Opinion on the criteria proposed for Swan label regarding bread and bakeries (13 pages)

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1. Summary

The great majority of the references used to suggest the GM ban proposition for Swan label are **not scientific** ones. On the contrary, the bulk of those are scientifically invalid reports produced by various political or ideological organizations (e.g. IAASTD[34,35] and Genøk, see below). Their claims and conclusions do not represent scientific research but contradict even the basic biological knowledge accumulated during the three latest decades of modern life sciences.[D,29,C] Often those claims are purely absurd biologically. It is also just as evident that their writers know practically nothing about traditional plant breeding either (so that they are unable of any sensible comparisons and conclusions in the discipline).

In regard to environmental issues, resistant crop varieties are in many respects ideal means of plant protection, as is confirmed by extensive studies in recent decades. They are better focused against just the pest species damaging the crop, whereas conventional means such as control sprays, tilling or spread of parasites generally harm innocent and passer-by species as well.[29,4,14,16] Furthermore, resistant crop varieties enable transition to no-till cultivation – with dramatically reduced erosion – on a large scale in the world.[37,38,16,4] Accordingly, their cultivation offers a good protection of yield and its quality, with markedly lesser strain imposed on environment than when conventional plant protection means are in use.

The GM ban proposed for plant varieties in the Swan label is groundless and scientifically untenable. Just as worryingly, the proposition would mislead the public to favour products and methods more harmful to the environment. Thus, the ban would **contradict the basic aims of the environmental label** and **ruin its credibility**.

Food safety was not exploited in the document for the justification of GM ban in an environmental label. Even so, it needs to be noticed that there are no scientific food safety reasons whatsoever to discriminate against foods containing ingredients from GM plants.[12,13,15,33,14,17,19–21] (Allegations largely circulated in popular media are untenable scientifically, including the latest claims by Seralini et al. [8]). GM foods on the market are recorded **as safe as or likely even safer** than conventional foods. They have been studied much more thoroughly than any conventional foods, and the methodologies in use with them provide hundreds or thousands of times **more pure and controllable** results than their conventional equivalents widely used in traditional plant breeding and food production.

Furthermore, the **complete traceability and labeling** of GM foods has been fully realized in EU since 2003, when the respective EU regulation was implemented (EC N:o 1830/2003). Whereas, the tracing of conventional foods is still largely impossible in practice, which manifested itself once again in the horse meat hassle in EU recently.

2. Dissektion av gm-förbudets premisser erbjudits i dokumentet "Om Svanenmärkta Bagerier och matbröd. Bakgrund för miljömärkning. Version 1.0, Remissversion. Produktgrupp 082, 2013-01-02" http://www.svanen.se/Templates/Criteria/CriteriaGetFile.aspx?fileID=150619001

Analys i detalj (partially in English)

Utdrag av det ovan nämnda dokumentet trycks här med ***kursiv och fet font*** medan min analys presenteras med normal stil.

Krav på genetisk modifierade (GM) råvaror (O8)

Bakgrund till kravet

Nordisk Miljömärkning väljer att förbjuda användningen av råvaror som kommer från bekämpningsmedels- och insektsresistenta GM-växter baserat på försiktighetsprincipen och på de potentiellt negativa miljöeffekterna.

Gm-förbudet motiveras således med två propositioner: 1) några möjligtvis ofördelaktiga miljöverkningar, och 2) den så kallade försiktighetsprincipen. Den första propositionen motsägs av de omfattande vetenskapliga forskningsresultaten och den andra är baserad på en grundligt missförstådd tolkning av den officiella försiktighetsprincipen:

1992 Rio Deklaration om Miljön och Utvecklingen förklarar sig: "Om det finns en risk för allvarliga eller irreversibla miljöskador ska man inte genom att skylla på att en full vetenskaplig pålitlighet ännu saknas uppskjuta kostnadseffektiva åtgärder för att förhindra miljöförstöring". [A]

Under ett par årtionden har miljöverkningar av resistenta gm-sorter forskats av hundratals biologiska experter i tiotals extensiva studier överallt i världen, inte minst i Europa, och slutsatsen är klar: resistenta gm-sorter är inte mer utan ofta mindre harmliga för miljön än de andra produktionsmetoderna såsom konventionell jordbruk (eller i vissa avseenden även eko-odling). [29,18,16,4,24,37,38,5,6,3] Detta bekräftades senast i ett speciellt symposium på Bt-majs i Europe ett par månader sedan.

