



## Book Reviews

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Ivica Kelam

### Genetički modificirani usjevi kao bioetički problem

### [Genetically Modified Crops as Bioethical Problem]

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This book was published by Pergamena publishing house, Evangelical Theological Seminary, and Centre for Integrative Bioethics, Faculty of Humanities and Social Sciences of the University of Zagreb as part of a research programme of the Centre of Excellence for Integrative Bioethics, which is hosted at Faculty of Humanities and Social Sciences of the University of Zagreb. The book is 496 pages long and is divided into four parts, with additional supplementary materials. Each of the parts is divided into five or more titles and subtitles. First part is, in a sense, an extended introduction, while the second and third parts are discussing GM crops on a global scale, and in Croatia. The fourth part is written as a discussion on how to proceed with agriculture in the future. At the end of the book, there is a two pages long conclusion on the subject, extensive bibliography, summary, name index, and a note about the author.

Problems surrounding GMO are not only relevant for scientific research but for the society as a whole, and the planet itself, as GMOs can be a potential threat to biodiversity. Since GM technology can be considered to be an invasive method of manipulating the content of DNA in an organism, there are a lot of controversies surrounding it, and possible consequences make it a very complex topic. In this book Ivica Kelam is approaching the topic of GM crops pluriperspectively (taking multiple perspectives in account) which is a method proposed by integrative bioethics. Covering this complex topic from many different perspectives helps us to gain a more complete

picture of the problems surrounding it, and Kelam is doing it by taking into account research and conclusions made in the fields of biology, chemistry, philosophy, sociology, economy, politics, and law. The sheer volume and complexity of the topic is reflected in the volume of appendix and literature, which is over 100 pages long.

One of the key elements that makes GM controversial is money. There are two sides to the money problem, one is the beneficial side that the companies promote: feeding the poor, ending world hunger, coping with climate change, etc., and the other not so beneficial: patent rights, law suits against farmers, and possibly modern slavery that is more and more present in neoliberal capitalism. From this comes the main hypothesis of the book, that the GM crops are designed first and foremost as a highly technological means of power and control in which the agriculture fits the techno-scientific, capitalistic worldview which is devoid of any other value but the profit.

In the first chapter the author explores the history and development of agricultural biotechnology, and ethical aspects of GMOs. He introduces the term “central dogma of genetic engineering” in which all the organism can be reduced to basic building blocks which are chemically and structurally equivalent, and thus substitutable. He notices the clever rouse that Monsanto uses in promoting biotechnology: that GM technology is just a continuation of thousands of years of selective cultivation of crops, which is not true because the main difference is that with GM technology it is possible to insert DNA material from across different kingdoms and species, which has never been naturally possible. First chapter continues with the history and the beginnings of GM technology, with controversies in the USA concerning the safety of GMOs. One of the greatest controversies is the substantial equivalence, by which the companies are basically circumventing the obligatory testing of GM food by making it equivalent to regularly grown food. In the second part of first chapter, Kelam discusses the ethical aspects of GM crops. He gives

