

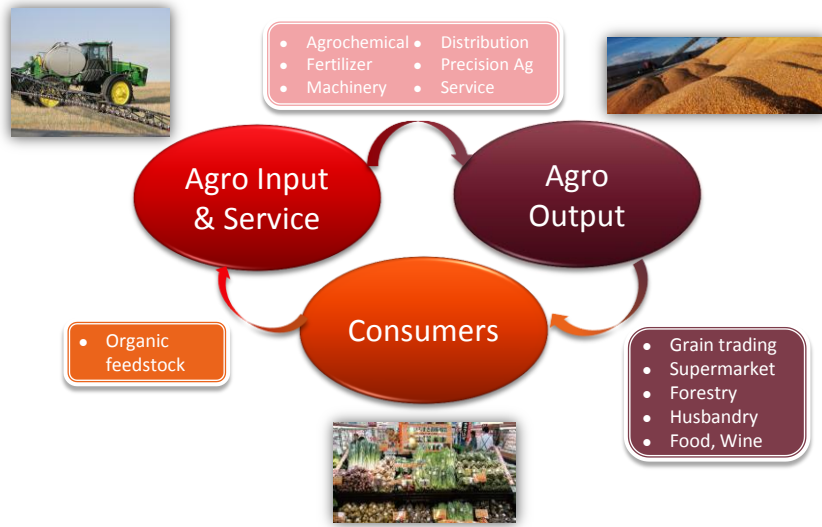
Controlled-release fertilizers: bridging the gap between established use in the Americas/Japan and practical experience and application in Asia-Pacific

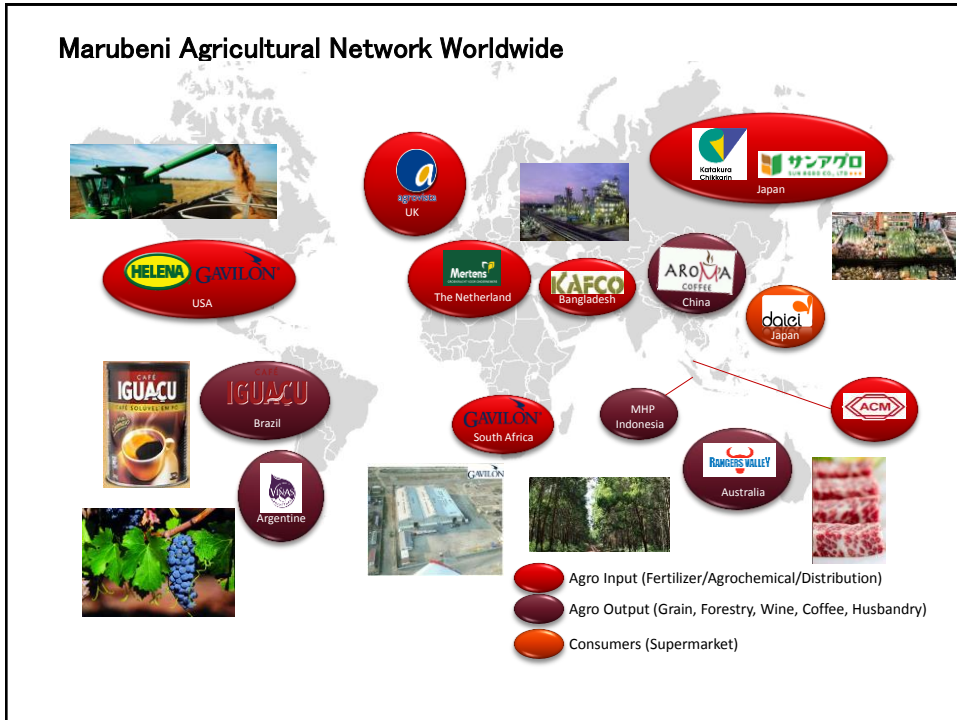


Agricultural Chemicals Section
Inorganic & Agricultural Chemicals Department

Presented by - Owen Powell

Marubeni Agricultural Scope : “From Farm to the Table”





Back Ground

- ▶ CRF is an accepted tool in Japanese rice production. The use of CRF (and inhibitors) is increasing in Agriculture in the USA and China driven by a variety of factors such as efficiency, environmental impacts, lowering of production costs
- ▶ The predominate factor from increased Market share of CRF is cost, ROI can be illustrated on a case by case basis