För miljöns skull ska de resistenta gm-grödorna inte förbjudas utan tvärtom. Själva försiktighetsprincipen förutsätter att dessa skulle snabbt tas i bruk också i Europe för att förhindra miljöförstörning – speciellt när det är fråga om de allvarliga och irreversibla skador för matsäkerhet, ekoeffektivitet och miljö som orsakas av segertåg över Europa av destruktiva främmande arter dylika som majsens rotskalbagge (*Diabrotica virginifera*), en nyanlänt karantänsskadeinsekt.[A] Alla traditionella bekämpningsmedel, såsom bevattnande med starka gifter, visat sig inte bara kraftlösa utan även förorsakar stora skador för jordmånen och dess biologiska mångfald. Resistenta gm-majssorter är det enda effektiva (och även oskadliga) skyddsmedlet, som således är i omfattande bruk överallt i världen – utom i EU, som ändå har godkänt dom för användning i livsmedel.

Genetiskt modifierad betyder att en eller flera främmande gener är tillförda med hjälp av genteknik.

Den där "hemvävda" satsen motsvarar inte alls den officiella definitionen av genetisk modifiering som har utlåtits i EU-direktiv (2001/18/EC); och desto mindre de vetenskapliga realiteterna gällande vårt milleniums naturvetenskaper (Life Sciences).[C,26,29,32,30,D]

Det är inte genens 'ursprung' utan dess funktion som är essentiellt gällande dess möjliga risker och fördel: dvs. vad genen gör och hur bra den fungerar i växten. Å andra sidan är det där påståendet på villovägar. Genetisk modifiering kan nämligen likaväl utnyttjas för finjustering av växtens egna gener; det kan man bäst göra med de nyaste gm metoder utvecklats i detta årtusende.[29,26,32,27,28,30] Med mera kan man nu kontrollbart slå av vilken harmlig gen som helst i växten och på så sätt eliminera dess oönskade gifter, allergiska proteiner etc.[7,10,15,17,19,20,21,28,31] Till exempel vissa herbicidresistenta sojasorter förädlats genom att föra i växten en finjusterad kopia av dess egen gen. Herbiciden glyfosat gör nämligen verkan på växter genom att förhindra aktionen av deras specifika enzym (EPSPS) som saknas i djur. När man

finjusterade enzymens struktur minimalt – bytte bara ett par aminosyror i noggrant valda lägen i enzymens långa proteinkedja – kan glyfosat nu inte länge gripa tag i enzymmolekylen och hindra dess aktivitet i dessa sojasorter.

GMO (genetisk modifierad organism eller växt, djur eller mikroorganism) är ett mycket omdiskuterat ämne i fråga om bland annat livsmedelssäkerhet och markanvändning. Positiva effekter av GM-grödor är en ökad avkastning/skörd i ett kort tidsperspektiv.
I ett lite längre perspektiv är kunskapen om konsekvenserna mer osäker[38].

a) The referred document is not valid scientifically [IAASTD, see below; 34, 35, and immediate personal knowledge, because JT functioned as a Global Lead Author in IAASTD (2004–5)]

b) 'Precautionary Principle' was formulated to enhance and not hamper the introduction of efficient means for diminishing environmental damages. "Where there are threats of serious or irreversible damages, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation" (1992 Rio Declaration on Environment and Development).[A]
Many plant pests cause the threat of just such serious and irreversible damages, and their control would deserve serious attention. This applies especially to the most destructive 'quarantine' pests such as corn rootworm (*Diabrotica virginifera*) – an alien beetle which arrived in Europa from America a decade ago.
The same pertains to the most aggressive weed species. If their seeds or rootstocks are allowed to accumulate in the soil to too high densities, great yield losses are inevitable in a long row of forthcoming years. A typical example is the 'bio'-production of turnip rape. In its fields the weeds cannot be controlled sufficiently. Therefore, seed for its cultivation cannot be produced using 'bio' methods in practice, as the EU regulation insists, because it would be a diverse mixture of seeds from turnip rape and its serious weeds. Accordingly, its seed is being produced with conventional methods relying on exceptional permits year after year.

