



NUTRIENT MANAGER FOR RICE: INDONESIA EXPERIENCE WITH ICT

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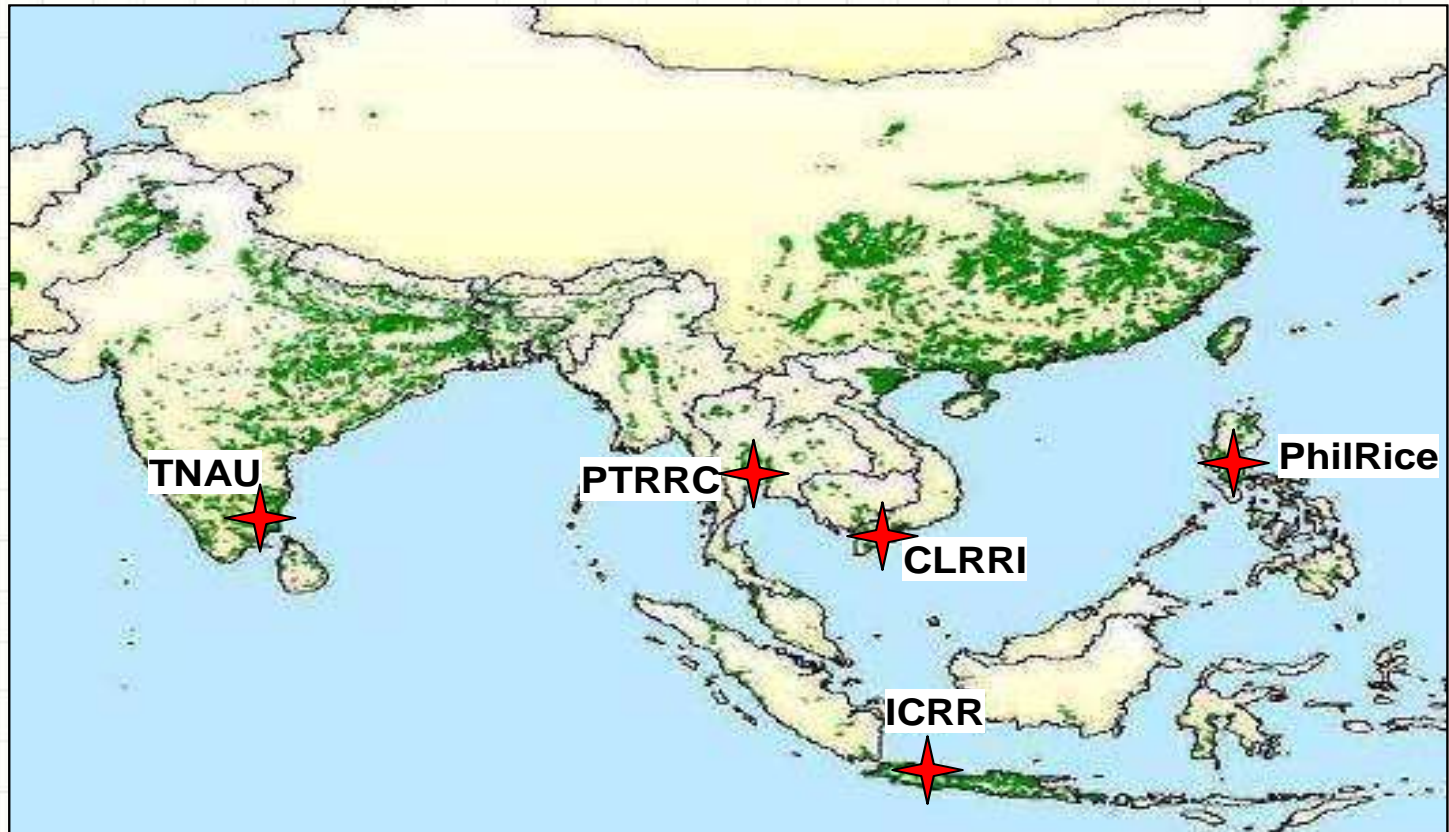
Landholdings for rice production are often small and variable



