



Zinc
nutrient
initiative

Greg Brouwer
Director, Zinc Nutrient Initiative

Seminário de Micronutrientes
Sao Paulo, Brasil
November 2010



International Zinc Association

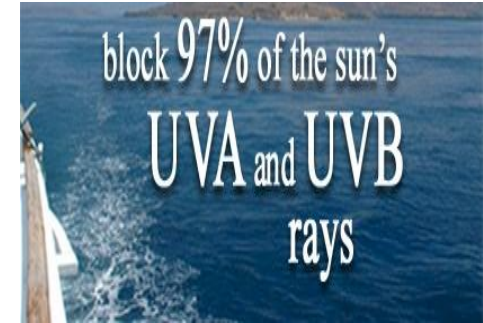
- Founded in 1990
- > 40 Full Members
- > 100 Affiliate Members
- 80% of WW zinc production
- 55% of world zinc production





Zinc is Essential for Life

- Humans, animals, plants need zinc to function
- Affects over 300 enzymes in the body
- Helps generate cells
- Important for growth and brain development
- Key for immune system
- People need up to 15 mg of zinc per day





Zinc is Essential for Life

Few extra milligrams of zinc

||

Difference between illness and good
health



Zinc Deficiency

- Reduced appetite, taste acuity
- Reduced growth velocity
- Skin lesions
- Diarrhea & infections
vulnerability
- Delayed sexual maturation &
reduced fertility



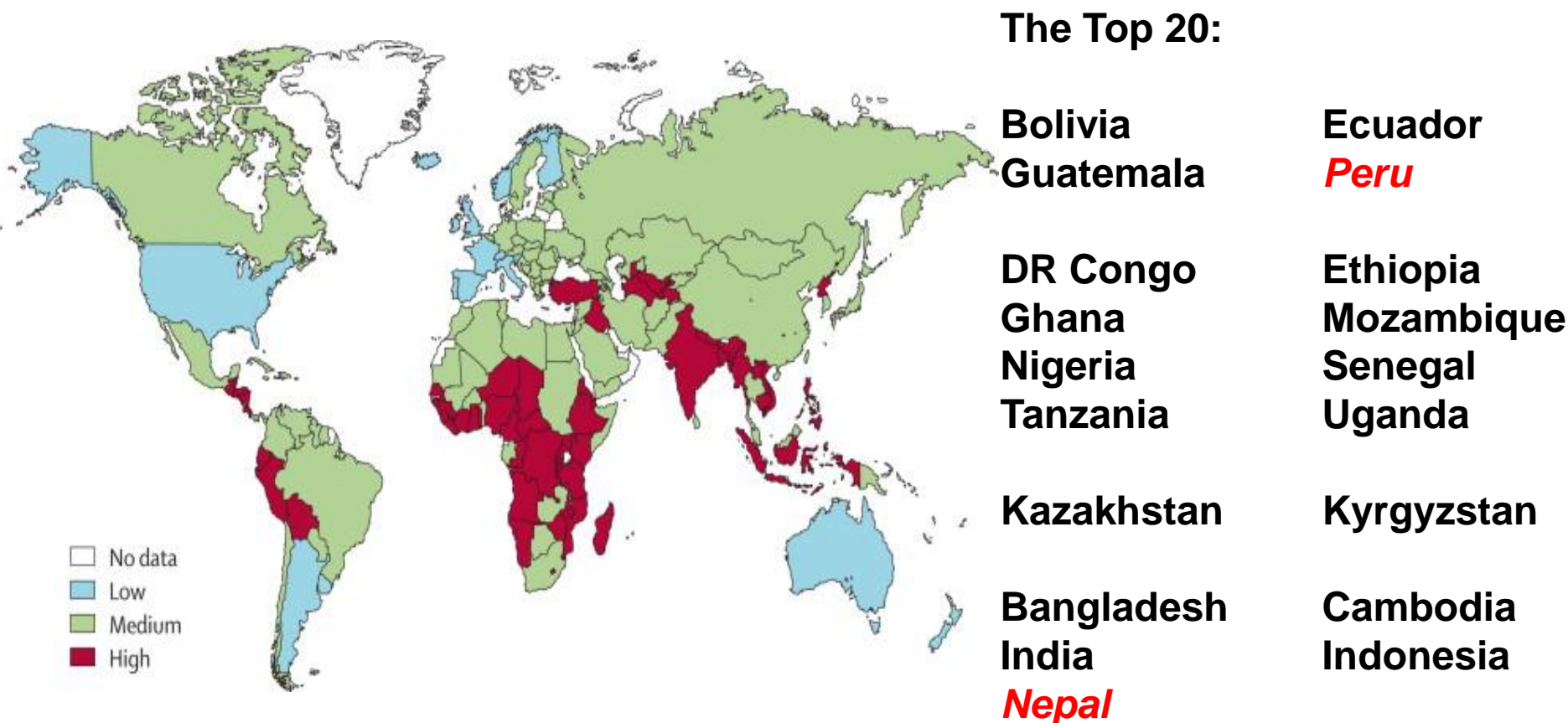


Zinc Deficiency: Global Issue

- Well-documented public health issue
- 1/3 of global population deficient
- Developing countries most affected



Zinc deficiency affects 2 billion people globally





Zinc Deficiency

- > 450,000 deaths annually in children under the age of 5 due to zinc deficiency – Black et al, 2008 Lancet
- 800,000 deaths estimated globally - WHO





Zinc Deficiency is 5th Leading Cause of Death and Disease in the Developing World

<u>Risk Factor</u>	<u>DALY (in %) *</u>
Underweight	14.9
Unsafe sex	10.2
Unsafe water	5.5
Indoor smoke	3.7
Zinc deficiency	3.2
Iron deficiency	3.1
Vitamin A deficiency	3.0
Blood pressure	2.5
Tobacco	2.0
Cholesterol	1.9



Copenhagen Conference 2008

- 8 leading economists, 5 Nobel Laureates
- Prioritized efforts to address world's biggest challenges
- Zinc & vitamin A #1 issue



Press Release

Copenhagen Consensus 2008 - RESULTS



The world's best investment: Vitamins for undernourished children, according to top economists, including 5 Nobel Laureates

Copenhagen, Denmark (May 30, 2008) – Over two years, more than 50 economists have worked to find the best solutions to ten of the world's biggest challenges. During the last week, an expert panel of 8 top-economists, including 5 Nobel Laureates, sat down to assess the research.

Newsweek

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GIVING GLOBALLY

Feeding the 900 Million: Micronutrients



By Sharon Begley | NEWSWEEK
Published Sep 20, 2008
From the magazine issue dated Sep 29, 2008

There is a good but sobering reason why "ending world **hunger**" has been a perennial hope of beauty-pageant contestants at least since Miss America contestants began naming that as their greatest wish: we haven't come close to doing it. This year some 900 million people—including 178 million children under 5—are suffering from malnutrition, estimates the [United Nations](#); every day 50,000 starve to death.



