

# International Workshop On Land Cover/Land Use Changes, Forestry, and Agriculture in South/Southeast Asia

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## Applying RIICE Technology for Rice Crop Monitoring and Insurance in Cambodia

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Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra



# Outline of Presentation

- Project Objectives
- What is RIICE standing for?
- Why RIICE Technology in Cambodia?
- Methodology of RIICE Technology
- RIICE Products
- RIICE Technology for Crop Insurance
- Lesson learnt
- Dissemination and network

# Project objectives

- RIICE in Cambodia aims at institutionalizing the RIICE technology in MAFF to improve its rice monitoring system as well as its capacity to manage natural disasters affecting agriculture
- RIICE will support MAFF in piloting insurance products based on the RIICE technology and exploring new usages by targeting specific needs of selected MAFF departments.



What is RIICE standing for?

Remote Sensing-Based Information and Insurance for  
Crop in Emerging Economies



# Why RIICE Technology in Cambodia?





# Remote Sensing-Based Information and Insurance for Crop in Emerging Economies

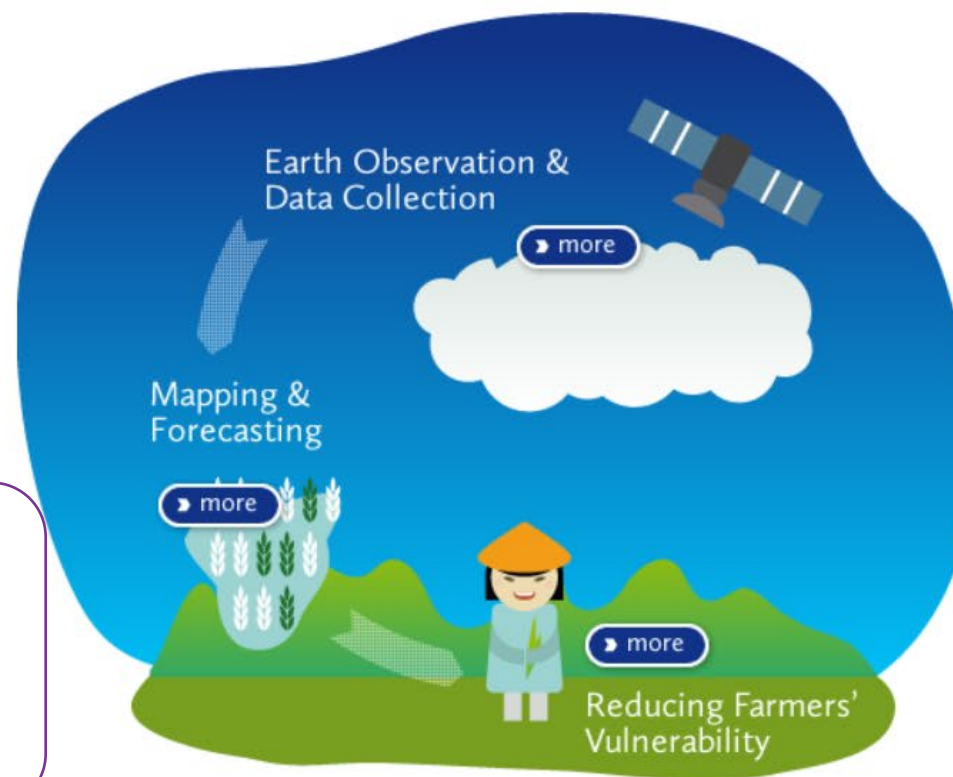
Improving food security through satellite technology

here is how it works.

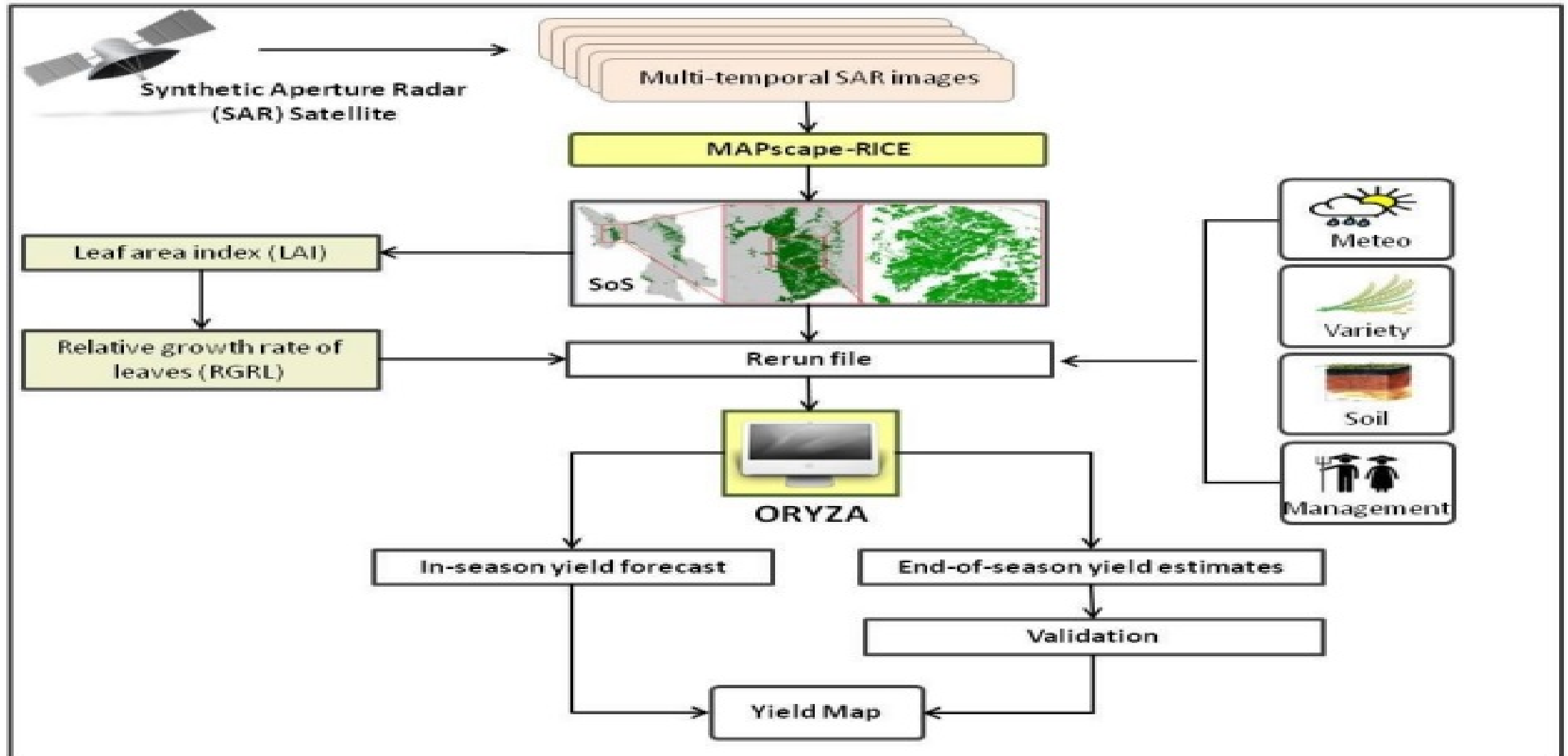
## Supported Software:

1. MAPscape-Rice 5.5.3
2. Rice-YES

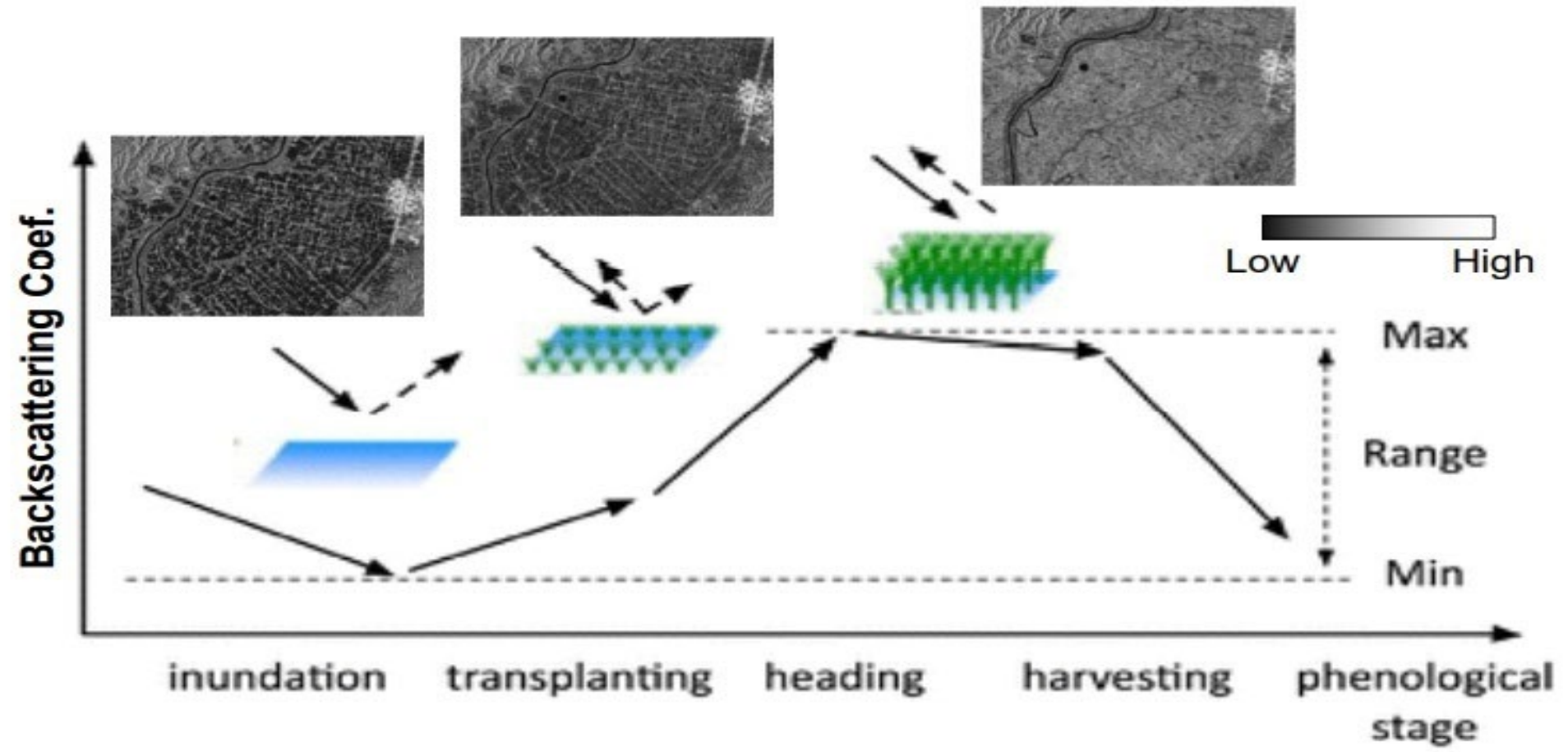
Imagery source: Timeseries Sentinel – 1 & 2



