




Multifactorial Considerations in Optimizing Rice Crop Nutrition

Dr. Matthew Morell
Director General
IRRI


1




Feeds
4 billion People
(56% of world population)




Grown by
144 million
Farm families
(25% of world farmers)




Annual value of
\$206 billion
(13% of world
crop value)




Home to
400 million
Rural poor
(40% of world poor)




Land Use
10% crop land



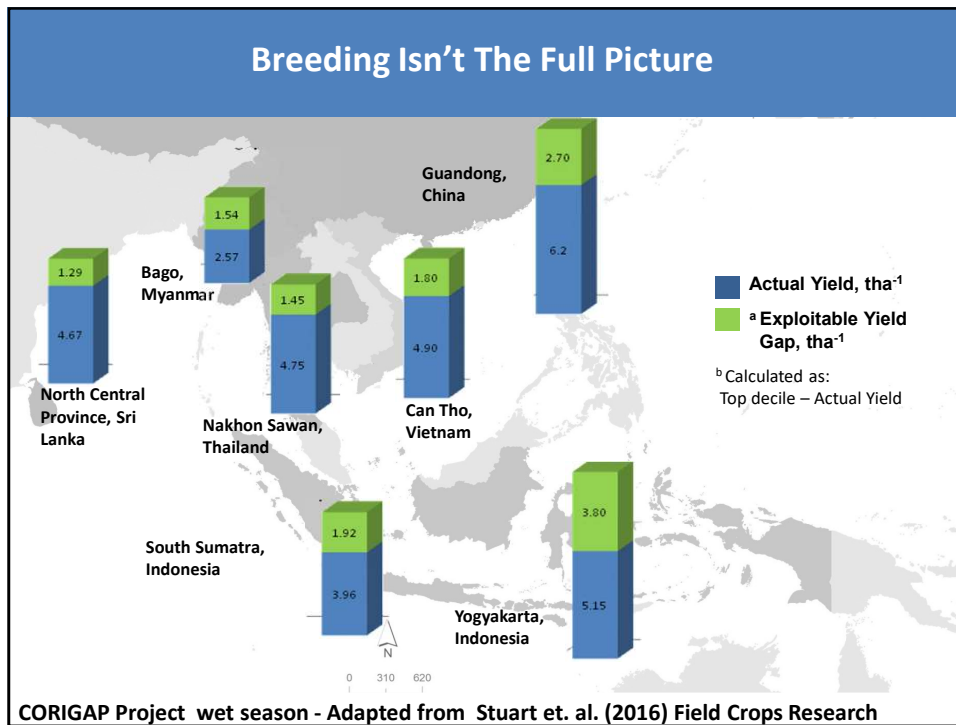
Fertilizer Use
15% of world total



Irrigation use
35% of world total



2



3

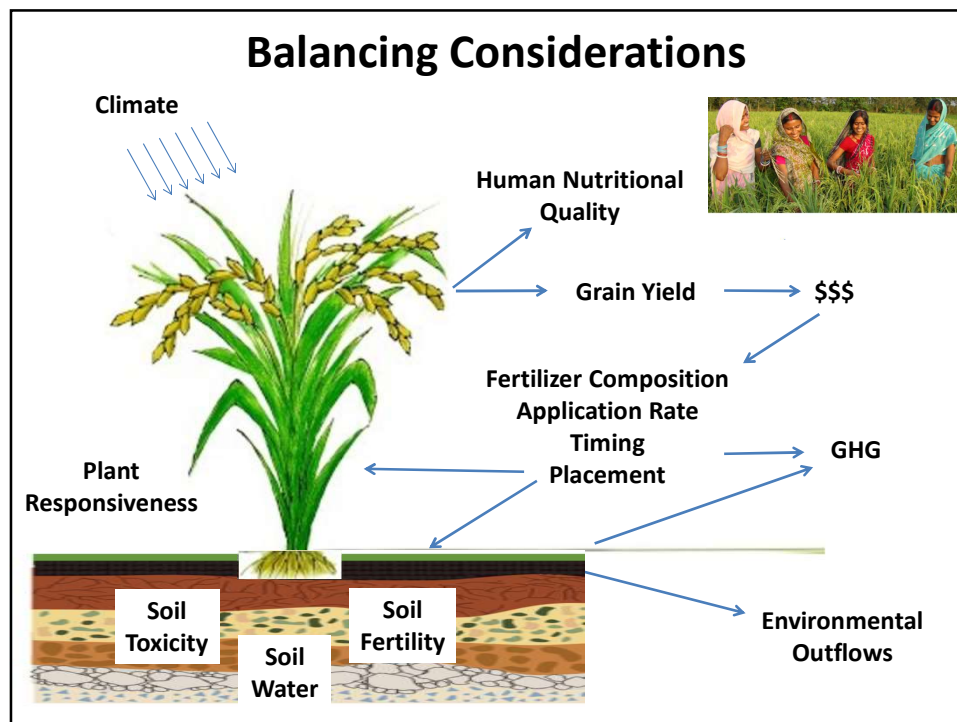
Balancing Objectives

1. Enhancing Yield
2. Decreasing input costs
3. Sustainable Production
4. Optimizing Human Nutrition
5. Reducing Environmental Footprint

Global Imperatives

Local Imperatives

4



5

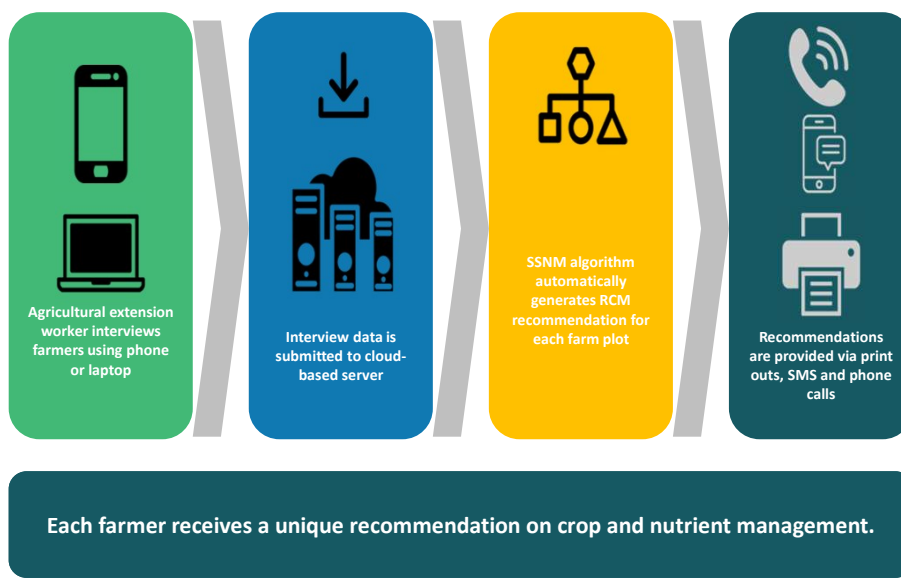
Rice Crop Manager: Science-based Solution

- **Site-specific nutrient management (SSNM)** principles underpin the digital ag tool
 - Plant based approach
 - Establish a yield target
 - Effectively use existing nutrients
 - Fill the deficit between total needs and endogenous supply
- **Actionable, relevant, tangible guidance for farmers**
 - Recommendation is given in terms **easily understood** by farmers
 - **Time and amount of fertilizer** (in kg) to be applied is recommended
 - Provides recommendation for **stress conditions** (submergence & drought)
- **Partnership based for effective, locally relevant dissemination channels** - combine IRRI and NARES **research across disciplines** for comprehensive solutions
- **Tested in multiple countries:** Customized for different countries: Bangladesh, Indonesia, Philippines and India

Rice Crop Manager takes scientific principles coupled with effective dissemination pathways to ensure that SSNM principles are accessible to smallholder farmers.

