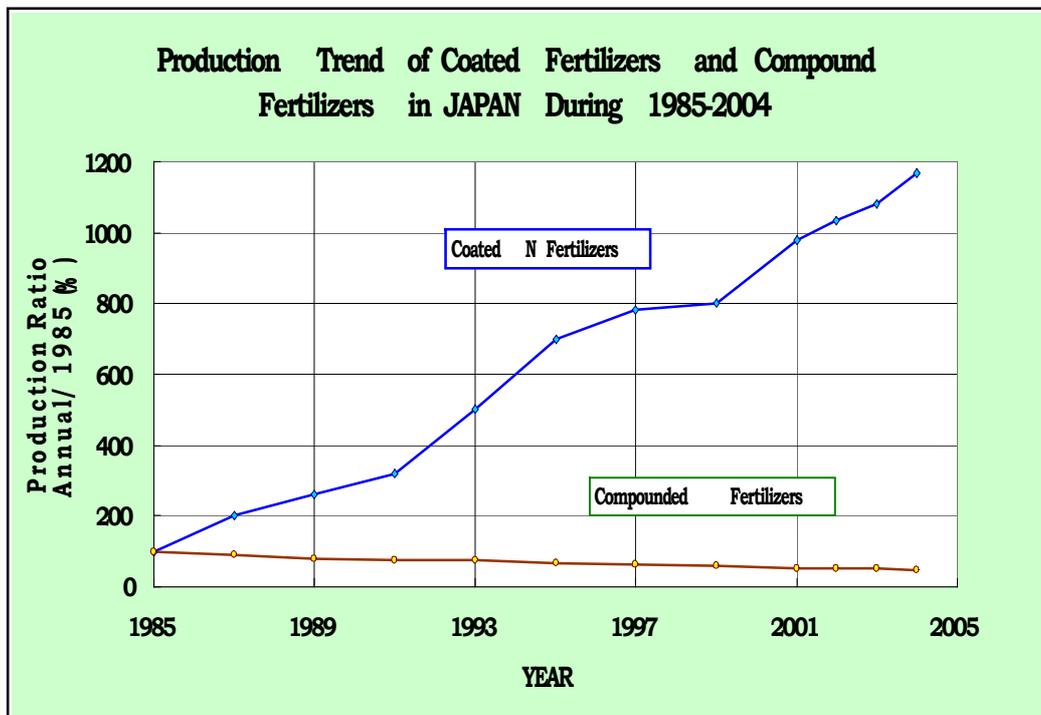


How to Maximize Nitrogen Use Efficiency of Polyolefin Coated Urea (MEISTER)

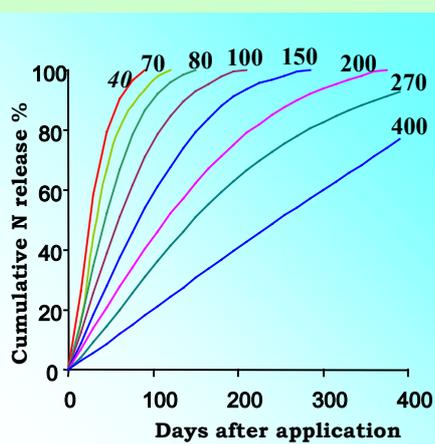
Masami Tachibana
Sadao Shoji

(Chisso Corporation)

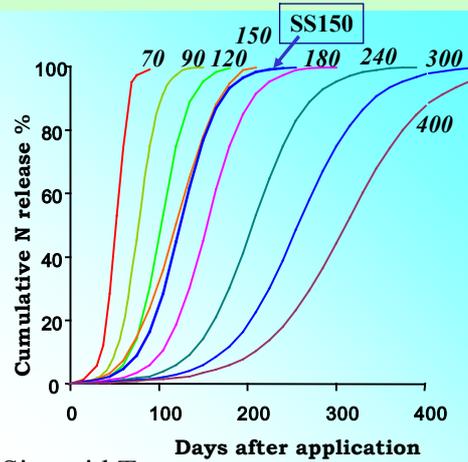


To obtain the highest Nitrogen Use Efficiency

- 1) **Best Placement** such as Co-situs application
- 2) **Programmed fertilization** to meet plant need accurately