Copenhagen Conference 2008

	SOLUTION	CHALLENGE
1	Micronutrient supplements for children (vitamin A and zinc)	Malnutrition
2	The Doha development agenda	Trade
3	Micronutrient fortification (iron and salt iodization)	Malnutrition
4	Expanded immunization coverage for children	Diseases
5	Biofortification	Malnutrition
6	Deworming and other nutrition programs at school	Malnutrition & Education



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World



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

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



Anna Kari / Documentography for Time



Think Zinc: A Healthy Option



www.zinc-crops.org

“ZINC SAVES KIDS” Campaign



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unicef 



UNICEF–IZA

Zinc Program: Objectives

- Reduce infant and child mortality
- Provide zinc treatment for children with diarrhea
- Prevent zinc deficiency through supplementation program
- Target audience: global zinc industry & customers, general public
- Target amount: \$3 million + over 3-yr



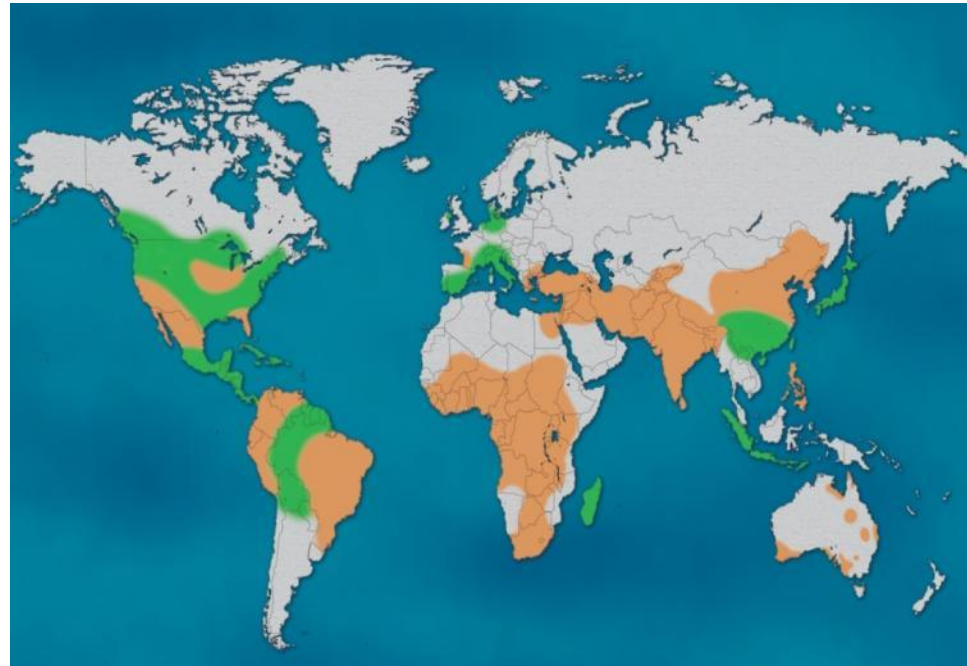
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THE PROBLEM

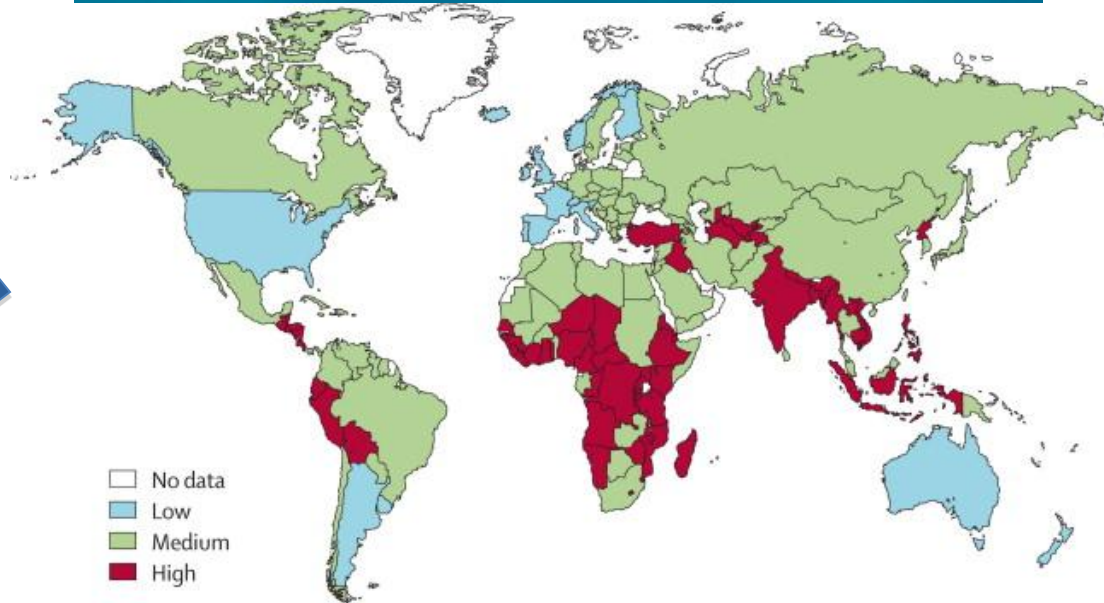


World Map – Zinc Deficiency

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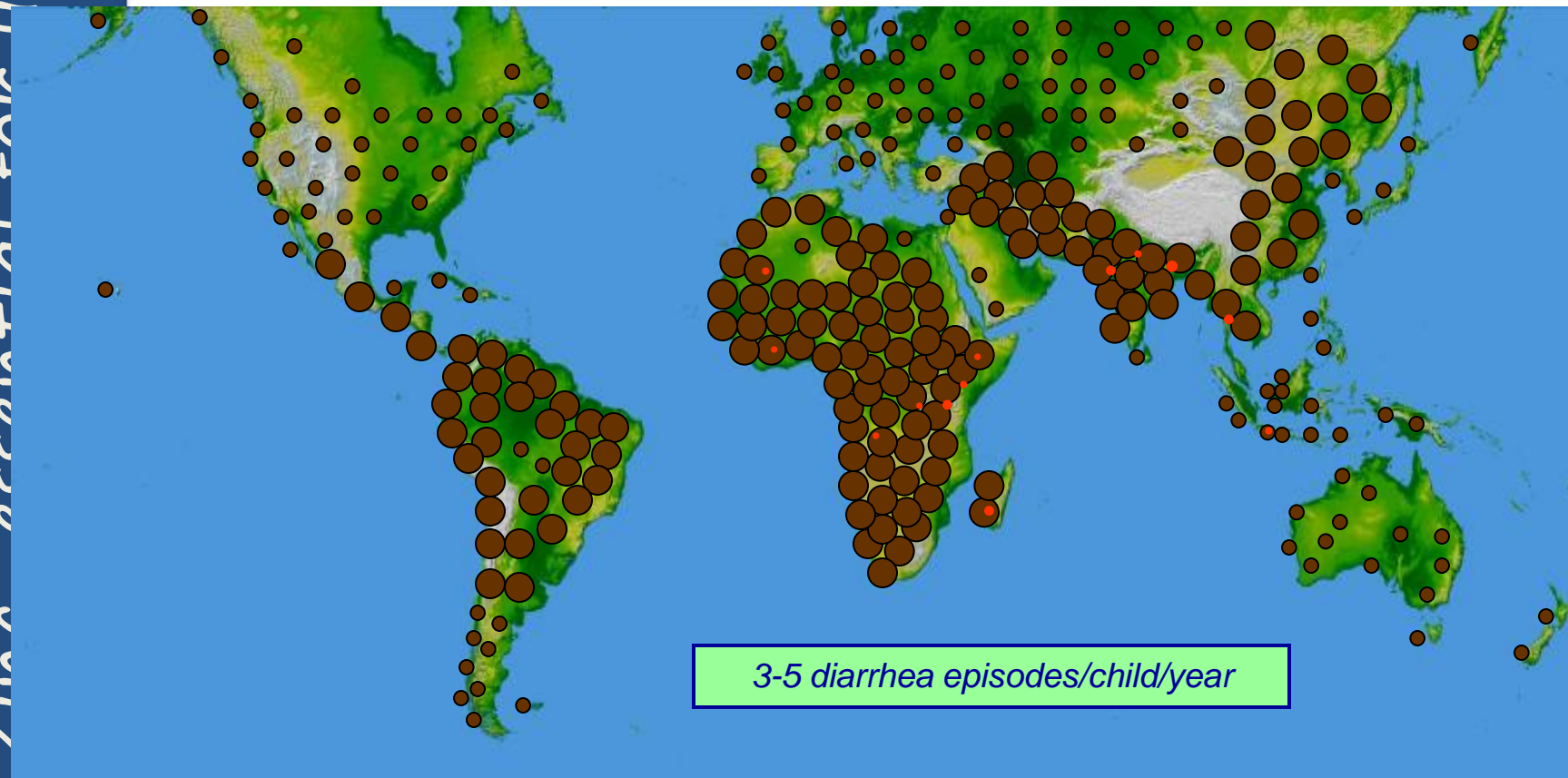
Soils