c) High productivity/yield is a crucial issue regarding the eco-efficiency of crop production, as is emphasized e.g. by life cycle scientists and ecologists. Ineffectiveness means wasting the natural resources. It is our duty to save the remaining wilderness by enhancing crop production on the existing field area so that no extra area would any more be cleared for cultivation in order to secure our supply of food, energy and raw materials.[26–29] On the contrary, a considerable portion of the current area of cultivation should be restored to natural ecosystems in years to come, in order to retain the bulk of remaining biodiversity in the world. Resistant and high-yielding new biotech crops (synonym for 'genetically modified') would be an important tool in enabling to achieve this goal, because such crops would essentially raise the quantity, quality and usability of crop yields.[14,16,18,22,24,25,27–29]

d) "In short time perspective"? That belittling expression used above represents a gross lack of knowledge about the foundations of plant biology. Namely, all our advances in the protection of plants against their pests are but transient by nature, irrespective of the methods in question. In the course of time, pest evolution will break down any means of protection we are introducing. Accordingly, also resistance breeding has always constituted a biological race against pest evolution – "by running fast we may keep our placing, at best". Albeit, the dilemma is now turning more moderate due to modern genetic know-how – by taking advantage of genetic modification it is already often possible to develop protective means retaining their efficiency for much longer periods than we got used to during conventional crop production.[36]

e) 'Precautionary principle' obliges us to take such functioning means for the protection of natural resources in use immediately, although we cannot be completely sure of their efficiency in a few decades' time in the future. On the other hand, due to novel precision modification technologies, we have now arrived in the era, when the protective means in a danger of losing their effectiveness may be adjusted rapidly anew to retain their former efficiency. Furthermore, the disintegration of plant protection due to pest evolution can be greatly retarded by combining two or more resistance factors of different types in the same crop variety.[36]

f) 333 local PhDs including 220 at least associate professors, 147 professors, 3 research directors, 8 university deans, 12 heads of research institutes/organizations, 13 university principals, 2 university chancellors and one science academician have undersigned an Appeal for an equal coexistence of various production methods and against banning of GM technology in Finland. Of those, 27 are professors in ecology, plant biology, genetics,

plant or animal breeding, population biology or environmental protection. In the appeal, policy-makers are petitioned to prevent unjustified discrimination against genetic modification. Banning GM applications in Finland would be an irretrievable blow to Finnish high quality life sciences and research.
We should concentrate on the end products of development, that is, on the characteristics of these crops rather than the processes used in the development. Likewise, the legislation on GM cultivation should be based on research evidence from biological sciences.[2]
Internationally, similar petitions have been published e.g. by 25 Nobelists and 3 400 scientists, and recently also by the great majority of premier researchers in plant biology in Sweden.[1,3]

De främsta negativa miljökonsekvenserna som är relaterade till GM-odlade grödor är förorening (både kemiska och genestisk)[39]

f) Crop varieties resistant to pest attacks are the tool for preventing heavy losses of yield which in principle inflicts least disturbances to environment. When such varieties are grown, an environmentally ideal type of pest control is achieved; i.e. point wise control, in which the harm is focused on and confined as narrowly as possible to the particular pest species actually damaging the crop. Typically in conventional and 'eco' control, the fields are sprayed or spread with control chemicals or organisms which rather indiscriminately also kill up to hundreds of species of beneficial and harmless inhabitants or passers-by in the field. Likewise, conventional tilling destroys beneficial organisms on and in the ground as well, and the same pertains to the flaming-off of weeds typical of 'eco' production.[4,5,11,14,16,18,23,29]