examples for the fact that all the risks are put entirely on the consumer part, and most of the profits go to the corporations, and not to farmers themselves. This part focuses on uncovering common misadvertisement that the corporations are making in order to win the public regarding the GMOs use. Different studies are mentioned and analysed, including the “Farm Scale Evaluations” financed by the government of Great Britain, discussed in the context of potential impacts of GMOs on the environment, the threat to biodiversity, and the myth that GM crops are beneficial for the environment. As a biologist, I was also pleasantly surprised when all the terms and functions of biodiversity and ecosystems where presented, because I think it is an important part in understanding the problem of GMOs. The book goes on to present all types of GM crops and their problems, including the transfer of genes to wild type crops, which is one of the biggest problems and threats to biodiversity. At the end of the third part of the first chapter, the influence on the society is presented with numerous evidence of lobbying in the USA, Great Britain, EU, and other international bodies with quite a few controversies tapped. The saddest proof against the GMO’s use comes at the end of the chapter, with the presentation of suicides of Indian farmers due to high investment costs, and catastrophically low yields of GM crops because of the droughts in India. The last parts of the first chapter deals with the patent rights regarding GMO, and with the controversy regarding the fact that GMO patent rights cannot be exhausted while the GM companies do not forego their patent rights when they sell the seeds to farmers. The other part deals with two different opinions to labelling GMO, and the problems that arise from avoiding labelling. The companies do not want the products to be labelled because it increases the costs, and in a way indicates that something could be wrong with GM products. As a result of the conflict, today it is very hard to even prove if GM products are harmful because even though they are present in the USA for over 30 years, they are not labelled, and thus no research about long-term human exposure to GM products can be conducted. Meanwhile, corporations are trying very hard to ban GM labelling in EU by lobbying, and are in this way endangering the European precautionary principle which is the main positive difference between the US and Europe. At the end of the first chapter, Kelam very nicely presents how different trade agreements, international organization, and documents concerning GMO negatively impacted Mexican farmers, and other poor or undeveloped countries.

Second chapter, titled “GM crops as a global problem”, starts with describing the historical context of the liberation of international trade, and the creation and development of WTO. Biggest criticism towards WTO is related to the fact that it is not democratically elected, answers to no one, is above jurisdiction of its members, acts in secret, and undemocratically (p. 145). The author here goes more in depth regarding how NAFTA agreement destroyed Mexican farmers, and how TRIPS agreement is used as the means of global corporation dominance. It is discussed how corporations are trying to patent life, and the devastating implications of it. In continuation, the World Bank and IMF are heavily criticised as one of the culprits for the malnutrition of people in Africa. USAID is also exposed for its controversies related to GM crops, in which they supposedly helped soothe the symptoms of hunger but at the same time managed export of the great amounts of GM food from American corporations, in turn gaining huge profits. In the end of the first part of this chapter *Codex Alimentarius* is presented and discussed, and – to my great surprise – demystified. While there were some polemics concerning GMO in the end satisfactory, but not great, compromise was made in which now the member states have a legal background to enforce GMO labelling.

In the second part of the second chapter, Kelam continues with providing examples about how corporations producing GM seeds are negatively impacting farmers. For example, if the farmer wants to return to conventional farming, there are a lot of legal complications that the companies impose on the farmer, including checking their fields for next 3 years if the old GM plant is not growing as a weed. If the plant presence is detected, the farmer is faced with numeral lawsuits even though the actual responsibility for the seeds rests with companies. Here we can see how GM seeds can become weeds, and in a sense biological pollutants, which presents a serious problem for the environment. In continuation, several examples of lawsuits are presented, in which Monsanto is suing farmers for having contaminated fields or seed stocks while in fact the problem was that Monsanto cannot contain their GM seeds. This is another evidence to how GM technology is unpredictable, and how it can cause more harm than benefit, especially when companies like Monsanto are unscrupulous, and will try to make profit on any grounds they can. Furthermore, Kelam continues to present cases in which researcher are attacked and heavily criticized for conducting research, and proving bad effects of GM crops. The biggest problem is that, when

you read the allegations and accusations of critics to the study, you can see that they are trying to circumvent or detract the findings in a study, but they cannot disprove them entirely. This signifies who is right. The author very precisely notices the possible causes for these happenings, and backs them with ample of evidence and references. Kelam also provided evidence to how the companies are actively trying to deter any research concerning the safety of GMO. This part ends with a picture of how corporations are organising and funding demonstrations for GMO, and lobbying in the street.

