

Challenges Facing the Fertilizer Industry

Presented at the
IFA-FAO Agricultural Conference
Global Food Security and the Role of Sustainable Fertilization

by
Henk Mathot
President
Cargill Crop Nutrition

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Sustainable Agricultural Development

The management and conservation of the natural resource base, and the orientation of technological and institutional change, in such a manner as to ensure the attainment of continued satisfaction of human needs for present and future generations.

Such development conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable.

UN-FAO 1995



Crop Nutrition

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PAGE 3

Developing a positive image of crop nutrient products and the fertilizer industry

Boosting crop production to feed a growing and more affluent population

Promoting the efficient use of crop nutrients

Producing crop nutrients in an environmentally responsible manner

Understand customer requirements

Deliver value to customers

Squeeze inefficiencies out of the value chain

Respect the environment

Return to stakeholders a competitive rate of return



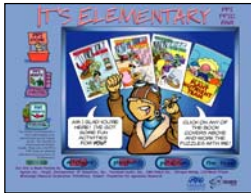
Crop Nutrition Developing a Positive Image



Agrium



IMC Global



Crop Nutrition Boosting Crop Production

Developing a positive image of crop nutrient products and the fertilizer industry

Boosting crop production to feed a growing and more affluent population

Promoting the efficient

Producing crop nutrient



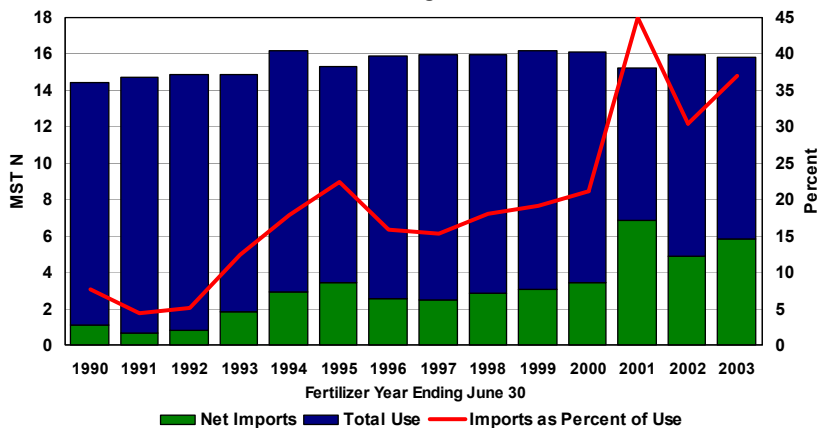
World Fertilizer and Grain Trade in 2001
(Million Metric Tons)

	World Use	Total Exports	Exports as a Percent of Use
Coarse Grain	902.1	101.2	11.2
Wheat	585.3	108.8	18.6
Rice	411.1	26.8	6.5
Total Grain	1898.5	236.8	12.5
Nitrogen (N)	82.2	29.8	36.2
Phosphate (P2O5)	33.1	14.0	42.4
Potash (K2O)	22.7	15.8	69.5
Total Nutrients	138.0	59.6	43.2

Sources: *USDA, World Agricultural Supply and Demand Estimates. International Fertilizer Industry Association (IFA), Annual Statistics.*

Notes: Nitrogen exports include ammonia, urea, ammonium nitrate, ammonium sulphate, and calcium ammonium nitrate. Phosphate exports include phosphoric acid, DAP, MAP, and TSP. Phosphate rock is not included. Potash exports do not include Canadian shipments to the United States.

U.S. Nitrogen Use



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Environmentally resp



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Implementation of Innovative Technology: The Case of USG in Bangladesh, Nepal, and Vietnam



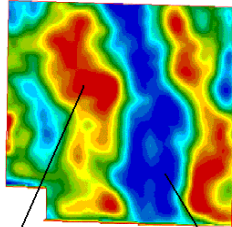
The ANMAT project (Adapting Nutrient Management Technologies)

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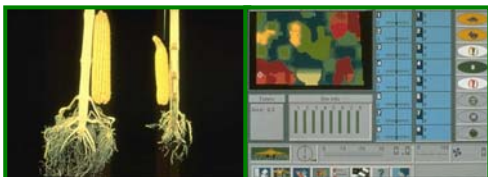
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Precision Agriculture



Low Potential Yield area: Lowest amount of nitrogen is prescribed.

High Potential Yield area: Highest level of nitrogen is prescribed.



InSite VRN™ Variable-Rate Nitrogen System

Precision Agriculture Solutions

Nitrogen is one of the most important, yet often misused, macronutrients. If you apply nitrogen at a single rate, you could be wasting money by over-applying on some acres or robbing yourself of yields by underapplying on others.

Turning data into profits
The InSite™ Information Management System is precision agriculture defined. It is a site-specific, on-going, data-driven environmental assessment with technological and agronomic expertise. And it's that expertise that turns data into precision agriculture solutions for your operation.

One such solution is InSite VRN™ Variable-Rate Nitrogen System. InSite VRN™ combines remote sensing and advanced computing with Global Positioning Satellite (GPS) mapping. The program is field-specific and nitrogen levels and creates a prescription for site-specific, soil nutrient needs. It also tells you when and how much to apply. InSite VRN™ takes each other's prescription and creates a field solution that can be done prior to planting costs.

A prescription for profitability
The InSite VRN system involves working closely with your local agronomist to develop a detailed plan for each field/acre.

- Yield goals based on the yield potential of each area of the field
- Precise field-level
- Organic nitrogen mineralization
- Nitrogen nitrogen availability
- Legume nitrogen availability
- Nitrate nitrogen source

The InSite system uses the standard formula of yield goal times yield factor (100/1.2 - 100/1.5 acres) that can be adjusted to suit. Yield goals are based on the productivity potential of the field identified through satellite imagery. The resulting field goal distribution varies across the field dependent on other crop management programs that ensure a consistent yield potential throughout the field.

These of the four fields show variability and are good candidates for InSite VRN. The one on the bottom right does not show much variability and may not be a good candidate for InSite VRN.

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“We need to change our mentality and business plans from simply selling tons of fertilizer to supplying crop nutrient solutions that deliver value to farmers and the environment.

That may well mean moving fewer tons but selling more services to our dealer and farmer customers.”

Henk Mathot
Cargill Crop Nutrition

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Environmentally Responsible Production

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“We shall never achieve harmony with the land, any more than we shall achieve absolute justice or liberty for people. In these higher aspirations, the most important thing is not to achieve, but to strive.”

Aldo Leopold