- **Farming practices vary among farmers and fields**
- **The best management for high profit and high yield can vary among fields**

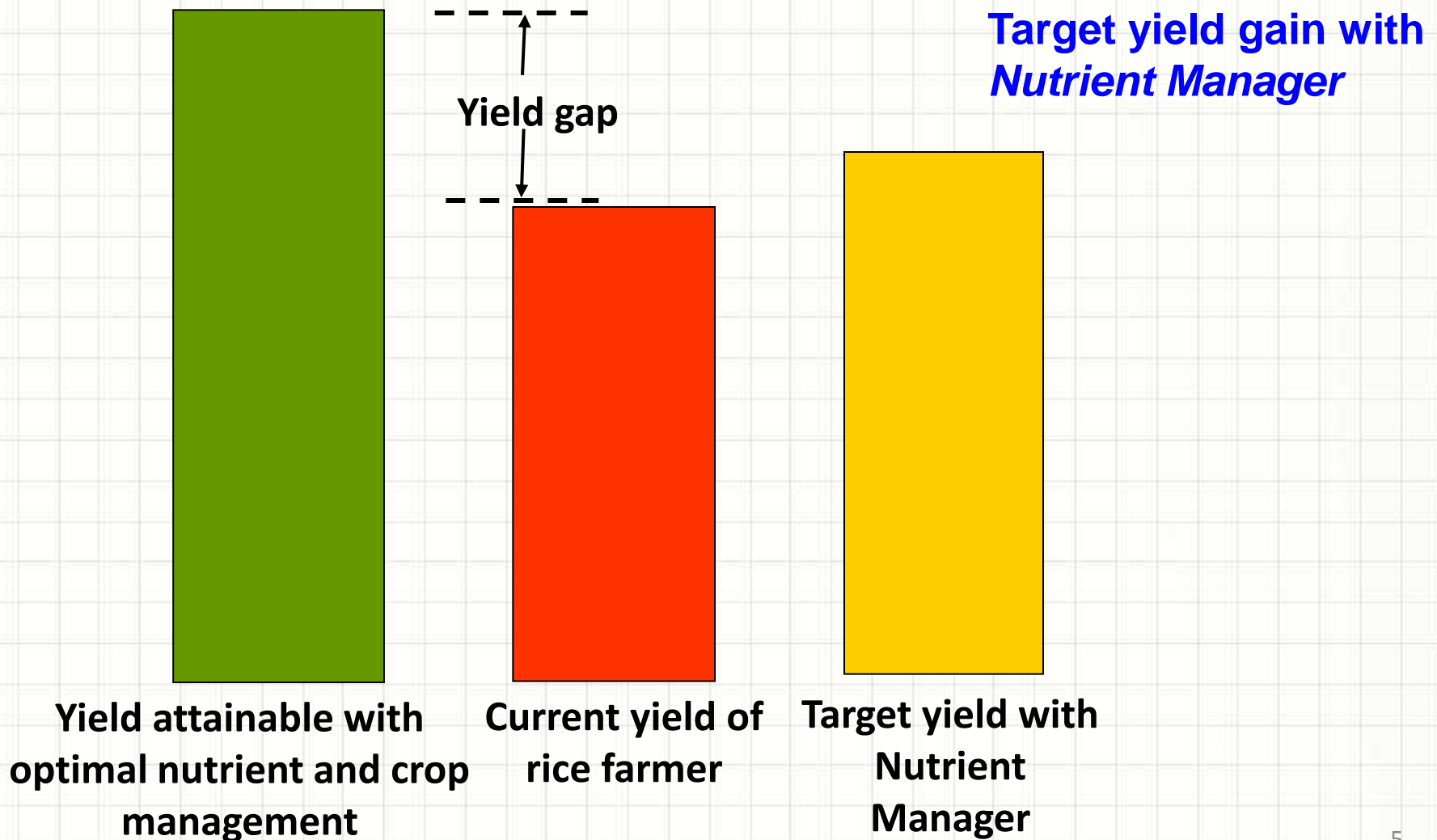
Nutrient Manager for Rice (NMR) is a decision tool that includes both web-based and mobile applications providing personalized fertilizer guidelines for small-scale rice farmers or extension workers

