DMH 11 GM mustard- Serious concerns and objections from a consumer perspective

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DMH 11 main claim

- ***"Increase in the yield will improve income of farming communities"***
- ***"Will reduce country's dependence on import of edible oil"***

On the former, please do ask farmers if producing more results in greater incomes for farmers and has actually happened in the case of Indian farmers (or may be you can refer to NSSO 70th Round data on Situation Assessment of Agricultural Households in India)!! It appears that rather than "produce more & prosper", it is "***produce more and perish***" for our farmers.

Let us look at the import bill reduction claims now….

Risk Assessment…

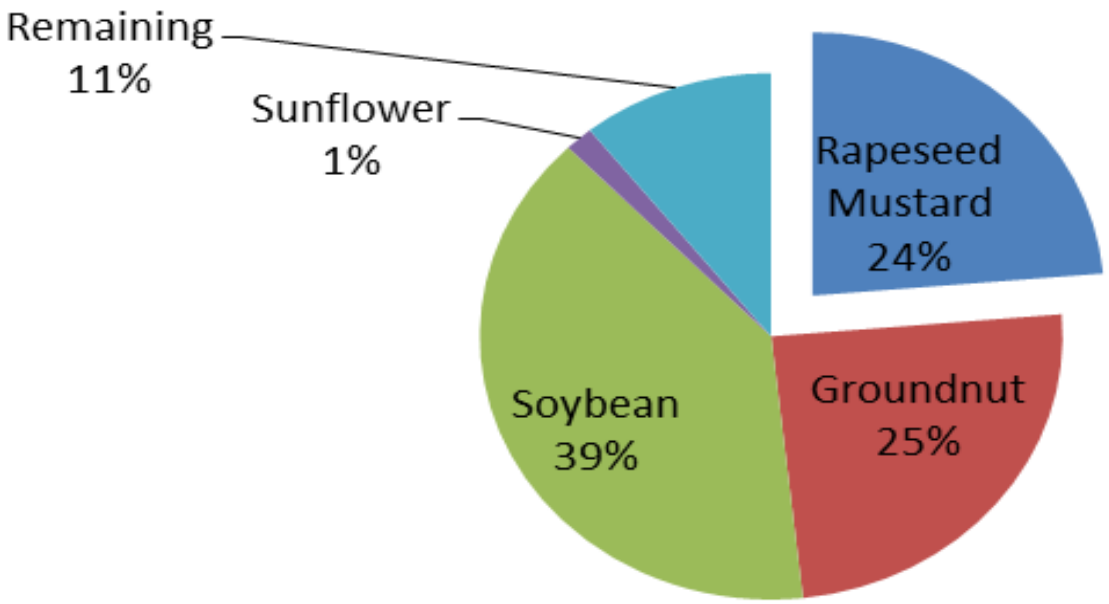
- Risk Assessment frameworks need to assess both BENEFITS and RISKS equally and comprehensively
- In the case of GM mustard DMH-11, **WHAT BENEFIT ASSESSMENT WAS TAKEN UP BY GEAC?**
- Crop developer's sweeping claim makes it imperative to understand the relation between release of one seed variety and increase in India's mustard yields and decline in edible oil import, to assess the very basis of this GMO's application

Can release of transgenic mustard reduce India's oil import???

- Oil Import = Oil Consumption – Domestic Oil Production
- Domestic Oil Production = Oilseed Production X extraction %
- Oil seed Production= Other Oil Seeds + Mustard
- Mustard Production=Seed yield parameters + adaptability of variety (Cultivation Area) + Agronomy + Climatic conditions + policy support (export-import policy, Market price etc) [Area planted is a function of these]
- Seed adoption itself is a function of numerous factors and not just seed yield parameters!

NUMEROUS VARIABLES AT PLAY: Releasing high yielder can not be directly and simplistically equated with reduction in Oil Import – here, we present evidence that it has not happened with other hybrids!

