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Agro-forestry in Bihar: Adaptation Strategy under a changing Climate

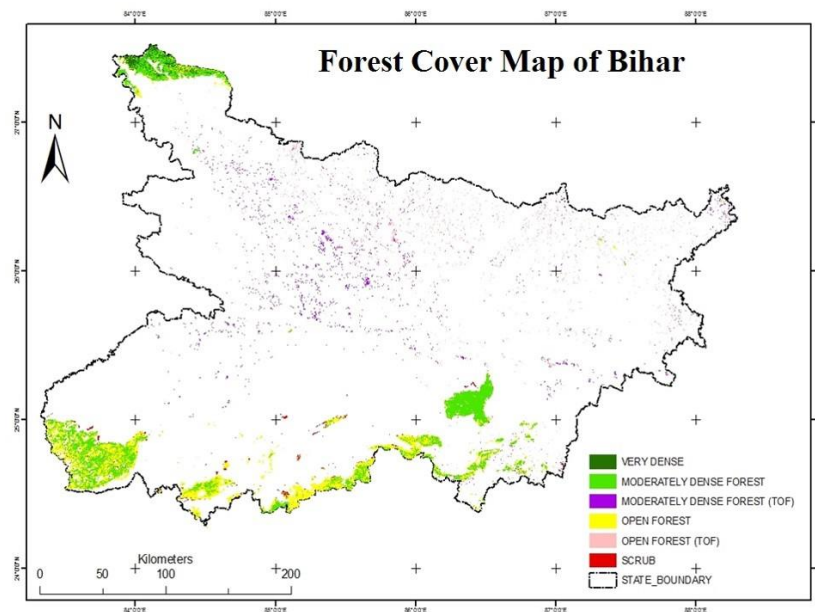
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Government of Bihar

Sustainable Lifestyle = Positive Climate Action

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Bihar- At a Glance

- Geographical area : 94163 sq.km.
- Total forest land : 7288 sq. km. (7.74%)
- Net Sown area : 57120 sq. km.
- Population : 104.10 million
- Rural Population : 92.34 million (88.71%)
- Average Population density : 1106 per sq.km.
- Livestock Population : 30.34 million
- Average Rainfall : 1200 mm



* As per census, 2011

* As per 18th livestock census

Strategy to meet climate change

- Development of degraded forests
- Promoting Agro-forestry and Farm forestry
 - Introduction of Poplar as the fast growing tree crop on agricultural lands by farmers on suitable tracts in Bihar plains
 - Promotion of native tree planting on farm bunds and lands
 - Co-opting farmers in production of planting stock
- Greening of urban areas
- Linear plantations along road and canal embankments

