculture becomes smart farming. Retrieved July 24, 2020, from https://www.sunpro.ch/wireless-sensors-in-the-field-agriculture-becomes-precision-farming/

[2]Ibid

Technology: Drones

- Unmanned Aircraft Systems (UAS)
  - Utilizing drones in agriculture has been increasing in frequency as technology advances.

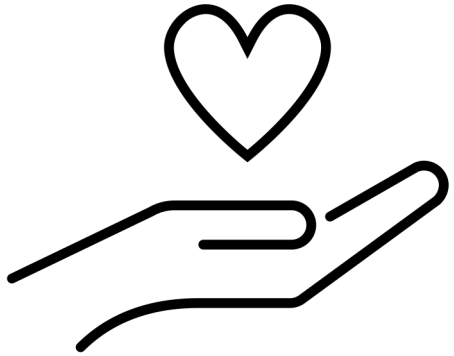
- These systems can be used to render 3-D maps of farmland and detect many forms of crop stresses.
  - Having a way to quickly and accurately evaluate farmland, respond to crop needs, and detect crop diseases means having a higher crop yield.

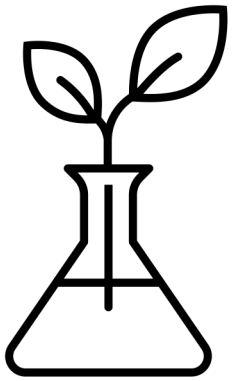
Kipkemoi, P. (2019, January 27). The Pros and Cons of Drones in Agriculture. Retrieved July 24, 2020, from https://www.droneguru.net/the-pros-and-cons-of-drones-in-agriculture/

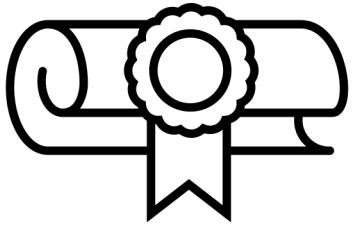
Benefit to Farmers

- According to the United States Department of Agriculture, implementing precision agriculture on a 1,000 acre farm would save that farmer roughly $13,000 every year.
- Making this transition will be expensive; however, most transitions to precision agriculture pay for themselves within two to three years.

Natural Resources Conservation Service. NRCS. (n.d.). https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/energy/conservation/?cid=nrcs143_023632.







Embracing the Future

- Creating more programs that focus on drones and technologies in precision agriculture help meet the demand for trained professionals for farmers to hire.
- Smaller programs such as certifications would give farmers the opportunity to learn how to use more advanced technology on their own.
- Funding the research and development of technologies used in precision agriculture will increase cost efficiency and crop yields world wide.
- Having strong food security allows more developed nations the opportunity to aid others.

Conclusion

- Transitioning to precision agriculture saves money, saves the environment, and reduces food insecurity.
- The continuation and expansion of educational programs and research/development of technologies used in precision agriculture is essential.
- Benefits will eventually be seen on a global scale.

References

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