

# Perennial crop

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

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## 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<sup>[4]</sup>
- 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,<sup>[5]</sup> while filtering pollutants (e.g. excess nitrogen) traveling to groundwater sources.<sup>[6]</sup>
- Nutrient cycling efficiency: Because perennials more efficiently take up nutrients as a result of their extensive root systems,<sup>[2]</sup> reduced amounts of nutrients need to be supplemented,<sup>[7]</sup> 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.<sup>[8]</sup>

## 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.<sup>[9]</sup>

## See also

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

## References

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## 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](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

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