

The Rice Seed System in Wayanad

The Changing Role of Rice Seeds

The production of crops for human consumption is based on seeds. Rice is a staple food for over half of the world's population. China and India contribute more than half of the total output to global rice production. With an estimated world population of 9.2 billion people by 2050, agricultural production has to meet the increasing demand of food and provide livelihoods for the 50 percent of the world's population that depend on agriculture for a living. To ensure food security, farmers need to have access to crop genetic resources (CGR) through a functioning seed supply system incorporating formal and informal rice seed sources.

Rice cultivation in Wayanad, a district in Kerala state within the Western Ghats region in southwest of India, is under pressure due to the conversion of paddy fields to non-food crop cultivation and other commercial land-uses. The cultivation of rice is increasingly becoming restricted to tribal communities, such as the Kuruma and Kurichya. The diversity of traditional rice varieties (TVs) is decreasing due to the increasing adoption of modern rice varieties (MVs) and, specifically, high yielding varieties (HYVs).

The aim of this study was to analyse the rice seed system in the district of Wayanad, Kerala in southwest India from the general perspective of Adivasi (indigenous) populations. It sought to document formal and informal rice seed sources, the current status of the system, the flow of traditional and modern rice varieties, the handling of the rice seeds (e.g. seed production, storage, etc.) and the knowledge of different varieties and their requirements.



TOPICS

- Seed system
- Seed supply channels for rice
- Recommendations for action

TERMS

Seed System

Various seed-supply channels that provide farmers with seeds coming from different sources, depending on the required variety, price and availability.

Formal Seed Market

The operations of the formal seed market are determined by regulations, explicit property rights, the supply of officially certified and approved seeds, quality control, and assured identity of the purchased seed varieties. The exchange of improved and certified crop varieties takes place through research stations, governmental agencies and commercial seed stockists that also conserve seed varieties ex-situ.

Type of Seed Transaction

Purchase, inheritance, exchange, gift, barter, borrowed, other (won at a seed fair, etc.).

The Research

The study analysed the status quo of the rice seed system in Wayanad, India. The interview-based mapping tool Net-Map and a semi-structured questionnaire were applied to collect information from farmers, officials and experts between September and November 2012. Network analysis was used to identify important actors and stakeholders in the seed system, the nature of their relationships and their power to influence the network. The method makes social connections visible, and enables alliances and goals of protagonists to be identified.

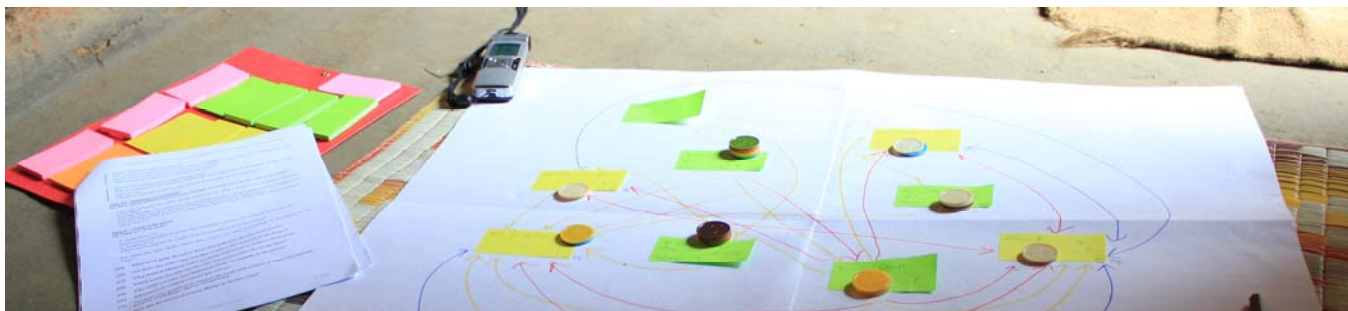
Stakeholders in the seed system comprise, firstly, individual members of the farming community, including neighbours, family and friends. Co-operatives, NGOs, seed banks and seed fairs play a role, alongside local markets, and government agricultural offices and research stations. This research studied the seed exchange process and its institutional rules, as well as the uses of seed varieties by different actors.