Humans

- No data
- Low
- Medium
- High

Diarrhea Incidence



- = Child diarrhea cases
- = Zinc treatment

Courtesy of NASA





Kids aren't getting enough Zinc

Cereal grains should contain around 40-60 mg Zn/kg

Current Situation:
10-30 mg kg⁻¹





Examples of Zinc Deficiency

Wheat



**Severe Zn
deficiency**



Zn treated plot



Recognizing Zinc Deficiency

- Chlorosis
- Necrotic Spots on leaves
- Bronzing of Leaves
- Rosetting of Leaves
- Stunting of Plants
- Dwarf leaves
- Malformed leaves





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THE SOLUTION



ALL PROBLEMS
ARE OPPORTUNITIES
IN DISGUISE



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Applying Zinc to Crops: A Sustainable Solution to Zinc Deficiency

+Zn



-Zn



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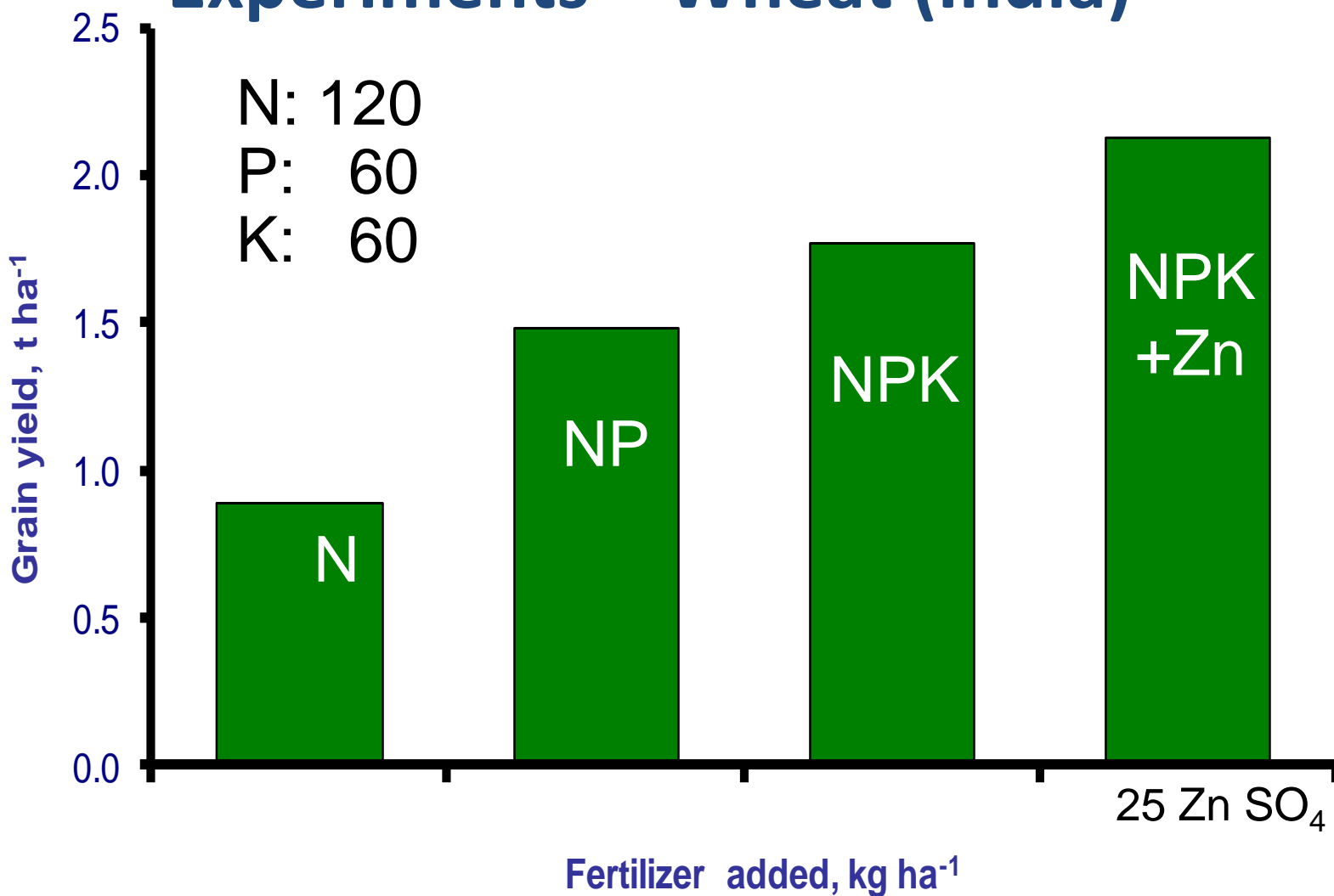
After 14 Days of Zinc Treatment to Barley Crops on Zinc-Deficient Soil!





Impact of Zinc: 20-50% Increase

Experiments – Wheat (India)





Zinc, a protective agent

- Not only:
 - Increasing crop yield
 - Increasing zinc content
- **But also acts as a protective agent against:**
 - Iron toxicity in rice cultivated areas
 - Cadmium accumulation in wheat and rice grain