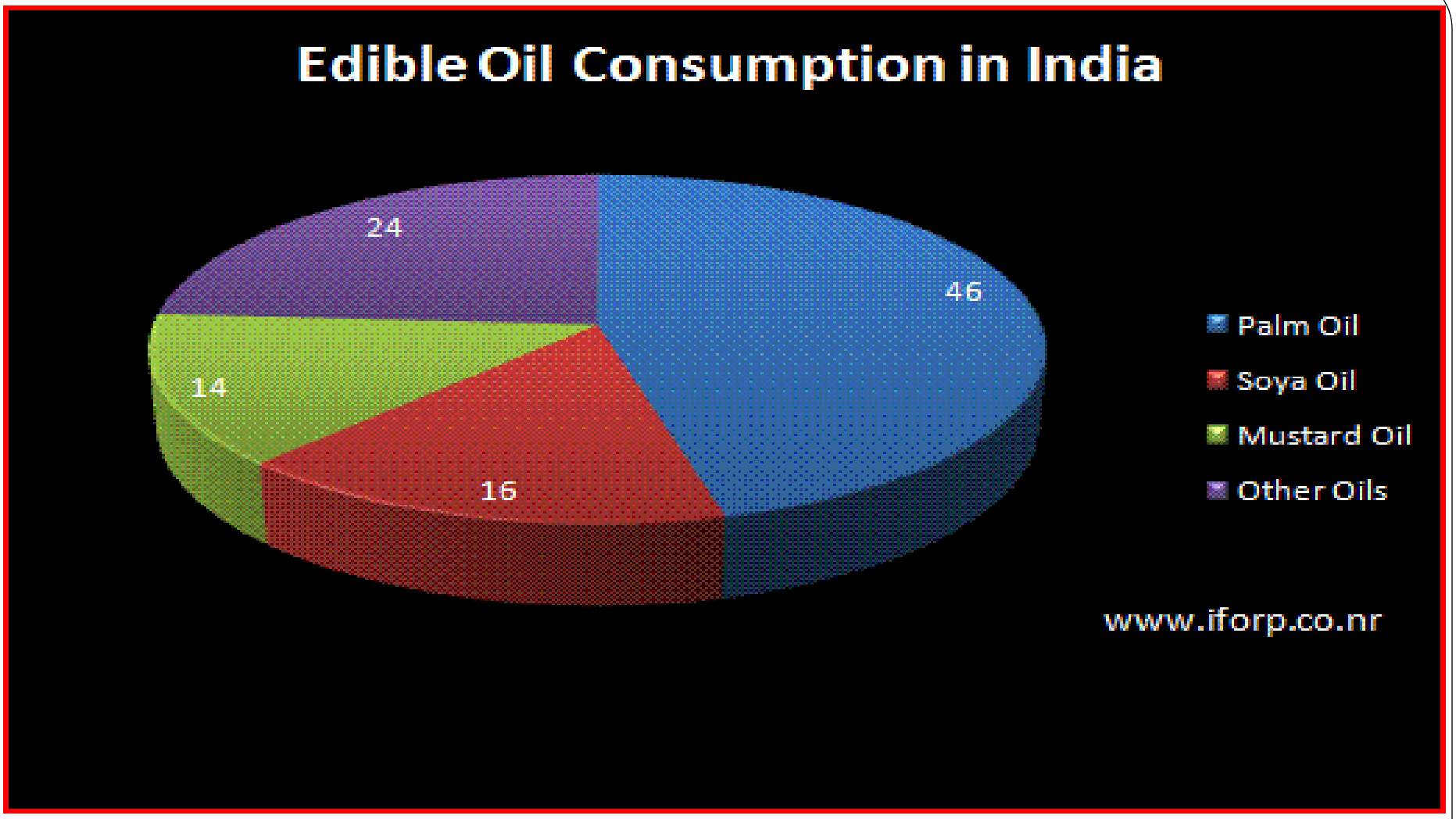
Total Oilseeds Production in India in Million Tonnes in 2014-15: 26.67 mn