Types – Slow or Controlled release

1. Coated/encapsulated controlled-release fertilizers

- Polymer Coated

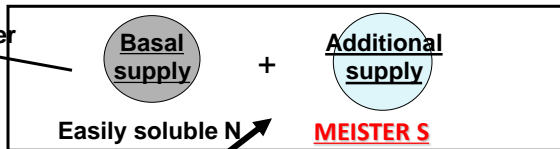
2. Urea reaction products/slow-release fertilizers

- Liquid methylene urea



One-shot fertilizer (ex. In Tochigi)

Sufficient tiller number is obtained

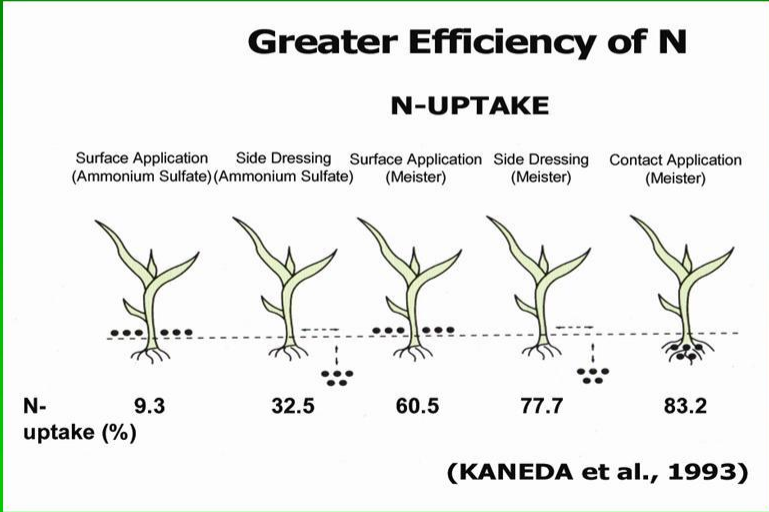


Nitrogen can be supplied efficiently through out the cultivation periods.

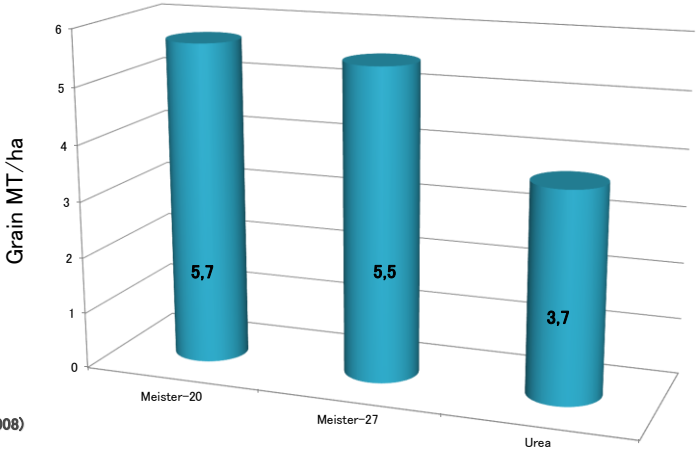
ひとふりくんのイメージ図



MEISTER gives greater efficiency of N



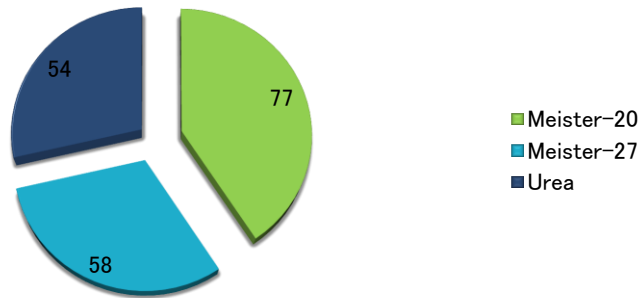
Controlled release Urea – Malaysia Rice – Field Application



(SINGH, 2008)

Controlled release Urea – Malaysia Rice – Field Application

N Uptake kg ha⁻¹

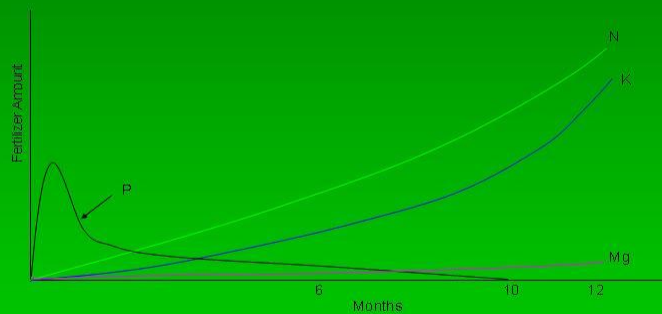


(SINGH, 2008)