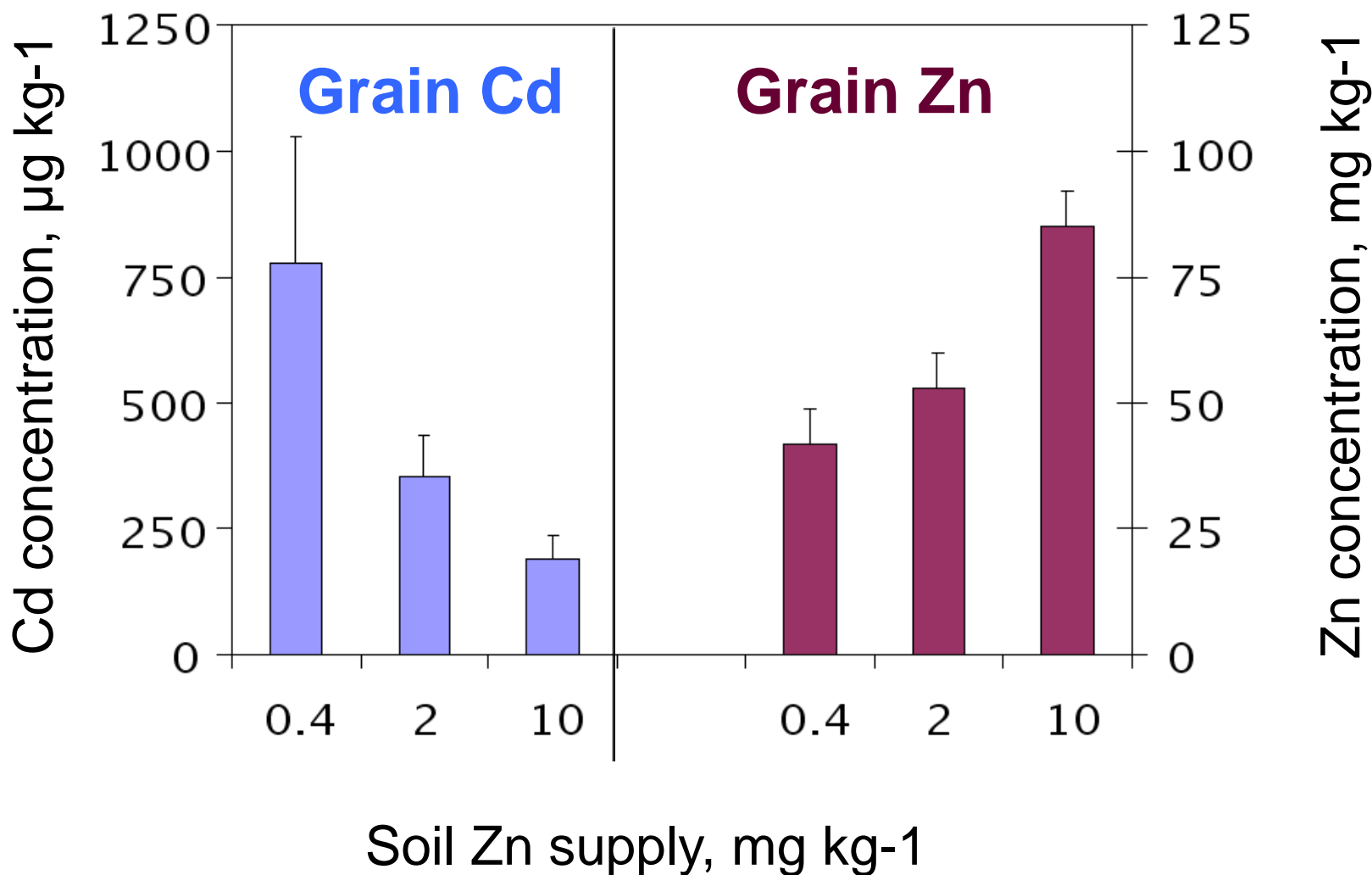
Cd Concern in Rice Grain in Asia

- In Asian countries rice contributes a high percentage of the Cd daily intake (Watanabe et al., 2000: Int. Arch. Occup. Environ. Health). Dietary uptake is an almost exclusive route of Cd exposure in Asia.
- Rice-originated Cd intake is responsible for approx. 45 % of the total Cd-intake (pollution) of Japanese (Cfr. Itai-Itai disease) and Korean populations.
- The Cd concentrations in rice samples collected from South China ranged from 0.01 to 4.43 mg/kg. Mean dietary Cd intake from rice for an adult is 191 µg/d (J. Environ. Sci. 2008, 20: 696–703)

Exposure levels of 30–50 µg Cd/d for an adult could increase the risk of bone fracture, cancer, kidney dysfunction, and hypertension (Satarug et al. 2003)



Effect of Increasing Zn Supply on Grain Concentration of Cd in Cd-Treated Plants





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- **4-yr program**
- **Global effort with focus in China, India, Brasil and Thailand**
- **Goal:**
 - **raise awareness about deficiency problem & benefits of using zinc**
 - **Increase use of zinc in fertilizers**



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Approach

- **Demonstration crop trials**
- **Communication activities**
- **Workshops/seminars**
- **Country-based marketing**





Demonstration Field Trials

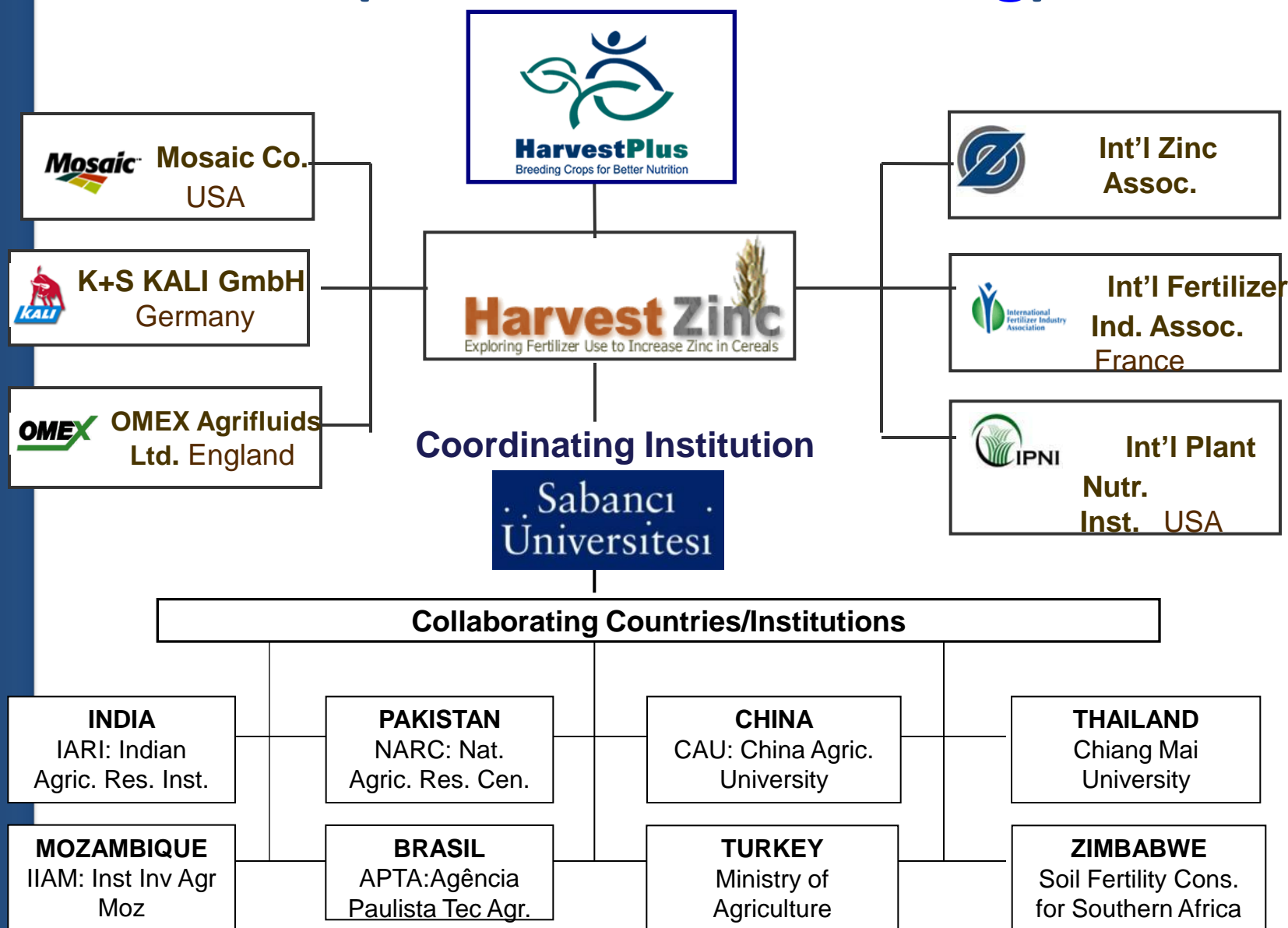
- ☐ study the effects of Zn fertilization on yield and nutritional status
- ☐ increase local awareness of the importance of zinc fertilization





