

Valerije Vrček*

Status of Transgenic Crops in the Encyclical „Laudato si”¹

ABSTRACT

Transgenic crops are introduced by Pope Francis in the encyclical „Laudato si”. It is the first document originating from Catholic teaching in which genetically modified (GM) crops are explicitly considered. Biodiversity is the main framework in which genetically engineered plants are contemplated. In addition to ecological concerns, the three different aspects have been presented: socioeconomic, scientific, and moral/theological. The interdisciplinary and multiperspective approach has been advocated in order to tackle the controversy of GM crops.

Keywords: integral ecology, precautionary principle, GMO, Catholic doctrine, bioethics.

Introduction

The loss of biodiversity, along with the climate change, is the main cause for Pope Francis to be concerned with the integrity of the earth.¹ Biological diversity, as presenting the interplay of all creatures and the whole of reality, is the leitmotif of the encyclical „Laudato si”. It is the framework in which transgenic crops are introduced and discussed. This is expected because genetically modified plants have been designed specifically to reduce the biodiversity.² It comes out that the control and retardation of the genotype is the antithesis of biodiversity.

In the encyclical „Laudato si”¹ genetically manipulated plants have not been blamed as “seeds of deception”. However, they are not declared as a panacea or the final

* Correspondence address: Valerije Vrček, Faculty of Pharmacy and Biochemistry, University of Zagreb, A. Kovačića 1, 10000 Zagreb, Croatia / Center of Research Excellence for Integrative Bioethics, Faculty of Humanities and Social Sciences, University of Zagreb, Ivana Lučića 3, 10000 Zagreb, Croatia. Email: vvrcek@pharma.hr.

1 Pope Francis, Encyclical Letter „Laudato si”, Rome, 2015.

2 Vrček, V., *GMO između prisile i otpora*, Pergamena, Zagreb, 2010., and references therein.

biotechnology fix for all environmental and nutritional dilemmas. It follows that Pope Francis is neither frightened nor delighted with the emergence of GMOs. The issue of transgenic crops has been considered according to the three important aspects: socioeconomic, scientific, and moral/theological. Such a multiperspective approach is an educational lesson on the need of holistic way to understand reality. This is what the author calls “integral ecology”.

Implementation of Precautionary Principle

The controversy of transgenic crops cannot be reduced to one question only – whether GMOs are harmful for human health or not. This toxicology argument would ignore all other areas and perspectives. It is clear from the encyclical text that “a broad, responsible scientific and social debate needs to take place, one capable of considering all the available information and of calling things by their name.”³ No scientific data are to be used to obstruct the dialogue; nutritionists and molecular biologists, for example, have no position to close any discussion or inhibit the rise of integrative bioethics.

Pope Francis is aware that no definite evidence of detrimental effects of GM crops exists: “Although no conclusive proof exists that GM cereals may be harmful to human beings,... there remain a number of significant difficulties which should not be underestimated.”⁴ Therefore, the lack of scientific proof “shall not be used as a pretext for postponing cost-effective measures”. Here, the author fully supports the implementation of precautionary principle as defined in the Rio Declaration on the Environment and Development: „If objective information suggests that serious and irreversible damage may result, a project should be halted or modified, even in the absence of indisputable proof.”⁵ This has been elaborated more comprehensively in reports by Gardiner⁶ and Spina.⁷

In many cases, therefore, no permission for planting of GM seeds can be granted, unless the precautionary measures are considered. The positive attitude towards precaution as a regulatory tool is in line with earlier position of the Catholic Church on the precautionary principle. In the Compendium of the Social Doctrine, the precaution has been recommended as a preventive measure in the decision-making process:

3 Ibid., p. 100.

4 Ibid., p. 99.

5 Rio Declaration on Environment and Development, UN Publication, Rio de Janeiro. 1992.

6 Gardiner, S. M., „A Core Precautionary Principle“, *Journal of Political Philosophy*, (14/2006); 33-60.

7 Spina, A., “Reflections on Science, Technology and Risk Regulation in Pope Francis’ Encyclical Letter *Laudato si’*” *European Journal of Risk Regulation*, (6/2015); 579.

„The authorities called to make decisions concerning health and environmental risks sometimes find themselves facing a situation in which available scientific data are contradictory or quantitatively scarce. It may then be appropriate to base evaluations on the precautionary principle.“⁸ Not surprisingly, in the encyclical „Laudato si“ this principle has been reinforced and applied explicitly to transgenic crops.