Marubeni
FERTILIZERS

9

N,P,K&Mg requirement curve for oil palm in main nursery & in 1st year field planting



- P requirement for 1st month is high; needed to encourage root growth and off-set fixation by soil.
- N&K requirement is high in the 10-12th months

Cost Calculation – Standard Fertilizer vs. Meister 1st year [oil palm]

Cost Advantage of Meister 1st year

Practice NPK 15-15-6-4MgO

500 g/ tree × 0.41 US\$/ kg × 4 times/ year × 135 tree/ ha × 1/1,000 MT/ kg
=110.7 US\$/ ha

Meister 1st year

350 g/ tree × 1.90 US\$/ kg × 1 time / year × 135 trees/ ha × 1/1,000 MT/ kg
=89.8US\$/ ha



COST BENEFIT!!

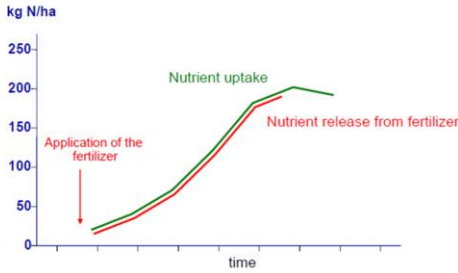
Plantation can save **US\$ 20.9-/ ha** of fertilizer cost by Meister 1st year!
Thus, plantation expand 5,000ha: **Saving US\$ 100,000- !!**

* Invisible costs can be also saved: Time, labor, fertilizer warehousing, transportation (from warehouse to the field), uneven growth, waste nurseries, etc...

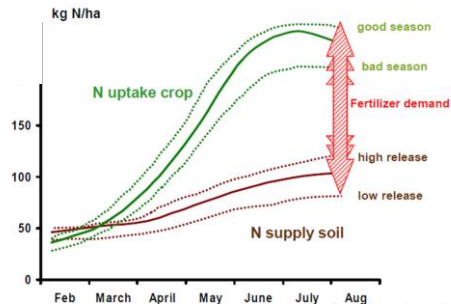
Types – Slow or Controlled release

- 1. Coated/encapsulated controlled-release fertilizers
 - Polymer Coated Urea
- 2. Urea reaction products/slow-release fertilizers
 - Liquid methylene urea

Risk management and Controlled Release Fertiliser



(Lammel, 2005)



Marubeni
FERTILIZATION

13

Foliar CRN – Methylene urea

- ▶ A true liquid nitrogen
 - 100% water soluble
- ▶ Contains Controlled Release Nitrogen
- ▶ Provides Safe foliar applications of N
- ▶ Is readily received across the cell membrane.
- ▶ Most MU CRN is in the plant within 6–8 hours, all within 24–48 hrs.

Marubeni
FERTILIZATION

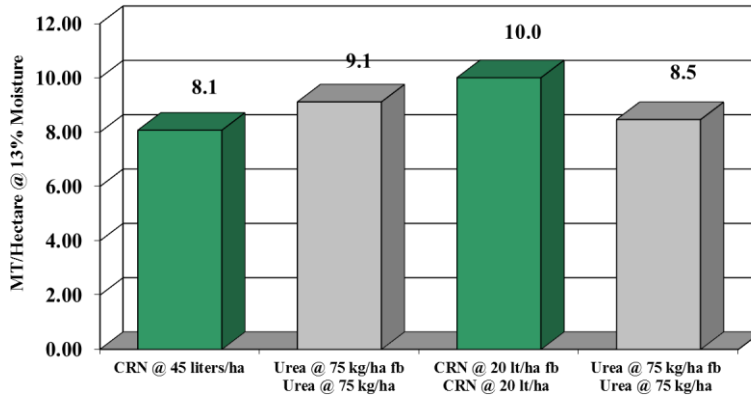
Transport and Accumulation of CRN Nitrogen

40 to 47% of the CRN found in non-treated plant parts 7 Days APT, Lamina and Petiole tissue N content was 4 to 5 fold higher than conventional nitrogen applications.