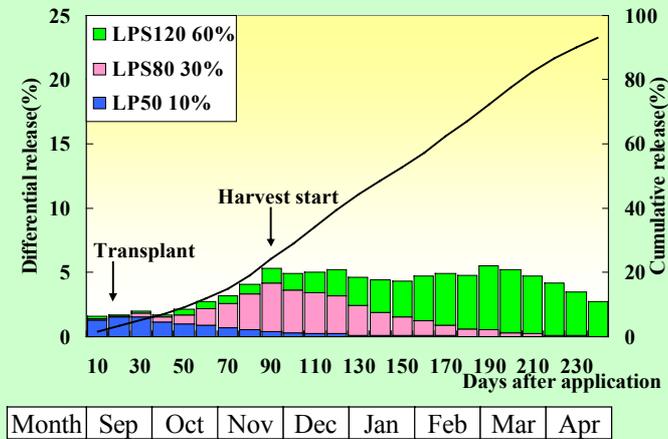
Linear Type



Sigmoid Type

Nitrogen Release of Misters in Water at 20 °C

High variety of release pattern



Predicted N release of MEISTER blend for Strawberry

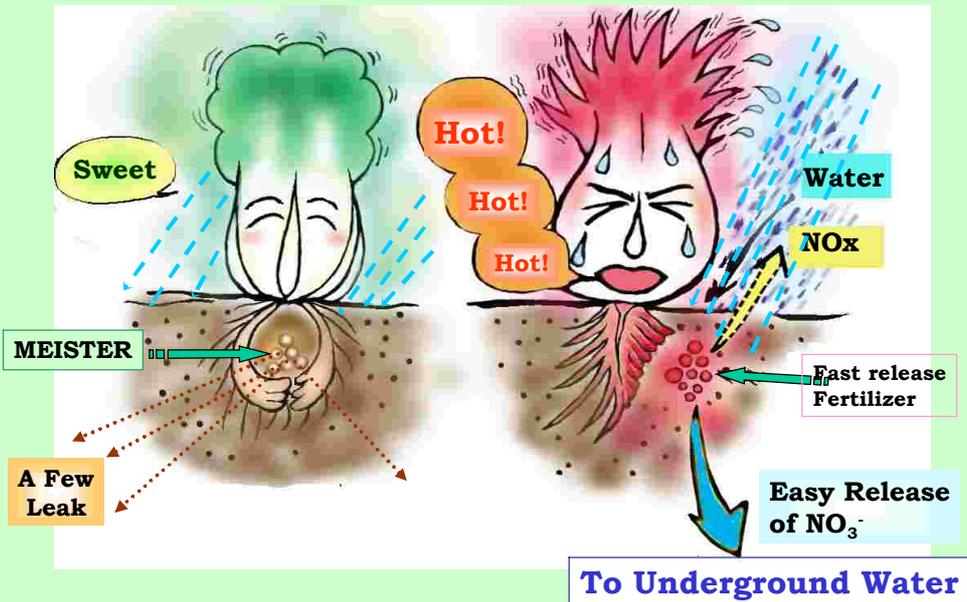
Any Pattern Fertilization is possible by blending



MEISTER Granules

Single Basal Application of MEISTER to Rice and Strawberry

Effect of Fertilization by MEISTER and by Fast Release Fertilizer



The Highest Records of NUE of MEISTER by Wetland Rice

Culture Method	Nitrogen Use Efficiency		Research Institute
	Meister	Conventional Fertilizers	
Trans Planting	83%	33%	Akita Agri. Res. Center
Direct Seeding	80%	30%	Yamagata University
Direct Seeding	83%	41%	Aichi Agri. Res. Center

1. Fertilizer Application : Single basal co-situs application for MEISTER
2 to 3 times band or broadcasting for conventional fertilizers
2. Determination of NUE: by the tracer method using ¹⁵N labeled fertilizers

Minimizing Fertilizer Pollution by Maximizing Nitrogen Use Efficiency

-- case study in a rice field in North East Japan --

Case	NUE	N rate	N rate reduction	N uptake by rice	Max. Potential Fert. Pollution
	%	kgN/ha	%	kgN/ha	kgN/ha
1	30	100	0	30	70
2	80	40	60	32	8

Notes:

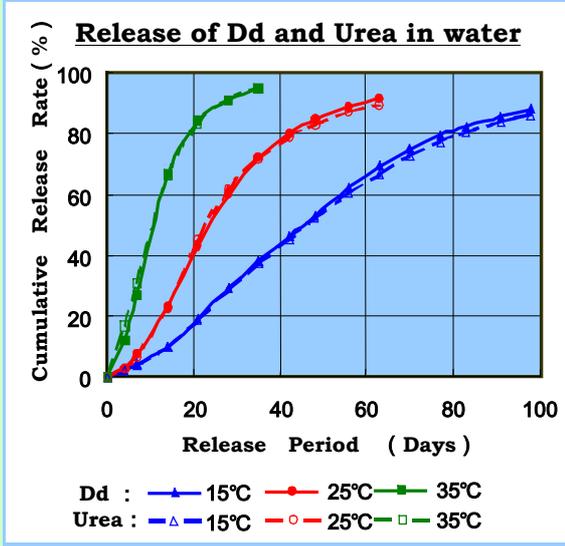
30% NUE: Average data of conventional fertilizer basal application

80% NUE: Highest data of MEISTER application

Benefit of Release controlled fertilizers

1. One shot application
2. Lower fertilizer consumption
3. Lower fertilizer pollution
4. **Higher yield with higher quality**

Quality Improvement - (1) (Vegetables with Low Nitrate N)



Dd - MEISTER

The release of Dd (Dicyandiamide) is just the Same with the release of Urea under various temperatures



Dd-MEISTER is good to provide $\text{NH}_4\text{-N}$ during the Whole release period.

Reduction of Nitrate-N and Oxalic acid Content of Spinach by MEISTER

	Yield g/10 bodies	Oxalic Acid Content g/kg FW	Nitric Acid Content g/kg FW
Conventional Fertilizer	324 (100)	5.2 (100)	8.2 (100)
Meister 7 + Meister S-9	330 (102)	4.9 (94)	5.9 (72)
Dd- Meister 7	340 (105)	4.1 (79)	5.6 (68)

Autumn harvest after three repeated tests are shown in the table.

(N.Mimaki, KUMAMOTO Agri. Res. Center, April.1. 2003 Agriculture and Science)

Quality Improvement -(2)**Effect of Just fit application
< Japanese Pear "HOSUI" >**

	Organic Pellet Fertilizer	Meister Application
Fertilizer		
Total - N	230 kg-N / ha	161 kg-N / ha
Application time	4 times	1 time
Results		
Yield	60 kg / tree	< 70 kg / tree
Fruits weight	410 g/n	< 512 g/n
Sugar Content	12.2 brix	< 12.8 brix
Partially High water	0.75	> 0.55

•Average data of three years (2000 ~ 2002)

• Oct.2003 Agricultural Research Center of KUMAMOTO Prefecture