Rapeseed Mustard share is only: 23.66%

(6.31 million tonnes

http://eands.dacnet.nic.in/PDF/Pocket-Book2015.pdf *4th Advance Estimates

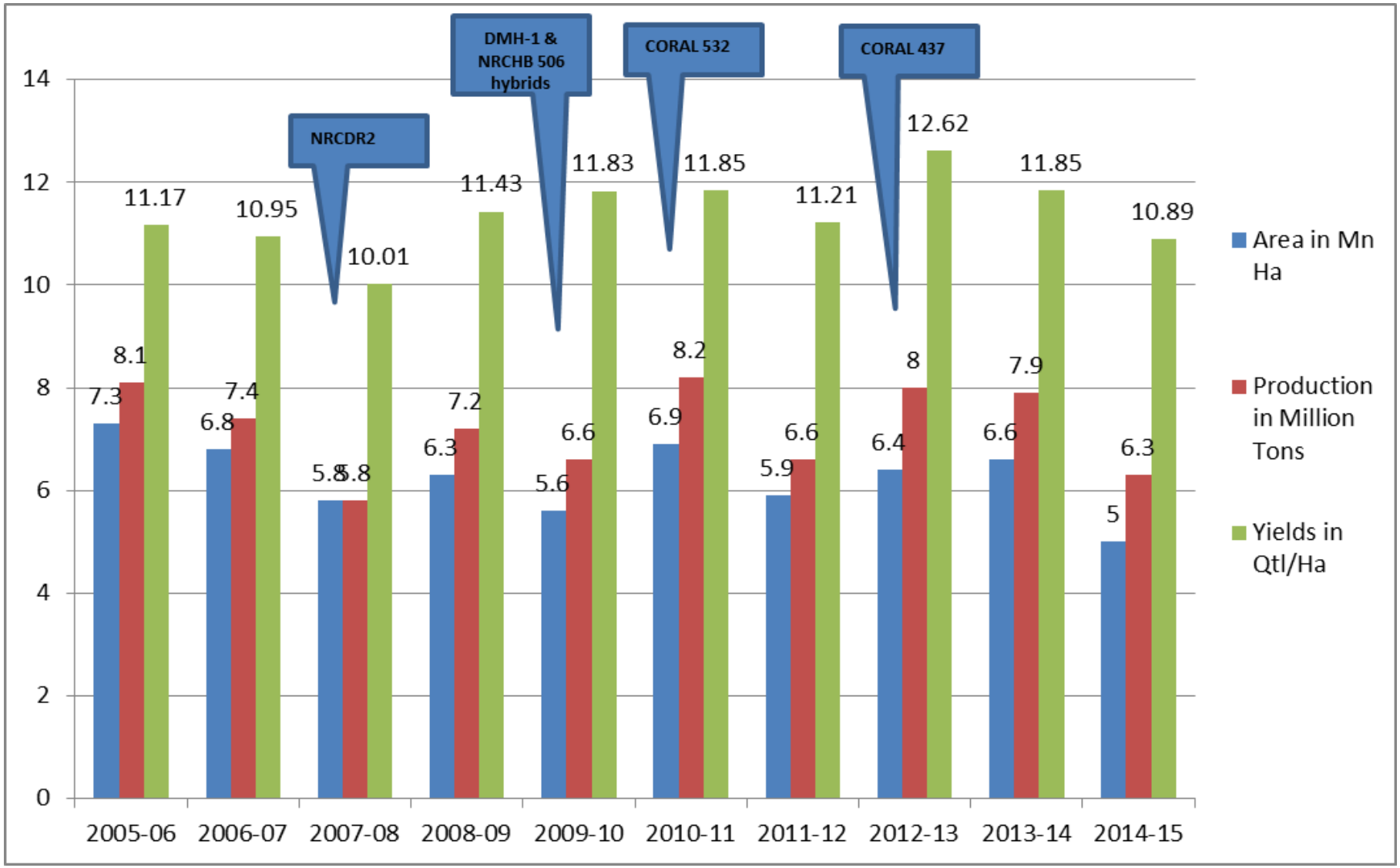


Mustard Oil Consumption is just 14% of total consumption

For various reasons other oils are more preferred and consumed.

