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Research Article

Participatory Action Approach in Student Initiatives for Seed Security

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ABSTRACT

This paper evaluates student initiatives collaborating with local farmers and various academic institutions of Kerala for executing seed security project**.** It analysed the role of collective action for a social change and its outcomes as a function of social capital. Using the participatory action method, the project intended to preserve varieties of indigenous seeds to ensure seed security for materialising food security. More than 280 native paddy seed varieties were collected, documented, and cultivated using organic farming methods in different colleges across five districts in central and northern regions of Kerala. The production of indigenous paddy was carried out by the National Service Scheme (NSS) under the purview of the University of Calicut. This initiative strengthened campus-community partnerships and empowered students through experiential learning, teamwork and sustainable practices.

Keywords: Student Initiatives, Seed Security, indigenous seeds, Participatory Action Approach, National Service Scheme (NSS)

Introduction

Climate change threatens the survival of indigenous seeds, thereby, making the link between seed security and food security a perilous state. The traditional varieties of seeds conducive to our soil are gradually becoming extinct with the introduction of hybrid and genetically modified seeds and this fact poses a grave threat to our seed diversity as well as food security. In this context, the students' engagement in seed conservation, organic farming and community-based agricultural practices as part of their education can uphold the cause of sustainability. This paper addresses the role of students in reviving indigenous varieties of seeds through participatory action and its outcomes from the perspective of social capital. It also analyses the role of collective action in driving social change and its outcomes as a function of the social capital.

Background of the Project

Seed security is a grave concern as it has the potential to guard food security and sustainability which are often threatened by climate change. Certain types of crops are adapted to specific geographical regions. Indigenous crops ensure consistency in yields, use less water and are resilient to pests and adverse weather like drought, flood and salinity. Rich in nutrients and minerals, indigenous seeds are valuable for health and food security. There were collective efforts of organic farmers to conserve paddy seeds in their respective regions. The government had offered many incentives for the promotion of paddy production. The collective effort of organic farmers to produce indigenous paddy was not sustained further as the native farmers favoured high yield varieties of seeds. Having considered the importance of conserving paddy seeds and fostering their diversity, the National Service Scheme (NSS) under the University of Calicut proposed a project for the conservation of paddy seeds in association with the farmers of the neighbouring local bodies during the year 2023. National Service Scheme (NSS) under the Ministry of Youth Affairs and Sports, Government of India aims to provide opportunities for students to participate in community services and programmes.

Seed Diversity, Seed Security and Food Security

This project is based on the linkage between seed diversity and seed security for assuring comprehensive food security.

Seed Diversity

Seed diversity refers to the variety of seed types available for cultivation, encompassing traditional, heirloom, and hybrid varieties. This diversity is crucial for food security, as it enhances crop resilience against pests, diseases, and changing climatic conditions (IPES-Food, 2016). A diverse seed environment allows for a broader genetic pool from which farmers can draw, enabling them to choose crops that are best suited to their specific local conditions. Seed diversity is fundamental to agricultural sustainability, climate resilience, and food security.

Seed security

It also focuses on the accessibility and availability of quality seeds for farmers, particularly smallholder farmers who often experience barriers to obtaining necessary resources (FAO, 2020). The erosion of seed diversity has direct implications for seed security**.** Seed security is, in turn, foundational to food security, which encompasses the consistent availability of nutritious food for all people (FAO, 1996).

Food Security

Food security exists when all people have access to sufficient, safe, and nutritious food to maintain a healthy and active life as defined by the (Food and Agriculture Organization 2019). The integration of seed diversity and seed security is essential to achieving comprehensive food security, as they contribute to the availability, accessibility, and sustainability of food resources.

Review of literature

Scholars argue that the preservation of local and traditional seed varieties enhances agro-ecological resilience and supports dietary diversity (Altieri, 2004). According to the FAO (2010), over 75% of crop genetic diversity has been lost in the past century due to the replacement of local varieties with genetically uniform hybrids. Vandana Shiva (2000) has been a prominent advocate for the preservation of seed sovereignty, arguing that seed saving is both an ecological and political act against corporate control of food systems.

