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"Global food security and food safety:
The role of universities"

Towards Sustainable Food Systems for the 21st Century: The Potential of Diversified Agroecological Systems

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Abstract

Today's food and farming systems have succeeded in supplying large volumes of foods to global markets, but are generating negative outcomes on multiple fronts: wide- spread degradation of land, water and ecosystems; high GHG emissions; biodiversity losses; persistent hunger and micronutrient deficiencies, the rapid rise of obesity and diet-related diseases; and livelihood stresses for farmers around the world.

These problems are tied to the industrial model of agriculture that is increasingly dominant around the world. The uniformity at the heart of these systems leads systematically to negative outcomes and vulnerabilities, and particularly the use of an increasingly narrow pool of animal breeds and plant varieties. The 'Green Revolution' of the post-war period left a dual legacy: huge advances in the productivity of staple crops, and the concurrent marginalisation of whole swathes of foods, crop varieties - and the communities depending on them.

The low-diversity industrial model is locked in place by a series of vicious cycles. Highly compartmentalized approaches to research, education and policymaking allow one-dimensional productivity-focused solutions to prevail, and obscure the links between healthy ecosystems, a healthy planet and healthy people. Meanwhile, the way food systems are currently structured allows value to accrue to a limited number of actors, reinforcing their economic and political power, and thus their ability to influence the governance of food systems.

To break these cycles, a fundamentally different model of agriculture is required, based on diversifying farms and farming landscapes, replacing chemical inputs, optimising biodiversity and stimulating interactions between different species, as part of holistic strategies to build long-term fertility, i.e. 'diversified agroecological systems'. There is growing evidence that these systems keep carbon in the ground, support biodiversity, rebuild soil fertility and sustain yields over time, providing a basis for secure farm livelihoods and diverse healthy diets.

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