



## Zinc Deficiency in Africa: Challenges & Opportunities



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IFA Africa Forum

Paris – June 3<sup>rd</sup>, 2010



### Zinc deficiency is a global problem

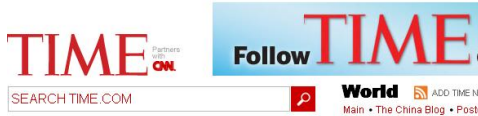
- One in three people (2 billion) are at risk of zinc deficiency
- 450,000 children under the age of five die annually - Lancet
- 800,000 people of all ages estimated to die annually - WHO





## Zinc deficiency is a global problem

- Identified as 5<sup>th</sup> leading risk factor for death & disease in developing countries - WHO
- Copenhagen Consensus identified Zn & Vitamin A as #1 priority



### Can One Pill Tame the Illness No One Wants to Talk About?

By VIVIERIE WALT / SOGOLA Monday, Aug. 17, 2009

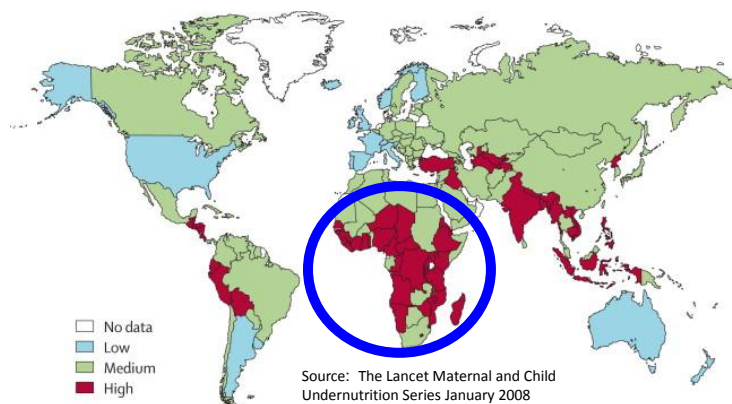


Anna Kari / Documentography for Time



## Zinc deficiency is a problem in Africa

- 28%/162 million estimated to be zinc deficient in Sub-Saharan Africa – IZiNCG
- Recent National Food Survey estimated ~ 50% of children were deficient in S. Africa

