Agriculture in a changing climate

Climate and demographic change complicate and exacerbate issues. Nepal is particularly susceptible – it is the fourth most vulnerable country to climate change[3]. Additionally, its economic development is closely linked to agriculture, with 23.95% of the country's GDP reliant on the sector.

Farmers are struggling to adapt to variations in precipitation and temperature patterns, dry spells, increased incidences of crop pests, declining soil productivity, and loss of agrobiodiversity. In western Nepal, a region that remains the poorest, most food and nutrition insecure, and least developed in the country[4], these effects are pronounced. The terrain is largely inaccessible. Limited road connectivity restricts flow of goods and services and remoteness exacerbates political neglect[4].

Working with nature

Agroecological farming approaches based on the natural functioning of ecosystems, locally available resources, traditional knowledge, and the co-creation of knowledge present a win-win for the region. These systems can holistically address agrobiodiversity loss and ecosystems degradation while sustainably ensuring income and nutrition security[1,3,4,5,7,8].

Agroecological systems are also more climate resilient. They are built around locally available resources and the cultivation of a diverse range of native underutilised crop species. This makes means crops are better adapted to local conditions and contribute to improved overall ecosystem resilience.

Testing climate-resilient agriculture

ICIMOD is working through the Green Resilient Agricultural Productive Ecosystems (GRAPE) project to test and demonstrate climate-resilient agricultural technologies and practices with farmers in the Sudurpashchim and Karnali provinces of western Nepal as research and implementation partners. Operating on the principle of 'seeing is believing', the project invites farmers to see, choose, and replicate – in contrast to externally mediated solutions that are 'delivered' to them.

The focus is on resilience building, ecological intensification, production diversity, circular and efficient use of local resources. Collaborative learning and sharing for the sustainably of agricultural ecosystems is ensured through:

- Consistent participation – from community members, key stakeholders, and local government
- Indigenous and scientific knowledge – traditional agricultural practices and farmers' innovations are valued and integrated with scientific solutions
- Co-designing and co-testing solutions packages – covering diversity and variety of crops; soil, nutrient, and water management practices; and pest control
- Demonstration sites – co-developed as learning hubs and managed by local community members, particularly women and the youth

- Enabling environment for scaling – supported through education, specifically the formal inclusion of agroecological practices in university curriculum and government support for consumption of locally grown produce through policies and linkages, wherever possible
- Capacity building and evidence generation – for local government and policy makers

Early results

Early findings suggest that agroecological interventions in western Nepal are improving agrobiodiversity – particularly through the revival of local, indigenous crops; decreased vulnerability to climate induced risks, i.e., pest attacks, droughts and dry spells, and water variability; and reduced dependence on external inputs[5].

These interventions are also creating safeguards from market shocks. The less farmers rely on chemical fertilisers and pesticides, the less market shortages and price fluctuations affect them[5].

Integration of local knowledge in designing solutions has helped boost farmers' confidence in the adoption and replication of solutions packages[6].

Moreover, the local governments (municipalities) and Agriculture Knowledge Centres (AKCs) have mainstreamed our approaches into their plans, programmes, and activities.

RECOMMENDED POLICY ACTIONS

- Promote an inclusive, participatory, and collaborative research agenda on agroecology and climate resilience to strengthen farmer- and citizen-led innovations built around local knowledge systems
- Redirect public incentives and subsidies from agrochemicals to agroecological practices to encourage a shift from inorganic practices to agroecological ones
- Develop packages of agroecological solutions incorporating Indigenous knowledge and scientific technologies
- Promote inclusion of courses on agroecology and climate resilience in university curricula to ensure wider promotion and scaling of agroecological practices
- Create demand for agroecologically grown produce through government support for consumption of locally and sustainably grown crops
- Build capacity of local government on the agroecological aspects of agriculture – through trainings and exposure for government staff at the AKC and municipal levels
- Develop supportive policies – including guidelines on setting common standards for agroecological practices

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