Third part of the second chapter begins with a discussion on “Green revolution”, a term and movement that was made in the middle of the 20th century, as an introduction to the effect of globalization and modern economy on the agriculture of undeveloped countries, and consequently problems with the use of GM crops in undeveloped countries. The impact of GM crops on social, economic, and cultural aspects of society are discussed and three important terms regarding GM crops are introduced: “Social responsibility”, “Intergenerational responsibility” and “Reduction of long-term costs”. It ends with examples on how GM soy is destroying small local economies and encouraging industrial scale husbandry of chickens and pigs – a big source of pollution since all the pollutants are heavily concentrated in one location, and all the water sources are too polluted to be used in any way (small scale farms use nutrient cycling where much less manure ends up in the water, it seeps into underground water reservoir which can then still be used for extraction of drinkable water).

In the fourth part of the second chapter, the author addresses the unrealistic promises that GM crops will increase crop yields, decrease use of pesticides and herbicides, and addresses moral blackmails such as the one about feeding the world. He focused on the problem of GM crops in Africa, and exposes the duplicity of USAID which refused to send food to countries that didn't want GMO food. He also presented the so called miracle “Golden rice” which was supposed to solve vitamin A deficiency in poor countries. He exposes the hoax with the information that a person would need to eat 2,272 kg of rice per day. This is another example where biotechnology is missing its own purpose. It is not the problem that rice does not have vitamin A, the problem is that people are poor and do not have access to other more nutritional crops. The same is with world hunger. This part ends with examining a ridiculous idea about growing pharmaceutical crops which can contaminate the environ-

ment and food not only genetically but pharmaceutically, so that people could be taking drugs that they do not need. In my opinion the biggest consequence could be the even more growing increase of bacterial resistance to antibiotics, since antibiotics could be grown out in the open where they could interact with bacteria which could evolve resistance to them. The final argument of a failed promise is crops that are drought resistant. The crops are only 6% more resistant to drought than conventional crops, and in the years since the crop was made conventional crops have naturally increased their drought resistance by 1% per year, which makes this GM crop useless in comparison to conventional crops.

In the next part of the second chapter the author presented the effects of GM crops usage in Argentina. On the example of Argentina we can see how the promises of corporations do not have any basis in evidence. The author states that the surface of roundup ready soy has increased four times while at the same time the use of glyphosate has increased fourteen times, which disproves the claim that GM crops will reduce the use of herbicides. What they did influence was the growth of superweeds to which the companies proposed the use of even more toxic herbicides. The indirect costs of GM soy cultivation are even higher than the toxic cost. It is estimated that costs from the irretrievable loss of nutrients in the soil (since GM crops are cultivated using only artificial fertilizers which are washed from the ground) is more than a billion dollars per year. The deforestation has caused many people to lose their jobs, and the natives in the forests to lose their home which is a serious social problem in Argentina. The intensive cultivation of GM soy has caused more than 250,000 families to move to the cities. The consequence is a decreased production of all other food categories. and the increase of overall poverty in Argentina. Last and maybe greatest lie the corporation have claimed regarding the use of glyphosate is their biodegradability and low toxicity. The author presents a series of facts that cannot be opposed. Since the introduction of GM soy and glyphosate the malformations in newborn children dramatically increased and different diseases including diarrhoea, pneumonia and flu have also increased. Overall the example of Argentina is a very good proof of what happens in different aspects of nature and human life when you introduce GM crops in a way they are currently used with a heavy herbicide usage.

Third chapter of this book addresses the GM crops usage in Croatia. It starts with introducing the “Cres appeal”, the first official act

of resistance to GM products, written by scientists. The author discusses what the importance of this appeal was and how it later helped get Croatia to the point where it is now. Appeal pointed out to the lack of any ethical and legal regulation of GMOs, and demanded that Bioethical Committee should be formed to address this issue.

Second part of third chapter discussed the development and process of regulation of GM crops in Croatia. It started with the founding of Bioethical Committee and its role. Overall the members of the Committee are divided in opinion, and most of the members are pro-GMO while the most avid criticizers were Ante Čović and Marijan Jošt. Jošt was excluded from the committee after the first session without any explanation until the fourth session when he was reinstated. Here we can see how through political pressure people are being pushed aside because they were not fitting the predefined framework of conclusion. Čović managed to stay in the committee, and through his avid and credible critique he managed to persuade other members to accept the arguments he was stating against uncontrolled GMO.