# Mythology of RIICE Technology for Rice Crop Monitoring



# Series for imagery downloading for rice yield estimation





# Products of RIICE Technology (Rice Ecosystem in Cambodia)

## Map of Main Rice Ecosystem in Cambodia



សហការរៀបចំដោយ៖  
 - នាយកដ្ឋានប្រតិបត្តិការកសិកម្ម  
 - នាយកដ្ឋានផែនការ និងស្ថិតិ  
 - នាយកដ្ឋានជំនាញបច្ចេកទេស  
 - មជ្ឈមណ្ឌលស្រាវជ្រាវ និងអភិវឌ្ឍន៍កសិកម្មកម្ពុជា

គាំទ្រដោយ៖  
 - គម្រោង The Remote Sensing-based Information and Insurance for Crops in Emerging Economies (RIICE- Phase 3)

ផលិតដោយ៖  
 - នាយកដ្ឋានប្រតិបត្តិការកសិកម្ម  
 - វិទ្យាស្ថានស្រាវជ្រាវកសិកម្ម (ឆ្នាំ២០២១)

សញ្ញាសំគាល់

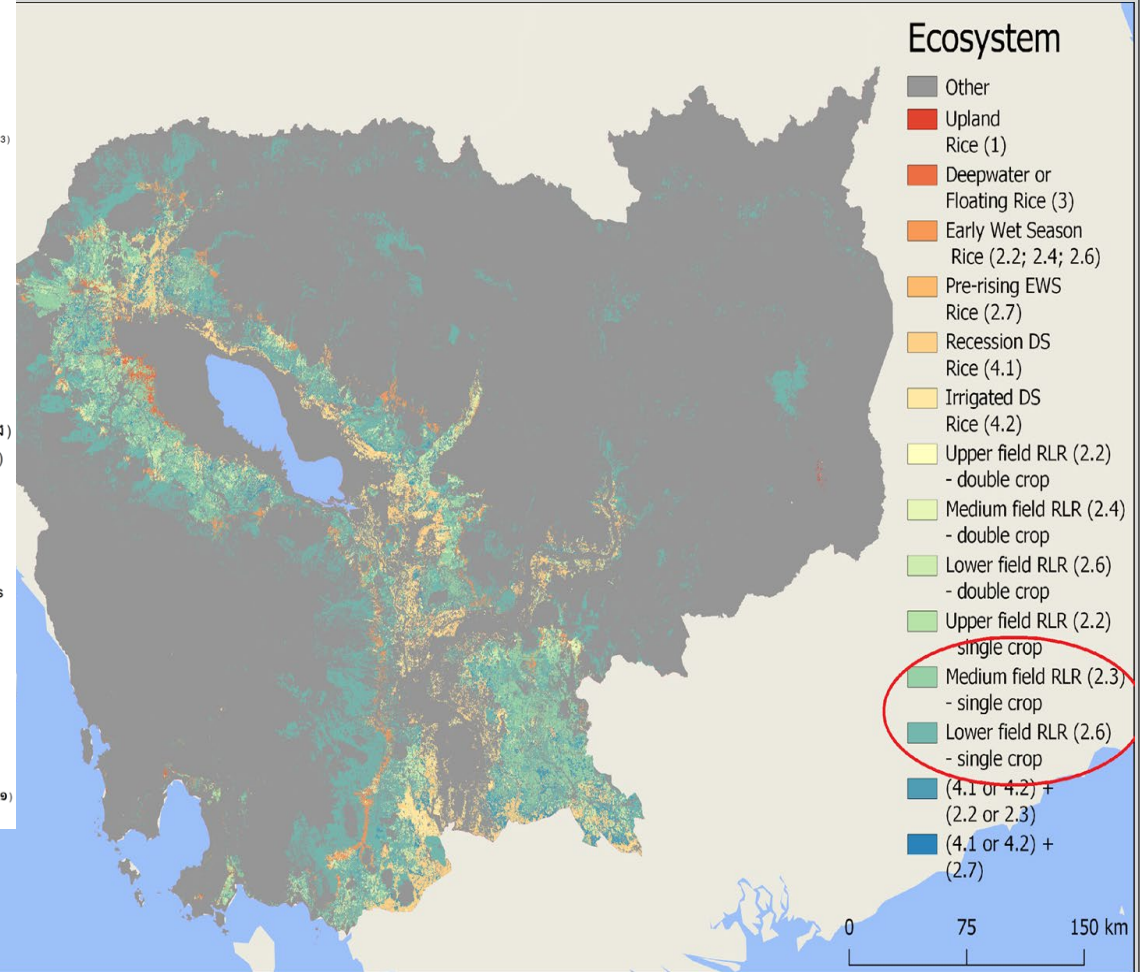
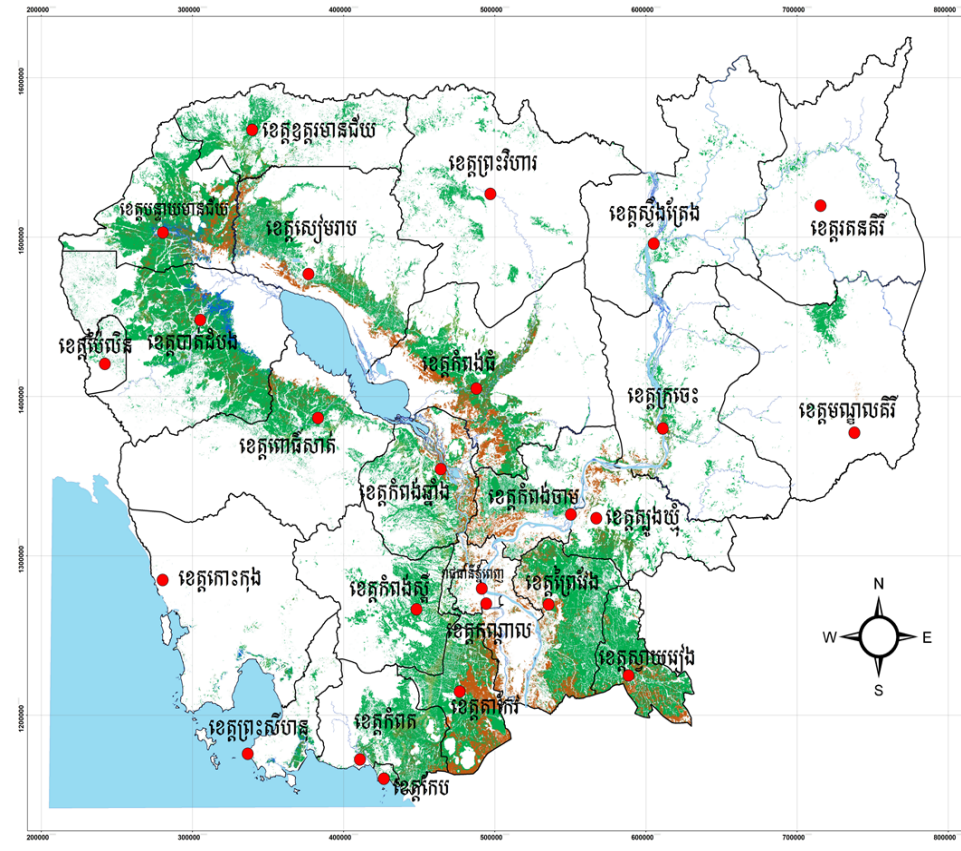
- ទីរួមខេត្តនិងរាជធានី
- ប្រទេសកម្ពុជា
- ផ្ទៃទឹក
- ផ្ទៃដីស្រែ
- ផ្ទៃដីស្រែស្រោច
- ផ្ទៃដីស្រែស្រោច (ស្រែស្រោច)
- ផ្ទៃដីស្រែស្រោចស្រែមេឃ (ដីមួយដង)
- ផ្ទៃដីស្រែស្រោចស្រែមេឃ (ដីពីរដង)
- ផ្ទៃដីស្រែស្រោច (ស្រែស្រោច)

