



Assessing Natural Farming through a wider lens: insights from India

Andhra Pradesh Community-Managed Natural Farming (APCNF) is a state-wide agroecological transformation of farming practices, involving 6 million farmers over 8 million hectares and 50 million consumers. It is the largest transition to agroecology in the world, and seeks to address multiple development challenges simultaneously: rural livelihoods, access to nutritious food, biodiversity loss, climate change, water scarcity and pollution. This research into the APCNF program, led by GIST Impact and supported by the Global Alliance for the Future of Food, started in 2020. The study is the first of its kind to assess the true costs and benefits of natural farming against other counterfactual farming methods, by measuring all major economic, social, and health impacts.

The research used The Economics of Ecosystems and Biodiversity for Agriculture and Food Systems (TEEBAgriFood) framework: a holistic approach to comprehensively examine food systems and systematically identify links between agricultural practices and human well-being, so that appropriate policy responses can be developed and adapted globally.

This study compared the impacts of APCNF with three other farming systems in Andhra Pradesh: chemical farming in the Godavari delta region, rainfed farming in the semi-arid region, and low-input tribal farming in the mountain region.

The results show strong evidence that APCNF offers a better alternative to the existing farming systems.

Adopting APCNF led to greater crop diversity, similar or higher yields, higher incomes for farmers, lower input costs, improved local economies, improved social networks, improved health, and reduced health costs. Overall, APCNF gave highly positive returns on public investment, suggesting APCNF to be the food production system with better economic, environmental and social outcomes.

Economic Impacts

- Crop diversity was higher on APCNF farms: an average 4 crops compared to 2.1 on counterfactual farms.
- Yields of prime crops—paddy rice, maize, millet, finger millet and red gram—increased by an average 11% in APCNF villages.
- APCNF farmers saw an average 49% net increase in income. This was largely the result of a 44% (average) reduction in input costs, primarily fertilisers and pesticides.
- Labour intensity on APCNF farms was 21% higher than comparison farms.

Social Impacts

- APCNF led to increased social capital in villages. Social capital includes: information sharing, mutuality, collective action, trust and support, community cohesion and risk reduction.
- Increasing the social capital created a 'virtuous cycle' of increased economic gains, which in turn led to greater trust, cohesion and reciprocity.
- Women significantly influenced social capital; particularly knowledge sharing, community cohesion, and trust and support.
- The results show that smaller farms had higher social capital scores than larger farms, suggesting that smallholder farmers are important to developing social capital within communities.
- APCNF farms had greater social capital than non-APCNF farms, likely due to the greater networking and mutual support.

Health Impacts

- The research showed strong correlation between lower on-farm health risks and transitions to APCNF farming. For example, farmers on APCNF farms lost one third fewer working days to illness, compared with farms using counterfactual farming methods.
- The use of chemical pesticides and fertilizers correlated with higher incidence of short-term exposure and symptoms. This in turn correlated with higher health costs and productivity losses for farmers. Such health impacts are not accounted for in conventional market-based crop pricing models.
- The health-cost analysis, based on health expenses incurred and wages lost due to illness, showed that villages with chemically-intensive farming had the highest health costs: 26% higher than those for APCNF farmers in this region.
- Household Dietary Diversity was greater in APCNF households than in other conventional farming households, indicating access to a greater variety of crops.

So what?

- Importantly, this study shows that natural farming and agroecological transitions can comfortably feed communities with better yields and crop diversity than conventional farming methods, with important insights for policy makers in India and globally.
- The scale of APCNF demonstrates that agroecological practices can be scaled to meet the demand for food while addressing multiple environmental and social goals.
- While public investment costs for APCNF were higher than on counterfactual farms, the higher costs for farmers, communities and the environment associated with counterfactual farming (loss of work hours, poorer health and poorer soils) meant that APCNF actually resulted in a better holistic return on investment.
- Using True Cost Accounting and the TEEBAgriFood framework highlighted the economic, social and human health benefits associated with APCNF and the increased costs associated with counterfactual farming. These would not be accounted for under traditional "yield-and-profit-only" metrics, but clearly show better returns on public investment after accounting for public benefits and costs.
- Using True Cost Accounting can provide a holistic analysis to inform policy decision-making that aims to enhance economic development, reduce poverty, and improve health and environmental outcomes.
- Given ongoing climate impacts, there is an urgent need to scale inclusive climate resilient models of agriculture. This research offers a clear assessment of environmentally-friendly agricultural development that also supports social and economic goals.

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