g) In regard to weed control, herbicide resistant crops can offer certain significant environmental benefits in comparison with conventional control methods. First, the farmer needs no more rely on maybe unnecessarily heavy control treatments, typically decided on and carried out in advance (even with long-lasting herbicides mixed in the soil), "to be on the safe side". Namely, when resistant varieties are in use, she can change over to an integrated control based on true needs. I.e., the densities of weeds in the field are followed-up in real time, and control treatments are only started when deemed necessary – and with appropriate, not exaggerated concentrations. Though, with such integrate methods, it is important to make sure that the invasion of weeds is not let bursting too far – belated control may be deemed to fail. When applying such a new custom of control, enabled by resistant crop varieties, herbicide quantities spread in the fields can be diminished.
Secondly, with herbicide resistant crops, choice of herbicides in use can often be directed from environmentally detrimental old products to more benign ones such as glyphosate. (Though, certain rotation of control means is advisable for sustainable weed control; see below).
Thirdly, herbicide resistant varieties have enabled switching over to no-till farming in a large scale in the world, with accompanied great decreases in erosion and water pollution.[37] For example in America, no-till farming has increased fivefold in recent years, in direct proportion to the area being used for HR (herbicide resistant) soybean production.[38]
Erosion has for long been the gravest environmental trouble in the world, only greenhouse gases excluded. It deprives the fields of their nutrients and contaminates water ecosystems, when fertile topsoil with its nutrients and agricultural chemicals is being flushed away in a mammoth scale as pollutants into the waterways. A comparison of studies all over the world concludes that erosion is almost 500 times lesser on average in no-till than conventional production.[37] Especially in 'eco' cultivation, the top soil has to be broken all the time, e.g. for controlling the weeds, with a marked increase both in erosion and unnecessary driving of machines, with consequent fuel waste in the fields. It is also well known that tilling reduces the carbon reserves in the soil substantially.
In addition to HR (herbicide resistant) varieties, also moth-resistant biotech corn can be produced without tilling, because its stems can be left as a cover layer on the field after harvest. On the contrary, the stems of conventional and 'eco' corn need to be ploughed into the soil, in order to prevent a devastating invasion of European corn borer in the corn fields in the subsequent spring. Namely, the dormant stages (pupae) of the pest are hiding safe within the stems of conventional and 'eco' maize and must be destroyed by tilling.
Accordingly, for the first time in the history of cultivation, soybean and corn can now be grown in a permanent no-till production enhanced with eco-efficient crop rotation – utilizing resistant GM varieties. There maize gains benefit from the nitrogen resources accumulated from the air in the field by the preceding soybean.

h) The claim of genetic ”contamination”, though highly popular in common media, is scientifically empty and dismisses the well-known essentials of population and ecological genetics and evolution. Such unfounded ”scaremongering” has originated from certain ideological lay organizations. Here it was referred to the unscientific “stub report” of IAASTD.[34,35] Any population geneticist – or any traditional plant breeder as well – could have clarified that also in regard with plant varieties and ecosystems, ”We should concentrate on the end products of development, that is, on the characteristics of these crops, rather than the processes used in the development”.[2]
In natural populations, general laws of evolution and natural selection apply – for all genes, be they modified by man or Nature. An introduced gene is being “adopted” by the population so that its frequency increases to some considerable level if – and only if – the gene offers the population better success in its ‘struggle for existence’. Natural selection takes care that gene variants clearly beneficial for the plant population tend to increase their frequencies in the population, whereas disadvantageous ones fade out (though sometimes fairly slowly).
[Though, in very small populations the gene frequencies are mostly governed by mere chance; and consequently, even a gene variant less profitable regarding adaptation may become common in a small portion of such tiny populations].
Scientific basics of ecology and genetics, in regard to the issues considered above, are introduced in short in these articles [5,6,15,24,27–29,39].
What then comes to the “contamination” of plant varieties, that is no novel but old, ubiquitous and fully natural phenomenon – which is ”better than adequately” under control in everyday plant breeding, for all plant varieties bred since the birth of genetics in 1900, be they conventional or modern ones. Nature is never “pure”, as the legislator accepts by admitting ‘eco’ products to contain up to 5 % of practically anything (except GM crops, “of course”). But if considered reasonable, for some special purpose, breeders can refine their crop varieties almost as unnaturally ”pure” as ever dreamed – with respectively huge costs, of course. Though, it is clear that by far the highest degree of purity can be achieved in plant breeding by relying on new genetic know-how and the accompanying novel precision modification technologies.[C,29,32,26-28,30,39]