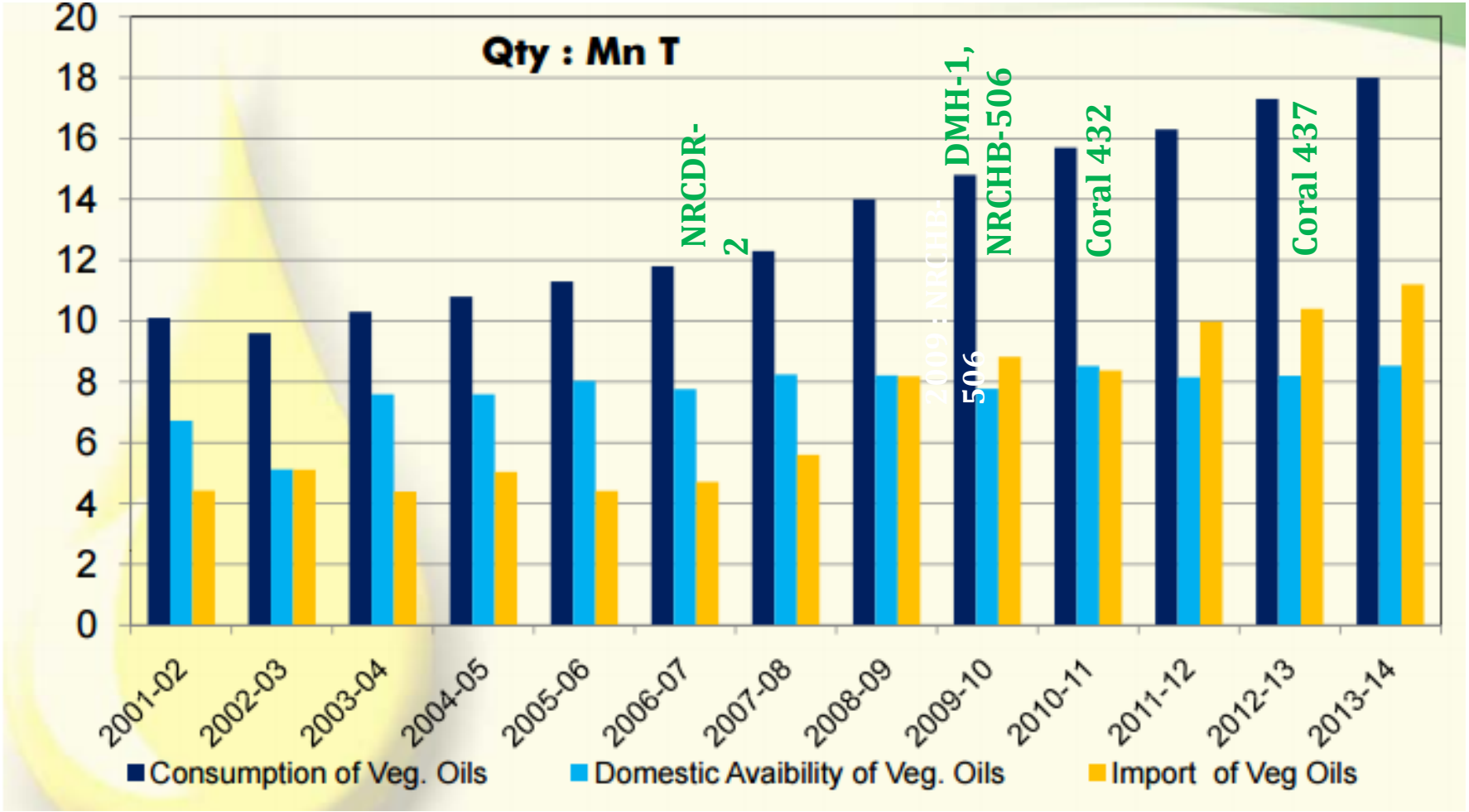
We can not change the consumer preference and patterns

DOES RELEASE OF HYBRIDS IMPROVE PRODUCTION OR YIELD?