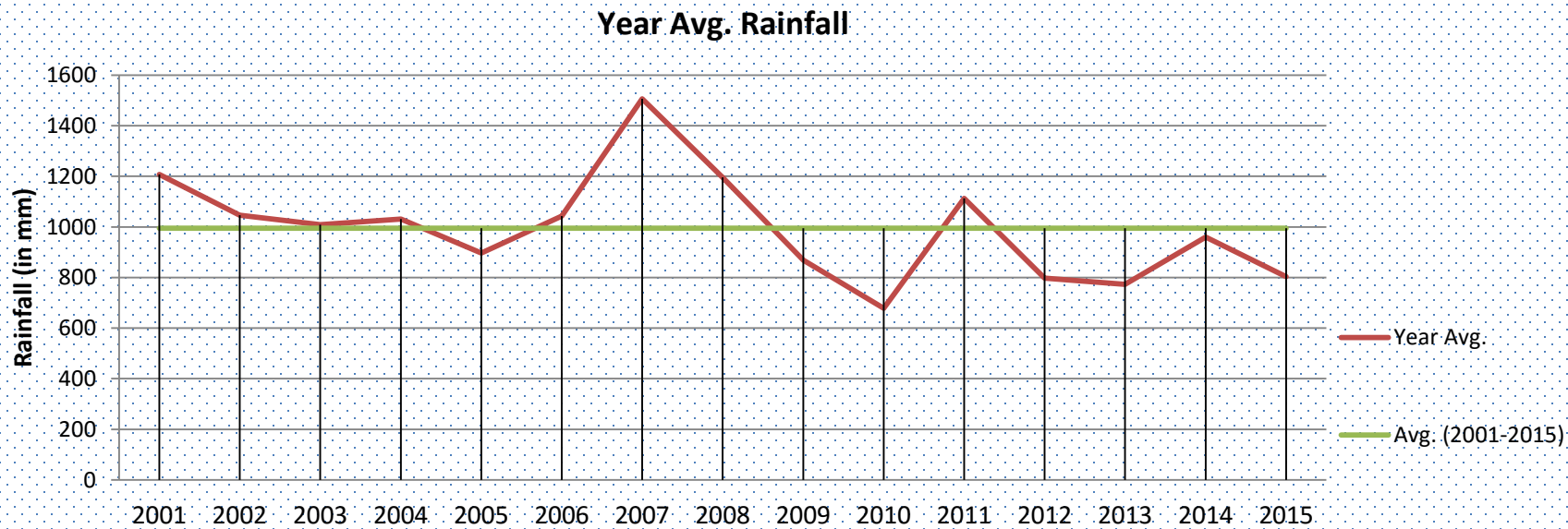


Agro-forestry in Bihar

- Govt. of Bihar prepared Agriculture Road Map for 2012 to 2017
- Hariyali Mission established under Department of E&F with objective
 - Raising the green cover in Bihar from 9.79% to 15% by the end of 2017
 - ISFR 2011- 9.79%
 - ISFR 2013- 12.86%
 - ISFR 2015- 12.88%
 - Additional 5.21% geographical area to brought under tree cover.
 - Expansion only possible in non-forest land, as there is no scope to expand natural forest area.
 - Increase in Income of farmers through Agroforestry
 - Environmental amelioration and Climate change mitigation
- Plantation of 24 cr. Plants out of which 6 cr. plants under agro-forestry
- Earlier plantation on private land were in the form of
 - Social forestry
 - Horticulture plantation etc.

Rainfall scenario

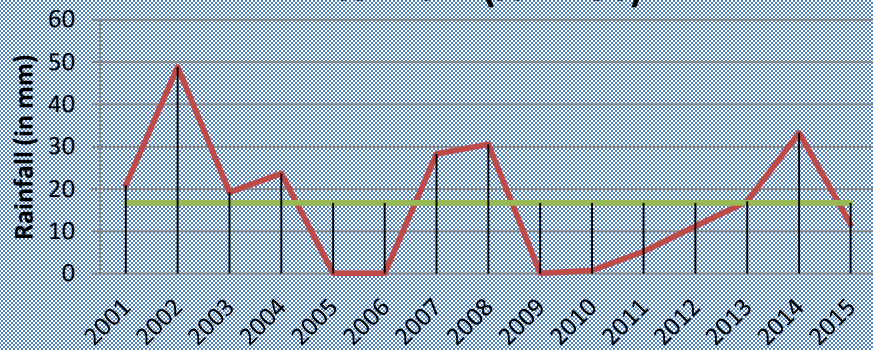
- About 79% of its population is engaged in agricultural pursuits.
- 22.21 lakh ha (38.88 %) area under rainfed cultivation
- Less number of rainy days



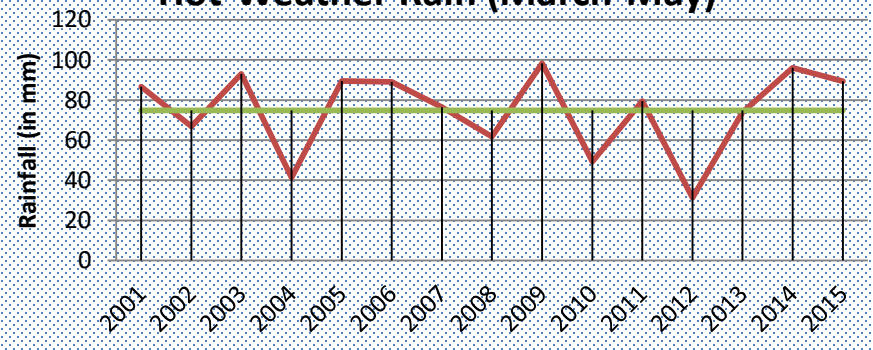
Rainfall Scenario contd.....

