# Products of ‘genome editing’ techniques should be strictly regulated as GMOs

Webinar “Brave new world”
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European Network of Scientists for Social and Environmental Responsibility

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For scientific details and references, see:

**ENSSER Statement (2017): Products of new genetic modification techniques should be strictly regulated as GMOs**

**ENSSER/CSS report (2021): Scientific critique of Leopoldina and EASAC statements on genome edited plants in the EU**

Both at https://ensser.org/category/publications/

Genetic modification (GM) techniques:

'old' vs 'new' – main differences (simplified):

- old (1980s – now): mainly by inserting new DNA at a random site in the genome ('TRANSGENESIS' and 'CISGENESIS')

- new (2000s – now): mainly by changing or deleting existing DNA at a chosen site or by inserting new DNA at a chosen site ('GENOME EDITING' or 'GENE EDITING')

Claims for ‘old GM’ (by GM industry):

- more accurate than conventional plant breeding
- will speed up plant breeding
- will raise crop yields
- will reduce hunger

Results of 'old GM' (in non-negligible market size):

- herbicide-tolerant crops
- insect-resistant crops

- superweeds (herbicide-tolerant)
- resistant insects
- no permanent yield rise
- no less hunger

Claims for 'new GM' (by GM industry):

- more accurate than old GM, therefore safe
- will speed up plant breeding
- will raise crop yields
- will reduce hunger

Result of 'new GM' so far (commercially):

- herbicide-tolerant crop

Important features of new GM (= 'genome editing'):

- many off-target modifications (therefore 'genome editing' is not an adequate term)
- on-target modifications often give rise to unexpected effects
- one very cheap and easy technique: CRISPR, allowing abuse, inadvertent misuse and 'dual use'
- 'gene drives' become feasible

Why do ‘genome editing’ and transgenesis fail to deliver on the claims?

- the desired traits (higher intrinsic yield, drought tolerance, disease resistance, 'climate resilience', etc.) all require multiple genes, possibly big portions of the genome
- it is technically unfeasible to modify so many genes at once in a controlled manner and free of undesired effects
- for short: achieving a desired effect of GM is uncertain, but getting undesired effects of GM is certain
- efficacy and safety are therefore at risk
- this is not new: we have known for decades that one gene – one trait relationships are very rare, and that DNA is not 'the blueprint of life'
- the root causes of hunger are related to social and economic issues (conflict, poverty, exclusion, etc.) more than to crop yield
- there is already much more food on the world than required for feeding the world’s population: there is no need to raise yields – we can feed everyone with the available food

Conclusions:

GM agriculture cannot and will not solve hunger because:

- science shows that it is technically unfeasible to change an organism in a controlled way by modifying its DNA (it’s not a surprise that GM fails, it is bound to fail)
- everyone can be fed with the world's available food: there is no need to grow more

‘Genome editing’ must be strictly regulated because:

- it is inherently unpredictable, like transgenesis
- it allows more abuse, inadvertent misuse and dual use than transgenesis
- it allows developing gene drives