

The Environmental Impacts of GM crops

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The Five Year Freeze

- Formed in 1998
- 126 member organisations.
- Women's organisations.
- Trade unions
- Religious
- Health
- Conservation
- Business

Risk Assessments EU Directive 2001/18

- Includes cumulative and long term effects.
- Immediate and delayed affects.
- Impacts on biogeochemical processes.
- Impacts of changed management eg different herbicides.
- Direct and indirect impact
- Selective advantages following gene transfer.

Direct Impacts

- Direct – GM plants may produce toxins that impact on environmental systems eg soil.
- Direct – GM plants may produce toxins that impact on non target or beneficial species.
- Direct – GM may alter plant metabolism and defenses against pest or disease.
- Direct – gene transfer may alter fitness of the crop plant or wild relative – weedier or more invasive. By pollen or seed.
- Direct – impact of different herbicides.

Indirect impacts

- Gene transfer to bacteria.
- Food chain impacts.
- Biodiversity impacts.
- Agronomic impacts – management of herbicide tolerant volunteers or weeds.
- Pest resistance – weeds, insects, fungi and disease.
- Integrity of land races and wild gene pool.
- Other forms of farming eg Bt used in organic

Oilseed rape or Canola

- Centre of Biodiversity northern Europe
- Crosses with wild relatives
- Volunteers and feral populations
- Spread by wind and insects
- Spread by seed
- Massive seed production – up to 10,000/m² lost.
- Seed dormancy of at least 7 years
- Biodiversity threatened.
- Seed purity threatened.

GM Coffee

- Wild relatives - Ethiopia
- Land races
- Insect pollination – bees
- Human trafficking of seeds
- Unexpected results of GM.
- Bt – direct and indirect impacts.
- Caffeine free – impact on plant.
- Indirect impacts on environment and biodiversity from management changes

GM Coffee and the Environment Summing Up

- Many potential environmental impacts direct and indirect.
- Dangerous to assume equivalence eg removal of caffeine.
- Difficulties in designing and conducting contained trials.
- Lack of research in alternative approaches and ecosystems likely to be affected.
- Many other potential impacts eg socio economic and health.

GM Coffee and the Environment Summing Up

- Coffee growers must be involved in decisions and oversight.
- Coffee consumers must be involved in decisions and oversight.
- Ownership and rights to genetic resources are key issues.
- Solutions have to be appropriate and affordable.