Harvest Zinc Fertilizer Project

(www.harvestzinc.org)



IZA Crop Zinc Trials

- **India** – 17 wheat and rice trials
- **China** – 24 trials in 6 provinces with rice, wheat & maize
- **Thailand** - 2 rice trials
- **South Africa** - 2 maize trials
- **Brasil** – 2 soybean trials

Total of 47 crop trials globally



Global Zinc Fertilizer Project



Coordinating Institution: Sabanci University



There was an increase in grain yield up to 20 % by Zn application in the experimental sites of the Nakorn Nayok and Chiang Mai Provinces



Zinc Applications improved rice grain yield up to 30 % in some locations of the Orissa State

INDIA




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Zinc Applications improved wheat grain yield, on average, 9 % in 6 locations of the Uttar Pradesh and Haryana States



A man with a beard, wearing a pink turban and a pink button-down shirt, stands in a lush green wheat field. To his right is a large white sign with blue text and a logo. The sign reads 'International Zinc Association' and 'Zinc Fertilizer Project'. Below that, it says 'Punjab Agricultural University- Sabanci University Bathinda'. The background shows a clear blue sky and some trees in the distance.

International Zinc Association

Zinc Fertilizer Project



Punjab Agricultural University- Sabanci University
Bathinda

**Zinc Applications improved wheat grain yield,
on average, 7 % in 3 locations of Punjab State**

Zinc Applications improved rice grain yield, on average, 9 % in 4 locations of the Punjab State



传统施氮

8kg氮/亩+喷施锌

高 氮

12kg氮/亩不施锌

Zinc Applications improved rice
grain yield 20 % in 2 locations of
Sichuan, China

Grain Zn concentration in different countries with and without zinc fertilization

Country/Location	-Zn	+Zn	Country/Location	-Zn	+Zn
	mg kg ⁻¹			mg kg ⁻¹	
India			Mexico		
•Varanasi			•Year-I	21	45
•PAU-I				36	60
•PAU-II				12	29
•PAU-III				32	57
•PAU-IV				23	49
•IARI				22	43
				28	54
Kazakhstan				19	26
•Loc-I				18	39
•Loc-II				20	32
Pakistan					
•Loc-I	27	40	Iran		
•Loc-II	28	44	•Average	17	28
•Loc-III	30	40			
•Loc-IV	29	60	Brazil		
			•Average	30	52

**Average Grain Zn Concentrations
(10 Countries with 32 locations)**

**-Zn: 26 ppm
+Zn: 50 ppm**

Average of all countries -Zn: 26 +Zn:50

Zinc is essential for crops

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But...

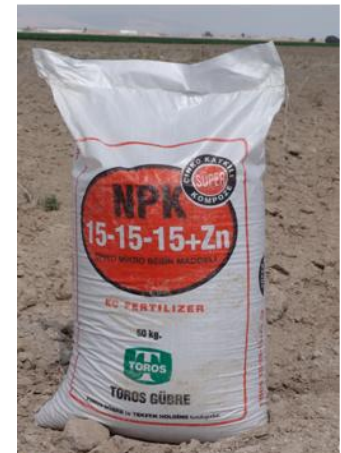
- Quality of zinc products a critical issue
- As, Pb and Cd reported in micronutrient fertilizers in range of 100's – 1000's of mg/kg
- Shipment of contaminated zinc fertilizer from China to S. Africa recently made the international news
- MgSO_4 sold as ZnSO_4 in Thailand & India





Code of Practice needed

- ensure the safe and sustainable use of zinc-fertilizer products
- ensure quality of products for farmers
- help develop and grow zinc fertilizer market





Two key goals of CoP

1) safe & sustainable product



2) Limits achievable by industry



- Working with Dr. Mike McLaughlin, Commonwealth Scientific and Industrial Research Organisation & University of Adelaide
- Review by Dr. Rufus Chaney, USDA



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Communication Activities:

- Case-study on success story in Turkey
- Technical brochure
- Publication of articles/book
- Fact sheets
- Newsletter
- website: zinc-crops.org
- Videos
- Seminars/workshops



Case Study: A Success Story with Zinc Fertilizers in Central Anatolia

Introduction

Until the early 1990s, wheat grown in the Central Anatolia region, which is a major cereal production area in Turkey (4.5 million hectares), showed chlorotic and necrotic spots on their leaves, had reduced shoot growth, and most importantly, produced low crop yields.

Since this discovery, several soil and environmental factors have been assessed as possible reasons for the problems seen in the wheat, such as water deficiency, pathogenic infections, heat stress, boron toxicity, and micronutrient deficiencies. Soils in the region were also known to be extremely poor in moisture and organic matter, and high levels of pH and calcium carbonate. These factors typically result in zinc being deficient in the soils for use by crops.

The Zinc Project

A field experiment was completed at the Transitional Zone Agricultural Research Institute in Eskişehir by Mr. Murat Kaya in order to demonstrate the effect of different micronutrients on wheat and barley. The results of this first field trial showed that the addition of zinc resulted in significantly increased grain yield, and the chlorotic and necrotic symptoms on leaves were not developed (Figure 1). On average, zinc application enhanced grain yield of the wheat and barley crops by approximately 55%, while other micronutrients had little to no effect on the yield.

In order to identify the underlying cause of this growth problem in wheat further a long-term, multi-institutional project was conducted between 1993-1997 in

Central Anatolia as a NATO-funded Zinc project under direction of Professor İsmail Çakmak. In many locations, there were spectacular increases in grain yield resulting from application of zinc fertilizers. In certain areas where zinc availability was low in soils, wheat grain yield was extremely low and was not economic (e.g., 250 kg ha⁻¹). Applying zinc fertilizers on these soils resulted in substantial increases in growth and enhanced grain yield by a factor of 6-8 to around 2000 kg ha⁻¹ from approximately 250 kg ha⁻¹.

Besides such extreme regions, there were also a number of locations in Central Anatolia where zinc fertilizers increased grain yield at least 20% and eliminated development of chlorosis and necrosis on leaves. It was also demonstrated that the yield-increasing



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Communication Activities:



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Issue No. 1
July 2009



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Press Release: Zinc and Fertilizer Industries Form Task Force to Reduce High Mortality Rates in Developing World 2-3

HarvestPlus Project Making progress in the past year 3

National Soil and Fertilizer Conference in Thailand: A presentation of research and publications 3-4


Zinc Nutrient Initiative

The Zinc Nutrient Initiative represents a new program with the overall goal of increasing the use of zinc in fertilizers. The Food and Agricultural Organization (FAO) has estimated that 50% of the world's agricultural lands are deficient in zinc. Further, the World Health Organization (WHO) attributes 800,000 deaths worldwide each year to zinc deficiency and highlights that zinc deficiency in humans is largely related to inadequate intake or absorption of zinc in the diet. Numerous other studies and findings have come out recently reconfirming the global and critical nature of the zinc deficiency problem, in crops and humans. The use of zinc fertilizers in zinc-deficient soils can increase crop productivity as well as the zinc nutritional status of the crops. To achieve these goals, the program will incorporate the use of demonstration crop trials (including the generation of time-elapased video showing the benefits of adding zinc), plus communications and marketing, initiatives to government organizations, fertilizer companies, dealers and farmers.

