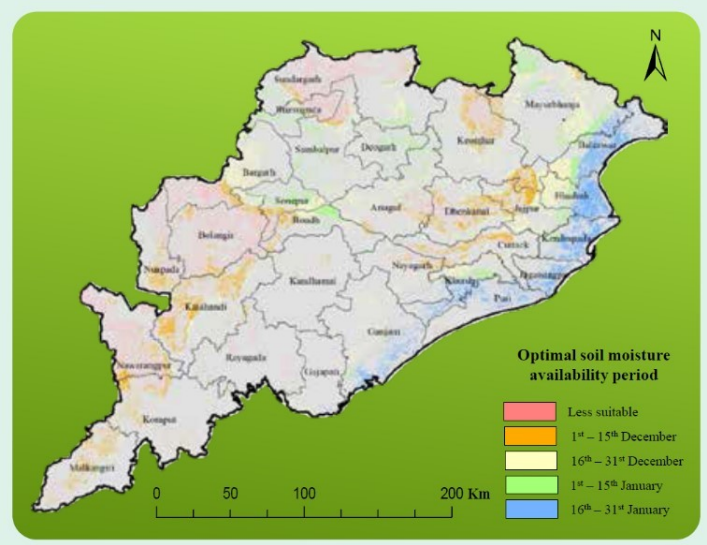
IRRI 60!

Rice-Fallow Management in Odisha



Soil moisture based suitability map for targeting water efficient suitable short/medium duration crops in Rice-Fallows

What are Rice-Fallows?

Rice-Fallows are those croplands which remain uncultivated during winter (*Rabi*) season after the harvest of *Kharif* rice.

Rice-Fallows in Odisha:

- Rice is the main crop of Odisha covering 75-80% (3.8 million ha) of a total cultivated area of about 6.5 million ha
- About 40% (around 2 million ha) of the total rice cultivation area is estimated to remain fallow in the winter season (after Kharif rice)

(Source: Odisha Agriculture Statistics 2013-14 and IRRI Report 2018-19)

District	Suitable area (ha) for Rice Fallow	District	Suitable area (ha) for Rice Fallow
Anugul	43042	Kandhamal	13346
Baleshwar	120926	Kendrapara	79006
Bargarh	42919	Keonjhar	57243
Bhadrak	125408	Khordha	57420
Balangir	9076	Koraput	1170
Baudh	30783	Malkangiri	7157
Cuttack	27574	Mayurbhanj	173675
Debagarh	14092	Nabaranagpur	2143
Dhenkanal	19179	Nayagarh	14191
Gajapati	8719	Nuapada	6752
Ganjam	61493	Puri	35833
Jagatsinghapur	32824	Rayagada	404
Jajpur	53635	Sambalpur	48281
Jharsuguda	11578	Sonepur	32109
Kalahandi	18423	Sundargarh	36360
Total	**1178009**		

Residual Soil Moisture derived Rice-Fallow Suitability Area

Why is the land left fallow in Rabi season?

- Lack of irrigation in many parts of the State
- Lack of residual moisture after rice harvest in uplands and medium lands
- Excess moisture after rice harvest in lowlands which delay planting rabi crops
- Cultivation of long duration paddy varieties leaves little time for a second crop
- Limited availability of short duration, high yielding and stress-tolerant rice and pulse varieties and good quality seed
- Lack of knowledge and experience in cultivating Rabi crops and limited extension effort to promote appropriate varieties and management practices
- Open grazing of cattle during the dry season

Why is Rice-Fallow management important?

- Bringing the rice-fallow lands into cultivation could enhance production and food security
- Farmers' income could be enhanced by planting the high potential fallow lands with cash crops or those with high market demand like pulses, oilseeds and vegetables
- Diversification with crops like pulses and vegetables in Rabi could add to the dietary diversity of farm households and lead to better nutrition and health
- Growing pulse crop maintains the fertility of the soil through fixation of atmospheric nitrogen and helps in enhancing the productivity of crops in next cropping season

Black gram:
VBN 8
PU-31
PU-35

Rice:
Sahbaghi Dhan
Bina Dhan 11
Swarna sub 1
DRR 44

Green gram:
IPM 205-7 (VIRAT)
SHIKHA (IPM 410-3)
IPM 02-14
IPM 99-125 (Meha)
IPM 02-3, MH 421

High yielding short duration varieties of rice and pulses

What knowledge and options are available to enable farmers to manage Rice-Fallows and achieve high productivity?

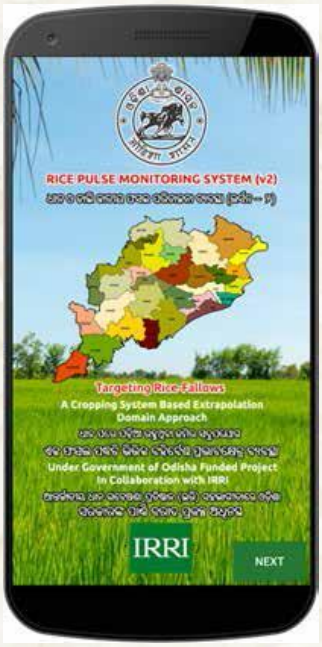
- Soil moisture-based suitability map has been developed to facilitate precise targeting of suitable areas for Rice-fallow management. This information can help decide the type and duration of rice and rabi crops to be used as well as adjustments in sowing time (early sowing in uplands before moisture depletes; delayed sowing in lowlands after moisture depletes to the desired level)

- Availability of residual soil moisture content in uplands and medium lands can be enhanced by growing shorter duration rice (early harvest). Reducing turnaround time to plant the rabi crops and selection of rabi crops of shorter duration further enhances the possibility of raising a successful rabi crop

Farmer happy with the performance of Pulses (Mungbean-Virat 55 days variety

- Delayed planting of rabi crops in lowlands can lead to heat stress at flowering and maturity. Shorter duration varieties of rabi crops can prevent such losses

- New drought-, flood-, and salt-tolerant, short duration (100-120 days), high yielding rice cultivars and short-duration (55-75 days), disease resistant, high yielding pulse (green gram & black gram) crops, along with improved agronomy and water management technologies are available which can significantly improve the productivity of rice-based cropping systems



Rice-Pulse Monitoring System Mobile Application

Rice-Pulse Monitoring System (RPMS) is an android (phone/tablet) based survey application system for rice, pulses and oilseed crops. RPMS app can be used to collect and store geo-referenced information, along with a suite of geospatial tools to visualize, analyse and manipulate ground data for various needs of the Department of Agriculture and Farmers' Empowerment (DAFE), Odisha in different schemes

CGIAR collaborative trials of different other rabi crops in Rice-Fallows

IRRI-ICRISAT Collaborative trial of Pigeon pea

IRRI-ICRISAT Collaborative trial of Chickpea

IRRI-CIP Collaborative trial of Sweet Potato

IRRI-WVC Collaborative trial of Vegetable-Brinjal

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