Research Collaboration on SSNM started since 1995 in five countries



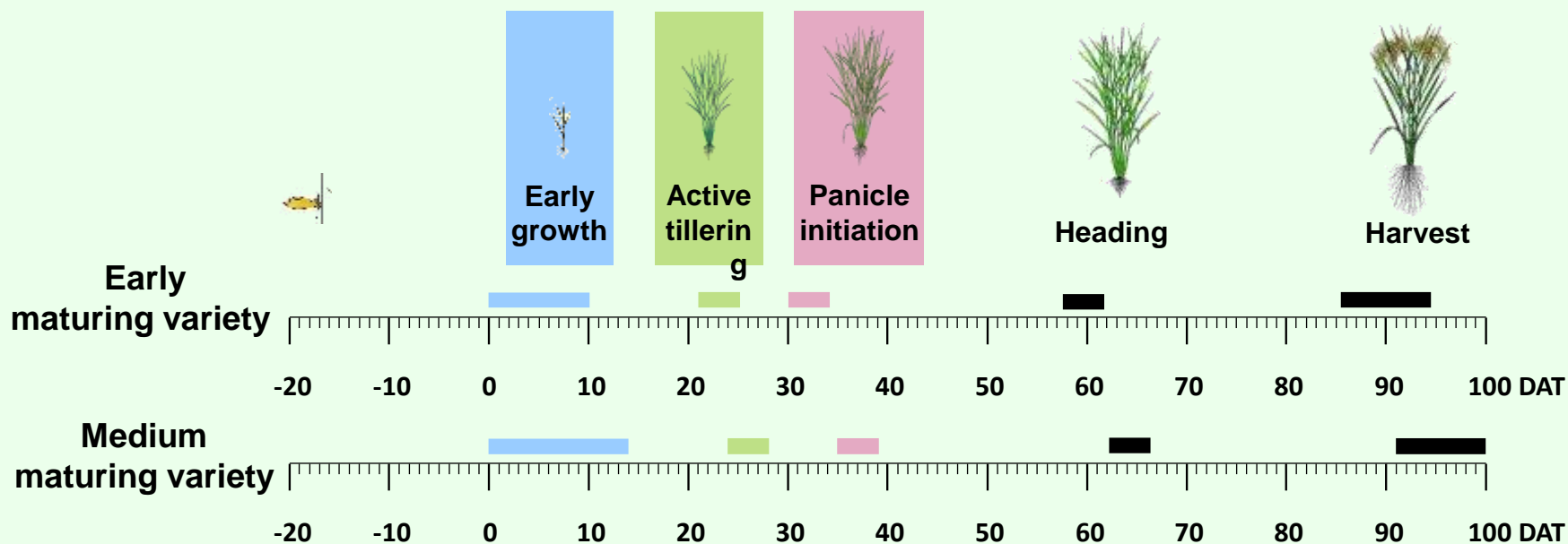
- TNAU = Tamil Nadu Agricultural University, India
- PTRRC = Pathun Thani Rice Research Center, Thailand
- CLRRI = Cum Long Rice Research Institute, Vietnam
- ICRR = Indonesia Rice Research Institute, Indonesia
- PhilRice = Philippines Rice Research Institute, Filipina

