

“Management of Micronutrients through Food Fortification and Food Based Approach on the Platform of Bioactives and Food Safety ”

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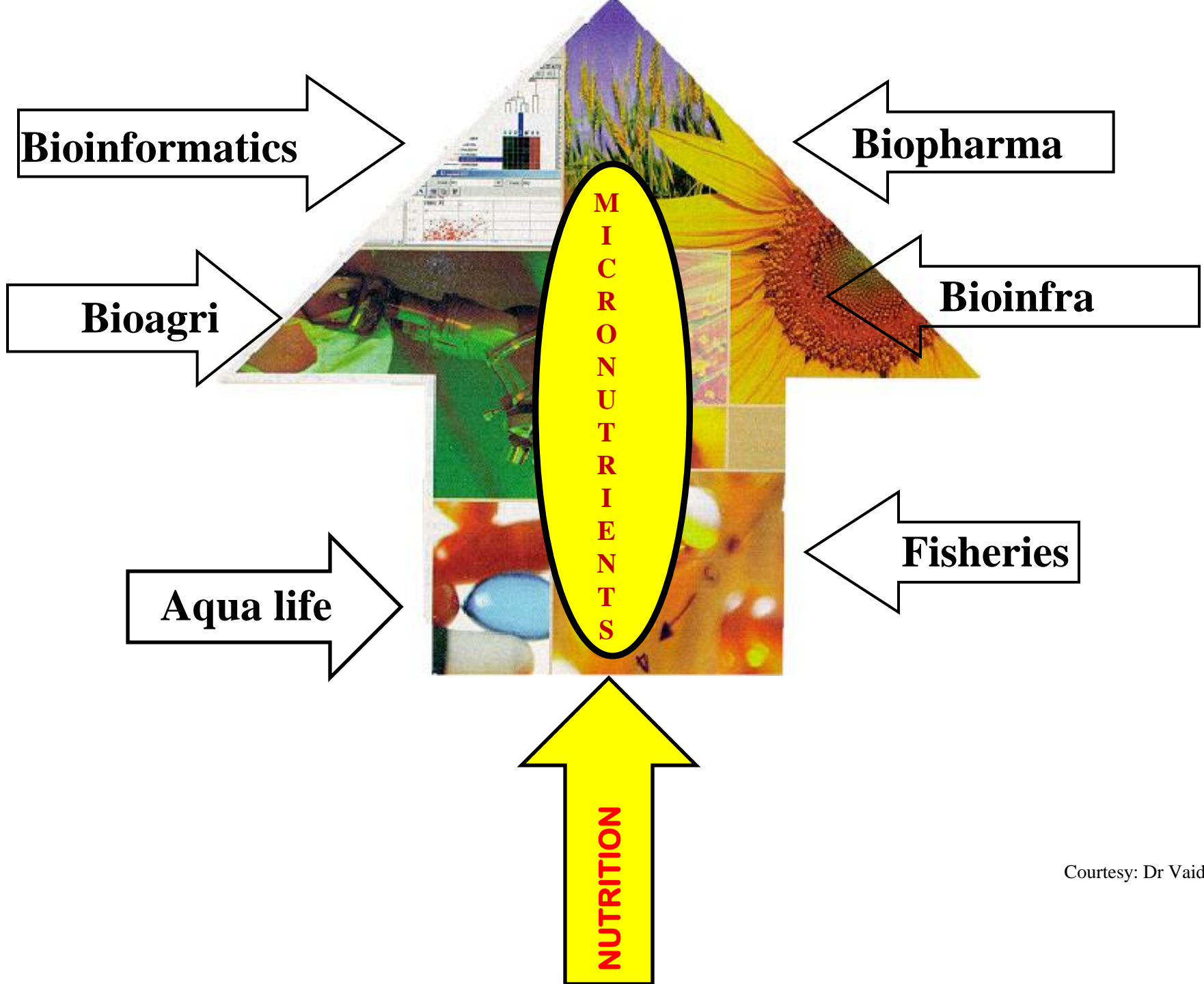
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The most affected population groups in need of improved Nutrition are the poor. However they often do not have access to fortified foods because of low purchasing power and undeveloped distribution channels.

Poor population groups are known to present multiple micronutrient deficiencies, not all of which can be addressed by fortified foods.

The technology for fortifying various foods has not been fully established as regards Nutrient levels, stability and physical property characteristics; nor has acceptability by consumers in terms of cooking properties and taste been determined. Insufficient scientific knowledge regarding Nutrient interaction complicates the decision regarding levels of a Nutrient to be added to food. Nevertheless, fortified foods as part of food aid are of unquestionable value to protect the Nutritional status of vulnerable groups and victims of emergencies.

