

# Agroecological innovations

**F**armer faces challenges of climate on one side and markets on the other. Resilience is not just a desirable trait but an essential approach to deal with these growing uncertainties. Agroecological approaches are now firmly recognised as the way forward to deal with issues like food security, improving farm livelihoods and climate aberrations. In short, it is being recognised as a means to achieve SDGs.

Small holder family farmers are the ones who have continued to keep agroecological approaches alive and popular. In spite of having limited access to resources and extension support from the government, and subjected to piecemeal approaches of development, these farmers are surviving owing to their ingenuity and innovative capacity. Fundamental to small holder's survival is resilience and resilience is innovation based. In fact, Innovation nourishes resilience. It is necessary to examine whose resilience and innovation we are talking about. While most other stakeholders are caught in the trap of 'more of the same', farmers have been in fact practising resilience through innovation and showing simple ways of doing things. As agroecological approaches are rooted in local ecosystems, local resilience and adaptation, small scale farmers have been able to evolve a lot of techniques to defend the adversities in farming.

It is widely acknowledged that the contribution of family farmers to global food security is much more compared to the market driven commercial farmers. The declaration of 2019-2028 as the '**Decade of family farming**' by the UN General Assembly, in its 72 session, finally gives the much needed recognition to family farmers across the globe.

## Adaptations/Innovations

Farmers' wisdom, their adaptive skills and innovative spirit plays a key role in agroecosystem management. Most of the farm level innovations of small holders are based on low cost intensive options. This issue highlights some of these approaches and experiences.

Water availability is a critical limiting factor, whether it is crop management or fisheries. Coastal farmers of South Kerala have been addressing this critical issue of salinity and water logging through appropriate crops and intercrops, suitable varieties, crop combinations, agronomic innovations, resilient planting time etc. For instance, among intercrops, pineapple was found to be the most ideal crop to withstand water logging. (Kalavathi et al., p. 6).

Another interesting example of dealing with water logging has been water harvesting structure named as 5 square model which involves a water harvesting structure and appropriate land shaping to minimise water logging and salinity. The water body created and the field bunds created support diverse production systems like pisciculture, seasonal crops and vegetables. (Sutapa De et al., p.10). A series of simple and local indigenous devices developed and used by aquaculture farmers in West Bengal highlight the simplicity and effectiveness of these in dealing with a challenging production system. Some of them include bamboo based local devices and eco-friendly options to deal with predators. (Pratap Mukhopadhyay, p.22).

In yet another simple but effective innovation, apple farmers in Nepal focused on collecting snowfall, and

irrigating apple trees. By slightly refining their traditional snow harvesting system through scientific methods, they could support critical irrigation of the crop, resulting in better quantity and quality of production. (Dhan Bahadur Kathayat et al., p.14)

Innovations are not limited to crop production systems. Farmers in remote hilly region of Chakrata area in Dehradun district of Uttarakhand have evolved a collective marketing and transporting mechanism with transparent mechanisms of pricing and cash payments. (Bankey Bihari et al., p.18).

## Enabling environment

Ingenuity of farmers' innovations and improvements successfully tested over time should be given due recognition, lest such innovative ideas and spirit get lost for ever. (Pratap Mukhopadhyay, p.22). Innovation is dependent on an enabling environment -an environment where the innovator is motivated and supported.

There is a need for creating an enabling environment and local innovations could be incubated and scaled up. Though the approaches are fragmented, there are some interesting examples of convergence and need based collaboration. NGO Prasari joined hands with Panchayat and Rural Development Department to address salinity through 5 square model, leveraging NREGA scheme with community involvement. While the NGO supervised the model implementation, the Agriculture Department scaled up the technology ((Sutapa De et al., p.10).Also in Nepal, the Government institutionalised the innovation on snow harvesting, by supporting apple farmers. (Dhan Bahadur Kathayat et al., p.14).

There are instances where research played a very supportive role. CPCRI carried out effective demonstrations introducing low cost alternatives for diversified production systems. (Kalavathi, et al., p.6).These models do give us encouragement on what is possible.

Documenting farmer innovations is also one way of recognising their knowledge systems. Farmer innovations seldom enter the public domain knowledge systems. They remain localised and inaccessible. Strongly believing that innovation is intrinsic to agriculture, Small Farmers' Agribusiness Consortium (SFAC), documented a

compendium of innovations by farmers. Around 100 profiles of innovative farmers was compiled with a focus on individual farmers and entrepreneurs and simple, cost-effective yet imaginative solutions to common problems faced by the farming community. Some of them include dairy shed design; mixed cropping of banana and papaya; introduction of wild karela species; preparation of bio pesticide from leaves; homemade dal etc. (p.28).

While most concede that there is an urgent need to radically transform our food systems through innovations, the proposed innovations for more sustainable food systems are drastically different. The suggested technological innovations reinforce the concentration of political and economic power in the hands of a small number of corporations. A number of questions need to be answered. Who controls the global governance of innovation? Would the farmer innovation be incubated and supported or would it be replaced by a dominant industrial paradigm patenting technologies? We need to be careful in choosing those that will have long-lasting effects on human society and the planet. Deliberative and inclusive processes such as citizen's juries, people's assemblies, and community led participatory approaches are urgently needed to decide priorities for food and agricultural innovations. (Pimbert and Anderson, p.33). Only then the decade of family farming will serve its purpose.