***Nutrient Manager* aims to increase profit of a rice grower by USD 100 per hectare per season**

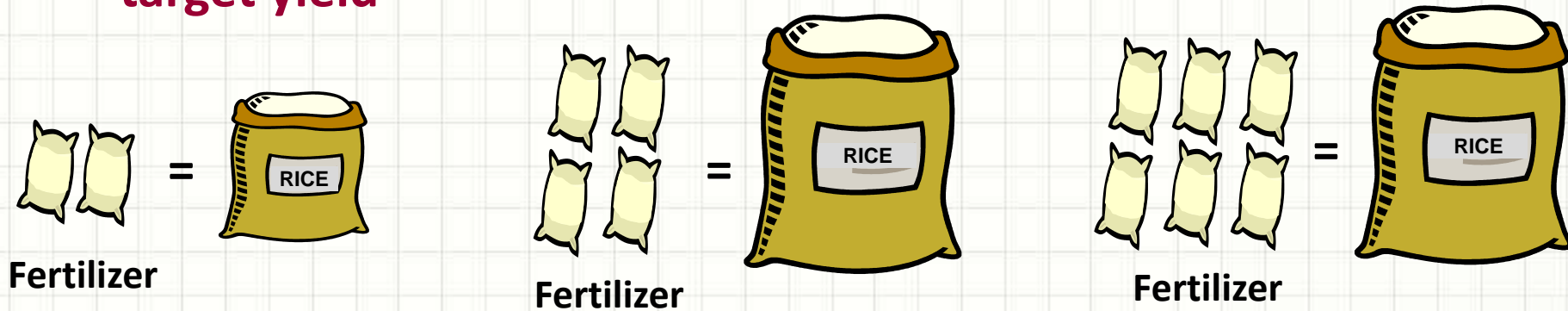


How does SSNM benefit a rice grower?

1. Adjust timing of fertilizer to match critical growth stages of a rice variety

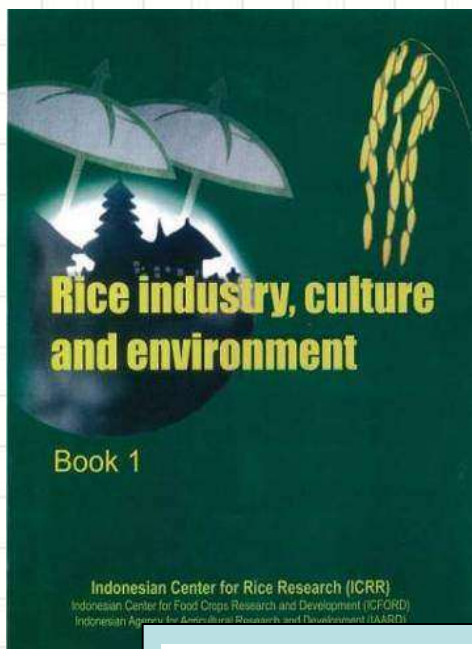


2. Adjust fertilizer rates to match a field-specific attainable target yield



3. Adjust fertilizer P and K for inputs from crop residues and organic materials





IMPROVING NUTRIENT MANAGEMENT FOR IRRIGATED RICE WITH PARTICULAR CONSIDERATION TO INDONESIA

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Provide appropriate 'precision farming' to rice farmers to small landholdings

1. Acquire information for a small field ---often less than 1 hectare



2. Compute field-specific nutrient needs



Computer-based calculator of field-specific management practice

3. Provide management guideline



Printed guidelines



Web



SMS



Smartphone

INTERNET VERSION OF NUTRIENT MANAGER FOR RICE LAUNCHED IN INDONESIA IN JANUARY 2011



1. Use of Web application with rice farmer coming to extension worker



1. Access web site
2. Interview rice farmer
3. Answer 15 to 17 simple questions about field

Computer with Web connection



4. Give rice farmer guideline as a printout



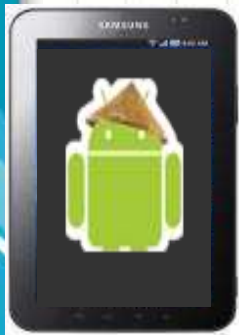
<http://webapps.irri.org/nm/id>

Kerja sama:



2. Use of Smartphone application, usually with extension worker going to rice farmer

- 3. Interview rice farmer without web access
- 4. Answer off-line 15 to 17 simple questions about field



