Glyphosate : Lessons for India

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HT not a Suitable Trait for India

- 90% of all GE Crops have HT/Bt genes
- HT developed for weed control in west:
  - Large land holdings
- No Agriculture labor
- Weeds are a nuisance & have no use

HT Trait not Suitable….

* HT will displace labor

* India : Labor surplus country

* Weeds have many uses in India, destroying them with chemical herbicide will deprive rural communities of valuable resources.

HT Trait not Suitable ….

* Weeding is income source for agriculture labor specially women.

* Weeds gathered from fields are:

- nutritious leafy greens (saag) - *chaulai*,*bathua*
- supplementary fodder for live stock
- medicinal plants for local health and veterinary care

GC KAP Study on GMO

- 3 year research study (2007-2010) by Gene Campaign & University of Hyderabad to study the Knowledge, Attitudes and Perceptions to GMO among farmers, consumers and other stakeholders.

- Study conducted in Andhra Pradesh, Maharashtra, Punjab, Jharkhand and Assam.

Will you use chemicals that would kill all weeds but also kill

	Frequency	% yes	
Surrounding plants	746	18.4	
Medicinal plants	262	6.5	
Fodder plants	617	15.2	
Saag & leafy greens	537	13.3	
Mixed cropping was impossible	738	18.2	
Base Total	4052	100.0	

- 80- 90% farmers said they would not use a technology (HT seeds) that allowed the use of chemicals to control all weeds effortlessly but also destroyed surrounding flora (medicinal plants, fodder plants, leafy greens etc) .

- Farmers not in favor of seeds that would not allow mixed cropping.

- Not surprising since rural and farming communities in India use field biodiversity in many ways

- “Weeds” are not useless.

• The government must take note that validating GM foods by pure science and promoting these foods on ‘science based evidence’ of safety is unlikely to be relevant in the back drop of such public perceptions. The presumption that knowledge and awareness about the benefits of GM crops will automatically convince people of their attractiveness cannot be taken for granted.

The devastating impact of Glyphosate on the health of soil, plants, animals, and human population.