A number of activities have occurred:

Meetings

- Latin American Fertilizer Conference held in Panama (January 2009) including presentation by **Dr. Ray Hoyum** (IZA Consultant) on Zinc and Fertilizers
- Zinc crop session and booth organized with Padaeng Industry (IZA Member) at Thailand's National Soil & Fertilizer conference (April 2009), including presentation by **Dr. Andrew Green** and **Dr. Ismail Cakmak** on IZA's Zinc Nutrient Initiative.
- Zinc Symposium - New Delhi (April 2009) organized with Fertilizer Association of India and, including presentation by **Dr. Andrew Green** and **Dr. Ismail Cakmak** on IZA's Zinc Nutrient Initiative.
- Meeting held with the Food and Agricultural Organization (FAO) by **Stephen Wilkinson** and **Johan Van Wesemael** to discuss support of zinc fertilizer program and funding efforts.



Zinc in Fertilizers

Essential for Crops...Essential for Life!



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Communication Activities:



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Zinc Fact Sheets: Rice

Introduction

Rice production systems differ widely in cropping intensity and yield, ranging from single-crop rain-fed lowland and upland rice with low yields (1-3 tons/ha), to triple-crop irrigated systems with annual grain production of up to 15-18 tons/ha. Irrigated and lowland rice systems account for about 80% of the worldwide harvested rice area and 92% of total rice production. To keep pace with population growth, overall rice production must increase by 25% over the next 20 years. Rice provides up to 80% of the calories consumed by 3.3 billion people in Asia.

High yielding, nutrient rich rice requires improved, yet balanced, crop nutrition of all major, secondary and micronutrients. Unfortunately, it is estimated that over 50% of agricultural soils devoted to cereal cultivation are potentially zinc deficient. Also, over two thirds of the rice grown worldwide is produced on flooded paddy rice soils which are typically low in plant available zinc.

Balanced Crop Nutrition

For high yielding rice, crop nutrition must be adequate and carefully balanced. Where available, soil testing and plant analysis should be utilized to guide any fertilizer program. Any deficient or unbalanced use of nutrients potentially reduces yield. Recent research has shown significant reductions in yield when zinc is less than adequate (Table 1).

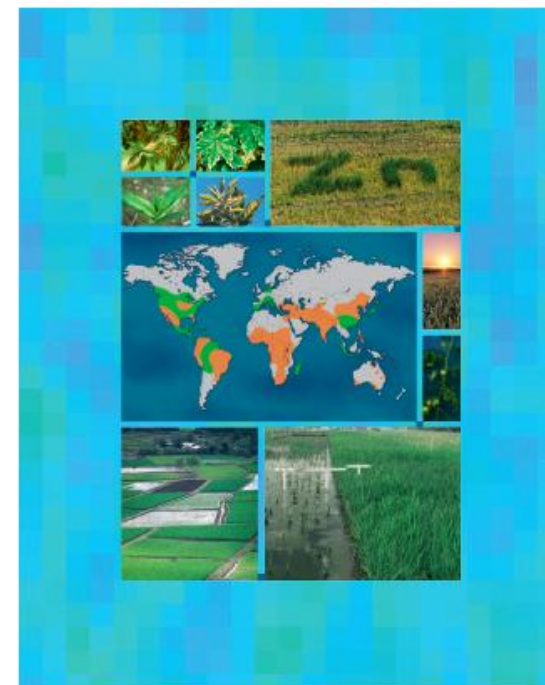
Table 1: Rice Yields With and Without Adequate Zinc

Country	+Zn (t/ha)	-Zn (t/ha)	% Change
Columbia	9.3	7.5	-19%
	11.3	10.3	-8%
	12.0	9.8	-18%
China	8.2	7.3	-10%
India	9.95	8.7	-12%

Results from 140 greenhouse trials based on soils from 17 provinces of China showed that 49% of the soils were deficient in zinc. When a variety of crops were grown, the average relative yields were only 75% of the optimum, again demonstrating the serious decline in yield when zinc is deficient.

ZINC IN SOILS AND CROP NUTRITION

Brian J. Alloway





Communication Activities:

Numerous key publications in trade and academic journals



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Rice is very susceptible to Zn deficiency. The symptoms can be recognized from chlorosis, necrotic spots on leaves, bronzing and/or rosetting of leaves, dwarf or malformed leaves, and stunting of plants.

As a vital micronutrient, zinc (Zn) is a natural element that is essential for normal healthy growth and reproduction of plants, animals and humans. It appears in the soil at a typical ratio of 25-200 mg Zn/kg DW, in the air at between 40-100 ng Zn/m³, in water at between 5-40 µg Zn/l and biomass (25-200 µg Zn/g DW). In plants, Zn is critical for many physiological functions, including the maintenance of structural and functional integrity of biological membranes and the facilitation of protein synthesis. Of all micronutrients, Zn is required by the largest number of enzymes and proteins. The zinc pathways have important roles in:

- Photosynthesis and sugar formation
- Protein synthesis
- Fertility and seed production
- Growth regulation
- Defence against diseases.

If the supply of plant-available Zn is insufficient, plant growth may be impaired and yields and crop quality will be reduced. Zn deficiency in a plant manifests itself in visible symptoms of stress, including:

- Stunting/reduced height
- Interveinal chlorosis, as shown by the yellowing of the leaves between the veins
- Bronzing of chlorotic leaves
- Abnormally-shaped leaves and leaf stunting.

These different types of symptoms vary with plant species and are usually only clearly displayed in severely deficient plants. In cases of marginal deficiency, plant yields can fall by as much as 20% or more without any obvious visible symptoms. (Zinc in Soils and Crop Nutrition, Brian J. Alloway, International Fertiliser Industry Association/International Zinc Association (July 2006).)

Zinc also plays a critical role in human and livestock diets, influencing metabolism, the perpetuation of genetic material and the transcription of DNA. Zn deficiency can lead to reduced appetite, reduced growth, vulnerability to illnesses and infections, reduced fertility and lower longevity.



Zinc is a key ingredient in human nutrition, soil and crop management and is being identified as an increasingly frequent limiting factor. This review evaluates the range of products that can counter this threat to crop yields.

Zn deficiency in animals and humans can be rectified through enhanced zinc content in cereals and other crops.

