AGRICULTURAL HIGHER EDUCATION IN THE DEVELOPMENT OF A BIOCENTRIC SOCIETY

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My background as an agronomist at the University of Horticulture and Food Industry in Budapest explains my interest in Biopolitics and in biocentric viewpoints of society. I have taken my task very pragmatically and have worked in a practical way for my short contribution, which touches upon the beneficial effects of agriculture on the environment and on the role of agricultural higher education in the development of a biocentric society.

Agriculture is a sector of the economy which strongly links society as a whole to nature and to the environment. Agricultural production uses natural resources to a great extent, while at the same time influencing natural species and their traditional habitats and way of life. When planning agricultural activities in any particular area, the given biological possibilities and capacities of the area should always be considered very seriously, while any use of natural resources should be subject to a long-term plan. It is only in the last few decades that agriculture has become one of the polluting factors threatening the environment and the biosphere. This is due to the general, and in most cases, overestimated tendencies that introduced very intensive development methods, the so-called ''industrial methods,'' into crop growth and into animal husbandry.

In recognising the damage that has been done by the exploitation of the environment, we also tend to forget that agricultural activities do not only have a negative impact on the environment; there are considerable beneficial aspects in the relationship between agriculture and the environment too. This relationship has been steadily receiving greater attention over the past few years, and despite the harmful effects of agriculture, recent thinking has focussed on the positive side of the picture as well. While, on the one hand, agricultural activities can lead to the pollution of surface and underground water supplies, the destruction of original vegetation and the drainage of wetlands, on the other hand, sustainable farming systems can be associated with the maintenance of traditional landscapes, the preservation of natural habitats and biodiversity. They can improve water and soil management and sustain rural communities and culture. It is becoming increasingly evident that the environmental benefits of agriculture can protect biophysical and ecological values in the environment for example, unique flora and fauna by low intensity farming, and can preserve the natural landscape as well as cultural features during periods of rural development. Properly planned rural development can thus contribute to balanced regional development at a national level.

Recent studies determined that the effects of farming practices on agricultural land use and soil quality including the cultivation of marginal land, water management, air quality, diversity of animal and plant species and preservation of wildlife habitats and ecosystems, natural landscapes and rural development, can be either positive and beneficial, or negative and harmful, depending on the direction of the chosen course of change. The judgement of these effects is generally subject to, and very much dependent upon local conditions, however, the effects themselves are not always immediately evident.

Governmental agricultural policies influence public activities by changing the variables in agriculture and altering incentives through changes in output and input prices, restrictions on output and input use. Incentives and disincentives for the development and adoption of new methods and practices are, among others, the removal of the issue of interdependent resource movement, changes in agricultural infrastructure, and the provision of information and advice, training, research and development. In addition, environmental policies that affect the environment also influence farming activities by placing regulation on certain activities like chemical use or waste disposal and general farm practices, or by changing taxes on certain farm activities and influencing the climate of public opinion.

All these means and measures can be used to help in ensuring the enhancement of the positive impacts of farming on the environment and the reduction of the negative points. They can help to develop a better situation in which agriculture and the environment can survive in happy partnership, rather than being each others' enemies. This could lead to a situation where everyone might be sensitive and understanding towards bios, and from this stage, result in a healthy and sustainable respect towards nature and the environment.

Agriculture at secondary and higher education should in all instances play a part in the promotion of the rational use of natural resources and the importance of conservation. Lately, a more conscious effort has been made, especially in agricultural higher education, for education to promote an environmentally and biologically sound attitude into the curricula of all subjects, and for it to support the adoption of environmentally friendly methods in all production technologies, omitting harmful or injurious activities from everyday practices.

Nowadays, in contrast with previous years, it is much more common for people to be more aware of the solution of education. This is especially the case in agricultural institutions, but also in other universities as well. These institutions are attempting to use biology and environmental courses and to offer new teaching methods. In Hungary, agricultural universities were among the first to offer independent courses in environmental awareness to the student, the first such courses beginning as early as 1974. At the University of Horticulture and Food Industry, environmental themes have been integrated into the basic courses and disciplines in all faculties and, recently, elective courses and branches have been started up specifically to cater to environmental protection and management studies.