Det har t.ex. medfört att utvecklingen av herbicidresistenta ogräs ökar kraftigt[40].
Though the reference presented here for the justification of GM ban is not strict science, it is a well-known advisory internet page, much used by plant protection people for the follow-up of the cases of weeds turning resistant to some herbicide as reported in various countries. However, the sentence above gives a strongly misleading assertion of the state of art in weed science – and the contents of the referred page as well.
Scientists in the discipline are united in the key principle: Extensive use of herbicides will inevitably cause the development of resistant plant lines, as an unavoidable result of genetic variation and natural selection. The process obeys well-known foundations of plant biology and protection. It is this way that weeds have during decades already managed to develop resistance to in total 148 different herbicides, and herbicide resistant weed lines have been reported from 63 crop plants in 61 countries.[40]
It is fundamentally being caused by the large-scale and long-lasting use of one specific herbicide in the field without necessary alteration between years – a commonly occurring flaw in various production systems – and not genetic modification. Albeit, resistance in various weeds has emerged much more slowly than usual just towards glyphosate, though that herbicide is in extensive use also in many herbicide resistant crop varieties.
However, the researchers unanimously emphasize that in order to retain important herbicides efficient as far as desirable in the forthcoming years, sustainable herbicide rotation should be applied, so that different herbicides should be used in the field in subsequent years whenever possible.[40] [29]

Herbicidresistenta ogräs kan medföra att användningen av herbicider ökar. I ett längre perspektiv kan det även medföra att mycket farligare växt-skyddsmedel används. Bioteknikföretagen börjar även utveckla nya sorter med gener som medför resistens mot fler herbicider [41].
Pursuing retardation in the development of resistant weeds is important, as stated above. It is just therefore that scientists are now breeding crop varieties resistant to more than one herbicide. The sufficient rotation

of herbicides stated above could more readily be ascertained by growing such flexible new varieties.[29,p.192]
Such development is also being made by using conventional breeding methods, as years before – another reason to refuse using it as a justification for the proposed GM ban. The Scientific Community in Life Sciences has already for long underlined in consensus that the benefits and disadvantages of crop varieties for humanity or environment has to be evaluated on the basis of the traits bred in them and not the methods utilized during their breeding.[1–3,9,15,18,29,33,39]

Andra negativa konsekvenser som är relaterade till odling av GM-grödor är en risk för reducerad[42]:

- **biodiversitet**

According to science, all the claims stated in the present list (here and below) are false. Some of them are purely absurd, lacking any biological sense whatsoever. Albeit, such odd beliefs are widely circulated in internet hotbeds and popular media. Here these claims were picked up from a scientifically worthless writing (IAASTD).[34,35]
It is naturally clear that the density of weeds within the crop is smaller when their control has been managed adequately – irrespective of the method. Regarding the overall effects on environment, the least detrimental option would be aiming at no-till farming combined with resistant varieties.
The optimal densities of weeds residing in the crop, regarding sustainable production, can best be achieved by adjusting the timing, frequency and efficiency of the control treatments, which became conceivable with the introduction of HR varieties.
Albeit, it should be noticed that the production of weed species within the crop would not be the best option for retaining biodiversity in the landscape scale – as ecologists currently point out, especially in Central Europe. Namely, meadow-type biodiversity can be secured far more eco-efficiently, and without compromising food security and quality, by growing the weed species apart from crop growth, i.e. outside the field plot. Though, that should be done on purpose, by applying helpful methods when appropriate.

- ***lokal livsmedelsförsörjning,***

That proposition is really odd, and no support for it can be found. It is biologically clear – and supported with the vast experience accumulated during hundreds of years of cultivation and plant breeding – that better crop varieties would of course not impair but advance the prospects of crop production; anywhere in the world. On the contrary, the resource-poor small farmers in the Third World would desperately need much more productive and tolerant new plant varieties, suited for them.[22,23] Such varieties could be bred for them by far most rapidly, reliably and safely with the help of modern genetic modification. These could best be developed in large-scale international, humanitarian breeding programs such as is under way in 'BioCassava Plus' – if only their illegal and legal sabotage by ideological interest groups in the West would lessen.[26]
Provided with such better varieties the small farmers could feed their families more reliably. Furthermore, due to the improved and no more poor productivity, part of the yield could be sold in the market and bring income to the family, enabling the acquisition of livelihoods and better inputs for production, such as seed, fertilizers or equipment.[23]