The International Zinc Association (IZA) identifies Zn as the third most important nutritional factor affecting grain yield after nitrogen and phosphorus. Many plant species are affected by Zn deficiency on a wide range of soil types in most agricultural

regions in the world. The major staple crops, such as rice, wheat, maize and sorghum, are all affected by Zn deficiency, along with many different fruit, vegetable and other types of crops, including cotton and flax. Rice is particularly susceptible to Zn deficiency as it grows in waterlogged soils which are conducive to zinc deficiency. Flooding the soil reduces Zn avail-



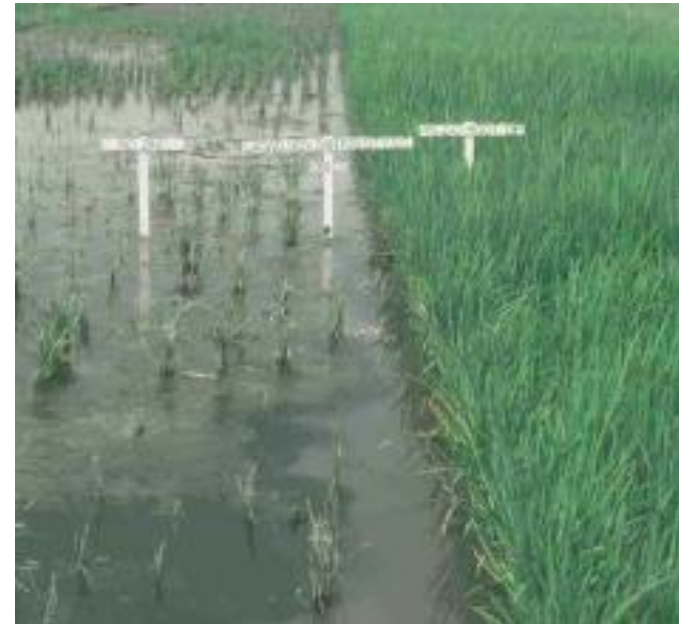
Videos

- 4-5 minutes videos being developed for India & China
- 2-3 minute international video planned
- Time-elapsed videos developed from greenhouse and field-trials in Turkey



-Zn

+Zn



www.zinc-crops.org

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international **zinc** association

[why zinc?](#)

[library](#)

[news](#)

[events](#)

[partners](#)



Zinc is essential for all humans, animals and plants. It is vital for the proper functioning of the immune system and crucial for healthy growth, physical and mental development of children.



"The Zinc and Nutrition Initiative": Clinton Global Initiative recognizes partnership to eliminate global zinc deficiency.

[watch video](#)

>>>



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The Zinc Nutrient Initiative, a program of the International Zinc Association (IZA), seeks to address zinc deficiency in soils, crops and humans through increased use of zinc in fertilizers.



Zinc Fertilizer Seminar/Sessions

- India
- Thailand
- Canada
- Mexico
- China
- Brasil
- S. Africa

ZINC
In Improving Crop Production
& Human Health in India

A meeting is scheduled for April 29, 2009 in New Delhi, India to discuss available information on the essentiality and roles of zinc in crop production and human health. The primary focus will be the importance of zinc in fertilizers for production of better yield and healthy food for human consumption in India. Zinc deficiency is the most common micronutrient deficiency in soils in India that affects seriously adequate crop production and also hinders sufficient accumulation of zinc in edible parts of food crops. International and local speakers will present presentations dealing with the aspects of zinc deficiency-related problems in crop production and human nutrition, and panel discussions will follow.

The event is being organized by the Fertilizer Association of India (FAI) and International Zinc Association (IZA) in collaboration with HarvestPlus Program.

Inaugural Session:
Welcome Address: Mr. Satish Chander, Director General, FAI, New Delhi
Opening Remarks: Dr. Andrew Green, International Zinc Association
Inaugural Address: DG, ICAR/Dr. V.L. Chopra, Member Planning Commission
Vote of Thanks: Dr. R.K. Tewari, Chief (Agri Services), FAI, New Delhi

Technical Session I: Dr. J.C. Kanyal, VC, CCSHAU, Haryana
Role of Zinc in Human Nutrition: Dr. Nita Bhandari, AIIMS, New Delhi
Prevalence of Zinc Deficiency in Soils & Crop Plants in India: Dr. M.V. Singh, Coordinator, Secondary & Micro, ISS, Bhopal
Role of Zinc Nutrition in Rice-Wheat Production: Dr. Rajendra Prasad, Scientist, INSA
IZA's Zinc in Crops & Human Health Initiatives: Dr. Andrew Green, International Zinc Association
Lunch

Technical Session II: Dr. N.B. Singh, Agricultural Commissioner, DAC, GDI
Plant Breeding in India: Dr. Anju M. Singh, IARI
Role of Fertilizer Strata: Sabarwal University, Tarn Taran
Issues Concerning Micro Policy Initiatives to End Conclusions

Registration Contact:
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Zinc in Fertilizers

Zinc: In Improving Crop Production and Human Health in China

10 December, 2009 - Beijing, China



A symposium is scheduled for December 10, 2009 in Beijing, China, to discuss available information on the essentiality and roles of zinc in crop production and human health. International and national speakers will make presentations dealing with the following topics:

- The importance of zinc in fertilizers for production of better yielding crops.
- The nutritional status of plants for healthy food and human consumption.
- Zinc deficiency problems in Chinese soils and crops.

For more information, please contact:
Professor Zhang Fusuo
China Agricultural University
Email: zhangfs@cau.edu.cn
Phone: 0086-10-62732499



Zinc Crops 2007 Conference

- International conference held in Turkey with International Fertilizer Association
- Focus: Science on zinc deficiency and its impact on global crop production and human health
- 180 people attended from 36 different countries





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2011 International Zinc Conference



3rd International **ZINC SYMPOSIUM** Improving Crop Production and Human Health

Hyderabad, India - October 10-13, 2011





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Country Based Marketing



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IZA India Actions



- Hired Director, Dr. Soumitra Das
- Policy Intervention
- Agricultural Extension



India -NBSS

- Total Indian subsidy for fertilizers is ~ 22-23 billion USD
- In old system, maximum retail price (MRP) of fertilizers set by government
- In NBSS, subsidy given on individual nutrients based on nutrient need. NBSS promotes balanced fertilization.





India- NBSS

- Subsidy for zinc has now been included in NBSS
- First time zinc has been included in central government subsidization scheme
- 500 INR subsidy paid to fertilizer companies that fortify with Zn.





India - Customized Fertilizers



- Only government approved fertilizers can be manufactured and sold in India
- Government promoting “Customized Fertilizers” that are crop specific , soil specific and location specific
- Must meet all of the nutritional requirements of the crops





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IZA India Actions

- **Policy Intervention**
 - Zinc Oxide Registration
 - Increase zinc subsidy



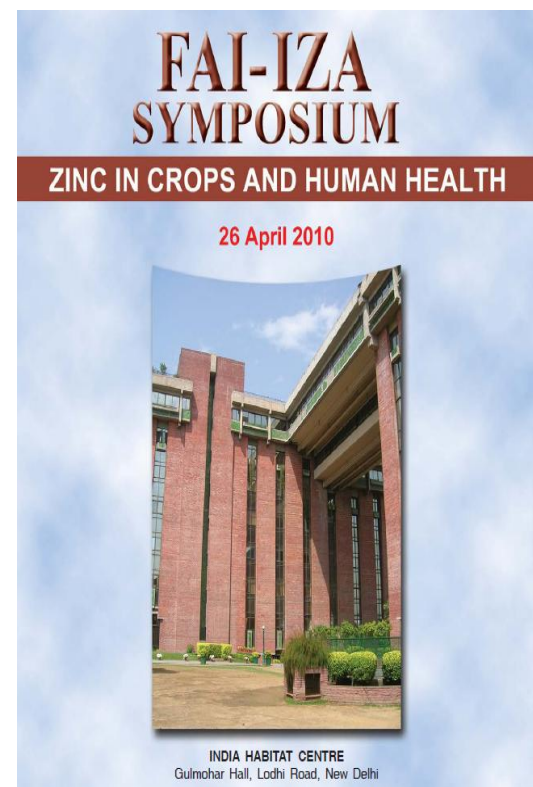


IZA India Actions

- **Agricultural Extension**
 - Zinc Training Program
 - Regional Workshops
 - International Zinc Conference
 - Institutional Award
 - Fertilizer Companies



DEEPAK FERTILISERS
AND PETROCHEMICALS CORPORATION LIMITED



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India Results





MFG. BY : STAR FERTILIZERS PVT LTD, PLOT NO. 101/A1, DA BOLLARAM, MEDAK DIST. A.P.