6

RCM: Current dissemination pathways



7

RCM: Proven Results

- Deployed in Philippines, India, Bangladesh, Indonesia
- <http://webapps.irri.org/ph/rcm> in English, Bangla, Tagalog, Hindi and Odiya
- On-farm evaluation: Application of fertilizers using RCM **increased yield** and **net added benefit**
- **170,000** recommendations (Odisha) (2017-2018)
- **2.1 million** recommendations between 2014 to 2018 (Philippines)
- **+USD100/ha/season** in all countries

Average yield increase of 397 kg per hectare per crop



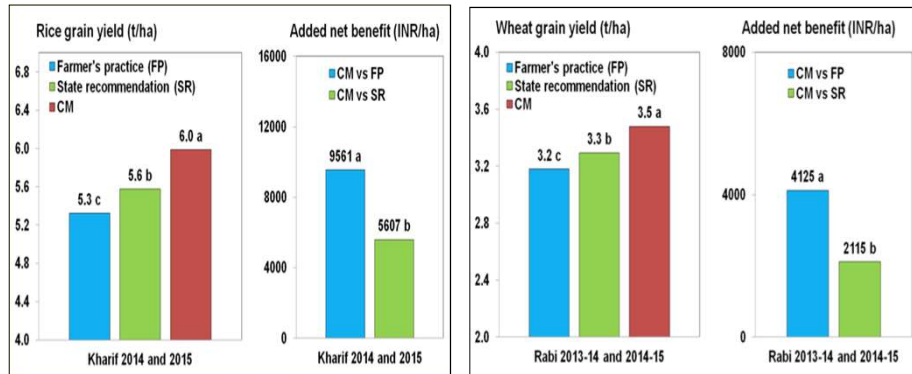
Added net benefit of 107 USD per hectare per crop

Results from 915 on-farm trials (2014-2018)

In all countries where it has been deployed, RCM has proven to increase farmer yields and incomes.

8

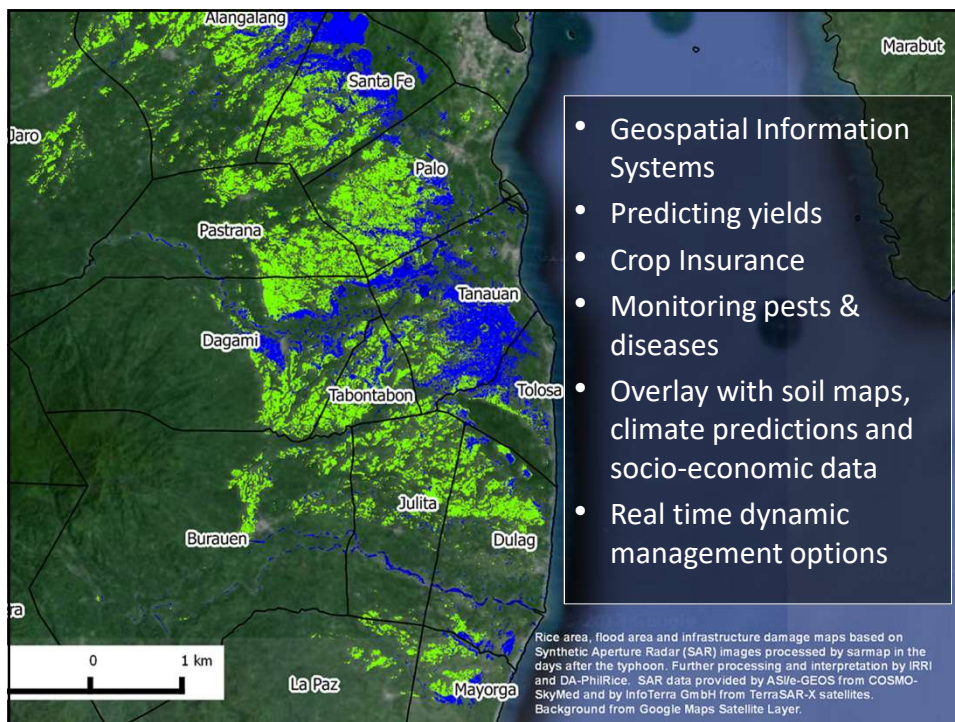
Crop Manager for Rice-Based Systems



Application of fertilizers using CMRS increased yield and net added benefit for Rice and Wheat in Bihar & Eastern UP (On-farm trials)



9



10



11

SSNM is not just a technology

- SSNM optimizes factors affecting gross margin – increasing yield and decreasing input costs
- SSNM has potential to improve non-monetized outcomes of agriculture – but needs policy support
- SSNM is the basis of a conversation with farmers
 - Understanding what is critical for the farmer
 - Increasing understanding of critical success factors
 - A gateway to adopting improved technologies
- Focus on scaling the system-based approach that SSNM underpins

12