មាត្រដ្ឋាន ១:៧០០.០០០



Coordinate System:  
 Projection : UTM  
 Zone : 48N  
 Unit : Meters  
 Datum : WGS1984  
 Spheroid : Everest

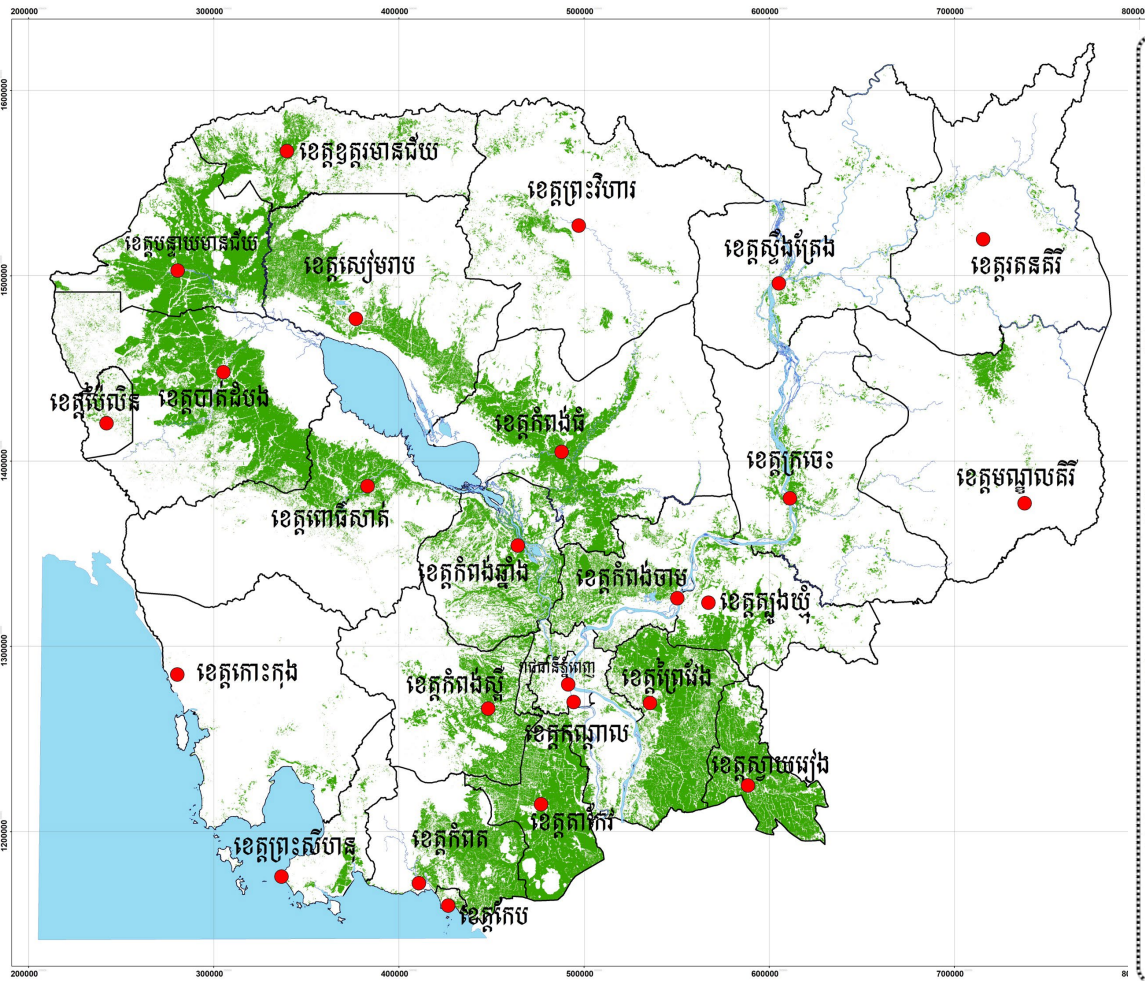
ប្រភពព័ត៌មាន៖ គម្រោង RIICE- Phase 3 (២០១៩-២០២១)