- ***kunskap om utsäde och rätten till utsäde,***

'Farmer's privilege' is the right of farmers to use their own seed, harvested from their own field, for sowing of crops in the production for their own use. That privilege also pertains to GM seed as well in EU, for it is clearly stated in our patent legislation (Directive 98/44/EC). Similar rights can be ascertained for small farmers in the developing countries in their legislation. In any case, possibilities for securing that privilege can be enhanced by breeding such biotech varieties for these countries in a) public sector research organizations including universities, and b) great international research centers of CGIAR, a research organization guided and supported by UN, which have developed more than 95% of the crop varieties in developing countries in the course of the last 40 years

Sufficient advice in the use of new crop varieties and production methods is important especially in such developing countries, where illiteracy is still quite common. Unfortunately, certain countries have left their agricultural counseling systems degenerating to a non-functioning level, e.g. India. The repair of such advisory systems is in the key role for taking a full advantage of novel varieties, as is shown e.g. by the

investigations in India.[11,23]
In principle, resistant varieties are often easier to farm than conventional ones, because in their cultivation the "wisdom is bred in the seeds". On the other hand, consequent to having chosen resistant varieties, the farmer often tends to switch over to the environmentally more benign, 'integrated' production, enabled by these varieties. However, such integrated methods may require certain new basic know-how from the farmer –she needs to be able of keeping an eye on relevant pest and weed populations – and advice of a competent counselor may often be needed in the beginning to avoid undesired explosions of pest populations. [11,23,29]

Genetic modification has nothing to do with such issues, and these can naturally not be used as the justification of the GM ban proposed for Swan label.

Bevarande av lokalt anpassade sorter.

As every traditional breeder would know, that proposition is as groundless as the previous ones. Breeding better crop varieties by utilizing genetic modification does not endanger the local landraces in any way conceivable. "Self-made" landraces have been fallen out of practical cultivation all over the developed world already scores of decades ago – due to their much worse productivity or other unsustainably poor properties. Though, their seed is kept safe in large international gene banks, and everyone interested can order their seed for own cultivation e.g. from The Nordic Gene Bank in Sweden.
Luckily also in the North, a gene bank for the rapidly disappearing local landraces was founded by the breeders and scientists in the Nordic Countries, though unfortunately late, not until in the 60's. Much valuable local adaptation is retained there for the future needs in plant breeding.
In the course of known agricultural history, better varieties provided by the genetic experts of their ages, i.e. ancient self-made or new scientific breeders, have "always" been taken in use by the farmers and superseded their inferior precursors. Though, many old popular varieties have a row of favourable properties and would deserve rescuing – if only the couple of their decisively inferior 'bottleneck' characters could be sufficiently ameliorated. Just that can now be done.
Any popular old variety can be rescued with the new precision modification, by precisely improving its drawbacks in some chosen detail, so that the variety shall retain its competitiveness and continue its success in production and market further in the future.
The same also pertains to any varieties particularly well adapted locally. Such a local variety can well be used as the basis for a locally adapted version of a biotech variety, thus combining both benefits. As an example, Indian universities developed their own type of insect resistant cotton on the genetic basis of one local variety exceptionally well adapted to dry growth conditions. They deliver its seed, at a modest cost, to the small farmers in less favourable areas in India lacking drainage systems so that the production is there fully dependent on the sometimes unreliable monsoon rains.[23]
Small farmers in the developing countries do farming for their livelihoods. They cannot be asked to pretend patrons that could maintain low-yielding or nutritionally poor old varieties in their fields "for humankind's purposes", as if working as unpaid porters of our gene banks in the backwoods. Also small farmers in the Third world should have equal rights of adopting better new varieties whenever such improvements become available. The responsibility of retaining our common genetic resources of crop plants shall remain on us and particularly on the high-level expertise of the common gene banks in the world.[22]
In the current era, plant breeders are in fact utilizing much more massively than ever before the advantageous genes found from landraces and wild relatives in gene bank collections. Such valuable "exotic" genes are now combined with genes promoting high yield levels in modern crop varieties. The aim is to develop highly productive varieties with better ecological tolerance, eco-efficiency and adaptation to the local growth conditions. With the help of genetic modification such results can be achieved remarkably more rapidly, purely and reliably than with the inherently dirty and chaotic traditional methods of plant breeding – which on top of everything else require decades of time (that we do not have in our profoundly changing world).[27,28–30,32,40]

[38] IAASTD International Assessment of Agricultural Knowledge, Science and Technology for Development. 2009. Agriculture as the Crossroads Synthesis Report. Island Press, Washington DC
[39] Ibid.