Modern rice varieties	2002	2012	Modern rice varieties	2002	2012
<i>Athira</i>	✗	✓	<i>Kanchana</i>	✗	✓
<i>Bharathy</i>	✗	✓	<i>Kunjuttimatta</i>	✗	✓
<i>H4</i>	✗	✓	<i>Kurumutti</i>	✗	✓
<i>IR-8</i>	✗	✓	<i>Prathyasa</i>	✗	✓
<i>Jaya</i>	✗	✓	<i>Sabari</i>	✗	✓
<i>Jyothi</i>	✗	✓	<i>Uma</i>	✓	✓
<i>Kaliyni</i>	✗	✓	<i>Basmati</i>	✗	✓

Figure 1: Modern rice varieties planted in Wayanad

Cultivated Rice Varieties

In 2002, farmers cultivated 20 different indigenous rice varieties, with Gandhakasala, Veliyan, Thondi and Chomala being the most popular ones. 10 years later, the diversity of traditional varieties had decreased by about 30 percent, whereas the range of modern rice varieties available had increased from 1 to 14 high yielding varieties (Figs. 1 and 2). The overall range of rice varieties available between 2002 and 2012 increased, whereas the diversity of the rice varieties used by farmers declined. Farmers mentioned various reasons for cultivating MVs alongside or instead of TVs. Modern rice varieties yield more than indigenous ones, and are thus also more profitable. Also, paddy plants from modern varieties require less time to mature and have a shorter growth period. Further, there is a stable supply of MVs, with rice seeds coming from various sources. Even though farmers increasingly cultivate MVs, many still cultivate TVs for their own consumption because they think the grains smell and taste better. Farmers also mentioned the resistance of TVs to droughts and floods, and lower production costs arising from their reduced dependence on inorganic pesticides and fertilizers, as reasons for growing TVs.



Mapping of seed systems

Results of network analysis of seed systems

Farmers' sources of rice seeds

The farmers of Wayanad obtain their rice seeds from various sources depending on the variety. Farmers obtain modern rice varieties directly from governmental agencies, including Agriculture Offices (AOs), and Regional Agricultural Research Stations (RARS), Padasekara Samithies (farmers associations), Kudumbashrees (women's self-help groups) and the co-operative society VEGMARK. The Kerala State Seed Development Authority (KSSDA), National Seed Corporation (NSC) and the two private seed companies, Ankur Seeds and Indo-American Hybrid Seeds, supply AOs and VEGMARKs with improved varieties for distribution to farmers. The NGOs VOICE and M. S. Swaminathan Research Foundation (MSSRF), as well as the Kudumbashrees, provide traditional rice varieties, but are little known among farmers and rarely sought out as a source for seeds. The farmers' main rice seed source is their stock of farm-saved seeds. They also supply modern and traditional rice seed varieties to other farmers. Indigenous farmers, for example from the Kuruma and Kurichya communities, provide local rice varieties to the wider farming community.

Traditional rice varieties	2002	2012	Traditional rice varieties	2002	2012
Adukkan	✓	✓	Kudaku Veliyan	✓	✓
Chempathi	✓	✗	Marathondi	✓	✗
Chennellu	✓	✓	Mullanpuncha	✓	✓
Chennelthondi	✓	✓	Njavara	✓	✓
Chentadi	✓	✓	Palthondi	✓	✗
Chomala	✓	✓	Thondi	✓	✓
Gandhakasala	✓	✓	Thonnooranthondi	✓	✗
Jeerakasala	✓	✓	Unrunikaima	✓	✓
Kalladiyan	✓	✗	Valichoori	✓	✓
Kothandan	✓	✗	Veliyan	✓	✓

Figure 2: Traditional rice varieties planted in Wayanad

TERMS

Informal seed market

Informal seed markets or farmers' seed markets are institutions for local exchange of seeds from small-scale crop production, and farmers' own selections of improved strains. The exchange of local varieties and non-certified improved varieties contributes to in-situ conservation. "Rules" for seed exchange are determined by cultural norms and social relations among the participants.

Social relations between seed provider and purchaser

Family members, caste/tribe members, neighbours, friends, acquaintances, strangers, other (NGO programmes, etc.)

RECOMMENDED ACTIONS

1. Extend schemes for the promotion of modern rice varieties and the local landraces to include traditional rice varieties.
2. Set up a forum for rice farmers in Wayanad as a platform for discussion of issues related to rice cultivation and the supply of modern and traditional rice varieties. It should include stakeholders from all levels and areas of expertise and knowledge in order to get insights from different perspectives about the current situation and problems.
3. Promote sources of traditional rice varieties among the members of a Gram Panchayat. Agriculture Offices should create lists of farmers that provide local landraces.
4. Promote cultivation of 25% traditional rice varieties alongside 75% modern breeds, in order to increase and maintain the proportion of traditional varieties grown in the district.
5. Promote the creation of new institutions, agencies and programmes to provide support to rice farmers.

