



International
Fertilizer Industry
Association

Fertilizer Management: Global Issues and Challenges

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- ① About IFA
- ② Overview of fertilizer demand
- ③ Meeting food demand / Reducing environmental footprints



Fertilizer Management: Global Issues and Challenges

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About IFA




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Membership / Legitimacy and diversity

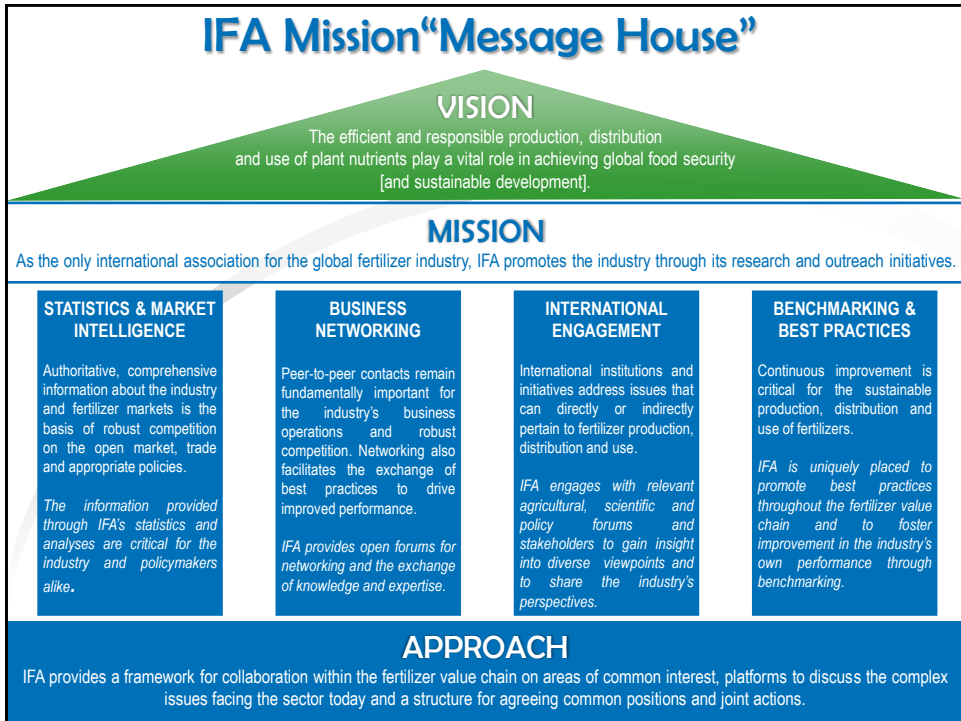
542 members **81** countries



Region	Members
North America	86
South America	36
Europe	141
Africa	53
Asia	96
Australia	25



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Presenting the International Fertilizer Industry Association



fertilizer.org





JOIN US

and become an
AMBASSADOR
for the fertilizer industry



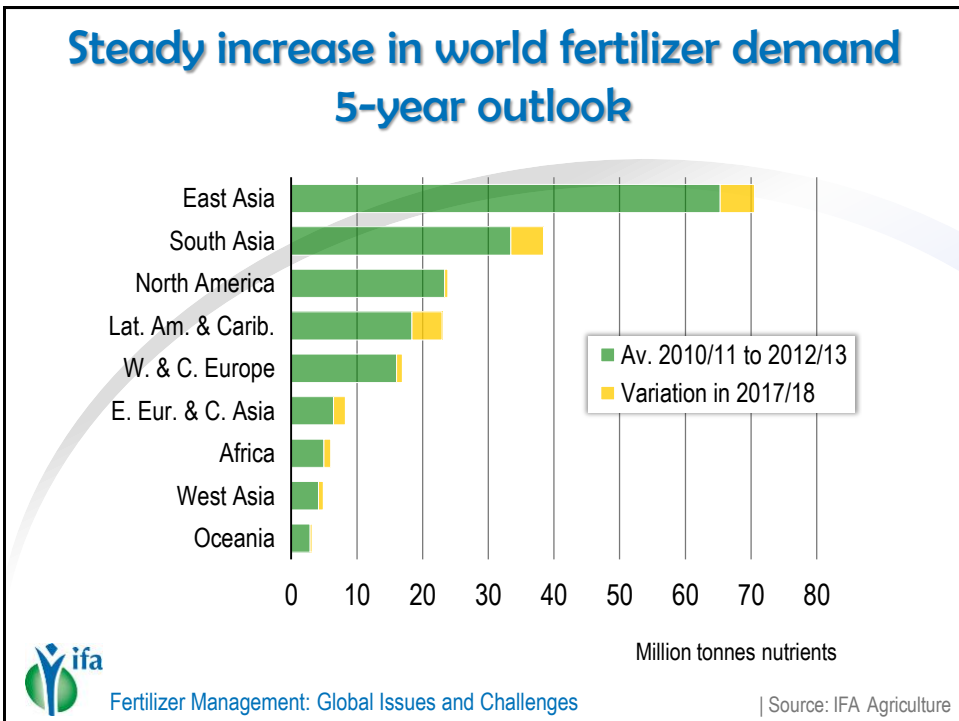
This motion graphic video provides a broad overview of the International Fertilizer Industry Association's scope of work. It highlights its membership, key activities, committee structure and encourages existing and potential new members to join and be pro-active in the work of the association.