DES data, Ministry of Agriculture & Farmers Welfare, GoI

Impact of release of Mustard Hybrids on Production, Demand & Import of Edible Oil in India



Can we claim that release of Mustard Hybrids will increase domestic edible oil production & reduce import?

Source : Solvent Extraction Association, Mumbai & AICRP Reports

Reality Check

- Rapeseed Mustard is only 23.6% of the total oilseed production
- Only 14% of India's oil consumption is of Mustard oil
- The price war with some imported oil like unhealthy palm oil can never be won, unless serious policy shifts are made
- Entry of hybrids did not make any dent in production or yield situation of rapeseed mustard as shown in GoI figures
- Story of DMH-1 showcases that tall claims will not materialise just because one new cultivar is released – no silver bullet here

HAS GEAC ASSESSED ALL OF THIS?

TO REITERATE:
Edible Oil Import - A complex Issue

1. **Consumer Preference and Demand:**

   86% oil consumed is NOT mustard - Cost, taste and cultural issues.

2. **Domestic Oilseed Production:**

   76% is NOT Mustard

3. **Cropping Pattern:**

   86% Area is under other oil seeds cultivation, NOT mustard

4. **Agro-Climatic Conditions:**

   Weather Effects, Irrigation Facilities created, Biotic stresses etc.

5. **Spread and Adoptability:**

   DMH-1 is not preferred due to shattering habit, weak stem, higher plant height and small seed size. Is DMH-11 any different?

6. **Policy Support at National and State level:**

   MSP, Incentives For Oilseeds Cultivation, Export-Import Policy and Duties

7. **Investing on other oilseeds: For instance, groundnut has only 25% irrigation cover**

8. **Competitiveness: Aggressive Marketing of Private Hybrids, eg. DuPont claimed 85000 Acres of cultivation under their hybrids, targeting to 3 million acres by 2017.**

