



India

**Improved Nutrient Use and Manure
Management towards Sustainable and
Resilient Agricultural Systems**

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Soil Fertility and Nutrient Use in India

@ Indian agro-ecosystems are diverse with several soil types and production systems.

@ Indian soils are multi-nutrient deficient and therefore optimum plant nutrition is critical for sustainable agriculture and food systems.

@ N and P are mostly low to medium and K status is medium to high.

@ Several secondary and micro nutrients are deficient in Indian soils.

Poor Soil Fertility associated with Low Soil Organic Carbon

- @ Important reason for low soil fertility in Indian soils is low soil organic carbon.**
- @ However, improving soil organic carbon is a challenge due to prevailing high temperature with tropical climate in the country.**
- @ Low agriculture production is associated with low soil fertility and sub-optimal nutrition.**
- @ Therefore, optimum nutrition and improving nutrient use efficiency and manure management is critical and agriculture programs and policies are build towards this.**

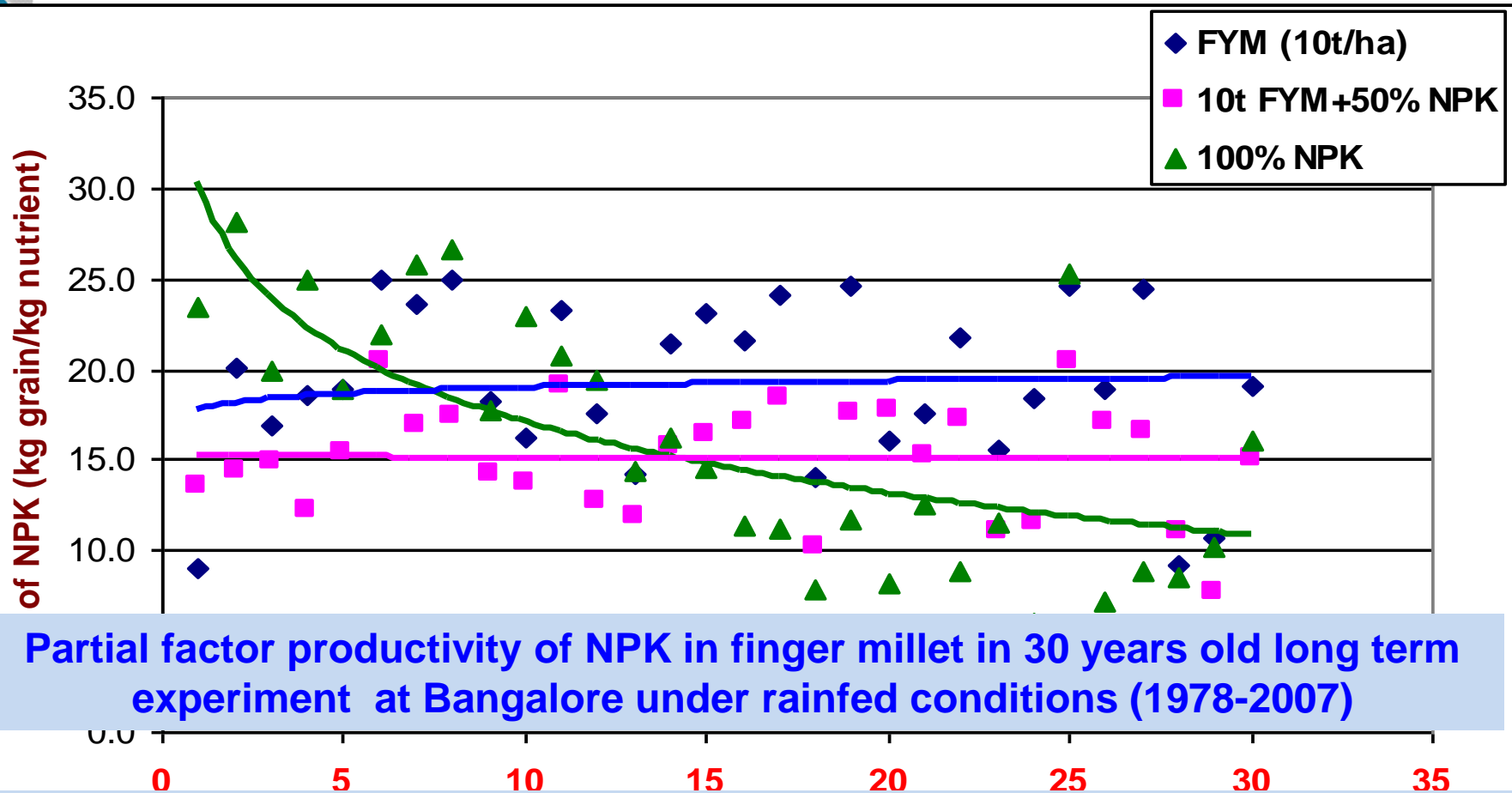
Technologies, Programs and Policies for Improved Nutrient Use Efficiency and Manure Management in Agriculture Systems