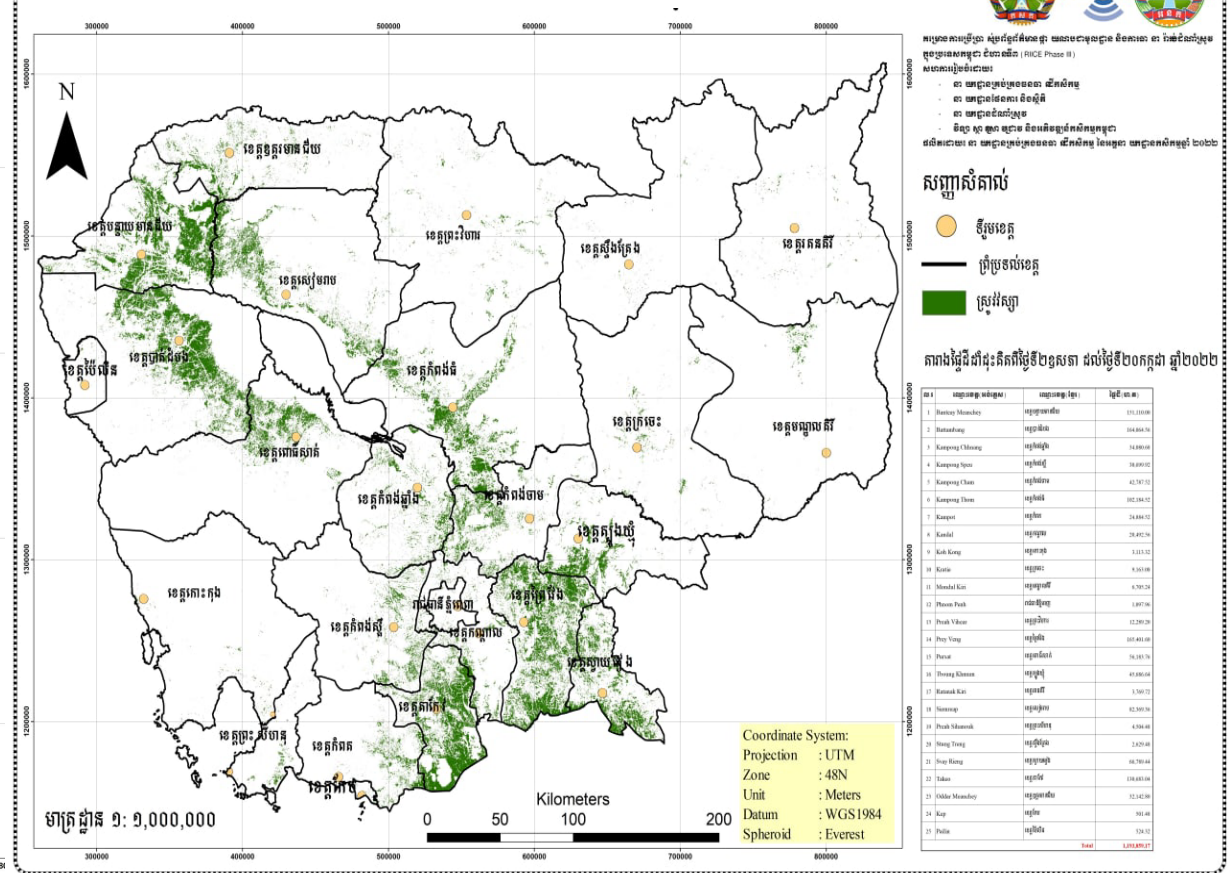
- ### Ecosystem
- Other
  - Upland Rice (1)
  - Deepwater or Floating Rice (3)
  - Early Wet Season Rice (2.2; 2.4; 2.6)
  - Pre-rising EWS Rice (2.7)
  - Recession DS Rice (4.1)
  - Irrigated DS Rice (4.2)
  - Upper field RLR (2.2) - double crop
  - Medium field RLR (2.4) - double crop
  - Lower field RLR (2.6) - double crop
  - Upper field RLR (2.2) single crop
  - Medium field RLR (2.3) - single crop
  - Lower field RLR (2.6) - single crop
  - (4.1 or 4.2) + (2.2 or 2.3)
  - (4.1 or 4.2) + (2.7)