Per Capita Oil Consumption

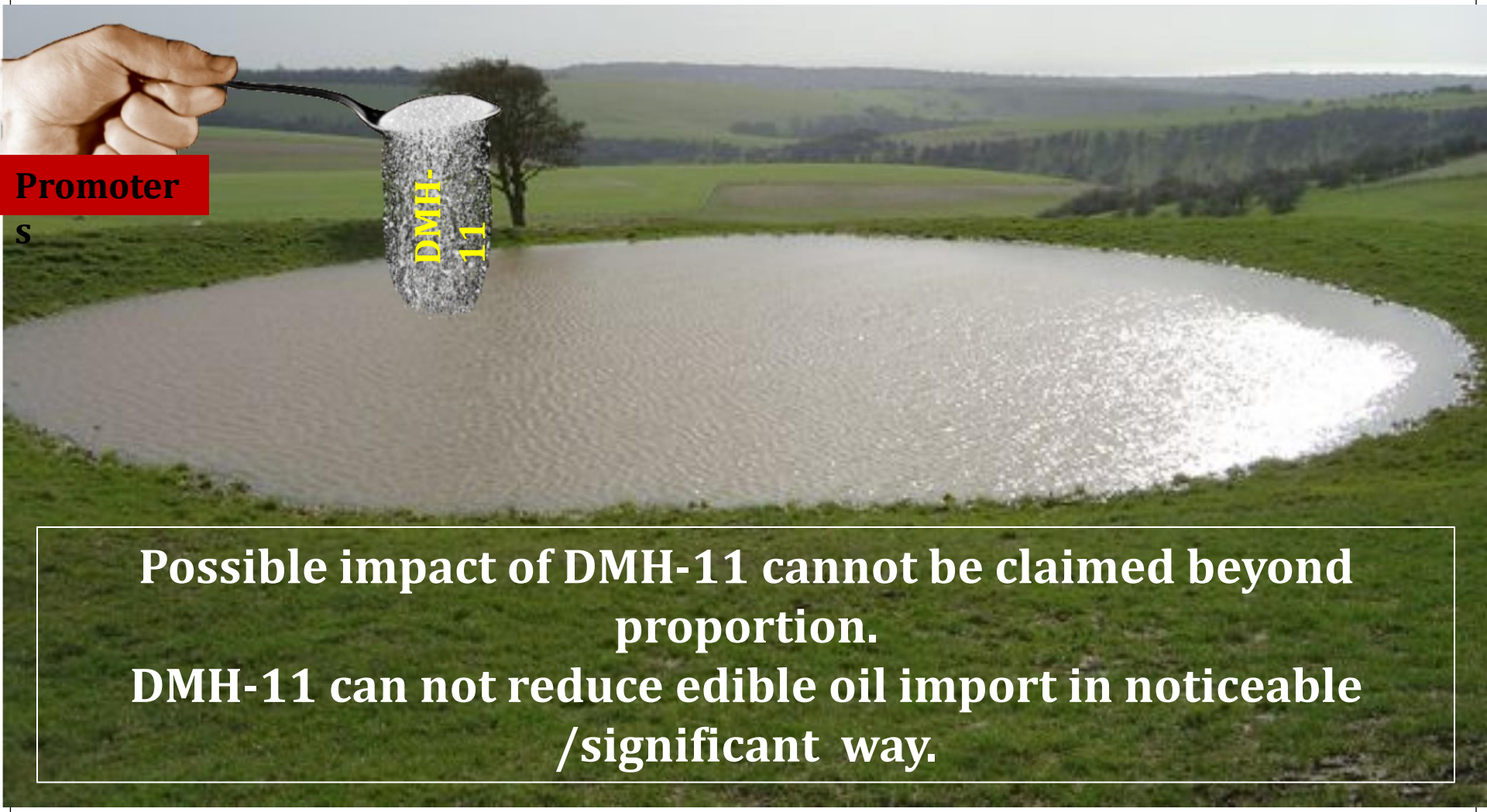
- More important to address could be the Dietary habits and the overshooting of recommended per capita edible oil consumption in India

  Recommended annual per capita = 10.5kg; Consumed = 14.8kg/year

- May be the PDS should prioritise and supply required healthy per capita edible oil to the poor

Why not address any lower-than-recommended per capita consumption through PDS and not address the issue as A general effort to address growing edible oil demand?

Where is the sense of proportion?



Possible impact of DMH-11 cannot be claimed beyond proportion.
DMH-11 can not reduce edible oil import in noticeable /significant way.

DO THE REGULATORS PERFORM ANY BENEFIT CLAIM ASSESSMENT AT ALL??

OTHER IMPORTANT CONCERNS

HOW WILL YOU UPHOLD OUR RIGHT TO CHOICES?

- For Farmers: IF I DON'T WANT TO GROW GM CROPS?
- What about my right to be an Organic Farmer?
- For Consumers: How will I know what I am eating? What if I don't want GM mustard? My right to safe food?

  Labeling Enforcement is non-existent; what about unpackaged foods?

WHO IS RESPONSIBLE AND WHAT IS THE MECHANISM IN PLACE?

Honey Production & Honey Exports

- Honey production and honey industry rests heavily on mustard crop
- Possible impacts:
  - Impact on honeybees (evidence exists, both of GM crop & herbicide use)
  - Decline in honey production?
  - Decline in Mustard production?
  - Contamination and rejection of Indian honey (esp export which is at 35000 MT per year)?
- General impacts on biodiversity?

