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Identifying and addressing sustainability hotspots in fruit and vegetable value chains: a participatory assessment from the niayes area in Senegal

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Abstract

Senegal is pioneering an agroecological transition through movements led by scientists and civil society actors. These movements are calling for agroecology to be placed at the centre of policy-making for agri-food systems to steer them towards sustainability. However, agri-food value chains in the Niayes area, one of Senegal's fruit and vegetable belts, are facing challenges. These include depleting groundwater reserves, increasing soil and water salinity, dominance of monoculture cropping systems, and overuse of synthetic chemical fertilisers and pesticides, which pose threats to human health, environment and biodiversity. To understand the complexity of sustainability challenges and identify related solutions, a sustainability assessment of selected fruit and vegetable value chains was performed in 2024 with three farmer groups engaged in mango, onion and tomato value chains in three sites in the Niayes area. The three value chains were prioritised by participants based on relevance for income generation, production knowledge and perceived sustainability challenges. The study used the 'participatory hotspot analysis' method based on agroecological principles and elements to identify most pressing economic, social and environmental sustainability issues, the so-called 'hotspots'. Growers and other value chain actors were involved through focus group discussions and key informant interviews. By systematically identifying, ranking and scoring challenges, this participatory approach involved the above-mentioned stakeholders in identifying specific hot-spots for each of the selected value chains. The participants also listed and discussed solutions based on their perceptions and roles. We found hotspots in key resources (soil, water and access to credit) to cross-cut through the three value chains, while other challenges such as fruit flies, poor seed quality and livestock encroachment were context-specific yet interconnected across value chain stages. Participants listed solutions including crop diversification, reduction of chemical inputs through integrated pest control and organic soil fertility management, and strengthening community-led governance structures to promote local knowledge sharing. While the method still calls for streamlining across contexts, it has proven useful for identifying areas for intervention and encouraging dialogue among value chain actors with different sustainability perspectives.

Keywords: Agroecology, horticulture, hotspot analysis, soil and water management, stakeholder engagement

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