MFG. BY : STAR FERTILIZERS PVT. LTD., PLOT NO. 101/A1, IDA BOLLARAM, MEDAK DIST. A.P.

Govt. of India approved CF grades for Andhra Pradesh



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<u>S.No</u>	<u>Crop</u>	<u>Region</u>	<u>CF Grade</u> (N-P ₂ O ₅ -K ₂ O-S-Zn)	<u>Stage</u>
1	Rice	Godavari districts & Viskhapatnam	15-32-8-0-0.5	Basal
2	Rice	Krishna, Guntur & Khammam	18-33-7-0-0.5	Basal
3	Maize	Godavari districts & Viskhapatnam	18-27-14-0-0.5	Basal
4	Maize	Krishna, Guntur & Khammam	18-24-11-0-0.5	Basal
5	Rice	Telangana districts	11-24-6-3-0.5	Basal
6	Maize	Telangana districts	14-27-10-4-0.5	Basal



New Zinc Fortified Product



- Tata Chemicals Ltd.

N:P:K:S:Zn (4 grades)

N:P:K:S:Zn:B (1 grade)

- Deepak Fertilizers & Petrochemicals Corporation

N:P:K:S:Mg:Zn:B:Fe (4 grades)

- Coromandel International Ltd.

N:P:K:S:Zn:B (2 grades)



China

- Hired Director, Dr. Ming Fan
- Crop Trials
- Policy Intervention
- Agricultural Extension





IZA China Actions



- **Policy Intervention**
 - Develop IZA/CAU/CAAS Report on Zinc
 - Zinc Labeling Standard
 - Add zinc to provincial/state level recommendations

Chinese Version
• <http://www.cau.edu.cn/cis/>

Office of International Relations, CAU
中国农业大学国际合作与交流处

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About CAU

China Agricultural University: An Overview

China Agricultural University (CAU), directly subordinated to the Ministry of Education, is a Key National University entering the State 985 Program and the State 211 Program. QU Zhenyuan is the Chair of the University Council and CHEN Zhanliang is the President.

CAAS.net.cn

CHINESE ACADEMY OF AGRICULTURAL SCIENCES

Research Thrusts of the CAAS Institutes

- Crop Genplasm Research
- Crop Breeding
- Biotechnology Research and Development
- Orchard Horticulture Research

Introduction

The Chinese Academy of Agricultural Sciences (CAAS) was established in 1957. Different

List of the Research Institutes of CAAS

CAAS Research Institutes in Beijing

1. Sciencetech Documentation and Information Center
2. Institute of Crop Germplasm Resource
3. Institute of Apiculture



IZA China Actions

- **Agricultural Extension**
 - Zinc Training Program
 - Regional Workshops
 - IZA/IFA Task Force Roundtable
 - Fertilizer Companies
 - Partnerships with NPK groups



Zinc in Fertilizers

Zinc in Improving Crop Production and Human Health in China

10 December, 2009 - Beijing, China

A symposium is scheduled for December 10, 2009 in Beijing, China to discuss available information on the essentiality and roles of zinc in crop production and human health. International and national speakers will make presentations dealing with the following topics:

- The importance of zinc in fertilizers for production of better yielding crops.
- The nutritional status of plants for healthy food and human consumption.
- Zinc deficiency problems in Chinese soils and crops.

For more information, please contact:

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Thailand

- Working with Padaeng Industry
- Crop Trials
- Policy Intervention
- Communications



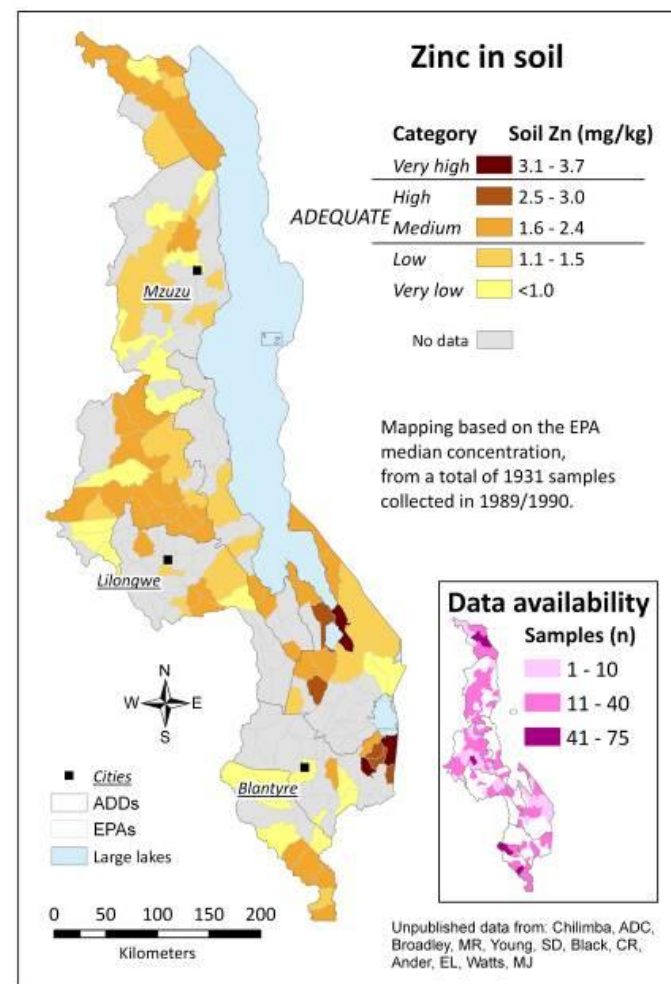
Workshop planned in 1st quarter





Malawi

- Proposal to CFC in partnership with ILZSG for \$120,000
- Crop Trials
- Policy Intervention
- Communications





Partnerships Needed for Success

- IFA
- IPNI
- The Sulfur Institute
- CFC/ILZSG
- Governments
- U.S. AID
- Gates Foundation
- FAI
- Fertilizer Companies





Fertilizer Affiliate Members

- Mosaic
- IRM
- Deepak Fertilizers
- Beijing Xinhefeng Agrochemical
- Omex Agricultural
- Tetra Micronutrients
- International Raw Materials
- Sinofert



DEEPAK FERTILISERS
AND PETROCHEMICALS CORPORATION LIMITED



中化化肥
SINOFERT





Zinc...essential for life



CLINTON GLOBAL INITIATIVE

- CGI highlighted the Zinc & Nutrition Initiative at annual event in September
- Effort focuses on addressing zinc deficiency in humans and crops through supplementation & fertilizer use.





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 security, nutrition, health and economics**



Zinc...essential for life



Zinc is an essential nutrient for human health. Ensuring adequate levels of zinc intake should be a key component in efforts to reduce child illness, enhance physical growth and decrease mortality in developing countries. In spite of the proven benefits of adequate zinc nutrition, zinc deficiency is the fifth leading risk factor for disease in the developing world (WHO, 2002).

To learn more about zinc and health, visit us at booth #317 or www.zinc-health.org.



International Zinc Association
Zinc ...essential for life
www.zincworld.org



International Zinc Nutrition Consultative Group
Improving health of people in need
by enhancing zinc nutrition
www.iznco.org



Zinc...essential for life

Questions?



Zinc Saves Kids