Soil Health Cards to Farmers for Site Specific Nutrient Management-Improved Nutrient Use Efficiency

@ Site specific nutrient management (SSNM) at field level with soil health cards and nutrient recommendations improve nutrient use efficiency and cost of cultivation.

@ 140 million farmers are expected to get soil health cards in India in time bound manner which guide the farmers for rationalized nutrient use and manure management.

Improving Nutrient Use Efficiency with Integrated Nutrient Supply System with Locally available Organic Manures



FYM 10t/ha=50-25-50 NPK; 10t FYM+50%NPK=75-50-62 NPK; 100% NPK=50-50-25

Strategies at Farm Level for Improved Nutrient Use Efficiency in India

- @ More crop per unit nutrient concept
- @ Crop residue recycling
- @ Balanced nutrient application
- @ Integrated nutrient management
- @ Leaf color chart based nutrient application
- @ Foliar application promotion
- @ On-farm generation of organic manures and reducing fertilizer nutrient application
- @ Cover crop technology promotion to reduce soil nutrient losses and enhance N fixation with legumes
- @ Biological nutrient sources
- @ Restoring soil health in rainfed regions under National Mission for Sustainable Agriculture (NMSA)
- @ Harnessing water-nutrient synergy for enhanced nutrient use efficiency
- @ Fertigation with water soluble nutrients

Strategies at Farm Level for Improved Nutrient Use Efficiency in India



- @ Micro irrigation systems for water and nutrient use efficiency**
- @ Placement fertilizers**
- @ Composting and vermicomposting**
- @ Alternative sources of nutrients**
- @ Organic farming promotion**
- @ Parampagat Krishi-Traditional Agriculture Practices**
- @ Improved factor productivity of nutrients with multi commodity integrated farming systems**
- @ Conservation agriculture systems**
- @ Legumes in Crop rotation**
- @ Soil health to Human health link promotion etc.**
- @ Technology improved fertilizer management & financial support for larger implementation**

Coated Urea: Slow Release Nutrient Fertilizers for Higher Nutrient Use Efficiency in India

@ Neem Coated Urea : Contributes to Slow release of N, and meets crop N demand and thus reduces N losses-*directly contributing N use efficiency.*

@ Needful policy and programs are in place in this direction towards improved N use efficiency in the country.

Support to Biogas Plant Establishment and Manure from Biogas Slurry

@ Establishing biogas plant house hold level, supported by Government of India

@ Slurry thus obtained are encouraged to use for composting or vermicomposting.

@ Above two programs and actions contributes to climate adaptation and led to co-benefits in many ways including **Improved Nutrient Use Efficiency and Manure Management.**

Tank Silt Recycling (Restoring Soil Fertility by Recycling of Eroded Soil under High Intensity Rains) Reduces to Nutrient Application Requirements in Different Production Systems

@ High intensity rains (frequency increased with climate change) erodes fertile top soil.

@ Restoring soil fertility by recycling of eroded top soils (which settles in village or farm tanks) is being implemented in India particularly rainfed light textured soils

@ This technology contributes reduced nutrient application, improved nutrient use efficiency by better water holding capacity of soil during mid-season droughts (another climate change impact)

Climate Adaptation and Risk Mitigation Contribution of these Programs and Policies

@ Cost reduction on nutrient application

@ Higher crop production leading to higher nutrient use efficiency

@ Cut down of nutrient application rates

@ Eco-friendly growing crop production



Thank You