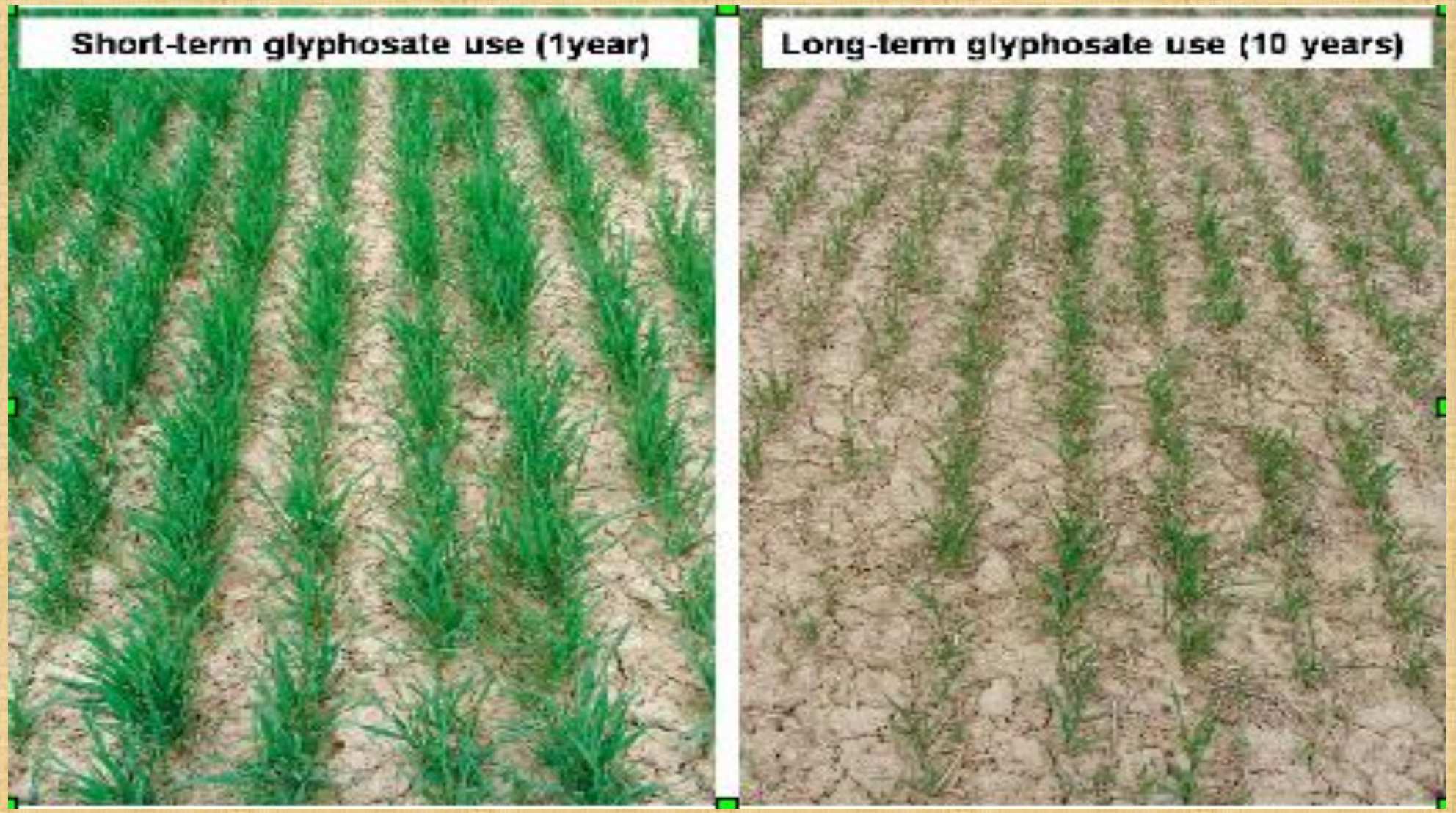
% Reduction in Alfalfa Nutrients by Glyphosate*

Nutrient	% reduction compared with Non-RR
Nitrogen	13 %
Phosphorus	15 %
Potassium	46 %
Calcium	17 %
Magnesium	26 %
Sulfur	52 %
Boron	18 %
Copper	20 %
Iron	49 %
Manganese	31 %
Zinc	18 %

*Third year, second cutting analysis; Glyphosate applied one time in the previous year

- Glyphosate molecule chelates with vital nutrients
- When applied to crops, it deprives them of vital minerals necessary for healthy functioning—*especially* for resisting serious soil borne diseases.
- Glyphosate thus promotes pathogens present in almost all soils - which overrun the weakened crops with deadly infections
- Glyphosate destroys beneficial soil organisms, like *Pseudomonas* and *Bacillus* bacteria that live around the roots.

- These facilitate the uptake of plant nutrients and suppress disease-causing organisms,
- Their loss means the plant gets even weaker and the pathogens even stronger.
- Glyphosate can interfere with photosynthesis, reduce water use efficiency & shorten root systems, negatively affecting crop health.
- Glyphosate itself is slightly toxic to plants.



Wheat affected after 10 years of glyphosate field applications.

As Glyphosate use rises, plant disease skyrockets

Sudden Death Syndrome (SDS), a serious plant disease ravaged the UD Midwest in 2009 & 2010
Cause- Glyphosate use

- Super weed problem - some have become nearly invincible.
- Super-weeds resistant not so much to the glyphosate, but to the soilborne pathogens that normally do the killing in Glyphosate sprayed fields.

Glyphosate impact on human- animal health

- The same nutrients that glyphosate chelates and deprives plants are also vital for human and animal health.
- These include iron, zinc, copper, manganese, magnesium, calcium, boron, and others.
- Deficiencies of these elements in our diets, interferes with vital enzyme systems and causes disease.
- Alzheimer’s, which is linked with reduced copper and magnesium, has jumped 9000% since 1990.
- Carcinogenic

Some References

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