5. Transmit answers to Web based PHSL program



6. Transmit guideline to extension worker



- 1. Access web site
- 2. Download or update application

7. Transmit SMS to rice farmer

Kerja sama:

3. Use of mobile phone application using interactive voice response (IVR)

GSM mobile phone



1. Call toll-free phone number with voice recording



IVR implementation box

2. Select a local language
3. Answer 10 questions with key pad to obtain farm profile

4. Complete in about 8 minutes
5. Transmit answers to model on high-end (cloud based) server



7. Deliver customized advice as SMS message



6. Generate advice specific to farmer situation

Totally automated: No phone operator required

Kerja sama:

Answer 10 questions with key pad to obtain farm profile

- 1. If you are located in Java or Bali, press 1; If not, press 2**
- 2. Select the unit of land area you use for expressing the size of your rice field. If hectare press 1; If are press 2; If bahu press 3; If bata, tumbak, or ru press 4; If rante or patok press 5**
- 3. Select the upcoming season for which you need a fertilizer recommendation. If for the wet season, press 1; If for the dry season, press 2**
- 4. Select the growth duration of the variety you will use. If similar duration as Ciherang and IR-64, press 1; If shorter duration than Ciherang and IR-64, press 2; If longer duration than Ciherang and IR-64, press 3**

Answer 10 questions with key pad to obtain farm profile

5. For wet season, please enter the amount in kilograms of fresh unmilled rice typically harvested in your rice field right after threshing, and then press the 'number sign' key
6. For dry season, please enter the amount in kilograms of fresh unmilled rice typically harvested in your rice field right after threshing, and then press the 'number sign' key
7. If the water supply throughout the wet season is typically adequate to meet the crops needs in your parcel of rice land, press 1; If not, press 2
8. If the height of the remaining straw in the field before land preparation for the dry season or wet season is about 10 centimeters, press 1; If about 25 centimeters, press 2; If about 40 centimeters, press 3

Answer 10 questions with key pad to obtain farm profile

9. For the upcoming wet season, if you will apply commercial organic fertilizer less than 500 kg per hectare, press 1; if about 500 kg per hectare, press 2; if more than 500 kg per hectare, press 3

You will now receive the fertilizer recommendation to your phone as a text message

The text message will indicate the amounts of fertilizer you need to apply at a given time during the wet season in your parcel of rice land



Phone application (receive recommendation as SMS message) as Public-Private Partnership

➤ Available in 4 local languages: **Indonesia, Javanese, Sundanese, Balinese, and Bugisnese**

- Without access to internet !!
- Call # : 081298828091-2-3-4
- Coming soon tool free number: 135
- Follow the instruction you hear from Cell Phone
- Activate speakerphone

