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# GMOs Could Destroy the Global Ecosystem: Risk Expert

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## "Black Swan" Author Nassim Nicholas Taleb *Demolishes* the Claim that GMOs Are Low-Risk

Risk analyst Nassim Nicholas Taleb predicted the 2008 financial crisis, by pointing out that commonly-used risk models were wrong. Distinguished professor of risk engineering at New York University, author of best-sellers *The Black Swan* and *Fooled by Randomness*, Taleb became financially independent after the crash of 1987, and wealthy during the 2008 financial crisis.

Now, Taleb is using his statistical risk acumen to take on genetically modified organisms (GMOs).

Taleb's conclusion: GMOs could cause "an irreversible termination of life at some scale, which could be the planet."

Sound crazy?

Sure it does ... but only because we don't understand statistics, and so we have no handle on what's risky and what's not.

Taleb and his 2 co-authors write in a new draft paper:

> For nature, the "ruin" is ecocide: an **irreversible termination of life at some scale, which could be the planet**.
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> Genetically Modified Organisms, GMOs fall squarely under [the precautionary principle, i.e. the rule that we should err on the side of caution if something is really dangerous] not because of the harm to the consumer because of their **systemic risk on the system**.
>
> Top-down modifications to the system (through GMOs) are categorically and statistically different from bottom up ones (regular farming, progressive tinkering with crops, etc.) There is no comparison between the tinkering of selective breeding and the top-down engineering of arbitrarily taking a gene from an organism and putting it into another. Saying that such a product is natural misses the statistical process by which things become "natural". [i.e. evolving over thousands of years in a natural ecosystem, or at least breeding over several generations.]

What people miss is that the modification of crops impacts everyone and **exports the error from the local to the global**. **I do not wish to pay—or have my descendants pay—for errors by executives of Monsanto.** We should exert the precautionary principle there—our non-naive version—simply because we would only discover errors after considerable and irreversible environmental damage.

*Painting by Anthony Freda: [www.AnthonyFreda.com](http://www.AnthonyFreda.com).*

Taleb shreds GMO-boosters – including biologists – who don't understand basic statistics:

Calling the GMO approach "scientific" betrays a very poor—indeed warped—understanding of probabilistic payoffs and risk management.

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It became popular to claim irrationality for GMO and other skepticism on the part of the general public —not realizing that there is in fact an "expert problem" and such skepticism is healthy and even necessary for survival. For

> instance, in The Rational Animal, the author pathologize people for not accepting GMOs although ”the World Health Organization has never found evidence of ill effects” a standard confusion of evidence of absence and absence of evidence. Such a pathologizing is similar to behavioral researchers labeling hyperbolic discounting as ”irrational” when in fact it is largely the researcher who has a very narrow model and richer models make the ”irrationality” go away).

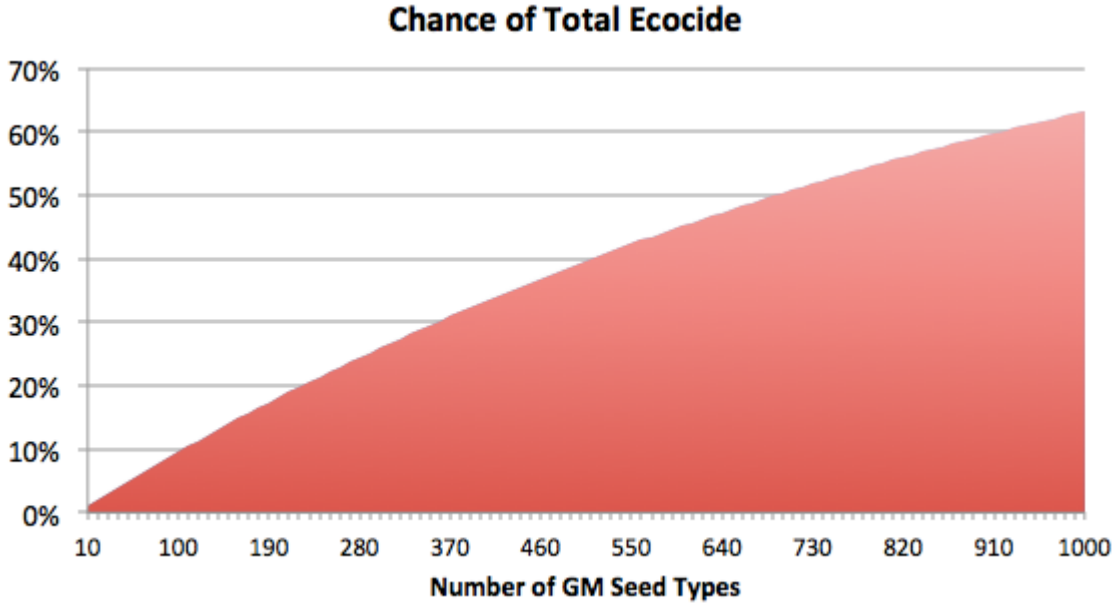
In other words, lack of knowledge of basic statistical principles leads GMO supporters astray. For example, they don't understand the concept that "interdependence" creates "thick tails" ... leading to a "black swan" catastrophic risk event:

> Fat tails result (among other things) from the interdependence of components, leading to aggregate variations becoming much more severe than individual ones. Interdependence disrupts the functioning of the central limit theorem, by which the aggregate is more stable than the sum of the parts. Whether components are independent or interdependent matters a lot to systemic disasters such as pandemics or generalized crises. The interdependence increases the probability of ruin, to the point of certainty.

(This concept is important in the financial world, as well.)

As Forbes' Brian Stoffel notes:

> Let's say each GM seed that's produced holds a 0.1% chance of — somehow, in the intricately interdependent web of nature — leading to a catastrophic breakdown of the ecosystem that we rely on for life. All by itself, it doesn't seem too harmful, but with each new seed that's developed, the risk gets greater and greater.
>
> The chart below demonstrates how, over time, even a 0.1% chance of ecocide can be dangerous.
>
> I cannot stress enough that the probabilities I am using are for illustrative purposes only. Neither I, nor Taleb, claim to know what the chances are of any one type of seed causing such destruction.
>
> The focus, instead, should be on the fact that the "total ecocide barrier" is bound to be hit, over a long enough time, with even incredibly small odds. Taleb includes a similar graph in his work, but no breakdown of the actual variables at play.




Taleb debunks other pro-GMO claims as well, such as:1. The Risk of Famine If We Don't Use GMOs. Taleb says:

> Invoking the risk of "famine" as an alternative to GMOs is a deceitful strategy, **no different from urging people to play Russian roulette in order to get out of poverty**.
>
> And calling the GMO approach "scientific" betrays a very poor—indeed warped—understanding of probabilistic payoffs and risk management.

2. Nothing Is Totally Safe, So Should We Discard All Technology? Taleb says this is an anti-scientific argument. Some risks are small, or are only risks to one individual or a small group of people. When you're talking about risks which could wipe out all life on Earth, it's a totally different analysis.

3. Assuming that Nature Is Always Good Is Anti-Scientific. Taleb says that statistical risk analysis don't use assumptions such as nature is "good" or "bad". Rather, it looks at the statistical evidence that things persist in nature for thousands of years if they are robust and anti-fragile. Ecosystems break down if they become unstable.

GMO engineers may be smart in their field, but they are ignorant when it comes to long-run ecological reality:

> We are not saying nature is the smartest possible, we are saying that time is smarter than GMO engineers. Plain statistical significance.

4. People Brought Potatoes from the Americas Back to Europe, Without Problem. Taleb says that potatoes evolved and competed over thousands of years in the Americas, and so proved that they did not disrupt ecosystems. On the other hand, GMOs are brand spanking new ... created in the blink of the eye in a lab.

## GMOs Also INCREASE Pesticide Use, DECREASE Crop Yield, And May Be VERY Dangerous to Your Health

As if the risk of “ecocide”isn’t enough, there are many other reasons to oppose GMO foods – at least without rigorous testing – including:

- *Decreased* crop yield
- *Increased* pesticide requirements
- Potentially severe *health effects*

On the plus side?  A few companies will make a lot of money.



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