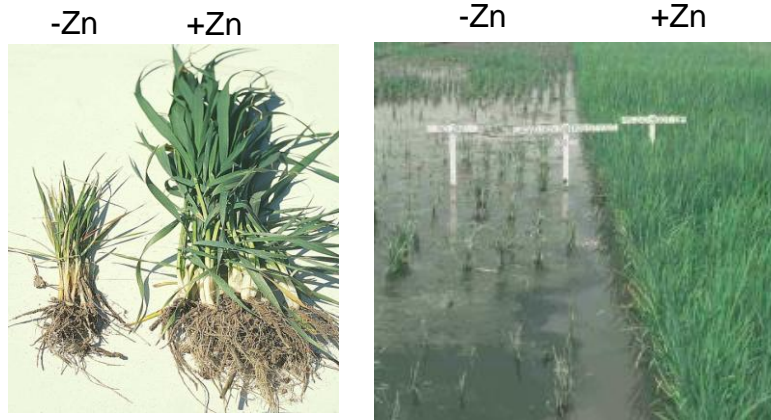


Source: The Lancet Maternal and Child Undernutrition Series January 2008



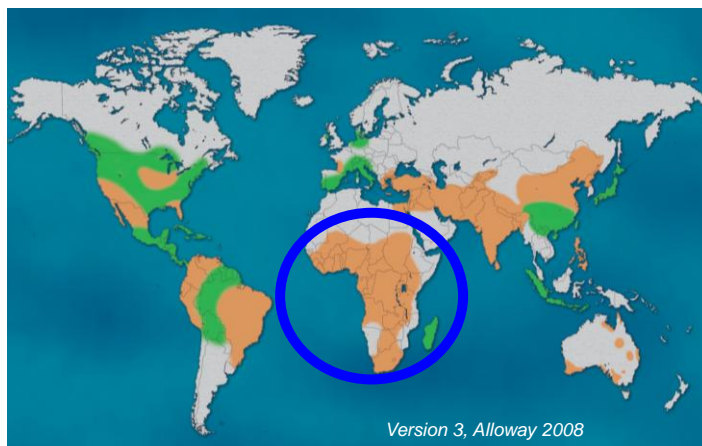
## Zinc deficiency in crops

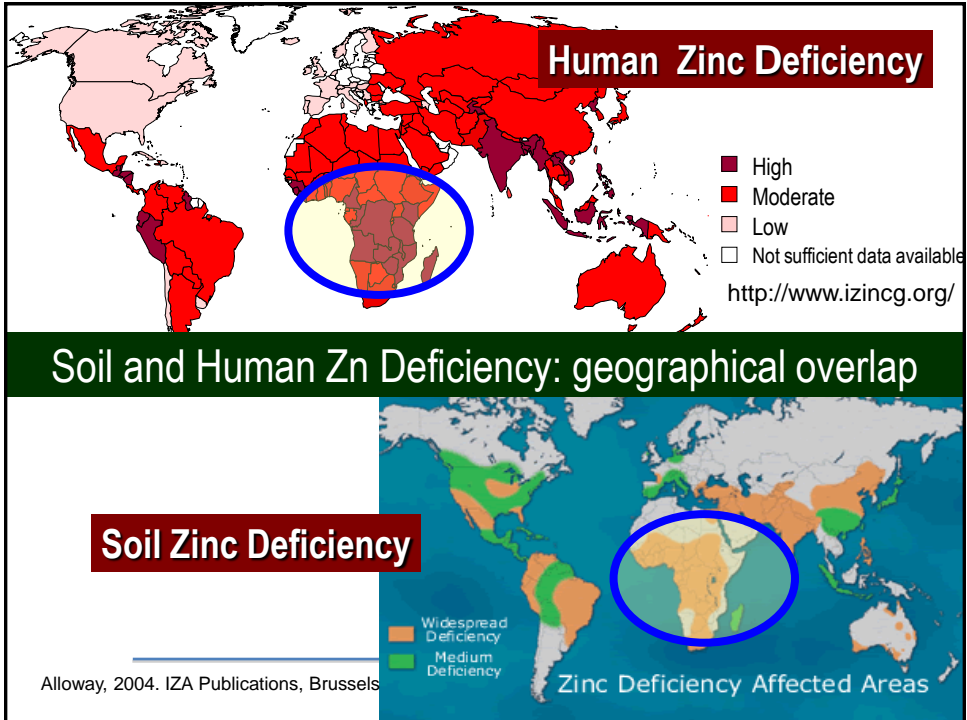
- Zinc is the most common micronutrient deficiency
- 50% world's agricultural soils estimated to be deficient - FAO



## Zinc Deficiency in African Soils

- 2006 study estimated 91% of SA soils are deficient, despite using .5% Zn in most of the NPK applied