# Products of RIICE Technology (Rice Area in Cambodia)

## Map of Rice Growing Area in 2021

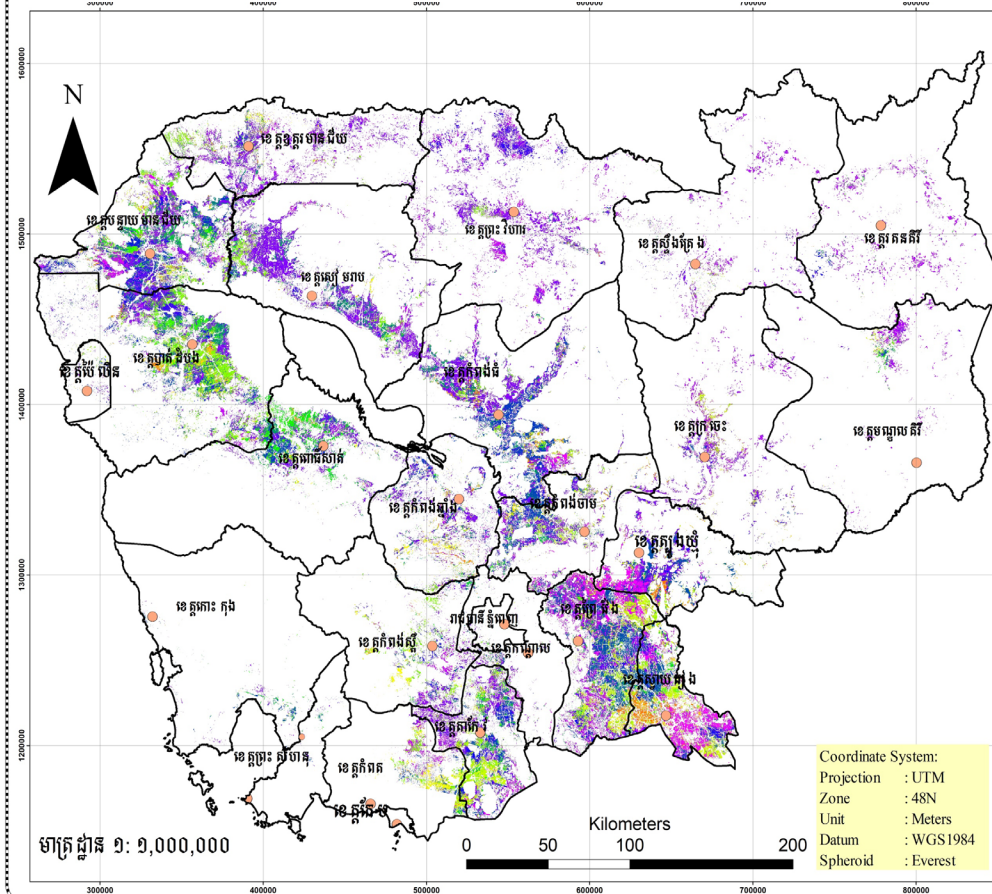


## Map of Rice Growing Area (22 Jul 2022)

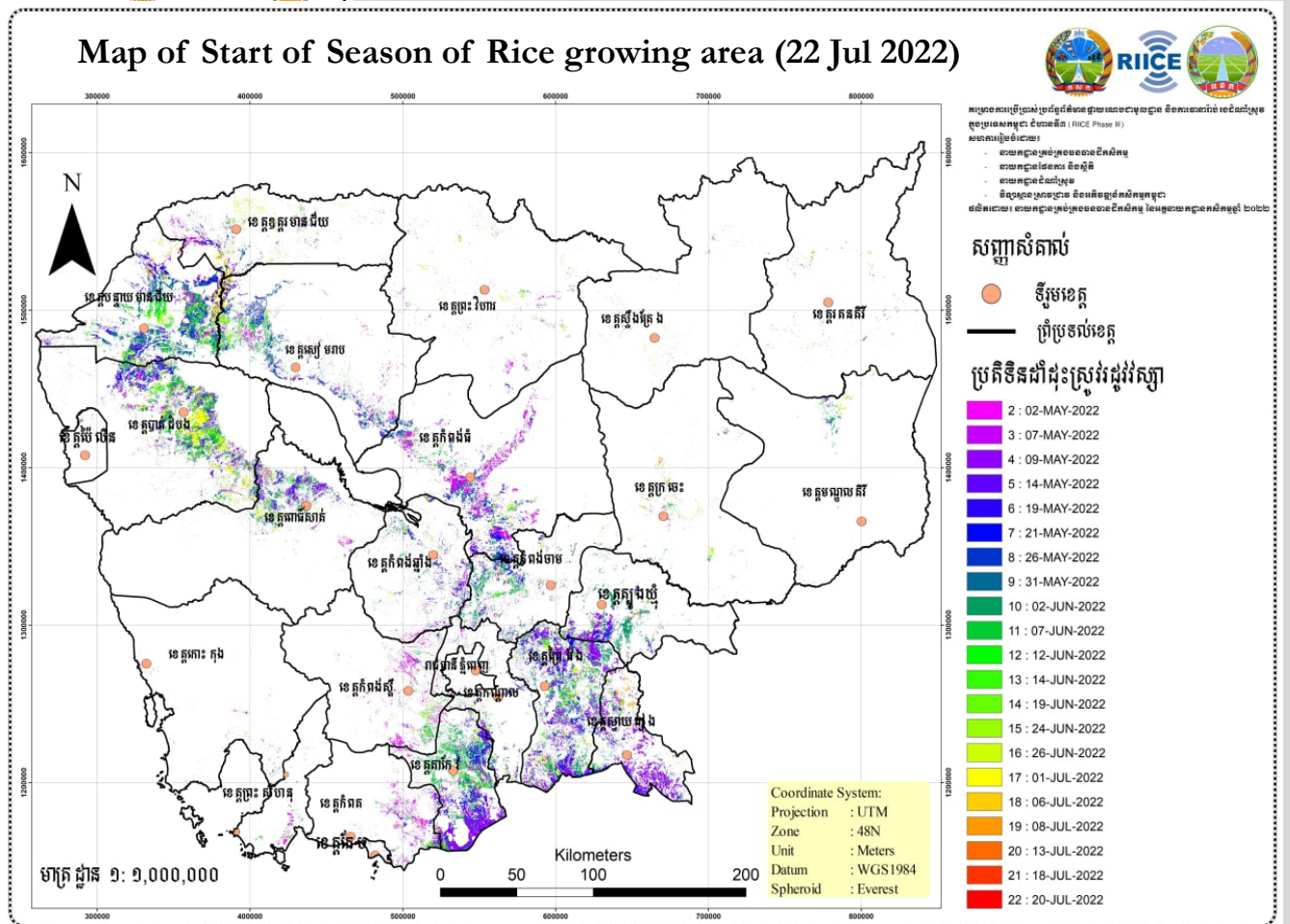


# Products of RIICE Technology (Start of Season of Rice Growing Area)

## Map of Start of Season of Rice growing area in 2021



## Map of Start of Season of Rice growing area (22 Jul 2022)





## Products of RIICE Technology (Rice Yield Estimation)

PROVINCE	DIS_NAME	YLD2018	YLD2019	YLD2020	YLD2021	Ave, Estimates	Govt Stats	Diff
Prey Veng	Ba Phnum	3.73	4.17	2.91	4.76	3.89	3.93	-0.04
Prey Veng	Kamchay Mear	3.42	3.58	3.27	3.95	3.56	3.62	-0.06
Prey Veng	Kampong Trabaek	4.21	4.61	3.24	4.89	4.24	4.38	-0.14
Prey Veng	Kanhchriech	4.19	4.18	3.12	4.17	3.91	3.76	0.16
Prey Veng	Me Sang	2.99	3.45	3.02	4.21	3.42	3.82	-0.41
Prey Veng	Peam Chor	4.34	4.49	3.74	5.32	4.47	4.67	-0.19
Prey Veng	Peam Ro	3.70	4.48	3.14	4.71	4.00	4.63	-0.63
Prey Veng	Pea Reang	4.29	5.49	3.71	5.20	4.67	3.79	0.88
Prey Veng	Preah Sdach	3.89	4.35	3.23	5.16	4.16	4.21	-0.05
Prey Veng	Prey Veng	4.12	4.79	4.22	5.25	4.60	4.20	0.40
Prey Veng	Pur Rieng	4.43	4.99	4.53	5.36	4.83	4.29	0.54
Prey Veng	Sithor Kandal	4.64	4.80	3.49	4.85	4.45	3.59	0.86
Prey Veng	Svay Antor	3.73	4.28	3.57	4.96	4.14	3.75	0.38