University of Michigan



CRN 25-0-0 vs. Urea Rice Trial Cleveland, MS - 2000



Plot Information:
 Variety: Priscilla
 Planted: April 10, 2000
 Pre-flood Fertility: Ammonium Sulfate @ 115 kg/ha +
 Urea @ 280 kg/ha

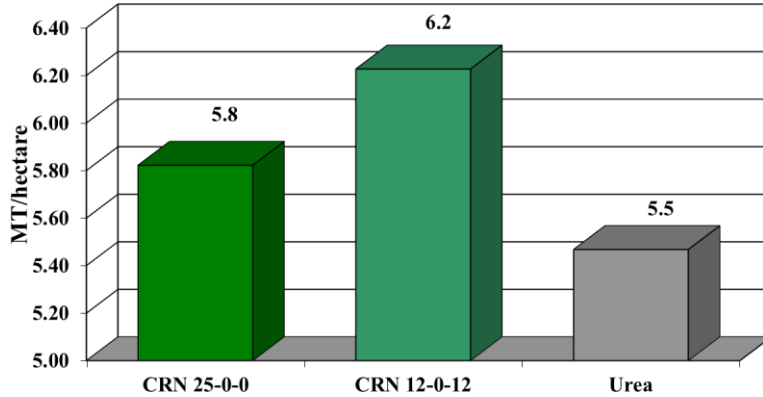
Application Information:
 June 21, 2000 - Plots 1 - 4
 June 29, 2000 - Plots 2 - 4

CoRoN is a registered trademark of Helena Chemical Company.
 Always read and follow label directions.
 © 2000 Helena Chemical Company



MMK 10/02

CRN vs Urea Rice Trial University of Missouri, 2002



Plot Information:
Variety: Cocodrie
Pre-flood Fertility: Urea @ 210 kg/ha

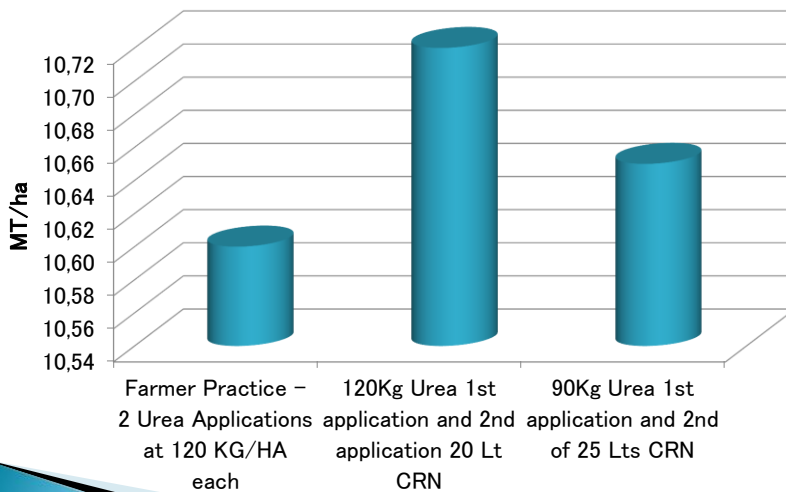
Application Information:
Split application @ internode elongation (7/17/02) fb 1E + 7 days (7/25/02)
CRN 25-0-0 applied @ 20 lt/ha fb 20 lt/ha
CRN 12-0-12 applied @ 40 lt/ha fb 40 lt/ha
Urea applied @ 75 kg/ha fb 75 kg/ha



CoRoN is a registered trademark of Helena Chemical Company.
Always read and follow label directions.
© 2003 Helena Chemical Company

MMK 01.01

Australia CRN application - Replacement of PI Urea applications





Foliar CRN – Rice

CROP	TARGET/OBJECTIVE	RESULTS
Direct seeded rice (1 st trial)	1. Improve yield 2. Replacement of UREA	10.75% yield increase
Direct seeded rice (2 nd trial)	1. Improve yield 2. Replacement of UREA 3. Application with fungicide	6.94% yield increase
Direct seeded rice (3 rd trial)	1. Improve yield 2. Replacement of UREA 3. Application with fungicide	37.2% yield increase
Transplanted rice (Big plot trial)	1. Improve yield 2. Replacement of UREA 3. Application with Fungicide	15.43% yield increase
Direct seeded rice (4 th trial)	1. Improve yield 2. Replacement of UREA	Ongoing
Fragrant Varieties - Sarawak	1. Improve Yield 2. Supply chain management	Ongoing