## Solutions to Zinc Deficiency

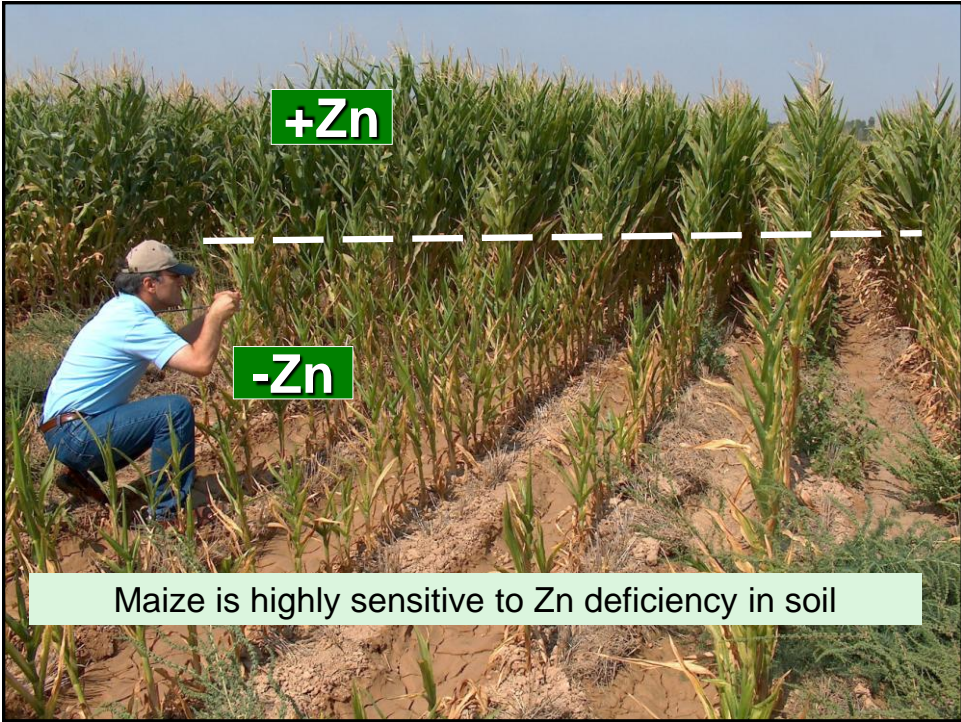


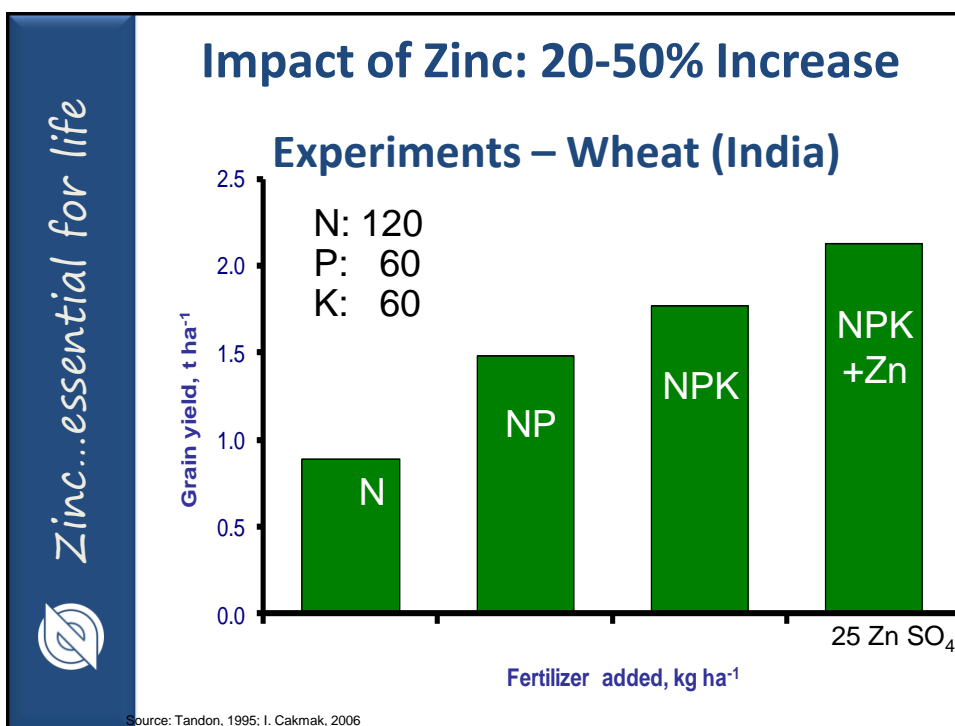
- **Supplementation**
- **Food Fortification**
- **Genetic biofortification**
- **Agronomic biofortification**