Conceptually, there are two main schools of thought on how to build a programme for higher education environmental training. The first, according to the opinion of one of the group of experts who rationalised it, is that environmental problems and solutions should be organically built into the different subjects of the curricula. No special courses would be required, because it would be very strange to teach technical studies and the course's environmental requirements separately, and to train on technical aspects and environmental aspects separately. The second school of thought supports that environmental problems in society and in the economy are so great that they could only be solved if we have enough specialists in environmental protection, well prepared for all problems and with solutions for all of them. Thus, specific courses should be organised for complex environmental studies at universities, to train people who are familiar with all the fields of environmental protection and who are able to eliminate difficult situations. After much negotiation and discussion, it finally became clear that both types of environmental education are important and necessary for higher education, and one may find direct and indirect environmental studies running parallel in the majority of high schools and universities throughout Hungary.

Following current trends, great efforts have been made to introduce new teaching methods and study possibilities for the students who are involved in environmental education. Interactive multimedia tools and methods are under preparation in most of the subjects to help students become better prepared. It is hoped that these will help to make them aware of their responsibilities towards, and potential actions in relation to, environmental improvement in agriculture and food processing activities. Their obligation to nature can help in the search for, and promotion of, new, environmentally sound methods in agriculture. Special short courses and distance learning methods are used, both for adult training and in the postgraduate education of those who would like to be aquatinted with special environmental questions and/or technologies

As a result, well educated, increasingly environmentally aware experts in agronomy, horticulture, forestry, animal husbandry and landscape architecture will start working on the farms and in all places of agricultural activity. I am convinced that the so-called ''Green Concept,'' where agricultural education has a determining role in the development of a more biocentric, more effective way of environmentally protecting society will succeed, because this group of highly educated experts can influence the great majority of the population living mainly in rural areas. I am also convinced that agricultural higher education can, and should be a part of biopolitics training as well, although special training and education reforms are necessary for biopolitics training.

Finally, I would like to remind you of the long overdue political changes in Central Europe that have allowed us to have a complete view of the interaction between agriculture and environment in these countries. My faculty have published a booklet, in which amongst other things, we have made some remarks about the environmental training of politicians, something which has not been covered here. Thus, apart from educating our students, our influence on policy makers is important. Thus, our task here is very relevant.

Professor Laszlo Vermes heads the Department of Soil Science and Water Management at the University of Horticulture and Food Industry in Hungary; he is also a member of the Hungarian Academy of Sciences. His main interests lie in Water Management in Agriculture, Renovation and Reuse of Wastes, and in Environmental Protection. His previous positions include Scientific Consultant and Section Head of the Institute for Technical Development at the Budapest Research Centre for Water Resources Development, Assistant Professor, Departmental Head, and Deputy Dean at the Department of Water Management and Land Reclamation, University of Agricultural Sciences, Godollo, Section Head at the Environmental Protection and Co-operation Section of the Ministry of Agriculture, Vice-Rector of the University of Horticulture and Food Industry, and Head of the Department of Agrometeorology and Water Management. Professor Vermes has also been part of several societies; he was Section Chairman of the Hungarian Society of Agricultural Sciences in 1982, and Chairman of the European Regional Work Team on Drought in 1995. He is a member of the Hungarian Hydrological Society, the Hungarian Academy of Sciences Commissions of Agricultural Water Management and of Microelements, the Society of Animal Hygienic and Environmental Protection, the Society of Biomass Utilisation, the Hungarian National Committee of FAO and of ICID WG on Environmental Impacts of Irrigation, Drainage and Flood Control Projects, of Sustainable Crops and Water Use, and of ICID European Regional WG. Professor Vermes was also Vice-Chairman of the FAO/ECE Working Party on Relations between Agriculture and the Environment from 1991 to 1994. He has published extensively, including nine books, some of which have been translated into English.