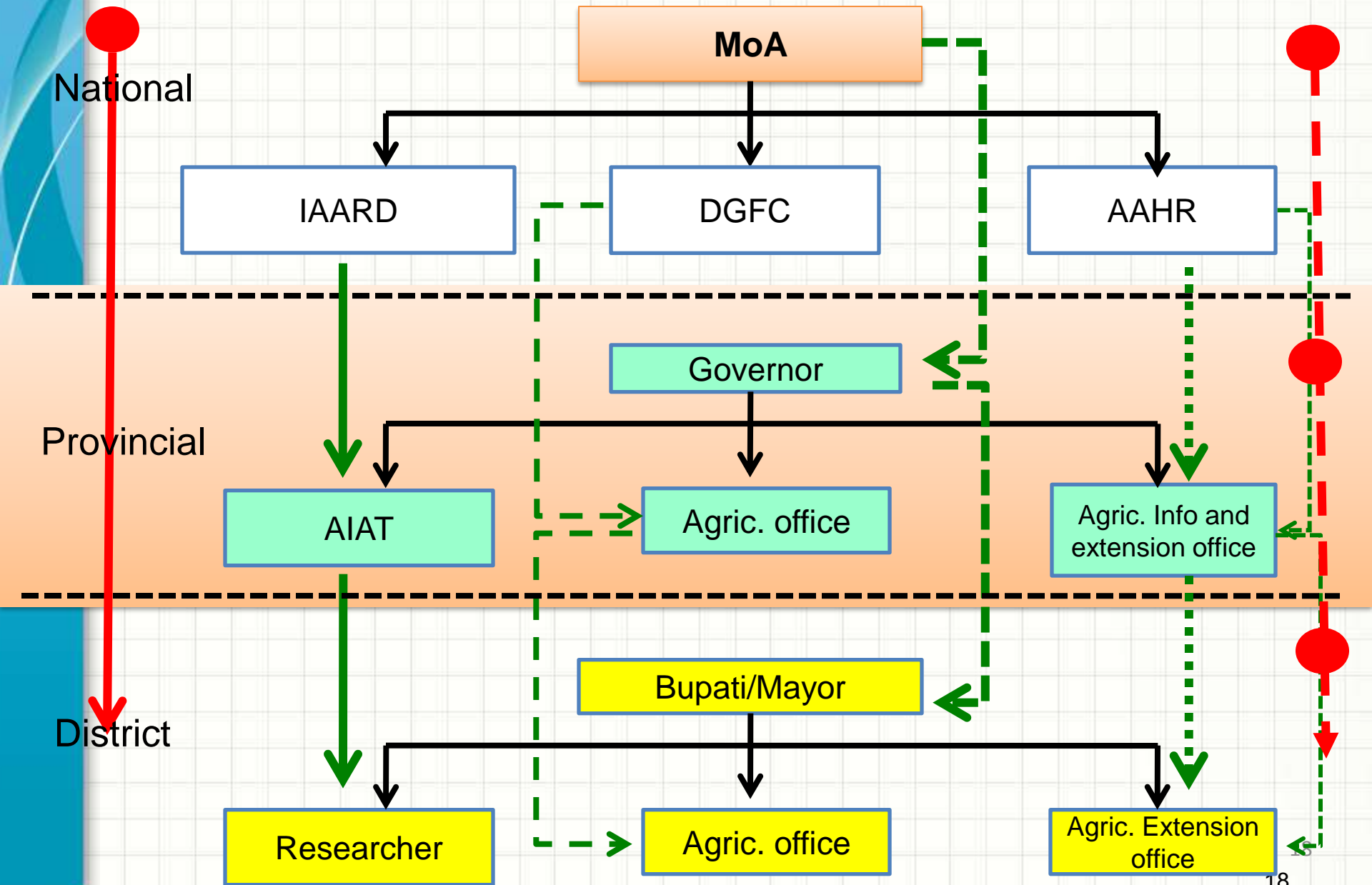


Totally automated: No phone operator required

Research-Extension interface and multistakeholder partnerships

Centralized

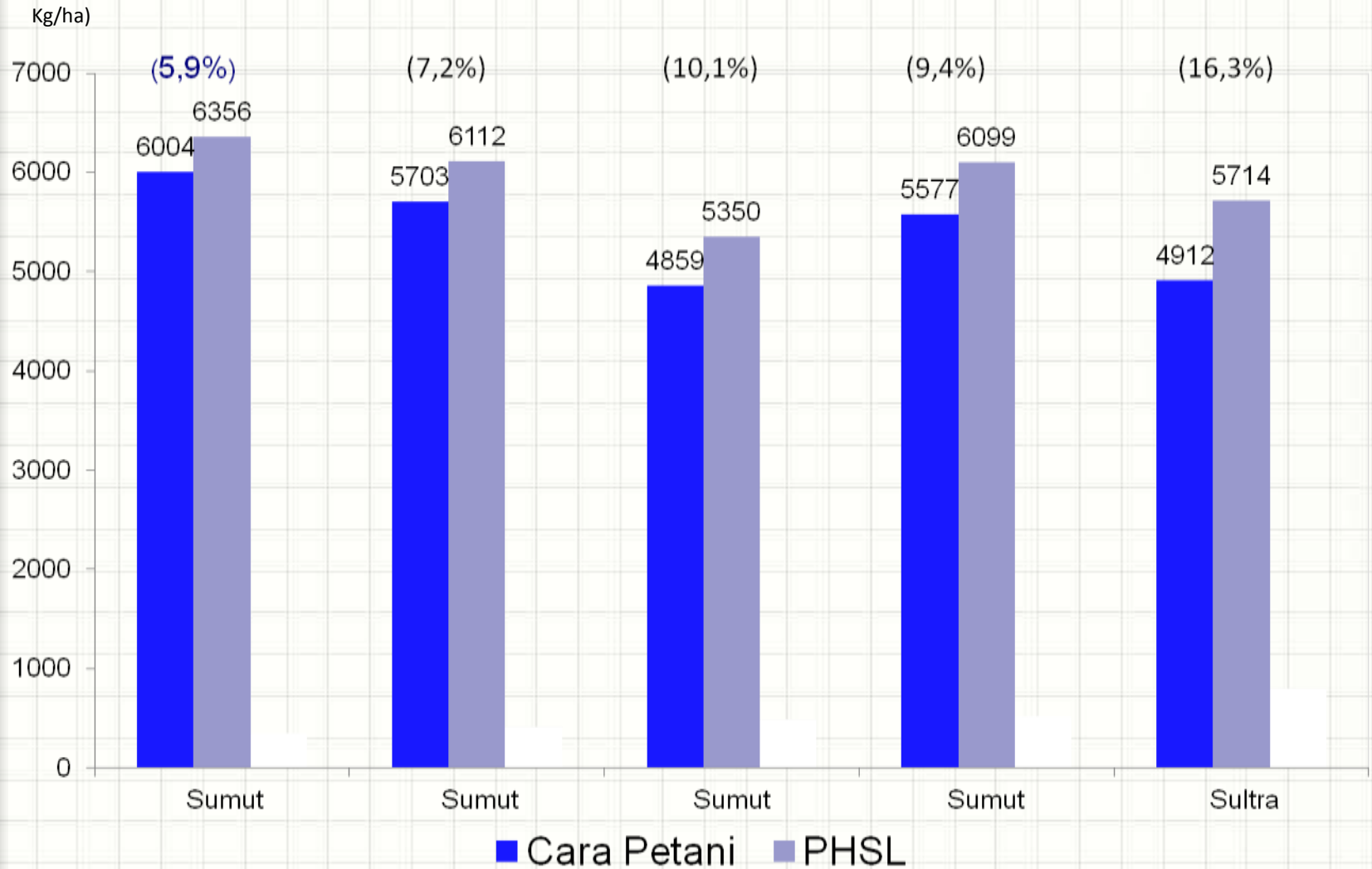
Decentralized



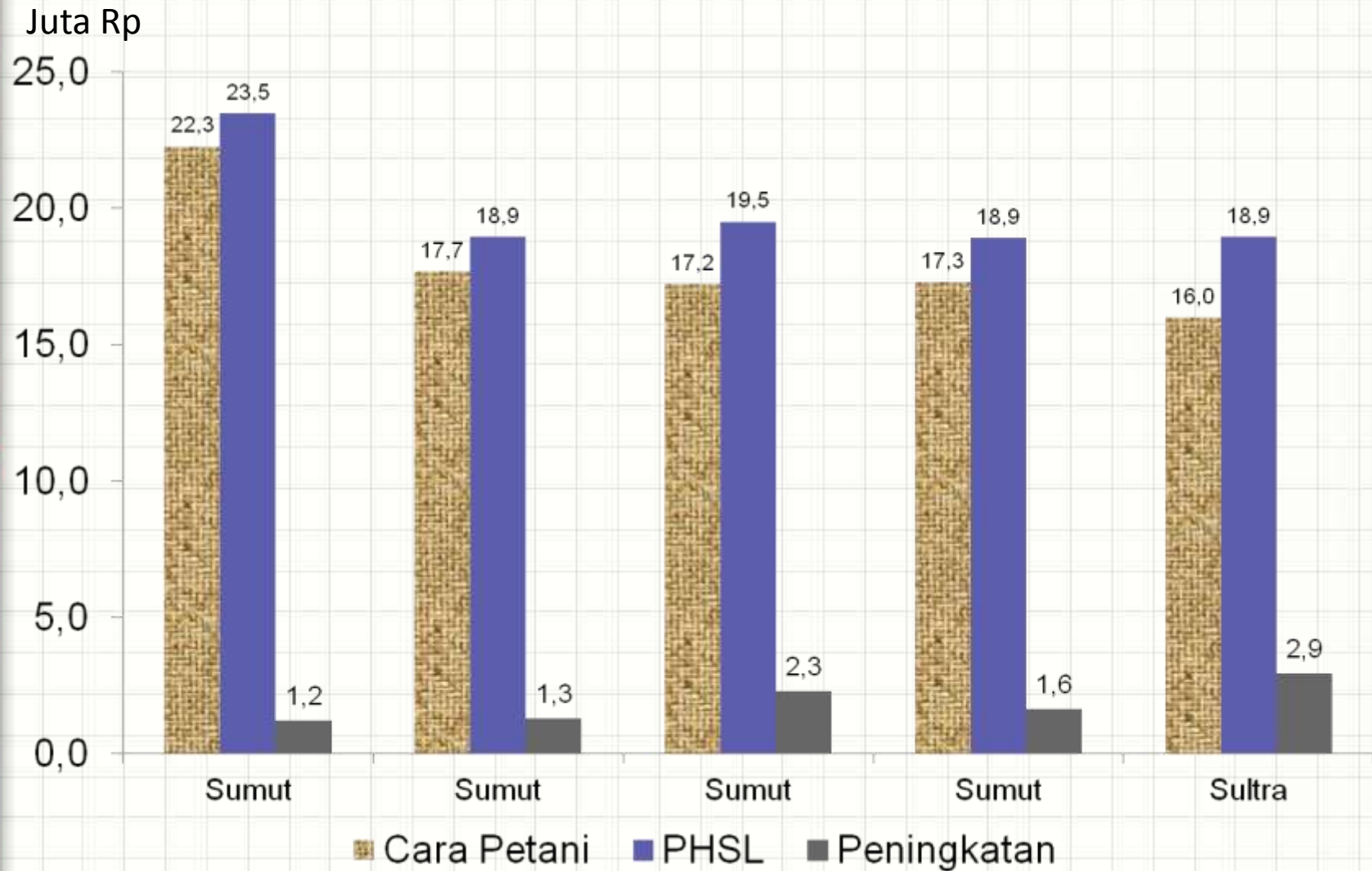
Evaluation of NMR in Indonesia



Grain yield performance of NMR in North Sumatra and Southeast Sulawesi (n=105)



Gross margin performance of NMR in North Sumatra and Southeast Sulawesi (n=105)



Target audience for promotional materials

Decision makers, influential persons, and technical persons

- One- page information brochure
- Coverage in the media

Farmers and extension workers

- Simple information (print & video) on available options (Web, IVR, and android)
- Guidelines (print & video) on how to use each option
- Training materials

Approaches for promotion

- **Use traditional and non traditional partners**
 - **Assessment Institute of Agricultural Technology (AIATs)**
 - **e-Farmers and Cyber extension activities of MOA**
- **Engage the assistance of a marketing company knowledgeable on consumers in rural areas**
- **Innovative use of videos developed by farmers, using adaption of Digital Green approach in India**

Summary

- **Nutrient Manager for Rice helped farmers better manage their fertilizers (right amount and better timing of N; right amounts of P and K)**
- **Farmers achieved the yield targeted by NMR**
- **The application will enable farmers to increase their incomes through increased yields.**