The role of students in sustainability is gaining scholarly attention, particularly in the context of education for sustainable development (ESD). According to Tilbury (2011), student participation embodies "learning for change," where students are not only recipients of knowledge but active participants in designing and implementing sustainable solutions. Youth-led sustainability initiatives in schools, colleges, and universities often focus on organic farming, seed saving, waste reduction, and biodiversity conservation (Leal Filho et al., 2018). Student engagement in agro-biodiversity restoration—especially in Kerala and other Indian states—has taken the form of school seed festivals, garden clubs, and eco-literacy programs. These initiatives promote awareness of traditional knowledge systems and foster intergenerational learning. Case studies from various parts of India show that student-led seed conservation initiatives, such as those in Kerala, have contributed meaningfully to agro-biodiversity conservation and environmental awareness (George & Varghese, 2021). These efforts often involve collaboration with local farmers, NGOs, and educational institutions, emphasizing participatory action research and collective learning. Moreover, such activities were aligned with the Sustainable Development Goals (SDGs), particularly Goal 2 (Zero Hunger), SDG 4 (Quality Education**)** and SDG 13 (Climate Action)**,** Goal 12 (Responsible Consumption and Production), Goal 13 (Climate Action), Goal 15 (Life on Land) and Partnerships(Goal 17).

The major objective of the study is to examine the role and outcome of student initiatives in conserving and preserving indigenous varieties of paddy seeds of Kerala.

Objectives

The major objective is to study the participatory action approach in integrating students with native farmers for conserving various types of indigenous paddy seeds for sustainable farming. The specific objectives are given below:

1. To understand the role of student initiatives through participatory action approach in conserving indigenous seeds.
2. To analyse the outcomes of social capital that evolved through the participatory action approach.

Methodology

By mobilising the resources locally available such as indigenous seeds, labour and natural resources, the project planned to integrate the idea of seed security in the selected regions. The project adopted a participatory action approach in the conservation of seeds and production of paddy in the selected areas. The participatory action approach in the present study means the collective involvement of communities for the common goal of seed security. The volunteers (students) of the National Service Scheme in respective colleges were the actors and farmers of the neighbouring areas were neighbourhood actors. These young actors along with neighbourhood

actors (farmers) should work in their campuses to accomplish the mission of the project. Through this approach, they might attain capabilities in terms of knowledge, organization skills and personal skills for the benefit of society. The project covered all the units of the National Service Scheme of various colleges affiliated with the University of Calicut, Kerala. Under University of Calicut, 300 NSS units were operating in various colleges. Among them, 200 colleges participated in the project. The NSS Department of the university would distribute indigenous paddy seeds to the NSS units of these colleges. These volunteers, under the guidance of native farmers, were responsible for producing indigenous paddy seeds and transferring them to farmers for further cultivation

The project activity includes the following:

The volunteers of NSS were the stakeholders of the project. The beneficiaries were farmers and society. The project visualised that the stockholders and beneficiaries were the same.

1. Integration of all NSS units of colleges affiliated with the University of Calicut to the seed security.
2. Collection of indigenous seeds from farming communities.
3. Conservation of indigenous seeds

- Propagation of seed varieties among the farming communities.
- Documentation on varieties of seeds

4. Production process
5. Workshops and motivational talks among the volunteers of NSS of all colleges.

Plan of Action

Seed security project was visualised by the Department of NSS, University of Calicut, Kerala. The department of NSS would collect indigenous seeds from farmers and the National Gene Bank and would transfer them to the NSS units of selected colleges. Each NSS unit had to prepare a plan of action by compiling following activities:

Paddy seed diversity register: NSS of each college had to identify traditional seeds suitable to the terrain and climatic condition of each region. The volunteers of NSS had to conduct a survey of indigenous seeds specific to the region and document exclusive features of the available indigenous and extinct seeds.

Resources: Any barren land having a remote chance of water lagging could be selected for paddy cultivation. Those colleges which did not have surplus land could adopt grow bag cultivation. The college was given the freedom to choose land either inside or outside the campus. The volunteers could approach farmers, paddy farming orgnaisations (*Padasahekharasamithis*) and agricultural officers for expert guidance. They could seek the aid of the farmers for the methods of organic cultivation and supply of pure organic inputs like biofertilizers,

Training programme: Motivational talks, presentations on sustainability, workshops on organic farming methods, field visits, interaction with farmer groups, etc. were to be conducted as per schedule.

Seed launch: In this round, all the NSS units should complete the process of land clearance and soil preparation for sowing the paddy seeds. The volunteers could sow paddy seeds in the most ideal time coinciding with the monsoon rains. After sowing seeds, the volunteers should monitor the fields continuously.