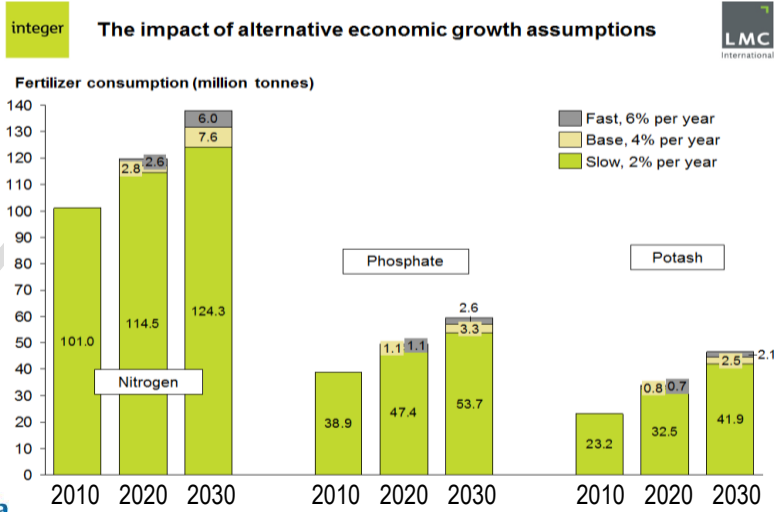
Overview of fertilizer demand



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Steady increase in world fertilizer demand Outlook to 2030

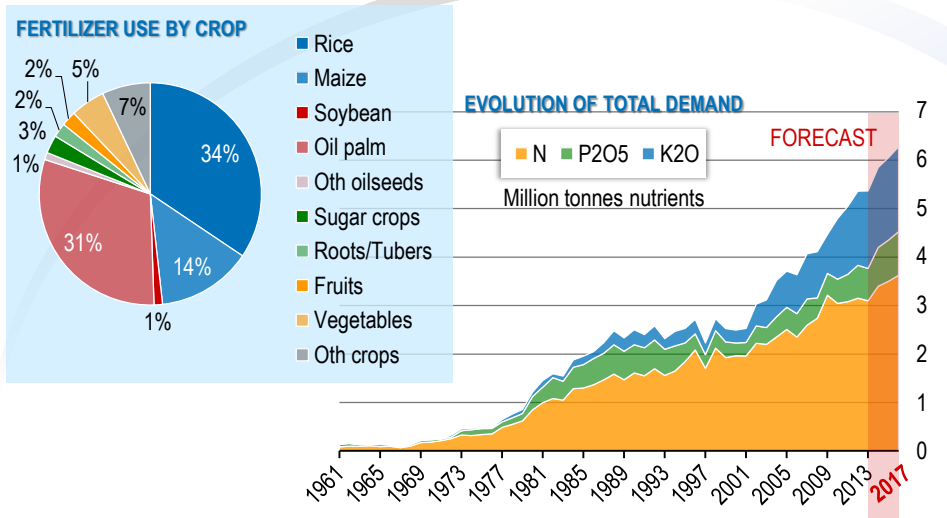


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| Source: Integer

Indonesian fertilizer demand

- #5 market, following China, India, USA and Brazil
- 3.2% of world consumption



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Meeting food demand / Reducing environmental footprints



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Food security and meeting demand

- Feed **2 billion more** people by 2050
- Still **850 million** hungry
- Increasing demand for livestock products
- Competing demand for feedstock for biofuels / bioenergy

60%
increase in total
agricultural
production (latest
FAO projection)

Increase yields
and cropping
intensity: **90%** of
the anticipated
gain

Greater (and more
efficient) use of
fertilizers (and
other nutrient
sources)

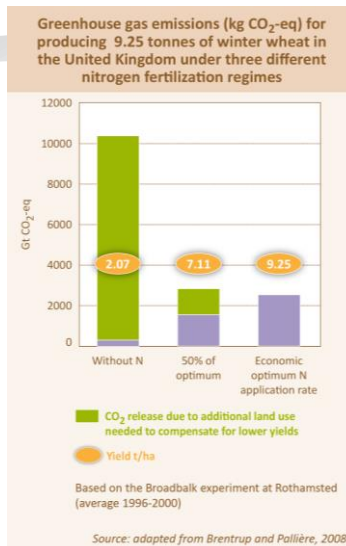
Industry
responds through
heavy
investments in
additional
capacity