Third part dealt with the “Lošinj declaration of biotic sovereignty” which was made as a part of an international scientific-cultural manifestation “Lošinjjski dani bioetike”. It describes the current state in Croatia and introduces a term “biotic sovereignty”, meaning that the preservation of autochthone environment is a supreme and invulnerable principle of self-sustainment of a living community. It criticizes the introduction of GMOs as one of the allochthone species in an environment for the reasons of unpredictable consequences, irreparable effects and possible catastrophic consequences. This declaration very intelligently recognises not only ethical and political problems of GMOs, but makes key arguments from a biological point of view, which in my opinion are the strongest arguments because of the magnitude of impact they have on human life and life on earth. Afterwards, in 2009, as part of the same manifestation, “Lošinj Statement – for Croatia without GMO” is made in which the makers are demanding the making of different legislations and political decisions towards a Croatia free of GMOs.

Fourth part of third chapter discusses the legislation of GMOs in Croatia. Different versions of Law on GMOs are presented and discussed with special commentaries to the statements of different politicians. Here we can see how some politicians are (seemingly on purpose) stating half truths about GMOs in order to sway the argument in their favour,

which author cunningly exposed in his commentaries. In the last two parts of this chapter the role of the USA and Croatian media in the GMO debate are discussed. Thanks to Global agricultural information network’s reports on Croatia, and WikiLeaks publication of classified USA diplomatic reports, the author presents and discusses the pressure that the USA and the media made concerning the approval of GMO in Croatia.

In the final part of this book, the author turns to the future in an attempt to solve the problem of GM crops. In the first chapter the author presents the works of Aldo Leopold and Hans Jonas concerning the ethics of Earth and ethics of responsibility. He discusses the field of Integrative bioethics, and the development of new planetary sensibility. The term bioethics is defined in short, and the ideas of integrative bioethics are presented from different philosophers such as Ante Čović, Hrvoje Jurić, and Ivan Cifrić. Here the author discusses a new type of science and knowledge, the one that will tell us if some usage of knowledge is justifiable i.e. should an application of knowledge be permitted or not, which brings us back to the term precautionary principle which is already implemented in the European law. Author discusses the terms ontic and phylonic responsibility. He quotes Čović who explains the difference between the two, and states that with the introduction of phylonic responsibility Kant’s categorical imperative expands, covering the whole biotic community. He states that phylonic responsibility builds upon Leopold’s ethic of earth and Johan’s responsibility ethics.

In the next short chapter sustainable development is discussed, and how the current use of GM agriculture is not sustainable. Last chapter discussed what ecological agriculture is, what its goals are, and can it feed the world. One of the main differences between it and conventional or GM agriculture is nutrient cycle. In ecological farming there is little need for outer input of nutrients because all the nutrients are cycling inside the farm. Manure feeds the plants, plant residue feeds the animals, and the use of herbicides or pesticides are not needed through the clever use of crop rotation, companion plants, weeding, and other methods for natural pest control. Ecological agriculture recognises that the soil is an ecosystem, and not just a medium that holds plants, and is pumped with water and nutrients. The author analyses the ethical, economical, and sociocultural dimensions of ecological agriculture, and presents that not only does this type of agriculture create jobs but it also creates more profit since it minimizes expenses, which also includes

expenses calculated from pollution and water consumption. At the end the author presents a research of three scenarios that Croatia can adopt regarding different percent of ecological agriculture implementation, and the consequences of that regarding food production, job creation, and profits.

The book ends with the author's hope that the sugar-coated terms with which the corporations are trying to introduce the GM crops will be recognised as lies, and that people will turn to ecological agriculture which will enable affordable and healthy food while conserving the environment.

