

**Geography:** Places where genetically modified crops are grown, the type of indigenous farming done there; in the map of the world ask them to draw out the type of farming undertaken in different zones e.g. step farming in the hills; locations of GM crop fields; repercussions on the farmland

**History:** The history of patents; Information can be found in 'Patents-myths and reality' by Vandana Shiva

**Mathematics:** Graphs to explain the politics of Genetically Modified

**Organisms:** biodiversity hotspots versus GMO producing nations; Varieties of a fruit (e.g. tomato) versus its GM versions

**Crafts/SUPW:** Posters on for and againsts of GMO production; Plays where the politics of GMOs is explained through a character representing a GM seed or any GM product; papermachie, clay or dough models of hybrid fruits, animals, etc.

**Civics:** What is wrong with the trade of GM crops; Who takes the decision on agriculture policies; Is the poor farmer of Southern countries represented in world summit on food; Do they participate in the decision making of policies made for them; Laws in various countries on export/import of GMOs

**Language:** We know that migrating Monarch butterflies died in Corn Fields of Mexico where Bt corn was planted. If pollens of corn could cause such a disaster on the butterflies then is the corn fit for human consumption? Ask the class to write an essay.

**Economics:** How US dominates the trade and wants rules and regulations in its favour; The declining rates of agricultural products causing havoc on the small farmer; how is it affecting the economy; local farming systems and markets; free trade versus fair trade

**Chemistry:** Chemicals causing mutation in genetic material

**Biology:** Cell biology; Genetic material; Genetic Engineering; Genomics; Hybrids; effects of genetic changes to a species or variety

## ACTIVITIES FOR THE CLASSROOM



**Lemon (Eng.); Limón (Spanish)**

The English and the Spanish term both come from the Arabic limum, which itself came from the Chinese term limung. Originally from the foothills of Kashmir, the lemon reached China around 1900 B.C. The "lime" was introduced to Europe by the Spanish in the sixteenth century, who discovered it in Peru and the capital city of Peru, Lima, was founded by the Spaniards, who named it after the fruit. There are other fruits and vegetables whose names can be traced back to some city or country. This could reveal the origin of the food. Check this site : <http://www.westegg.com/etymology>

**Geography, History, Language.**



India has the largest variety of wild species of rice and mustard. Now next in the cards is the modification of mustard seeds. How will this affect us as a country? Ask the students to find out any other crop that has a large variety in the wild. Which wild variety is dominant in which part of the country and why?

**Mathematics, Science, Economics**



Are modified foods really 'frankens-teins' waiting to be unleashed in the open. There are also positive points of GM food. Divide the class into two groups and have a debate on the pros and cons of the issue.

**Civics, Language, Economics, Science**

### Role Play:

Call a Children's Parliament. Tell them about the GM issue. This could be an interschool or interclass competition. Give each group the roles they have to play. Make them into: (a) Minister of science and technology (b) GEAC chief (c) Scientist who is pro GM (d) Scientist who is against the modification of genes in plants (e) Farmer who has a small holding of land and wants to increase yield with the help of the GM crop (f) Seed seller of an MNC (g) Small village level seed seller (h) Farmer from China (i) Farmer from US (j) Farmer from Australia who is facing the problem of pests becoming resistant to the genes implanted in the seeds

Give each person inputs the previous day. Ask them to consult the library and websites. Then they can discuss and lay down their points in favour or against Genetically Modified Organisms. Initiate the discussion with a little history of Genetically Modified Organism.

### Further reading

WTO? WOT! Gobar Times issue no:11, January 15 2000; Against the Grains Gobar Times issue no:12, March 31 2000; Patents – myths and reality, Vandana Shiva Penguin books  
Green Politics: Global Environment Negotiation (GEN)-1, Ed. Anil Agarwal et al, 1999, Centre for Science and Environment  
Global Environment Negotiation (GEN)-2, ed. Anil Agarwal et al, 2001, Centre for Science and Environment  
Reaping the Harvest, Fred Pearce, New Scientist, Feb 2002  
Beyond Organics Biotechnology, Farmers and Ethics, Bharat Dogra, New Scientist, May 2002; The Biotech Century, Jeremy Rifkin

### Web resources:

<http://dspace.dial.pipex.com/gmfood>  
[www.biotech-info.net](http://www.biotech-info.net)  
<http://www.globalchange.com/monarch.htm>  
<http://www.princeofwales.gov.uk>  
[www.colostate.edu/programes](http://www.colostate.edu/programes)  
[www.biodiv.org](http://www.biodiv.org)  
[www.gmac.gov.sg/faq-gmo](http://www.gmac.gov.sg/faq-gmo)  
[www.percyschmeiser.com](http://www.percyschmeiser.com)  
[www.newscientist.com](http://www.newscientist.com)  
[www.greenpeace.org](http://www.greenpeace.org)  
[http://biotech.cas.psu.edu/articles/gmo\\_crops](http://biotech.cas.psu.edu/articles/gmo_crops)  
<http://www.cropgen.org>  
<http://www.vshiva.net/biotech/gmofstomato>  
<http://www.westegg.com/etymology>  
<http://www.sac.ac.uk/info/External/About/publicns/gmos2.htm>  
<http://www.presswire.net>

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