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Preventing land use changes

- World arable land area in 2009: 1,533 Mha
- Anticipated expansion by 2050: 70 Mha (+4.6%)
 - +120 Mha in developing countries
 - 50 Mha in developed countries
- Conversion to arable land releases huge amounts of CO₂
 - 260 t CO₂-eq/ha for temperate forests
 - 590 t CO₂-eq/ha for tropical forests
- Increasing productivity is a must to:
 - Mitigate GHG emissions from land use changes
 - Preserve biodiversity-rich areas



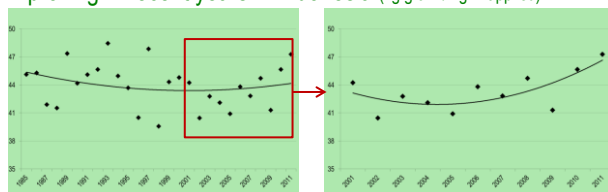
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Improving nutrient use efficiency

Imperative from agronomic, economic and environmental perspectives

NITROGEN

- ~40% recovery under farm conditions in year of application (global average)
- 60-80% in research plots → room for improvement
- NUE improving for 3 decades in developed countries; since 2008 in China
- NUE stagnating or declining in most developing countries
- Improving in recent years in Indonesia (kg grain / kg N applied)



PHOSPHATE

- Losses mostly through erosion (sloping land, concentrated livestock farming)
- Low PUE in year of application, but can reach up to 90% using the balance method over at least a decade

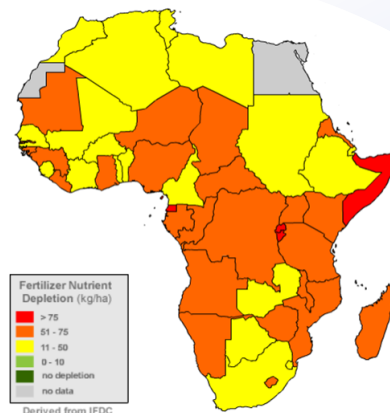


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Urgent need to restore soil fertility

- Average fertilizer application rate
~9 kg nutrients/ha / *Mostly on cash crops*
- Not sufficient to offset nutrients removed
→ massive soil mining
- More than 40% of the 220 Mha of farmland
lose > 30 kg nutrients/ha/year
- Losses worth US\$ 4 billion annually
→ Urgent need to replenish African soils' nutrient pools
→ Need innovative approaches to improve nutrient supply and use in the region

Soil Nutrient Depletion in 2004



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Fertilizing Crops to Improve Human Health

New paradigm

- Not only improve soil fertility, yield and profitability; but reduce environmental impact,
- ... also enhance human health
- From food security (enough calories) to nutrition security (all essential nutrients)

Success stories

- Zinc in Turkey
- Selenium in Finland and New Zealand
→ Need to scale up

Fertilizer can also influence composition of food products

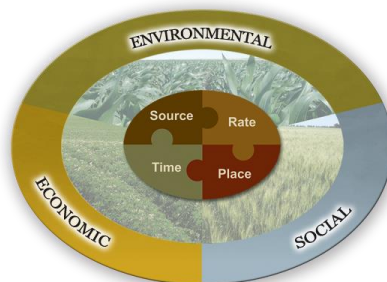
- N, S → proteins
- K → lycopene, isoflavone



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Nutrient stewardship programs

- Inappropriate fertilizer practices are widespread:
 - Blanket recommendations;
Unbalanced fertilization
 - Single basal application;
No soil testing/plant analysis
- Often responsible for large yield gaps and poor fertilizer use efficiency
- Best management practices improve productivity, profitability, preserve the environment → meet the economic, social and environmental goals
- **Nutrient Stewardship** actively promoted by the fertilizer industry: Apply the **right source**, at the **right rate**, at the **right time**, in the **right place**



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Knowledge transfer

- Developing countries account for 2/3 of world consumption
- Inefficient 'conventional' governmental extension
- Hundreds of million smallholder farmers are not satisfactorily advised on fertilizer management → poor use efficiency
- **Develop solutions to supplement extension workers**
 - Partner with farmers organizations to improve outreach
 - Train agri-input dealers to provide agronomic advice
 - Use mobile phone technology for customized, real-time, crop- and site-specific recommendations




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Special products

Slow- and controlled release fertilizers


Stabilized fertilizers



Fertilizers supplemented with micronutrients

Soluble / liquid fertilizers (fertigation, foliar sprays)

- Mostly used on specialty crops
- Constrained by price differential
- New products could alleviate the price constraint
- Virtual Fertilizer Research Center (launched in 2010 by IFDC): Creating the next generation of fertilizers




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Summary and conclusion

IFA is delighted to co-host this meeting with our Indonesian partners

Indonesia can play a key role in a global action and advocacy campaign on nutrient management

IFA looks forward to the outcome of these discussions and are ready to join hands with all of you in improving the global image of our industry



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For questions / comments
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