Rice seed source	Traditional rice varieties	Modern rice varieties
Civil society		
<i>Tribal / General farmers (Own seed stock, family, friends, neighbours, other communities)</i>	✓	✓
Government		
<i>Agriculture Office</i>	✗	✓
<i>RARS</i>	✗ (✓)	✓
<i>KSSDA</i>	✗	✓
<i>NSC</i>	✗	✓
<i>Padasekara Samithy</i>	✗	✓
<i>Kudumbashree</i>	✓	✓
Private sector		
<i>VEGMARK</i>	✗	✓
<i>Seed companies (Ankur Seeds, Indo-American Hybrid Seeds)</i>	✗	✓
NGOs		
<i>VOICE</i>	✓	✗
<i>MSSRF</i>	✓	✗

Figure 3: Rice seed sources in Wayanad

The Supply of Rice Seeds in Wayanad

The rice seed system of Wayanad consists of the formal and informal seed market. Farmers belong to the informal system, whereas all other sources (see Fig. 3) fall under the formal market. Farmers exchange and trade traditional and modern rice varieties with other farmers within the informal sector and purchase modern rice varieties from formal sources, such as government agencies, farmers associations (Padasekara Samithy, Kudumbashree) and the cooperative society VEGMARK. They also exchange MVs with Kudumbashrees. Within the formal seed sector only Kudumbashrees and NGOs (VOICE and MSSRF) provide TVs, but farmers can also exchange or trade local rice varieties among themselves. AOs and VEGMARKs source modern rice varieties for supply to farmers from NSC at Mysore, KSSDA at Thrissur and the seed companies Ankur Seeds and Indo-American Hybrid Seeds. The AOs either provide rice seeds directly to the farmers or, in some cases, through the Padasekara Samithies. Farmers provide information about the varieties and amounts of seed required to the AOs or Padasekara Samithies.

Farmers, NGOs, and the Kudumbashrees are the nodes linking the formal and informal seed supply systems. Farmers receive modern rice varieties from various sources of the formal system, but do not provide them with rice seeds. They trade and exchange indigenous rice varieties with VOICE and MSSRF and both MVs and TVs with the Kudumbashrees.

Modern and traditional rice varieties are provided by formal sources before each cultivation season (summer and monsoon) in order to prevent seed losses during storage. Most of the farmers also provide seeds only after harvesting and processing the rice seeds.

Changes within the System

The rice seed system in 1992 (Fig. 4) consisted of two sources: farmers own seed stock and other farmers' farm-saved seeds. Farmers only obtained their seeds by exchanging one rice variety for another and they cultivated mainly traditional rice varieties. The number and diversity of rice seed sources had increased by 2012 (Fig. 5). The seed system now includes informal and formal seed sources, which provide local landraces as well as improved rice varieties through non-market and market exchanges and trade. Farmers provide their farm-saved seeds to other farmers or VOICE and MSSRF, but no other formal seed provider. In order to sell their rice seeds on the market, the seeds need to be certified through a seed certification agency. If farmers sell seeds without certification, they are liable to prosecution by the government.

The analysis shows that farmers' access to crop genetic resources is through various seed sources. Farmers also cultivate traditional and modern rice varieties. Improved rice varieties are provided from different sources within the formal and informal seed sector, whereas local landraces are supplied only by farmers, Kudumbasrees and the NGOs VOICE and MSSRF.