Socioeconomic status

Socioeconomic consequences related to the planting of genetically modified seeds are discussed in the item 134 of the chapter entitled “New biological technologies“. Pope Francis is familiar with economic effect of introducing GM crops in South America: „In many places, following the introduction of these crops, productive land is concentrated in the hands of a few owners due to the progressive disappearance of small producers, who, as a consequence of the loss of the exploited lands, are obliged to withdraw from direct production“.⁹ The author refers to the document „Una tierra para todos“ („One earth for all“)¹⁰ of the Episcopal Commission for Pastoral Concerns in Argentina, which he himself signed in 2005.

According to Pope Francis the interference of GM crops with the local community induces different cumulative effects: „The most vulnerable of these become temporary laborers, and many rural workers end up moving to poverty-stricken urban areas. The expansion of these crops has the effect of destroying the complex network of ecosystems, diminishing the diversity of production and affecting regional economies“.¹¹

An expansion of oligopolies for the production of GM cereals and other products needed for their cultivation occurs in number of countries. This dependency would be aggravated if the production of infertile seeds were to be considered; the effect would be to force farmers to purchase them from larger producers. The final outcome of the second „green revolution“ in South America is the monopoly on the market and „drop in crop“ on the fields. It is known that the number of crop species is reduced and converges to the two categories only - corn and soy. The same problem appears in Northern America, where nutrition and food safety are increasingly dependent on the two crops, which puts biodiversity and food supply at risk.¹² Negative impact

8 Pontifical Council for Justice and Peace, Compendium of the Social Doctrine of the Church, Rome, 2005., No. 469.

9 Pope Francis, „Laudato si“, p. 100.

10 Conferencia Episcopal Argentina, Una tierra para todos, Buenos Aires, 2005.

11 Pope Francis, „Laudato si“, p. 100.

12 Aguilar, J., Gramig, G. G., Hendrickson, J. R., Archer, D. W., Focella, F., Liebig, M. A. „Crop Species Diversity Changes in the United States: 1978-2012“, *PLoS ONE* (10/2015); e0136580.

of increasingly homogenous cropping systems is in part due to introduction of transgenic crops and heavy use of the related herbicides, mainly glyphosate.

In conclusion, one has to realize that a true ecological approach always becomes a social approach; it must integrate questions of justice in debates on the environment, so as to hear both “the cry of the earth and the cry of the poor”.¹³

Scientific status

Genetically modified organisms are the controversial issue in the field of medicine, biotechnology, or ecology, and involve both scientific uncertainty and expert conflicts.¹⁴ The structure of scientific disputes on the GMO safety is shortly presented in the encyclical. According to the author, these debates are frequently contaminated by financial or ideological interest: “It sometimes happens that complete information is not put on the table; a selection is made on the basis of particular interests, be they politico-economic or ideological.”¹⁵ This makes it difficult to reach a balanced and prudent judgement on different questions about transgenic crops.

As mentioned earlier, the author takes a strong position that no evidence for toxicity of GM crops exists. This argument is highly explicit for a document which represents a Catholic doctrine, yet it is subject to scientific criticism. However, the lack of evidence is not to close discussions, as new data have been accumulated, some with „early warnings“. This is why the author calls for precaution (see above): „Certainly, these issues require constant attention and a concern for their ethical implications.“¹⁶ In conclusion, Pope Francis asks for financially independent and interdisciplinary research which can shed a new light on the problem.

In the first chapter „What is happening to our common home“ the chemical pollution is detected as a critical environmental problem. Of special importance are chemicals directly connected to industrialized agriculture, and most of them are explicitly listed: „There is also pollution that affects everyone, caused by... substances which contribute to the acidification of soil and water, fertilizers, insecticides, fungicides, herbicides and agrottoxins in general“.¹⁷ It is interesting to note that a particular attention is paid to the strong dependency between planting GM crops and using herbicide glyphosate. The author is well informed about fundamental properties of

13 Pope Francis, „Laudato si“, p. 35.

14 Carolan, M. S. „The Multidimensionality of environmental problems: The GMO controversy and the limits of scientific materialism“, *Environmental Values* (17/2008); 67-82.

15 Ibid., p. 100.

16 Ibid., p. 100.

17 Ibid., p. 16.

GM-crops which are genetically designed to resist the action of this herbicide. In addition, Pope Francis is familiar with the medical cost paid by farmers in South America, which heavily use glyphosate to treat GM-crops fields in Amazon basin: „Discussions are needed in which all those directly or indirectly affected (farmers, seed producers, people living near fumigated fields, and others) can make known their problems and concerns, and have access to adequate and reliable information in order to make decisions for the common good, present and future“.¹⁸

Clearly presented, in this encyclical, is that the environmental fate of Amazon rainforest is not an issue for science only but should be extended to the political and ethical realm. This is because the Amazon area is a very location where Indian massacre, land grabbing, and biodiversity loss are linked together. This concept is taken from Leonardo Boff, Brazilian theologian and philosopher, who coined terms “cry of the earth” and “cry of the poor” in his book „Grido della terra, grido dei poveri“.¹⁹ This is indeed another keynote used throughout the encyclical.