The Crux of the matter is
to link the
informal Nutrient delivery Centres
to
Organised Food Processing
Centres
***with* involvement of farmer, grower**
and producer to the MARKET



Courtesy: Dr Vaidya

Micronutrients ?Where is the correct list??

- Vitamin A
- Vitamin D
- Vitamin E
- Vitamins of the B Complex
- Vitamin C
- Iron fortificants + Folic Acid
- Iodine compounds
- Other mineral additives!!
- Zinc

Other Mineral Additives

A range of mineral salts are available for fortification with Ca, Mg, P, Zn, Cu and Mn. Prudent selection of mineral compounds is based largely on consideration of mineral reactivity and solubility of the salt. The requirements of the fortificant vary according to the nature of the product and its end use. To overcome problems of flavour, texture and colour deterioration due to addition of minerals, some companies have engineered new fortificant preparations which generally involve the use of stabilisers and emulsifiers to maintain the minerals in solution.

General Features of Interventions and Their Application

The main intervention strategies against micronutrient malnutrition are :

- Direct supplementation of vulnerable populations or groups with micronutrient supplements**
- Dietary improvement and**
- Fortification of common foods with micronutrients**

Micronutrient Fortification – the Permanent Questions ?

- Commodities to be fortified ?
- Levels ?
- Technologies ?
- Monitoring ?
- Learn from failures ?
- HRT and GMT ?
- Consumer Awareness ?
- Hygiene ?
- Are we Convinced ?
- If not, what else to be done ?
- We define them. Then

- Perhaps we need to integrate this with “Translational-Innovation models in the Food chain of reversing Rural to Urban *Pan India* for a firm science based approach of Sustainable Nutrition with MN for both rich and poor as the numbers have a complex mixture of both in reachout to Rural and as well as in urban ambience”