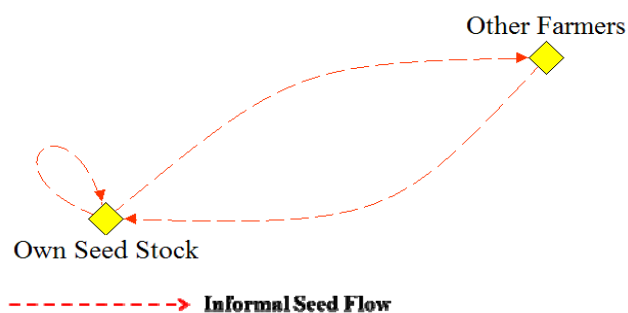


Figure 4: Rice seed system of Wayanad in 1992

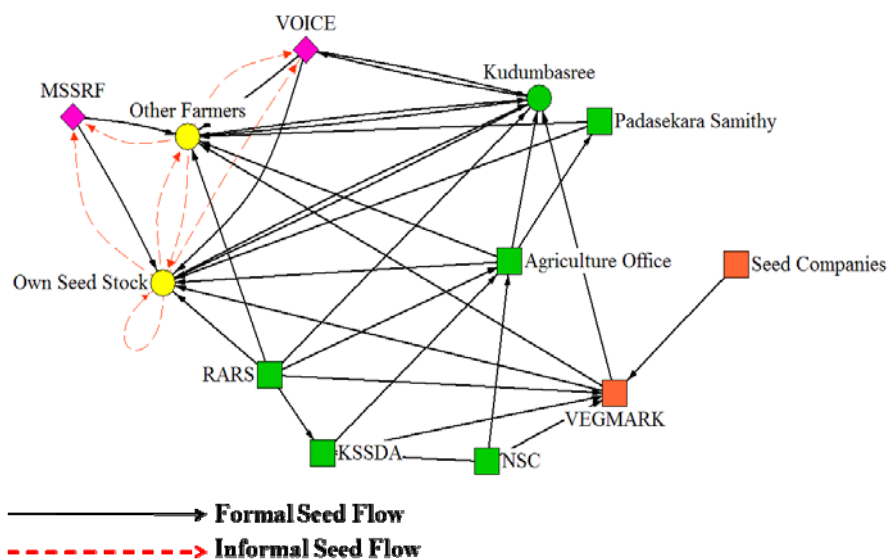


Figure 5: Rice seed system of Wayanad in 2012

RECOMMENDED ACTIONS

6. Promote the availability of TVs at the RARS at Am-balavayal, if farmers request them.

7. Create organizations to promote rice cultivation and agriculture in Wayanad.

8. The locations of seed villages (places, where farmers can obtain TVs) from MSSRF and VOICE need to be forwarded to the AOs, for them to pass it on to the farmers.

9. Establish portable storage facilities for high yielding and traditional rice varieties in order to facilitate seed exchange and trade among farmers.

10. Install and improve irrigation systems in order to ensure continued rice cultivation and seed production.

11. Implement programmes that support farmers and agriculture, e.g. a marketing system for seed procurement, and financial incentives for rice cultivation.

12. Set up a seed ordering system to ensure that farmers' seed requirements for the following season are met.

Measures of support for rice farmers

The Agriculture Department of Kerala sets up support programmes and subsidies for modern and traditional rice varieties and the Agriculture Offices implement these on the grassroots level. In Wayanad, farmers receive money if they cultivate Gandhakasala (TV), purchase MVs, convert fallow land into rice fields or lose their harvest due to extreme weather, such as droughts or floods. Further, AOs, RARSs, VOICE and MSSRF provide training on various topics, such as cultivation methods for rice varieties (modern or traditional), pest and disease management, handling rice varieties, production of organic fertilizers and methods of organic farming. Padasekara Samithies, RARSs and AOs also train farmers to use agricultural machines such as tractors, tillers and harvesters.

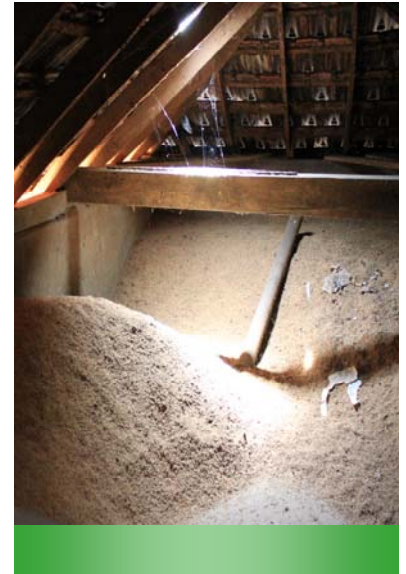
The Registered Seed Growers Programme, supervised and implemented through KSSDA, promotes production of quality rice seeds by farmers for supply to other farmers. The participating farmers need to apply to this programme beforehand, and then cultivate 10 hectares of rice seeds under standardized quality norms.

Farmers' access to TVs is difficult in some areas (farmers surveyed mentioned Vellamunda and Panamaram panchayats) that are remote from seed producing areas and where local sources have vanished. VOICE and MSSRF provide various local varieties within seed villages.

Farmers stated that the main requirement for additional support measures was for the promotion of agriculture and rice cultivation in general by the Agriculture Department of Kerala, to counteract the decline experienced by these sectors recent years.

Summary

Rice cultivation in Wayanad has to be promoted in order to ensure food, feed, and seed production by providing access to diverse crop genetic resources within farmers' local areas. The supply of improved varieties is already assured through various sources. However the availability of local landraces in Wayanad is declining. In order to counteract this tendency, governmental institutions should play an active role in ensuring the availability of seeds for traditional rice varieties, and promoting cultivation of a range of local landraces alongside modern rice varieties.



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