Pursat	Bakan	3.58	3.79	3.77	3.90	3.76	4.43	-0.67
Pursat	Kandieng	3.90	4.78	4.07	4.00	4.19	3.87	0.32
Pursat	Krakor	3.45	4.30	3.89	3.46	3.78	3.36	0.42
Pursat	Phnum Kravanh	3.27	3.91	2.84	3.39	3.35	2.36	0.99
Pursat	Pursat	3.67	3.98	3.65	3.42	3.68	2.96	0.72
Takeo	Angkor Borei	4.48	4.48	3.46	4.85	4.32	3.64	0.68
Takeo	Bati	3.43	4.46	3.01	3.32	3.55	3.36	0.19
Takeo	Borei Cholsar	4.39	4.46	4.01	5.05	4.48	3.63	0.84
Takeo	Kiri Vong	3.95	4.76	3.92	4.58	4.30	3.66	0.64
Takeo	Kaoh Andaet	4.32	4.86	3.91	4.98	4.52	3.64	0.88
Takeo	Prey Kabbas	3.74	4.15	2.89	4.31	3.77	3.56	0.21
Takeo	Samraong	3.04	3.83	2.59	3.54	3.25	3.44	-0.19
Takeo	Doun Kaev	2.57	4.66	2.84	3.76	3.46	3.51	-0.06
Takeo	Tram Kak	2.23	2.89	1.93	3.11	2.54	3.34	-0.80
Takeo	Treang	3.45	3.48	2.98	4.07	3.50	3.32	0.17
Battambang	Banan	3.87	3.85	4.00	3.87	3.90	4.07	-0.17
Battambang	Thma Koul	3.75	4.11	4.44	4.35	4.16	3.91	0.25
Battambang	Battambang	3.36	3.37	3.29	3.07	3.27	3.84	-0.57
Battambang	Bavel	4.49	4.11	4.45	4.39	4.36	4.10	0.27
Battambang	Aek Phnum	4.19	3.42	3.77	3.97	3.84	3.79	0.05
Battambang	Moung Ruessei	4.42	3.80	4.05	4.26	4.13	3.64	0.50
Battambang	Sangkae	3.83	4.17	3.73	4.25	4.00	3.98	0.02
Battambang	Koas Krala	3.93	3.94	3.84	3.61	3.83	3.24	0.59
Battambang	Rukh Kiri	4.21	4.40	3.86	4.49	4.24	3.99	0.25

