

ECOLOGICAL AND ETHNO-CULTURAL EXAMINATION OF THE RISE
AND FALL OF RICE CULTURE IN SOUTHERN INDIA WITH SPECIAL
REFERENCE TO THE WESTERN GHATS RICE BIODIVERSITY

FINAL REPORT

Submitted to
Indira Gandhi National Centre for Arts, New Delhi
By
Mathew K Sebastian, P R Arun, P A Azeez



SÁLIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY

Coimbatore – 641108

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EXECUTIVE SUMMARY

Extensive and intensive field surveys were conducted in the states of Kerala, Tamil Nadu, Karnataka, Maharashtra and Goa and in the Western Ghats areas. Discussions were held with farmers, both traditional and modern, researchers, NGO's, people who are dedicated to the conservation of Traditional Rice Varieties (TRVs), knowledgeable farmers who have abandoned rice cultivation and lay men.

Information about 591 varieties were collected. Few varieties like Navara, Jeerakasala, and Gandhakasala are cultivated in more than one state. Since they have been in cultivation in those states for a long time there is every chance that the characteristics of the varieties might have undergone modifications and therefore they have been treated as varieties pertaining to that state.

Among 141 Kerala traditional varieties 3 are disease resistant, 6 are drought resistant, 3 are medicinal, 7 are salt tolerant, 7 are flood resistant and 14 are pest resistant. All the 182 varieties reported from Tamil Nadu are cultivated in the field out of which 18 are drought resistant, 17 disease resistant varieties, 5 medicinal, 18 pest resistant and 7 are flood resistant varieties. From Karnataka 122 varieties were listed out of which 97 are still cultivated and many of them are under large scale cultivation. Cultivation status of 25 are unknown. Flood resistant varieties such as Nereguli and Yedi Kuni are cultivated in large tracts of Shimoga district wherein the paddy fields are submerged by the flood waters of Bhadra river. Large tracts of paddy fields in Mangalore, North Canara, and Shimoga districts are still cultivated with traditional varieties only. From Karnataka 1 disease resistant variety, 1 drought resistant variety, 7 medicinal varieties, 3 flood resistant varieties and 5 pest resistant varieties are recorded. Similarly there are 69 long duration, 21 medium duration and 2 short duration varieties in Karnataka.

Information about 77 varieties could be gathered from different sources from Maharashtra out of which 62 varieties are cultivated and the cultivation status of the remaining 15 varieties are not known. Out of the 77 varieties 23 are disease resistant, 19 are pest resistant and 6 are medicinal. Fifty varieties are long duration, 46 are medium duration and 21 are short duration.

From Goa 69 varieties are recorded out of which 35 varieties may be under cultivation and 34 varieties are not cultivated at present. Out of the 35 varieties reported to be under cultivation, the veracity of the information has to be checked at field level again. In Goa 8 varieties are salt tolerant which are cultivated in Khazan lands.

But it is painful to note that much of the traditional knowledge has been vanished along with the disappearance of traditional varieties and the cultivation practices.

Important Rice Cultivating Areas (IRCA's)

Kerala

Based on extent of rice paddies : a) Kuttanad b) Palakkad-Chittoor Area

Based on traditional varieties cultivated : a) Wayanad area b) Kanthalloor in Idukki

Based on traditional farming systems : a) Pokkali rice paddies in Ernakulam district b) Kole paddy fields in Trichur district

Tamil Nadu

Based on extent of rice paddies and production : Cauvery Basin Zone

Karnataka

Based on traditional varieties cultivated : Shimoga, Sagar, Medini areas in the Western Ghats

Maharashtra

Based on traditional varieties cultivated : Palghar district: Mada Chapada, in Vikramghad taluk, Chouk, Kaamdi Paada and Nangarmuda in Jawhar taluk, Pimpalgao matha in Sangamner taluk-

Ahmednagar District: Muttevadi, Kone and Sattevadi in Akole taluk in and Adoli, Halewadi- Bagalwadi, and Jalkewadi in Radhanagari taluk

Kolhapur district : Dhabil, Dhangarwada, Laatgaon, in Ajara taluk

Goa

The entire coastal area as it hosts Khazan paddy fields which are important due to its traditional unique way of rice cultivation and also for high yielding salt tolerant traditional rice varieties.

