



Bioenergy-Healthy Soil-Nutrition: an exploration of the links for win-win opportunities

Constance Miller (Global Bioenergy Partnership/FAO)

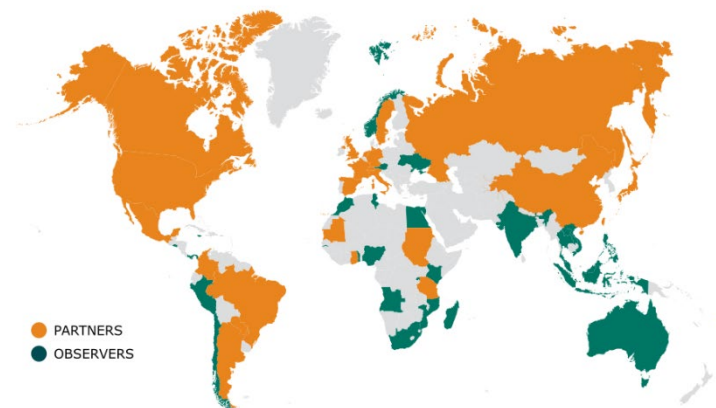
Co-authors: Caitlin McGinnis (ESN/FAO), Tomoko Kato (ESN/FAO), Patrizia Fracassi (ESN/FAO), Maria Michela Morese (FAO/GBEP)

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Linking bioenergy, healthy soils and nutrition

- **Modern bioenergy**, a form of renewable energy produced from organic matter, has the potential to aid in the achievement of the SDGs, when managed in an appropriate and sustainable manner.
- Bioenergy makes up part of the broader **bioeconomy**, and its production is in parallel and in synergy with biomass for other uses (including food, feed, bioproducts, etc.)
- While the **nexus between bioenergy and agriculture, food and diets seem apparent**, an active discussion has not yet taken place on the specific good practices across bioenergy value chains that could **positively impact food and nutrition security**.

GBEP – 85 Partners and Observers working together since 2006 to promote sustainable bioenergy



Global Symposium on Soils

Stocktaking literature review

AIM: Explore the linkages between bioenergy and nutrition, with a view to bring these to the attention of bioenergy and nutrition communities so that they can be leveraged to ensure food and nutrition security

Methodology:

- Review of recent literature on bioenergy and nutrition (from 2006 to 2021): peer-reviewed papers, technical papers, and documents prepared by non-profit organizations and governments.
- 47 articles: 42 were identified through internet searches, specifically Google Scholar, whilst remaining 5 articles were provided by the Partners and Observers of the Global Bioenergy Partnership (GBEP), after a request for specific examples and good practices at national and local level.

Main findings

Many of these practices have implications for nutrition due to their impacts on soil quality
(e.g. enhancing physical and chemical properties, detoxifying soil contaminants, reducing soil erosion and degradation, improving soil fertility, promoting biological functioning...)

Bioenergy value chains

Identified practices

Bioenergy production

- Phytoremediation
- Integrated biomass production systems
- Income diversification

Bioenergy by-products

- Use of biochar and digestate

Bioenergy use

- Improved cookstoves and clean cooking solutions
- Food transport and storage



What could be the implications of these practices on nutrition security...?

Conclusions and future considerations

- The findings from the articles reviewed show evidence of **multiple indirect or implied linkages between bioenergy and nutrition**
- Potential that bioenergy can indirectly work to improve nutrition and promote healthy diets, **especially through its impacts on soil quality**
 - The literature review identified some bioenergy value chains and/or specific good practices across these value chains that could contribute to ensuring nutrition security
 - **Research in this area is still lacking** and some linkages still need to be verified

Promising value chains for future research:

- Small-scale **gasification** of agricultural/forestry residues for clean cooking and use of biochar as soil amendment
- **Anaerobic digestion** of residues and wastes to produce biogas for energy and digestate as fertilizer



References and acknowledgements:

References are available in the literature review on the [GBEP website](#).

The review was prepared by Caitlin McGinnis (Consultant, Food and Nutrition Division ESN, FAO), with the support, and under the guidance, of Constance Miller and Maria Michela Morese (FAO, Global Bioenergy Partnership), Patrizia Fracassi, and Tomoko Kato (FAO, ESN).

Questions can be addressed to constance.miller@fao.org.

Thank you !

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