Indonesia

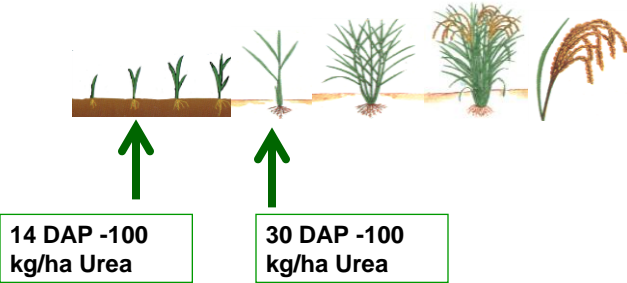


Indonesia – Trials 2012

Std Program – 100kg Urea 3 applications @ 14, 30 DAT and prior to PI

Liquid CRN

PI - 20 Lt/ha

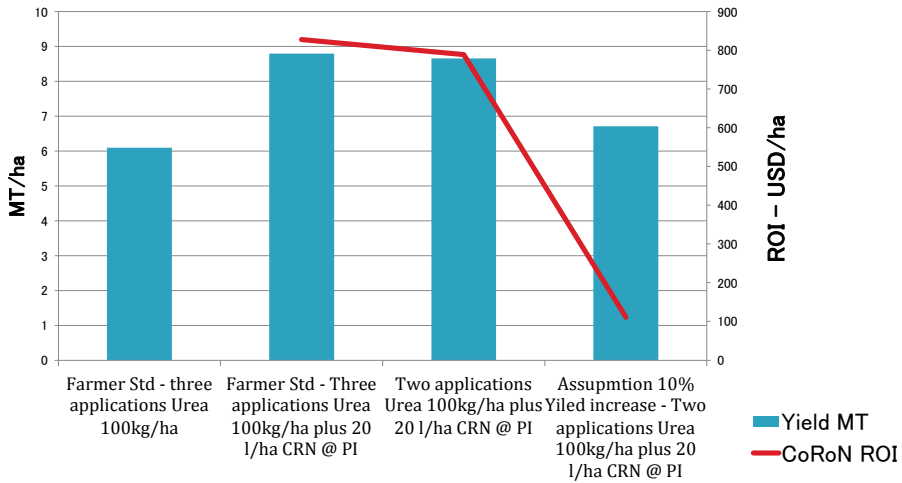


14 DAP -100 kg/ha Urea

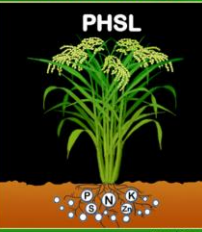
30 DAP -100 kg/ha Urea

Marubeni CORPORATION

@ PI – Urea Replacement



Nutrient Manager for Rice Indonesia v1.11



PHSL

NMRiceWeb Indonesia

Instructions

I agree with the terms and conditions

Start

Download questionnaire

Developed by:

IRRI


as a product of research collaboration with:

Indonesian Agency for Agricultural Research and Development (IAARD)

Home | Terms and Conditions | About
© International Rice Research Institute 2012

Site-Specific Nutrient Management

Enables farmers to optimally supply rice with essential nutrients



What's new?

Nutrient Manager for Rice Apps for Philippines National and ANIC Rice Office (NMRiceWeb)

A new set of e-learning modules are now available in the Rice Knowledge Bank, and more of its features is coming in the next release.

Resources for Farmers and Extension Workers

- Videos support tools
- News
- Leaflet sheets
- SOEM toolkits
- SOEM music sample
- Publications
- FAQs

Resources for Researchers and Scientist

- SOEM in detail
- Publications
- Publications
- FAQs

Resources for Teachers, Trainers and Students

- National Teacher for Rice
- Nutrient Manager Tutorial
- e-learning module for SOEM/gergen Rice

Resources by Country

- Philippines
- Indonesia
- Indonesia
- Downloads




4R PLANT NUTRITION

Agronomic efficiency of fertilizer N used on corn grain in the U.S., 1964-2002



39% increase in N efficiency
Since 1975: 12% increase in fertilizer N per ha
40% increase in corn yields

Thank you so much!!



Marubeni
FERTILIZER