Impact on Organic Farming

- Why should Organic Mustard Growers be penalized by cross pollination or other contamination?
- Mustard seed cake used by organic farmers as soil amendment – what happens with GM mustard?

ORGANIC REGULATION IN INDIA PROHIBITS THE USE OF BOTH GM SEED/PLANTING MATERIAL OR INPUTS MADE OF GM & PRODUCTS THEREOF….

WHAT ABOUT ORGANIC ENTERPRISES?

- Impact on Organic exports?

ON THE ONE HAND, THERE IS A PUSH FOR ORGANIC AND ON THE OTHER, BRING IN AN INCOMPATIBLE TECHNOLOGY?

Ayurveda: NO IMPACT ASSESSMENT

- Mustard has a big use in Ayurveda! Various uses as documented in Caraka Saṃhitā, Suśruta Saṃhitā, Bhela Saṃhitā and Kāśyapa Saṃhitā: cleansing of cranial cavity, used in decoction enema, have anti-prurient activity, induce emesis etc. Mustard leaves and seeds used in various formulations!
- DID YOU TAKE UP RISK ASSESSMENT IN THE CONTEXT OF INDIAN SYSTEMS OF MEDICINE – BOTH EFFICACY OF THE MEDICINES AND SAFETY, IN ADDITION TO TRADE RISKS, IF GM IS INTRODUCED??
- AYUSH is not even a part of GEAC! One meeting so far with AYUSH ministry representatives – is this adequate?
- Such a lack of assessment on ISM was one of the reasons for the Bt brinjal moratorium.

Impact of GM cold pressed oilcake?

- Cold pressed oil: today its gaining heavy popularity and recommended by doctors. Such holistic oil is the way to go for health and social reasons.
- Will protein remain in tact in such oilcake?
- What is the risk assessment done in such cases?

IMPACT OF GLUFOSINATE AND ITS RESIDUES??

ABSENT LIABILITY REGIME

- Who is liable for any failure? Crop Developer? Funding government agencies like NDDB and DBT? Regulators like GEAC/RCGM? Individual regulators? WHAT ARE YOU STANDING GUARANTEE FOR?
- What is the contingency plan – Even if there is a Management Plan, can you enforce? (could not enforce a single condition around refuge planting in Bt cotton, for example; nor could you control illegal spread of HT cotton to this day)?
- What is the redressal/compensation and remediation regime in place?

WHAT IS BEING CONSIDERED BY THE REGULATORS IS AN UNACCOUNTABLE, IRREVERSIBLE EXPERIMENT AT THE EXPENSE OF FARMERS AND CONSUMERS

SAFE, CONCRETE, ACTIONABLE PROPOSALS EXIST TO IMPROVE OILSEED PRODUCTION

- **Technical:** System of Mustard Intensification; Relay sowing on rice fallows
- **Policy:** Land use planning (incentivise increase of area under mustard or other oilseeds); Focus on promising oilseeds like Groundnut by giving assured emergency irrigation; import duty increases; remunerative prices and procurement; supply through PDS for poor households
- **Institutional:** Better extension systems – plugging the last mile gap in extension

Instead of addressing policy & practices that benefit farmers and consumers, will we keep increasing seed production?

WILL WE DABBLE WITH RISKS JUST TO MAKE LIFE EASIER FOR SEED MANUFACTURERS AND CREATE LARGER MARKETS FOR CHEMICALS?

Seed Yield (Kg/ha) with System of Mustard Intensification

State	Organisation/ Institute	Year	No. of farmers	Average Yield
Bihar	PRADAN/PRAN	2009-10	7	2964
		2010-11	273	**3211**
		2011-12	1636	**3458**
Madhya Pradesh	Department of Agriculture, GoMP (crop cutting experiments in 8 fields, out of 12 hectares of farmers' fields)	2012-13	8	**4693**
Rajasthan	DRMR Research	2013-14	-	**3560**
Non-SMI (for comparison)				
Hybrid	Developer	Year	No. of farmers	Average Yield
DMH-1 (Survey in farmers' fields by UDSC)	UDSC/DU	2009-10	63	2124
DMH-11 (TRIALS)	UDSC/DU	3 years	-	**2626**