# Why RIICE technology for Crop Insurance?

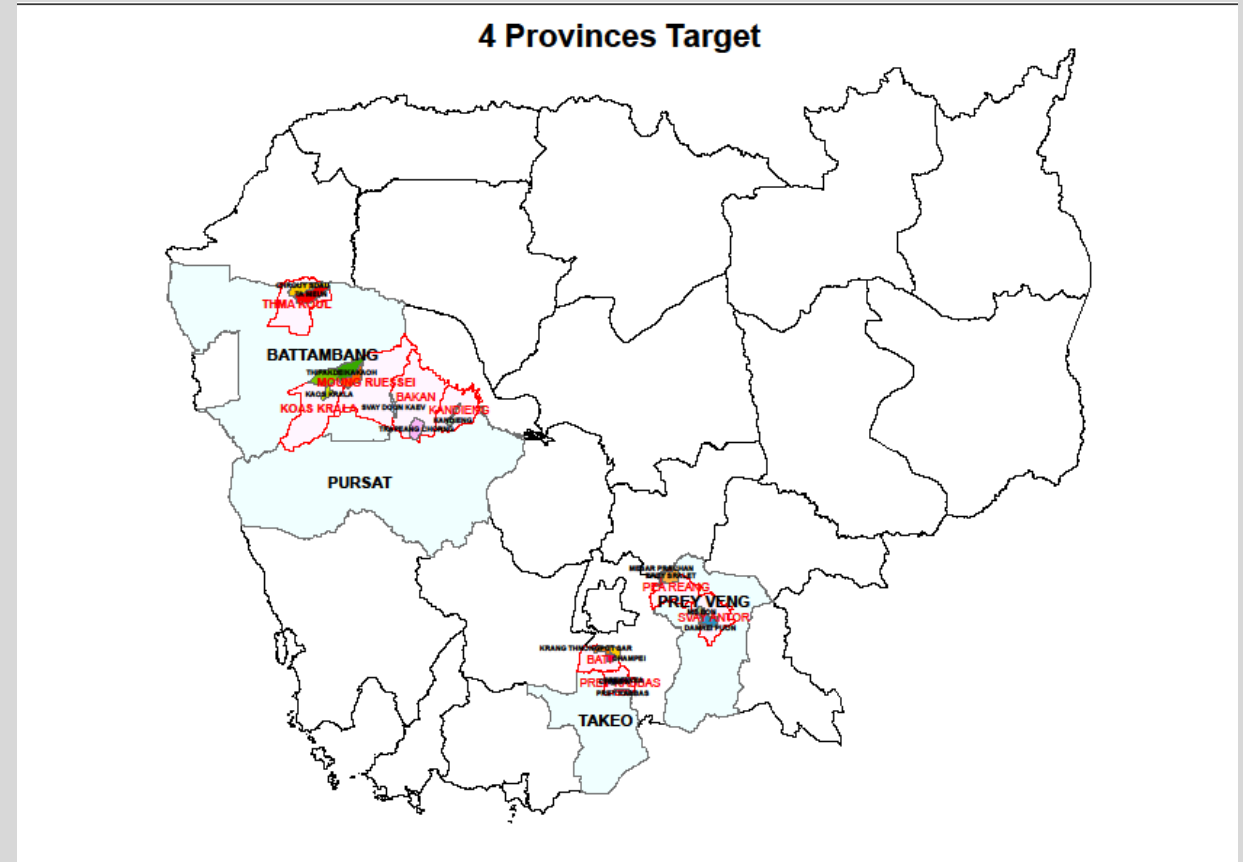
- 1 Securing re-insurance
- 2 Accurate data to crosscheck and supplement other field information inputs
- 3 Making insurance affordable to low-income households
- 4 Reducing fraud, moral hazard and adverse selection
- 5 Eliminating the burden of costly verification of claims on-the ground
- 6 Enabling faster and cheaper payouts to the insured
- 7 Provide insurance to farmers in remote areas
- 8 Remove area discrepancy in coverage

*Source: FORTE*

# Project Partners

- GDA/MAFF
- SDC
- Samarp
- FORTE
- SCOR Re
- CARDI
- SFSA
- RIICE-SDC Consultants
- IRRI
- Nileda

# Project Pilot Targets



*Source: FORTE*

# Lesson learnt – The good

- Smart, reliable, and science-based technology (Evidence-based decision)
- Information and knowledge products (Maps, data)
- Time-series monitoring of crop growth, biomass and yield estimation
- Trust – convincing stakeholders (Policy makers, farmers) by evidence. This is very important for crop insurance program



សម្ភារៈព័ត៌មាន និងការបង្ហាញផលិតផល នៃបច្ចេកវិទ្យា RICE ដល់ដល់ ឯកឧត្តម រដ្ឋមន្ត្រី ក្រសួងកសិកម្ម រុក្ខាប្រមាញ់ និងនេសាទ និងគ្រូសិក្សាស្រាវជ្រាវ ជាតិកសិកម្មស្រូវ ឆ្នាំ២០២០

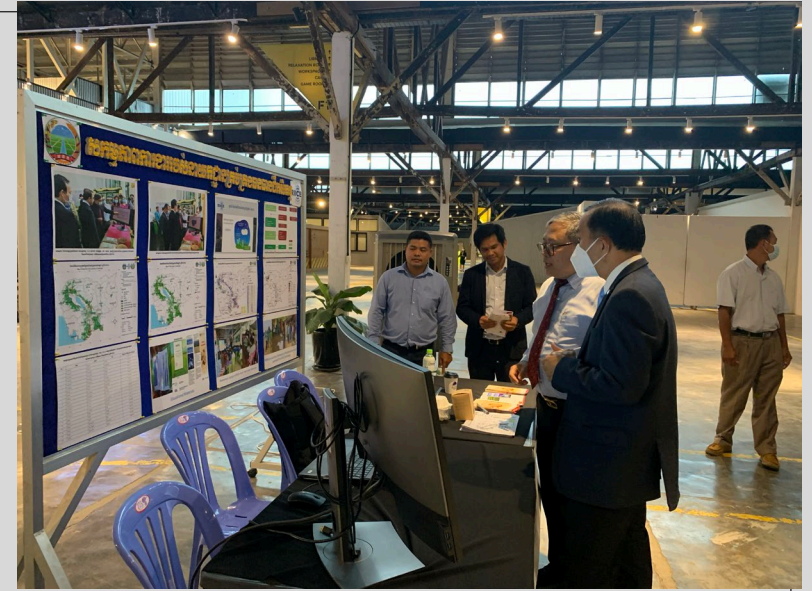




# Lesson learnt – The challenges

- Operational costs – Licenses, internet speed, computers specs, room conditions for work station
- Time – Responsive to emergency relief from climate disasters (Flood/drought). Disaster intervention is always urgent.
- Low income farmers – crop insurance adds more expense to farmers in addition to loan, buying inputs,...etc.
  - We see technology helps improve food security, but farmers see it as additional expense (Premium)
  - Thus, convincing farmers is a real challenge.
- Therefore, we need more time, efforts and resources to apply RIICE in crop insurance program.





RIICE display at the 10<sup>th</sup> Anniversary of SDC-Cambodia Cooperation (Phnom Penh, 27 May 2022).





RIICE awareness raising with commune authority and farmers.



◦  $\hat{H} \equiv Q, \dots$

*Thank you,...*