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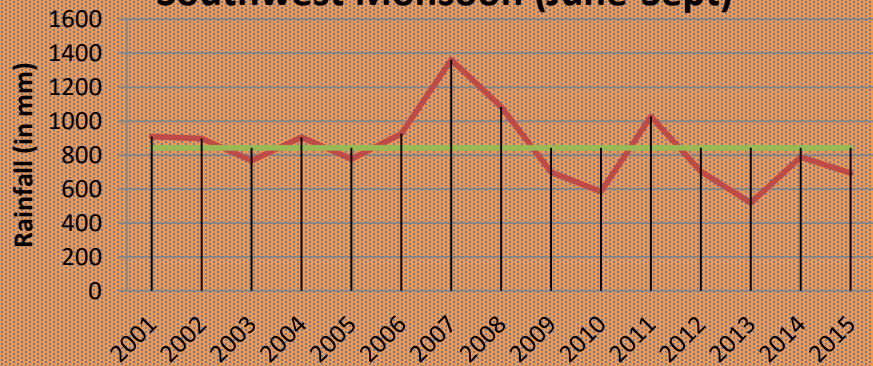
Winter Rain (Jan-Feb)



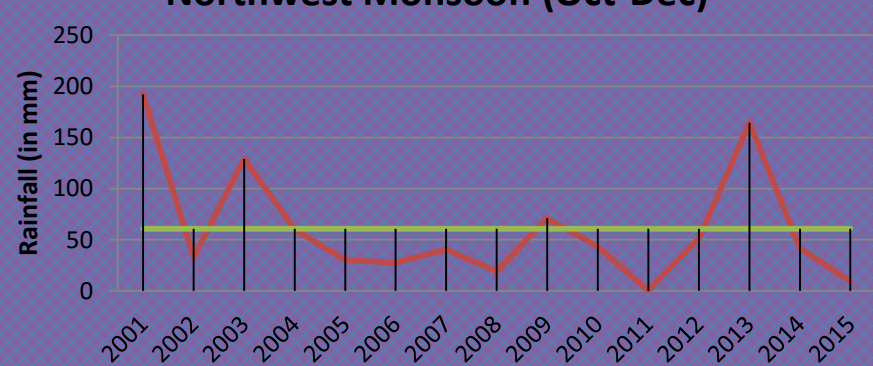
Hot-Weather Rain (March-May)



Southwest Monsoon (June-Sept)



Northwest Monsoon (Oct-Dec)



Why Agro-forestry?

- Uncertain income from agriculture.
- Imperfection in market mechanism.
- Agro-forestry as risk management strategy against erratic rainfall.
- For additional and lumpsum return from agro-forestry.
- To reduce pressure on forest for fodder and fuel wood requirement in fringe villages.
- Alternative source of timber other than forest to fulfill increasing demand.

Hariyali Mission

- Started in 2012-13
- Phase-I till 2016-17
- Schemes to promote agro-forestry
 - Agro-forestry- Poplar (ETP)
 - Agro-forestry- Other Species
 - Mukhyamantri Niji Paudhshala- Poplar species
 - Mukhyamantri Niji Paudhshala- Other species



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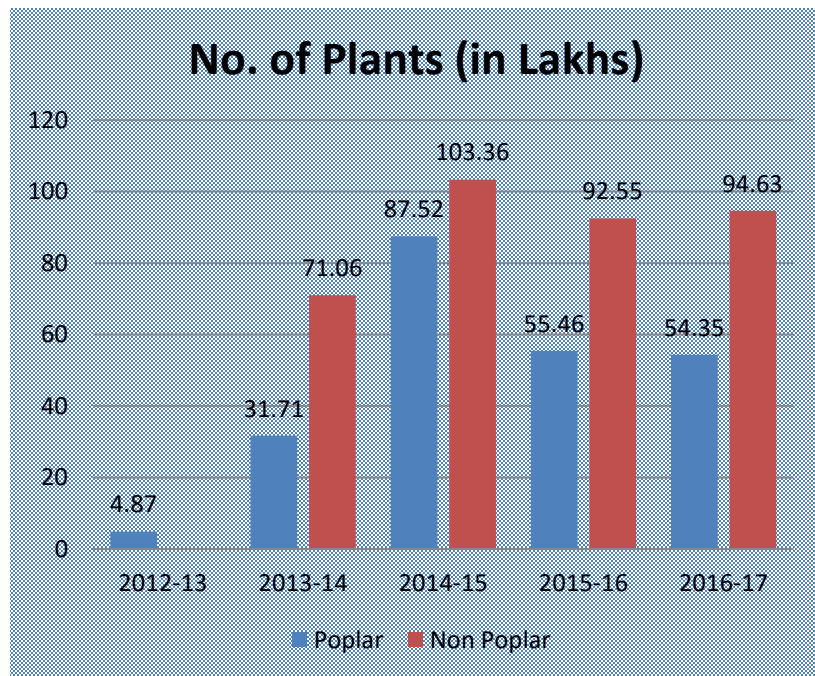
Agro-Forestry

- Objective to increase green cover and provide additional income to farmers.
- Beneficiaries are selected by open advertisement.
- Selection on the basis of first come- first serve basis.
- Preference given to farmers having experience.
- Free plants provided to beneficiaries.
- Technical training provided.
- Incentives given according to survival @ Rs. 10, 10 & 15 per plant respectively in 1st, 2nd & 3rd year.