- http://sri.cals.cornell.edu/aboutsri/othercrops/otherSCI/In_SMImustard_Pradan.pdf
- https://www.dropbox.com/s/146nyi8lbgn32us/Rajesh%20Tripathi%20-%20Powerpoint%20-%20SRI%20in%20Mustard.pdf?dl=0 :
- "Unprecedented Growth Achieved Using SRI Technique (SRI, SMI & SWI), District Umaria (Madhya Pradesh), Year 2012-13 & 2013-14, Department of Farmer Welfare & Agriculture Development, Government of Madhya Pradesh
- Directorate of Rapeseed-Mustard Research Annual Report 2013-14: http://www.drmr.res.in/publication/DRMR_ar_%202013-14.pdf
- Performance of DMH-1 in farmers' fields during 2009-10 – survey results from 63 farmers. Presentation by Dr Deepak Pental: http://www.slideshare.net/GCProgramme/keynote-icrisat-pental

Other important considerations..

- TEC report, PSC report, Growing Scientific body of evidence - there are so many clear warnings against GMOs and Herbicide Tolerant Crops in particular
- GEAC should remember it is **Appraisal** and not **Approval committee**! It should act like a regulator and not a promoter.
- GEAC's main mandate is to "protect nature, environment & health from risks of Gene Technology" – just a gentle reminder.

GE APPRAISAL Committee,
NOT GE APPROVAL Committee

We will come back..

- Consumers will be concerned about health safety of transgenic mustard DMH-11.
- There appear to be issues with lack of comprehensive studies as well as brushing aside risk warnings there too (body weight, kidney weight, bilirubin levels, glucose levels etc.) – WE HAVE SEEN THIS WITH BT BRINJAL TOO.
- We will come back on health risks related issues, once the bio safety dossier is put in the public domain. WE EXPECT ALL THREE GMOs BEING CONSIDERED TO HAVE THEIR OWN COMPREHENSIVE DOSSIERS, SHARED FOR INDEPENDENT SCRUTINY.

FOR NOW, WE ARE SURE THAT NEITHER GM MUSTARD DMH-11 NOR ITS PARENTAL LINES ARE AN ANSWER TO PRODUCTIVITY OR OIL IMPORT QUESTIONS; NOR HAVE THEY BEEN ASSESSED FULLY AND SCIENTIFICALLY FOR ALL RISKS.

GMOs: UNNEEDED, UNWANTED & UNSAFE

WE DON'T WANT TO BE SPENDING OUR ENERGIES FIGHTING HAZARDOUS TECHNOLOGIES LIKE GMOs WHEN NUMEROUS OPTIONS ARE AVAILABLE FOR PROBLEMS THAT TRANSGENICS ARE TOUTED AS A SOLUTION FOR. WE ARE NOT LAB RATS FOR BREEDERS EXPERIMENTING.

WE REJECT HERBICIDE TOLERANT CROPS OUTRIGHT.

THIS DEBATE IS A COSTLY DISTRACTION FROM INVESTMENTS TO BE MADE ON READY PROVEN SOLUTIONS. WE WANT A PRECAUTIONARY APPROACH TO THE TECHNOLOGY.

NOT FAIR THAT REGULATORS ALLOW EVERYTHING TO COME TO A STAGE OF COMMERCIALISATION FORCING US TO STEP UP OUR OPPOSITION.

WE REJECT GM MUSTARD AS AN OPTION.

EVEN WITH EXISTING LIMITED EVIDENCE WE HAVE, WE REJECT THE RELEASE OF PARENTAL LINES ALSO BOTH OFWHICH ARE HERBICIDE TOLERANT.

WE WILL NOT LET OUR RIGHT TO CHOICES AND RIGHT TO SAFE FOOD BE TRAMPLED UPON.