Harvest: Under normal conditions, 1 kg of paddy seeds can yield 20 to 30 times the output. Colleges could celebrate the harvest, once the paddy plants matured. The volunteers had to hand over the seed to the farmer who had supplied it earlier. The rest of the produce can either be sold in raw form or as value added product.

Project Area

The project covered five districts in Kerala that came under the purview of the University of Calicut, i.e., Kozhikode, Malappuram, Palakkad, Wayanad and Thrissur. More than 300 colleges under the University of Calicut carried out the project. The project area was the panchayath where each college was located, or a neighbouring panchayath. Colleges chose field, upland or grow bag cultivation within the campus or outside the campus depending upon the quantum of seed or land area.

Social Capital as a Resource

The social capital has great relevance in attaining the goals of a collective movement. Social capital refers to the networks, norms, and trust that facilitate coordination and cooperation for mutual benefit (Putnam, 1993). In agro-ecological contexts, it enables knowledge exchange, resource sharing, and participatory governance, all of which are essential for the success of community-based seed conservation. High levels of bonding (within groups) and bridging (across groups) social capital among students, farmers, and institutions create enabling conditions for innovation, inclusion, and resilience (Pretty, 2003). For instance, school-based eco clubs having partnership with local farmers help create transgenerational and translocal networks, enriching both ecological knowledge and social cohesion.

This project reflects the multi-dimensional gains of social capital as a productive resource. The functions of social capital such as bonding, bridging and linking had been experienced in all the campuses. “Bonding social capital is within a group or community whereas bridging social capital is between social groups, social class, religion” etc (Claridge 2018.) These functions generated intergenerational exchange of knowledge and sharing of resources, essential for the attainment of community-based seed conservation. A strong bond of relationship among volunteers and dedication to the common goal was developed within each NSS unit of each campus.

Volunteers with different socio-economic backgrounds, were involved in 'learning by doing' and exchanged this new learning experience with each other.
The linking function of social capital describes the vertical relationship between volunteers and institutions or authority. It is an extension of bridging which involves ties with individuals, government bodies, non-government bodies, universities, etc. By the term linking, the project team or the formal institution generated capacities among the volunteers to gain access to resources and information from the peer group and neighbourhood community i.e, the farmers.
The most important outcome was the strong bond among the campus community for a noble cause. The campus community particularly students could get involved in innovative methods of extra-curricular activities which yielded gains to the society. The participatory action approach embodied learning by doing through workshops and field work and this strengthened the relationship between the academic community and farmers. Social capital as a productive resource was created out of the interaction between farmers and students leading to orientation about sustainable farming. The project transmitted a civic consciousness among students to conserve indigenous seeds of all vegetation. Efforts of student volunteers brought fame and recognition to the institution. The NSS collected more than 280 varieties of indigenous paddy seeds from the local farmers and the National Gene Bank**.** A definite portion of the paddy was transferred to the farmer who had provided the seed earlier and the rest was marketed.
The Department of NSS under University of Calicut planned to carry out the project with no additional cost. Collective action and social networks and 'bonding' and 'bridging' between and across groups for a common goal minimised the cost of cultivation to the minimum. The project labelled as a campus community partnership incurred minimum cost. Each college could explore its social networks, voluntary labour of students and knowledge of local farmers as well as officers of the respective agricultural department. Being a university-level programme, the cost of training and awareness sessions for the volunteers was met from the administrative expenses of NSS.
The awareness campaigns on sustainable farming conducted for the volunteers could help them to develop life skills such as leadership qualities, basic lessons on farming and accountability during the period. The seed festivals, exhibitions, community seed banks, organic farming clubs, and educational campaigns arranged by the youth promoted agro-ecological farming and encouraged community self-reliance. Recognizing the importance of seed diversity, student-led projects were increasingly focused on seed saving, community seed banks, and the preservation of indigenous plant varieties.

Conclusion

The linkage between seed diversity and seed security played a pivotal role in guarding food security. The study highlights the process of participatory action of students under the National Service Scheme for conserving the seeds for future generations. Colleges affiliated with the University of Calicut were successful in cultivating 280 indigenous varieties of paddy, collected from local paddy farmers in Kerala. The students altogether could produce 280 varieties of indigenous paddy in various campuses through the organic method. While learning by doing, the student community, in collaboration with local farmers, could get opportunities to engage in the revival of lost varieties of indigenous seeds and align with the Sustainable Development Goals (SDGs). This initiative strengthened campus-community partnerships and empowered students through experiential learning, teamwork and sustainable practices.

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