[40] Heap, I. 2012 The International Survey of herbicide Resistant Weeds. Online. www.weedscience.com (2012-05-10).

[41] Meyer & Cederberg. 2010. Pesticide use and glyphosate resistant weeds – a case study of Brasilian soybean production. SIK-Rapport Nr 809. SIK. Göteborg.

SIK is not a science agency or independent research organization but it is a private company or corporation, which erodes the value of its findings to a degree. However, in itself it is a well-known fact among researchers that overly one-sided reliance on one single herbicide for long times shall inevitably speed up the emergence of weed lines able of tolerating ever higher concentrations of that herbicide. Even if such progression has been slower than average for long in regard to glyphosate, cf. 'sustainable herbicide rotation' above.

[42] IAASTD International Assessment of Agricultural Knowledge, Science and Technology for Development. 2009. Agriculture as the Crossroads Synthesis Report. Island Press, Washington DC.

In the preparation of IAASTD report, principles of science were violated so hard, and the expertise and contributions of premier life scientists were dismissed so systematically during the work, that distinguished researchers were before long obliged to disengage themselves from the exercise altogether. Yet they had themselves raised their travelling and accommodation costs and changed scores of invaluable working days in top science for sitting in an "ideological" mess.

The original purpose of IAASTD-program was to transfer the knowledge and know-how of modern agricultural sciences from the developed countries to the benefit of less advanced ones in the Third World. However, the autocratic command hierarchy built in its structure was soon misused to run the common effort out of science, e.g. to the gathering of "old wives' tales" from backwoods ('inherent knowledge') as well as plain anti-science politicizing, with amply of participants from science repellent organizations.

Such gross censorship of science, turning the whole effort to fake, made also me to finally leave; though I had been nominated as one of the Global Lead Authors when joining the program.

Therefore, it did not come as a surprise that its end report, when finally published, was disclosed as a scientifically inferior stub writing suffering from "astigmatism so severe with regard to genetically modified organisms" that it comes "close to blindness".[35,34]

På grund av dessa osäkerheter

No significant uncertainties have been pointed out in scientific considerations, and certainly no true ones in the text passages above.

väljer Nordisk Miljömärkning att förbjuda användningen av råvaror som kommer från bekämpningsmedels- och insektsresistenta GM-växter. Förbudet grundar sig på försiktighetsprincipen.

As already stated above, resistant (GM) varieties have several noteworthy environmental benefits to offer. By the way of growing such resistant crops, serious and sometimes irreversible damages to environment can often be prevented or repaired. No scientific evidence exists for any real risks to occur from them – as was last concluded regarding Bt-corn by biologists in a recent European symposium – yet the conceivable environmental effects of genetically modified varieties have already been studied for decades and quite widely also in several research programs of EU and its member states. Hence, the Precautionary Principle (see above) now urges us to take such varieties immediately in use also in EU. The introduction of such varieties and products made of them shall not be any more postponed by the requirement of "complete scientific knowledge"; particularly as any biologist can tell that such "complete knowledge" can never be gathered in any life sciences even in principle – a fact apparently totally unknown within certain ideological movements.[29,B]

De GM-grödor som odlas mest i världen är soja, majs, raps och bomull[43]. GM-växter används inom jordbruket eftersom man genom att använda genteknik i växtförädlingen kan ge jordbruksväxter egenskaper som inte kan åstadkommas med hjälp av andra förädlingsmetoder

Once again a "self-made", flawed claim/definition.

De vanligaste sådana egenskaper som tillförs är att göra en växt tolerant mot ogräsmedel (herbicidtolerant)

This trait can be, and has quite often been bred in plant varieties by using other methods than genetic modification as well.

samt att göra växten mer tålig för insektsangrepp (insektsresistent). Syftet är bland annat att minska användningen av växtskyddsmedel och möjliggöra plöjningsfri odling. Genteknik används också för att ta fram grödor med bättre näringsinnehåll.