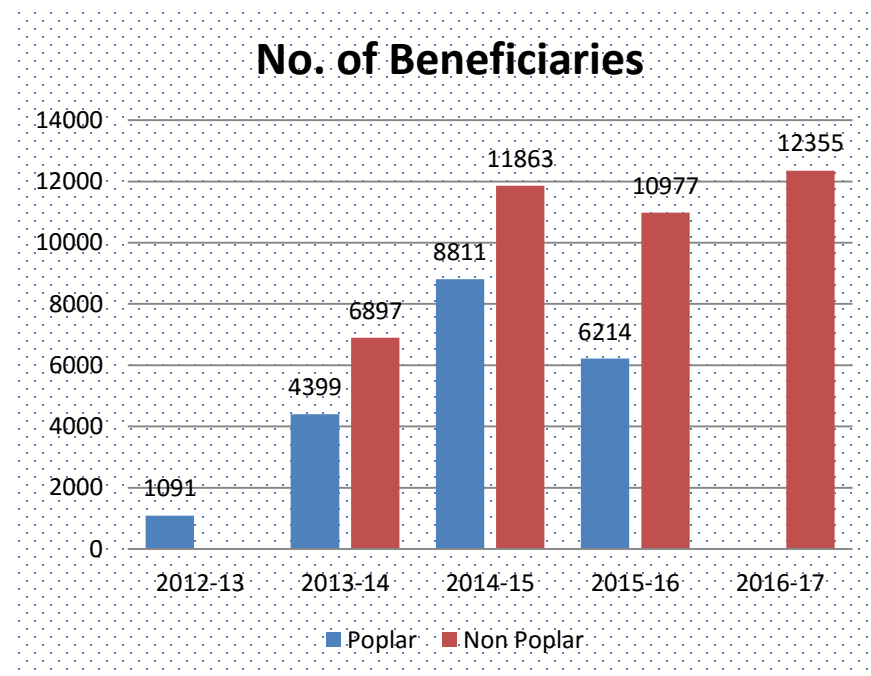


Agro-Forestry Achievements

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Total: Poplar- 234.91 lakhs
Non Poplar- 361.6 lakhs



Total: Poplar- 20515 Beneficiaries
Non Poplar- 42092 Beneficiaries

Poplar Nursery

- Objective to provide plants under Agro-forestry-Poplar ETP scheme.
- Beneficiaries are selected by open advertisement.
- Selection on the basis of first come- first serve basis.
- Preference given to farmers having experience.
- Free ETP cuttings provided to beneficiaries.
- Technical training organized before nursery establishment.
- Buy-back ETP of standard parameter @ Rs. 13-15 per ETP.