Historical changes in rice cultivation practices and the reasons for the same

During the past few decades especially after the introduction of hybrid varieties as an aftermath of the advent of the green revolution has impacted the paddy production scenario in our country drastically. Though there was a sudden jump in the total production and per unit production, initially thought to be result of the high yielding characters of the hybrid varieties, but actually the outcome of the high inputs added as chemical fertilizers and pesticides. During the last decade the per unit area production has either stagnated or struggling to improve bit by bit.

There has been consistent decline in paddy cultivation in Kerala since the 1980s. The area under paddy cultivation increased substantially during the first fifteen years after the State formation in 1956 – from 7,60,000 hectares in 1955–56 to 8,80,000 hectares in 1970–71. In 2012-13, the area under paddy was 197277 hectares only occupying just 7.6% of the total cropped area.

The analysis of the fifteen year (1997-98 to 2011-12) data from Karnataka shows that though there has been occasional setbacks paddy cultivation is holding forte despite many adverse situations. In 1997-98 the area under cultivation was 15.53 lakh ha. and after decline to 10.74 lakh ha in 2003-04 area under rice has peaked into 15.40 lakh ha in 2010-

11. In 2011-12 the area was 14.16 lakh ha. Therefore it can be concluded that rice cultivation is not under immediate threat in Karnataka.

Rice is the second important crop after Jowar in Maharashtra State. The total area under rice crop remained stable around 15 lakh ha for the past four decades and production around 24 lakh tones.

In Goa, though there has been a slight upward trend during 1999-2001, and after holding almost steady for the years 2003 to 2008, it started declining again. In fact, the actual area cultivated will be lesser than in the records shown, as many farmers have registered as cultivators for drawing the governmental benefits extended for rice cultivation, without actually doing any farming.

Diminishing returns, Conversion of paddy fields for other crops, Land as a speculative asset, Scarcity of farm labour, Apathy of new generation, Vagaries of climate and Developmental projects are major reasons identified as the reasons for the decline of rice paddies.

Paddy fields are a vital part of environment and ecological regime. They provide natural drainage paths for flood waters, conserve ground water, and are crucial for preservation of a rich variety of flora and fauna. In several regions paddy cultivation, in the traditional mode, is done in a manner that enriches the specific geographical and ecological features of the regions. In the Kaipaadu fields of Kannur and Kasargod districts, and Khazan lands of Goa, paddy has been traditionally cultivated in the fields flooded with saline water. In Pokkali fields and Khazan lands farmers alternate the cultivation of prawn with paddy cultivation. The decomposing biomass after the harvesting of the panicles, left in the field, provide nourishment to the prawns stocked there for fattening. Kole fields of Thrissur and Ponnani and backwater area of Bhadra river in Sagar, Karnataka are unique ecosystems where paddy is cultivated in the fields completely flooded during monsoon.

During our survey from Kerala paddy fields 149 plant species, 51 butterfly species and 189 species of birds were recorded. From Karnataka 169 plant species, 42 species of butterflies, 74 bird species and 30 species of odonates were recorded. From Maharashtra paddy fields 24 spp. of odonates, 31 spp. of birds, 36 spp. of butterflies and 144 spp. of plants were recorded. Tamil Nadu rice paddies were habitat for 41 spp. of butterflies, 57 spp. of birds and spp. plants.

In the Kole wetlands 125000 birds in a single hectare of paddy field were recorded in December 2002 by Jayson reflecting the importance of the Kole paddy fields as an important ecosystem for birds. Narayanan et al (2011) reported 225 species of birds belonging to 59 families from the paddy fields of Kuttanadu, of which 30% were migrants.

Based on our survey the following recommendations are made:

a) All the Important Rice Areas identified in this report should be declared as such. Special programmes should be implemented for protecting rice paddies in those areas and the accompanying ecology and biodiversity. b) Special incentives should be provided to all the

farmers who are cultivating traditional rice varieties c) Steps should be immediately taken to conduct further field trials for the high yielding traditional varieties identified in this report and should be reintroduced in their localities if found feasible d) Detailed studies should be taken up to document the biodiversity of macro and microorganisms associated with rice paddies.