Food losses and waste in the context
of sustainable food systems

A report by

The High Level Panel of Experts

on Food Security and Nutrition

June 2014

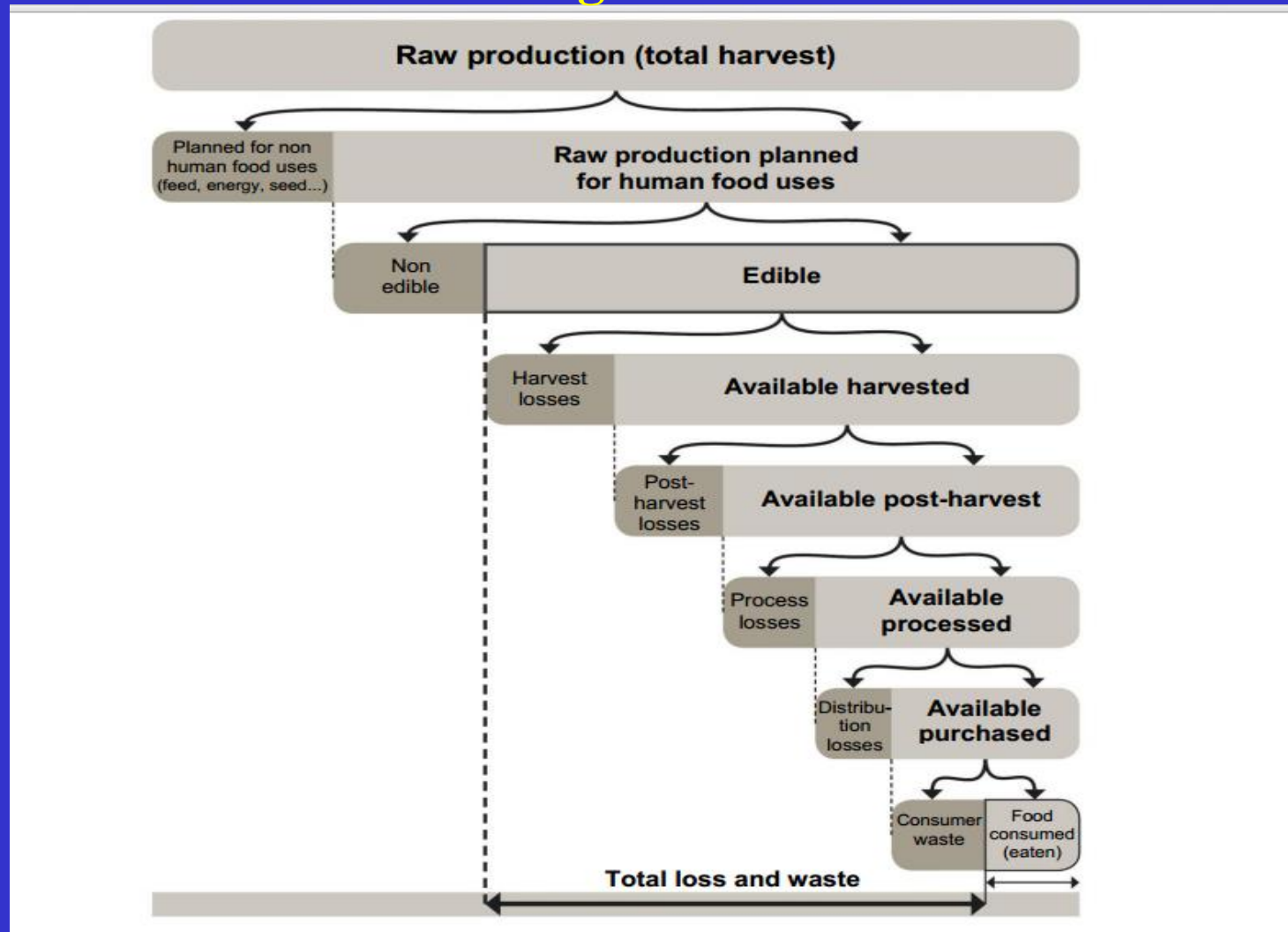


by
Dr V Prakash
Project Team leader

**Report released in
Rome
On
Oct 13, 2014**

www.fao/cfs/cfs-hlpe

Schematic representation of the definition of Food losses and Waste along the Food Chain



Where are Innovation attempts to solve these problem?
(1.5 Billion Tonnes Food wasted Globally. How many Million tonnes of MN
per anum down the drain??

SUCCESS STORY OF MILK – *INDIA*

**INNOVATION MADE THE DIFFERENCE THROUGH
CO-OPERATIVES.**

One of the workable innovations in the **Farm to Folk** model in the world but not talked about much!

I am yet to see any other low Income Country achieving this magnitude of Success!

But Milk not available to poor children.

**The Gruel of Rice which was
thrown earlier is added to
Curry or *Sambar* to replenish
the lost Carbohydrates and
Proteins of Rice and thus also
giving the thickness to Curry
or sambar !**

**(Small Innovative Action leading to big
Nutrition difference ,If MN is a part of
this!)**

**Healthy Instant and
Convenience Functional
Foods and Beverages a
good vehicle for MN?!**

**FOOD , DIET, HEALTH & INFORMATICS
AND
NUTRITION
ARE
INSEPARABLE ESPECIALLY
WHERE
CHILDREN ARE CONCERNED
AND THE AGENDA OF MN**

The Traditional knowledge of Ethnic population and its diversity in the Global arena from rare food resources must be preserved. This knowledge should be combined with basic science supported with data already available and must be used for bringing in awareness of Nutrient Rich Diet in the context of Food and Nutrition Security.

Can MN play a role here?

India requires Multiple Models for MN.

**Major Cross-cutting issues
need to be addressed if
Nutrition programmes
have to be a success with
MN.**

**It needs to be Steam rolled!
We have waited too long?**

Capacity Development in addressing MN agenda at different levels?

Social Impact of SAFE Nutrition

- Good nutrition relieves the social unrest underlying violent malnutrition epidemics
- Good nutrition decreases the human vulnerability that transforms systemic shocks of humanitarian disasters and
- Good nutrition lowers the death rate and promotes timely return to equitable and sustainable development in the aftermath of crises
- Story of Folic Acid!?

**Nutrition
throughout
the Life Cycle is vital of course
MN is needed till last breath
not just in
Nutrition Programmes?!
The Chain of Pediatrics to
Geriatrics!**

**Identification
of hot spots of malnutrition
must cascade into and focus
on bright spots of
Science & Nutrition
underpinning MN in the
process?**

“How Nutritious

is also defined by

How Convenient

&

How Affordable ?

&

**How Much of less Fat, less Cals and less
Protein in it !**

and

of course how much of MN in it How Safe ?”

Products containing nutritional substitutes, nutritional supplements are here to stay, having reached a worldwide consumer demand for a Safe Healthy diet with a clean mandate of minimum MN content assured .

No easy way out?!

Quality Assurance and Control for MN

- **Quality Assurance/Control in Food Processing with MN**
- **GMP and MN**
- **Analysis of Vitamins and Minerals not Harmonised**
- **Role of Legislation and Food Quality Control with minimum MN**

Other Consideration in the use of Fortificants and Compounds to reachout better

- **Bioavailability of commercial preparations.**
- **Nutrient-nutrient interactions.**
- **Nutrient-matrix interaction.**
- **Storage losses and Best before use.**
- **Chelators and MN Bioavailability**