Though the better nutritional content of crops brings benefit to health in both human beings and animals, that characteristic does not as such belong within the scope of an environmental label. However, in this case the trait would nevertheless improve essentially the eco-efficiency of the varieties in question, and accordingly the use of such special varieties should be rewarded or demanded in the label.

Andra områden där genteknik utnyttjas med hjälp av genetiskt modifierade mikroorganismer (GMM) är vid framställningen av exempelvis vitaminer, aminosyror och enzymer som sedan används i livsmedelsindustrin.

Både EU och Norge har bedömts ha den starkaste lagstiftningen på GMO[44]. Det finns några

Not 'some' but 'hundreds' of varieties

växtsorter som är godkända för användning inom livsmedelsproduktion i EU, till exempel soja, majs, raps och sockerbeta

Hereby the consult messes up the very basics of agronomy and biology: he does not know the difference between 'växtart' (plant species) and 'växtsort' (plant variety). In the sentence above he only lists crop species, whereas there are already almost half thousand GM-plant varieties accepted for cultivation in corn alone in EU. There are not very many crop species in use in EU. Though, from each crop species the breeders have developed thousands of varieties for cultivation; in total there occur hundreds of thousands of plant varieties worldwide.

Totalt finns knappt hundra produkter som innehåller ingredienser från godkända genetiskt modifierade växter i EU. EUs lagstiftning för GMO-produkter kräver t.ex. att Europeiska livsmedelssäkerhetsmyndigheten, Efsa, gör en riskbedömning där det bedöms om en GMO-produkt är lika säker att äta som den konventionella motsvarigheten. På liknande sätt bedöms vilka negativa konsekvenser odling av en specifik GM-gröda kan ha på miljön[45].

EFSA is our official and scientifically highly competent safety agency in the issues dealing with food and its production in EU. For its studies, EFSA can even utilize own network of ten thousand high-grade researchers from Europe and elsewhere. Hence, it might have been more wise for Swan label to utilize the competent and concise studies of EFSA, instead of paying for a[n ideologically "suitable"?] consult that does apparently not even know the basic concepts in the core area of his report.

I EU finns några genetiskt modifierade växtsorter som är godkända för användning inom livsmedelsproduktion, till exempel soja, majs, raps och sockerbeta.

This mess is a plain repetition from above; cf. the comments above.

I Europa odlas genetiskt modifierade majs i Frankrike, Polen, Portugal, Rumänien, Slovakien, Spanien, Tjeckien och Tyskland. Sammanlagt finns knappt hundra produkter som innehåller ingredienser från godkända genetiskt modifierade växter i EU.[46]

Because such applications are in many cases beneficial for the environment, as concluded in research studies, their use in bread production should preferably be rewarded by plus points in Swan label.

EU-lagstiftningen ställer även strikta krav på märkning av genmodifierade organismer, GMO. Alla produkter som består av, innehåller eller har framställts av GMO ska märkas. På en produkt kan det till exempel stå "framställd av genetiskt modifierad soja". Även livsmedel som är framställda av GMO men som genom olika processer inte längre inne-håller något DNA från en GMO ska märkas, till exempel tomatpuré, majsstärkelse och rapsolja. Däremot behöver inte tillsatser som enzymer, aminosyror och vitaminer märkas när de framställts i slutet system med hjälp av GMM och där den specifika tillsatsen har renats och inte innehåller några mikroorganismer i slutprodukten[47] [48]. Observera att Nordisk Miljömärkning inte förbjuder dessa ingredienser.

[43] ***http://www.gmo-compass.org/eng/agri_biotechnology/gmo_planting/144.gmo_cultivation_area_crop.html (2012-05-08)***

[44] ***Catacora-Vargas, 2011. Genetically Modified Organism – A summary of Potential Adverse Effects Relevant to Sustainable Development. Biosafety Report 2011/02. Genok – Centre for Biosafety Tromsö, Norway.***

That writing has been produced for Genøk. That private foundation, though it would be pleased to be called "Institute of gen-ecology" is no public science organization but a "think tank" that is well-known in the Scientific Community to concentrate on opposing modern biotechnology and genetic science on scientifically untenable basis.

[45] ***Livsmedelsverket. 2012. http://www.slv.se/sv/grupp1/Markning-av-mat/Genmodifierad-mat-GMO/ (2012-05-07)***

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