Moral/theological status

In agreement with teaching of John Paul II, Pope Francis is insisting on desacralization of nature. According to the encyclical, it is not a heresy to modify some parts of genome in plants: “Judeo-Christian thought demythologized nature. While continuing to admire its grandeur and immensity, it no longer saw nature as divine“.²⁰ It is in line with the conclusion from the chapter „The use of biotechnology“ in the Compendium of the Social Doctrine: „Nature is not a sacred or divine reality that man must leave alone. For this reason the human person does not commit an illicit act when... he intervenes by modifying some of their characteristics or properties.“²¹

In addition, Pope Francis reminds that genetic mutations have often been caused by nature itself, and that mutations induced by human intervention (e.g. domestication of animals, crossbreeding of species) are not “modern phenomenon”. He makes a positive judgment on the acceptability of human intervention in nature, which also includes genetic modifications of plants.

However, at the same time the author makes a strong appeal for responsibility: “Contemporary man has not been trained to use power well, because our immense

18 Ibid., p. 101.

19 Boff, L. „Cry of the Earth, Cry of the Poor“, Orbis Books, Maryknoll, New York, 1997.

20 Pope Francis, „Laudato si“, p. 57.

21 Pontifical Council for Justice and Peace, Compendium of the Social Doctrine of the Church, Rome, 2005., No. 473.

technological development has not been accompanied by a development in human responsibility, values and conscience“.²²

Similar warnings come from John Paul II, who noted that “we cannot interfere in one area of the ecosystem without paying due attention to the consequences of such interference in other areas”.²³ Next, he also pointed that genetic applications in agriculture should not lead to „indiscriminate genetic manipulations“ which ignore negative effects of such interventions. In the encyclical „Sollicitudo rei socialis“ another warning has been given: „One cannot use with impunity the different categories of beings, whether living or inanimate - animals, plants, the natural elements - simply as one wishes, according to one’s own economic needs.“²⁴ All these alerts have been reiterated, by Pope Francis in the encyclical „Laudato si“.

In short, the author shows clearly enough that, when it comes to the natural world, plants in specific, people are subject not only to biological laws but also to moral ones, and these cannot be violated without penalty.

Conclusion

Three different elements have been considered to discuss the problem of transgenic plants, as presented in the encyclical „Laudato si“”. The scientific, socioeconomic, and moral status of genetically modified crops have been selected to show that a single issue, such as GM crops, should be contemplated interdisciplinary. This approach could help to reach the social, political and/or scientific consensus. The multidisciplinary is the fundamental request in the environmental ethics, especially in fields of food, agriculture, and health. This is exactly in line with an integral ecology, as introduced in the encyclical, which calls for openness to categories that transcend the language of natural sciences: “... a new, integral and interdisciplinary approach to handling the different aspects of the crisis is needed.”²⁵ A comprehensive overview of an integrity emanating from the encyclical has been provided recently,²⁶ where an integral ecology is marked by this broader vision. Reflections on the transgenic plants in the encyclical, reported herein, serve as an example of an inclusive approach which Pope Francis refers to as an integral ecology.

22 Pope Francis, „Laudato si“, p. 78.

23 John Paul II, Message for the 1990 World Day of Peace, Acta Apostolicae Sedis 82, 1990, 150-151.

24 John Paul II, Encyclical Sollicitudo rei socialis, Rome 1987, 34.

25 Pope Francis, „Laudato si“, p. 144.

26 O’Neill, E., „The Pope and the environment: Towards an integral ecology?“, *Environmental Politics*, (25/2016); 749-754.

Status transgeničnih usjeva u enciklici „Laudato si“

SAŽETAK

Papa Franjo prikazao je u enciklici „Laudato si“, uz ostalo, problematiku transgeničnih usjeva. To je prvi dokument katoličke doktrine u kojem se genetički modificirani (GM) usjevi vrlo izravno razmatraju. Bioraznolikost je temeljni okvir unutar kojeg se promišlja genetički inženjering biljaka. Uz ekološke teme isprepliću se tri različita aspekta: socioekonomski, znanstveni i moralno-teološki. Time se snažno zagovara interdisciplinarni i multiperspektivni pristup u rješavanju kontroverzi oko GM usjeva.

Ključne riječi: integralna ekologija, načelo opreznosti, GMO, katolička doktrina, bioetika.