Zinc...essential for life

### Applying Zinc to Crops: A Sustainable Solution to Zinc Deficiency

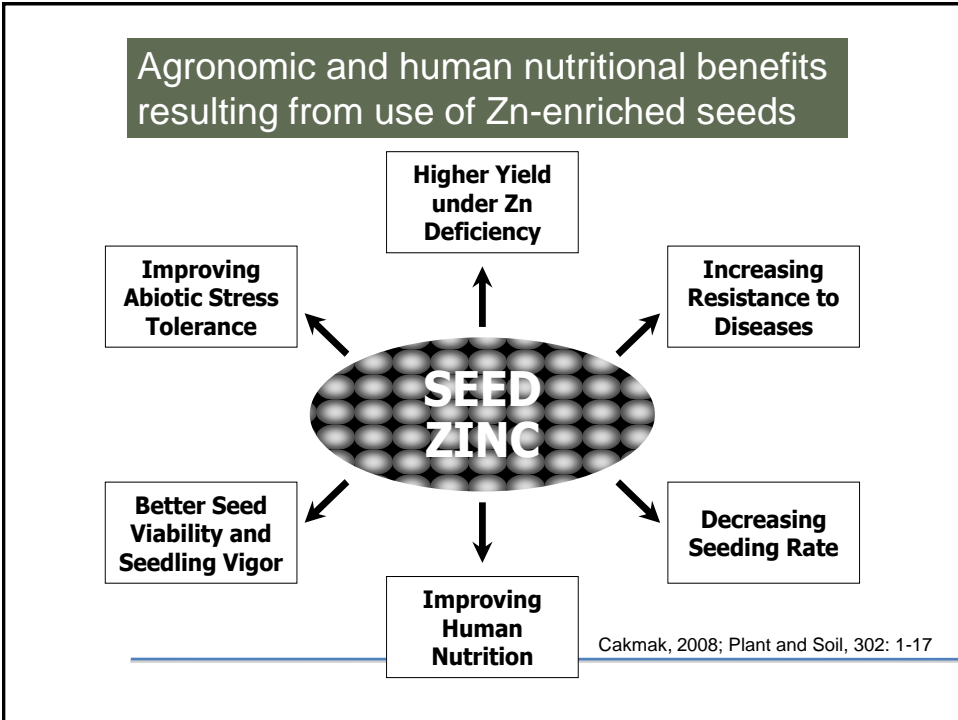




**Effect of Zn-enriched urea (ZEU)**  
on grain yield and grain Zn concentrations of  
aromatic rice, and economics of use of Zn-  
enriched urea

Treatments	Zn Added (kg ha <sup>-1</sup> )	Grain Yield (ton ha <sup>-1</sup> )	Zn Concentration (mg kg <sup>-1</sup> DW)	Benefit (USD ha <sup>-1</sup> )	Benefit:Cost Ratio
Prilled Urea	-	3.87	27	-	-
0.5% ZEU	1.3	4.23	29	95	96
1.0% ZEU	2.6	4.39	33	152	77
2.0% ZEU	5.2	4.60	39	216	55
3.0% ZEU	7.8	4.76	42	266	45

Shivay et al. (2008a) Nutr Cycl Agroecosyst





## Zinc Saves Kids

- Partnership program with UNICEF
- Goal is to raise \$3 million initially
- If scaled up, could save > 200,000 kids in 3 yrs



## Zinc Nutrition Research Project Burkina Faso

- Research consortium of University of Cal.- Davis, IRRS, Helen Keller Institute
- IZA funding with Thrasher Fund & Canadian International Dev. Agency
- Assessing preventative vs therapeutic strategies to control zinc deficiency



<http://clinicaltrials.gov/ct2/show/NCT00944359>



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Zinc  
nutrient  
initiative

- 4-yr program



Goals:

- Raise awareness of need for zinc as part of balanced fertilizer programs
- Increased crop production & nutritional status

## Global Zinc Crop Trials



Coordinating Institution: Sabanci University





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## Other Activities in Africa

- Fertilizers, Food Production and Human Health  
*Pretoria, South Africa, August 26-27, 2010*



- Seeking CFC funding for Zn fertilizer project in Malawi

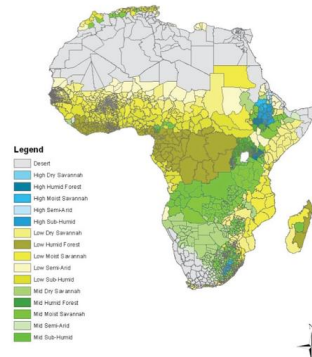


Common Fund for Commodities



## Challenges for Zinc Deficiency in Africa

- Issues affecting other fertilizer use – e.g. infrastructure
- Awareness of problem, solution & benefits
- Support of government agencies



## Partnerships Needed for Success

- International Fertilizer Association
- IPNI
- The Sulfur Institute
- United Nations – CFC
- Clinton Foundation
- U.S. AID
- UNICEF
- Fertilizer Companies



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Zinc nutrient initiative



- Zinc deficiency – in humans and crops is a critical, global, and linked issue
- Problem is solvable – Zinc fertilizer
- Benefits include increased food, nutrition, health and economics

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