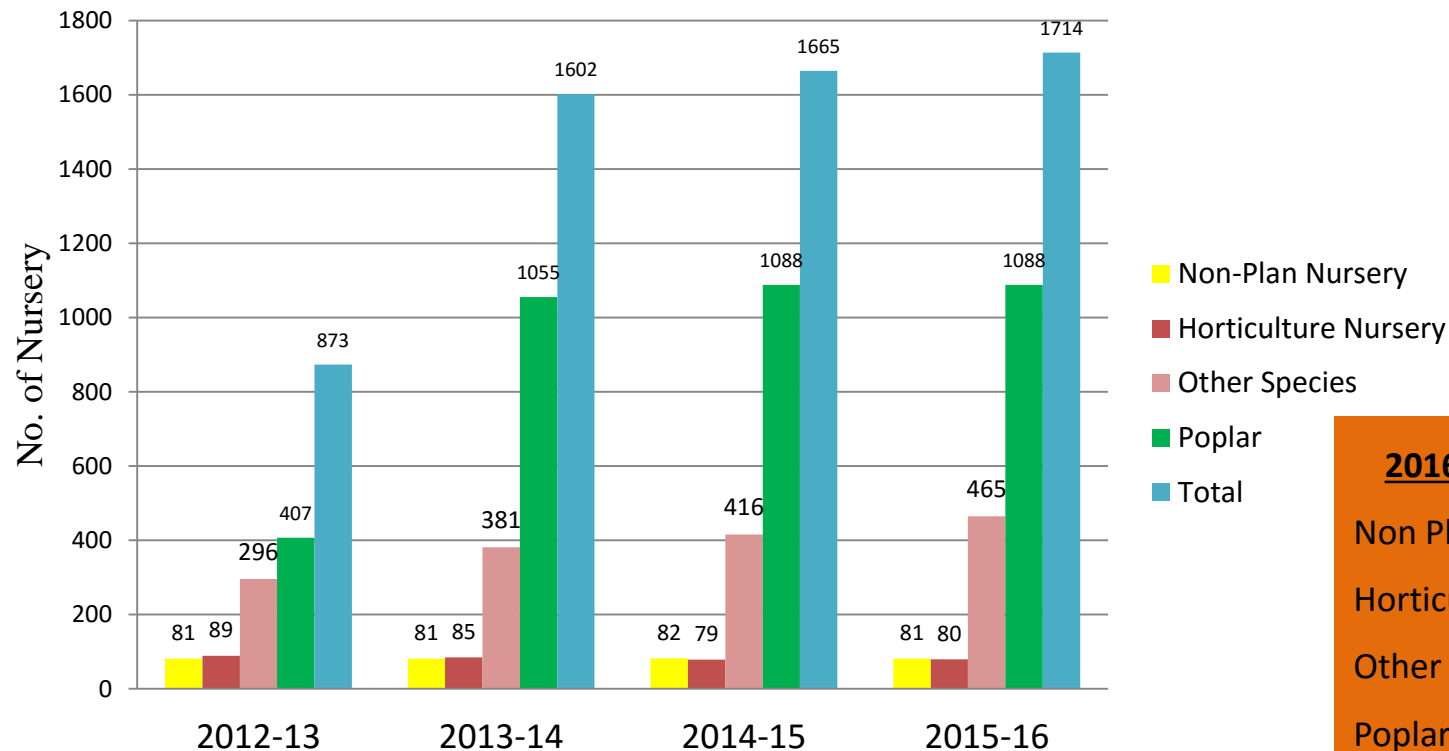


Other Species Nursery

- Objective to provide plants under Agro-forestry- Other Species scheme.
- Plants are raised in small tubes.
- Beneficiaries are selected by open advertisement.
- Selection on the basis of first come- first serve basis.
- Preference given to farmers having experience.
- Assistance provided for nursery establishment.
- Technical training organized before nursery establishment.
- Buy-back of seedlings of standard parameter @ Rs. 6.07-6.30 per plant.



Planting Materials



2016-17 (Proposed Target)

Non Plan- 79 Nurseries

Horticulture- 81 Nurseries

Other Species- 561 Units

Poplar-1087 Units

Training

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- MOU with ICFRE to provide training and carry out research activities.
- Training programme for beneficiaries started in 2013-14
- Training Inside State:
 - In districts/blocks
 - **37876 Participants (748 Trainings)**
 - Training by ICFRE experts
 - Participants: Local beneficiary and departmental staffs
 - Training of Agro-forestry and Nursery techniques
- Training Outside State:
 - Termed as Kisan Study Tour (KST)
 - **1991 Participants (83 Trainings)**
 - Institutes:
 - Forest Training Academy, Haldwani;
 - GB Pant University of Agriculture and Technology, Pantnagar;
 - National Research Centre for Agroforestry, Jhanshi
 - Training of Agro-forestry and Nursery techniques



Mid Term Evaluation

- Mid Term Evaluation of on going Agro-forestry projects.
- Conducted in the end of 2015-16
- Probability Proportionate to Size (PPS) method used for selection of beneficiary.
- Collection of data:
 - Primary- From official records
 - Secondary- Questionnaire and Focused Group Discussions
- Classification of data under 5 broad criteria
 - Socio-economic Level
 - Support from Forest Department
 - Economics of Business
 - Land
 - External Unforeseen Factors
- Suggestions based on outcomes:
 - Regular promotional activities upto block level
 - Support for economical irrigation technology
 - Proper monitoring of seedlings and it's distribution
 - Provide market for produce



Proposed Plan- Phase-II

- Introduction of E-Forest Mandi
 - To sell the produce of plants planted in phase-I
 - A common portal for seller and buyer
- Special emphasis on plantation of endemic species
 - *Gmelina arborea* (Local name-Gamhar)
 - *Melia dubia* (Local name-Bakain)

THANKS