Future Directions of Fortification

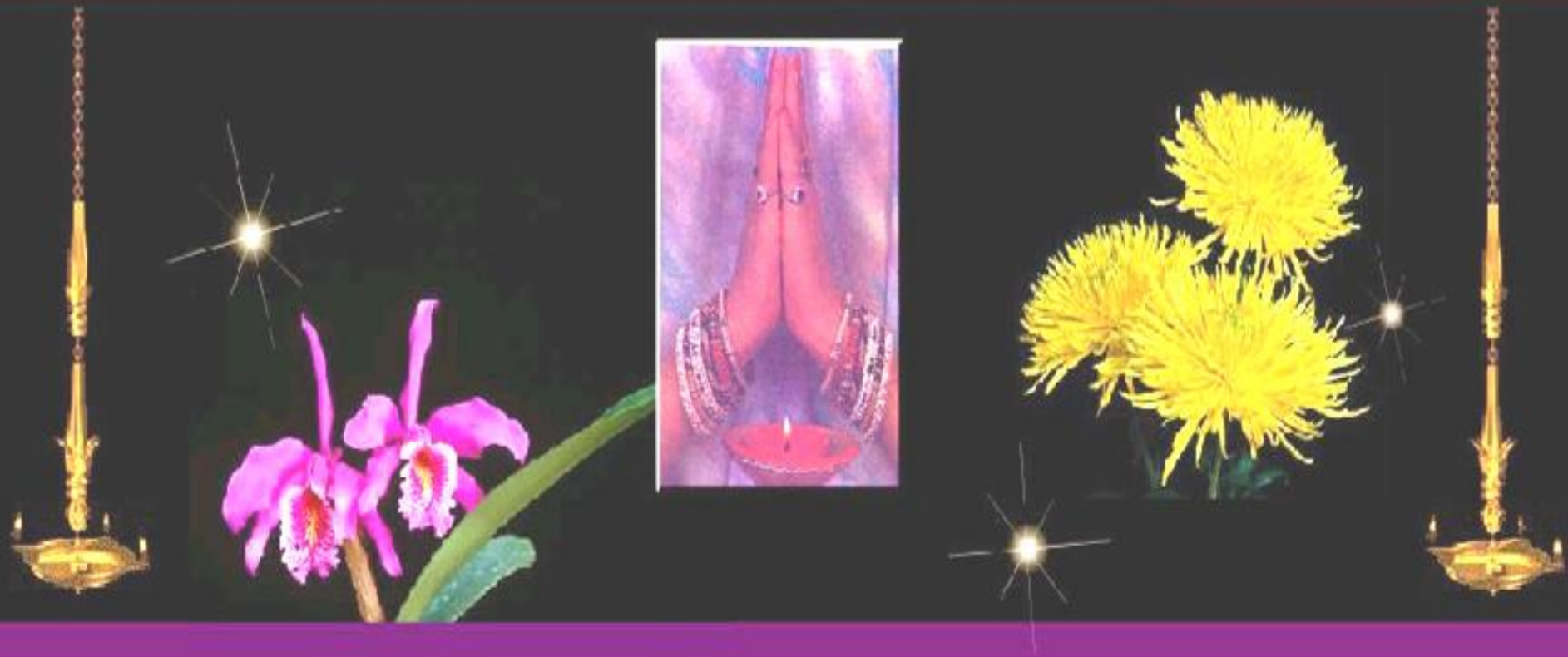
- Technical problems regarding addition
- Analytical considerations
- Health implications of micronutrients if the quantity dose is not available?
- Nutritional implications of new dietary trends
- Standardisation and regulation
- Food-Food Interaction
- Advise of eat “*Spinach profusely*”. Addition of MN in the Diet.
Consumer is confused and *Anaemic* in the end !!

Advantages of Food Fortification over high-dose Supplementation

	Supplementation	Food Fortification
<ul style="list-style-type: none"> • Effectiveness and timeframe • Delivery Requirements • Coverage • Compliance • Cost of maintenance • External resources • Sustainability 	<ul style="list-style-type: none"> • Effective strategy usually for short term • An effective health delivery system • Reaches only populations receiving the service • Requires sustainable motivation of participants • Relatively high financial resources needed • Foreign currency or external support required for obtaining supplements • Relates to compliance and existing resources 	<ul style="list-style-type: none"> • Effective medium- to long-term measure • A suitable food vehicle and organized processing facilities • Reaches all segments of target population • Does not require intensive cooperation and individual compliance of individual • low cost compared to supplementation – to maintain the system self-financing in the end • Adequate technology that is locally available or can be easily transferred • Fortificant compounds may need to be imported

To solve all problems related to nutrition in *one go* will never be possible. Segmented and focused approach with a holistic and sustainable solutions is needed at micro levels for *Micro-Nutrients especially as one of the agenda.*

***“If Nutrition of Mother and Child matters to us with MN, we shall matter more to it and Network Globally to prevent undernutrition with addition of MN to the Diet on Food based approach and of course to also prevent Obesity in the community” - V Prakash ,Distinguished Scientist of CSIR
Vice President International Union of Nutritional Sciences***



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