

Perennial crop

From Wikipedia, the free encyclopedia

Perennial crops are crops developed to reduce inputs necessary to produce food.^{[1][2]} By greatly reducing the need to replant crops from year-to-year, perennial cropping can reduce topsoil losses due to erosion,^[3] increase biological carbon sequestration within the soil, and greatly reduce waterway pollution through agricultural runoff.

Contents

- 1 Mechanisms
- 2 Example crops
- 3 See also
- 4 References
- 5 External links

Mechanisms

- Erosion Control: Because plant materials (stems, crowns, etc.) can remain in place year-round, topsoil erosion due to wind and rainfall/irrigation is reduced^[4]
- Water-use efficiency: Because these crops tend to be deeper and more fibrously-rooted than their annual counterparts, they are able to hold onto soil moisture more efficiently,^[5] while filtering pollutants (e.g. excess nitrogen) traveling to groundwater sources.^[6]
- Nutrient cycling efficiency: Because perennials more efficiently take up nutrients as a result of their extensive root systems,^[2] reduced amounts of nutrients need to be supplemented,^[7] lowering production costs while reducing possible excess sources of fertilizer runoff.
- Light interception efficiency: Earlier canopy development and longer green leaf duration increase the seasonal light interception efficiency of perennials, an important factor in plant productivity.^[8]

Example crops

- Perennial sunflower- A perennial oil and seedcrop developed through backcrossing genes with wild sunflower.
- Perennial grain- More extensive root systems allow for more efficient water and nutrient uptake, while reducing erosion due to rain and wind year-round.
- Perennial rice- Currently in the development stage using similar methods to those used in producing the perennialized sunflower, perennial rice promises to reduce deforestation through increases in production efficiency by keeping cleared land out of the fallow stage for long periods of time.^[9]

See also

- Agroecology
- Biodynamic agriculture
- Guild (agriculture)
- No-till agriculture
- Permaculture
- Perennial plant
- Sustainable agriculture

References

1. Berry, Wendell (5 January 2009). "A 50-Year Farm Bill". *A 50-Year Farm Bill*. The New York Times. Retrieved 25 March 2011.
2. "The Perennialization Project: Perennials as a Pathway to Sustainable Agricultural Landscapes in the Upper Midwestern U.S.". *The Perennialization Project: Perennials as a Pathway to Sustainable Agricultural Landscapes in the Upper Midwestern U.S.* Iowa State University. Retrieved 25 March 2011.
3. Wahlquist, Asa. "Perennial crops a win for food security". *Perennial crops a win for food security*. The Australian. Retrieved 24 March 2011.
4. Rich, Deborah (24 November 2007). "Perennial crops: The garden that keeps giving". *Perennial crops: The garden that keeps giving*. SFGate.com. Retrieved 25 March 2011.
5. "Perennial Grain Cropping Research: Why Perennial Grain Crops?". *Perennial Grain Cropping Research: Why Perennial Grain Crops?*. The Land Institute. Retrieved 25 March 2011.
6. Zhou, X. (2010). "Perennial filter strips reduce nitrate levels in soil and shallow groundwater after grassland-to-cropland conversion". *39* (6). *Journal of Environmental Quality*: 2006–15. PMID 21284298.
7. Glover, J. "Increased Food and Ecosystem Security via Perennial Grains". *Increased Food and Ecosystem Security via Perennial Grains*. ScienceMag. Retrieved 26 March 2011.
8. Dohleman, F. G.; Long, S. P. "More Productive Than Maize in the Midwest: How Does Miscanthus Do It?". *Plant Physiol.* **150**: 2104–2115. doi:10.1104/pp.109.139162.
9. de Rouw, A. "The adaptation of upland rice cropping to ever-shorter fallow periods and its limit." (PDF). *Poverty reduction and shifting cultivation stabilisation in the uplands of Lao PDR: technologies, approaches and methods for improving upland Livelihoods – Proceedings of a workshop held in Luang Prabang, Lao PDR*. National Agriculture and Forestry Research Institute. Vientiane, Lao PDR pp. 139–148. Retrieved 25 March 2011.

External links

- [http://motherjones.com/environment/2008/10/qa-wes-jackson-Perennializing crops](http://motherjones.com/environment/2008/10/qa-wes-jackson-Perennializing%20crops): Mother Jones Q&A with Wes Jackson
- <http://newfarm.rodaleinstitute.org/features/2005/0905/moonstone/hyk.shtml>- Rodale Institute: Farm, food and family: *In southwestern Minnesota, Audrey Arner and Richard Handeen are securing a future for their farm by "perennializing" the landscape.*
- http://www.perennialgrains.org/wiki/index.php?title=Rice_perennialization_program%2C_YAAS- Perennializing rice gene project
- <http://www.pnas.org/content/early/2010/11/15/1007199107.abstract>- Biodiversity can support a greener revolution in Africa: Semi-perennialized rotations are equally productive and more stable than monocultures with 1/2 fertilizer use

Retrieved from "https://en.wikipedia.org/w/index.php?title=Perennial_crop&oldid=725144378"

Categories: Crops

- This page was last modified on 13 June 2016, at 21:02.
- Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.