In conclusion I would like to recommend this book to anyone since it is easy to read and demands little to no previous knowledge concerning this theme. It is a well written synthesis on the theme of GMOs, it touches upon all the scientific fields concerning the problems of GMO, and offers a vast and comprehensive source of information on GMO. For anyone interested in GMO ethics, this book is a must read as an elementary introduction into the GMO problematic. From here the reader can see and choose which aspects of the GMO problem is most interesting and delve deeper into its theories and arguments, and I would also recommend it for translation to other languages.

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## Erkenntnisgestalten und Handlungsanweisungen

Abhandlungen zur Erkenntnislehre und praktischen Philosophie

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Der Band vereinigt in den letzten Jahren bereits erschienene Arbeiten mit einer bislang unveröffentlichten längeren Abhandlung. Der Autor steht der Schule des kritischen Rationalismus jedenfalls nahe, und dementsprechend stehen Autoren wie K. R. Popper, H. Albert und A. Musgrave bzw. Kritiker von maß-

geblichen Thesen dieser Richtung wie K.-O. Apel im Zentrum des Interesses, aber auch eher außerhalb des üblichen Diskussionszusammenhangs dieser Schule stehende Denker wie O. Neurath, J. Habermas, J. S. Mill oder W. Dilthey werden berücksichtigt. Die thematische Bandbreite reicht von grundsätzlichen erkenntnistheoretischen Fragestellungen über Methodenprobleme hin zu ethischen, religions- und sozialphilosophischen Themen und bietet damit einen ausgezeichneten Überblick über die Arbeitsgebiete des an der Universität von Montenegro lehrenden Philosophen.

Dass sich der Autor dem kritischen Rationalismus verpflichtet fühlt, besagt keineswegs, dass dessen wichtigste Repräsentanten bedingungslos verteidigt werden. Ganz im Gegenteil, die Kritik an wichtigen Thesen insbesondere des Schulgründers Popper ist der Ausgangspunkt mehrerer Texte. Der Tenor dieser wiederholt geübten Kritik ist, dass Popper immer wieder zu abstrakt und damit zu vereinfachend vorgeht, wichtige Unterscheidungen vernachlässigt und damit zu Einseitigkeiten neigt, die es auszugleichen gilt (damit nimmt Jakovljević Motive der bereits in den 1930er Jahren geäußerten Popper-Kritik von Neurath auf). Auch philosophische Thesen müssen sich in gewissem Sinn an der bunten und vielgestaltigen Wirklichkeit beweisen, und diesen Test besteht Popper, dessen Argumente nicht selten als (sei es absichtlich oder unabsichtlich gemachte) rhetorische Manöver entlarvt werden, oftmals nicht. An die Stelle einer „Verteidigung der reinen Lehre“ tritt damit – bei Festhalten an den grundlegenden Intentionen – die Reformulierung grundlegender Standpunkte bzw. deren Binnenkritik.

Ersteres betrifft den Fallibilismus, womit wir beim ersten und längsten Text des Sammelbandes wären, dem bislang unveröffentlichten Aufsatz „Fehlbarkeit des Fallibilismus“. Die These eines durchgängigen Fallibilismus gehört neben derjenigen des methodischen Rationalismus (alle Problemlösungsversuche sind kritischer Prüfung ausgesetzt, eine rationale Entscheidung zwischen verschiedenen Versuchen ist möglich) und der des kritischen Realismus (Erkenntnis bezieht sich auf eine subjektunabhängige Außenwelt samt Festhalten am klassischen Wahrheitsbegriff) zu den Kernbestandteilen des kritischen Rationalismus. Wie bei jeder These, die in irgendeiner Form eine Erkenntnisbeschränkung ausspricht, stellt sich auch beim Fallibilismus die Frage, ob diese These überhaupt ohne Selbstwiderspruch behauptet werden kann. Insbesondere K.-O. Apel hat schon vor einiger Zeit den Vorwurf erhoben, die These des Fallibilismus („Alle Erkenntnis ist fehlerhaft“) führe bei Selbstanwendung, also bei der