

*Bożena Baborska**

THE CONCEPT OF SUSTAINABLE DEVELOPMENT – SOME THEORETICAL AND PRACTICAL ISSUES

The author distinguishes two tendencies in literature, pertaining to the definition of sustainable agriculture and, consequently, two approaches to its conceptualization. These differences, in the author's opinion, are reflected in the social practice of implementation of sustainability in agriculture.

1. INTRODUCTION

In this paper the problems pertaining to the definition of sustainable agriculture (SA), as well as problems related to the practical implementation of changes making agriculture sustainable, are presented. The concept of SA first appeared during the work of the Bruntland Commission acting on a UN mandate in 1984–1987. The task of the commission was to determine the perspective of long term economic development, taking into account two kinds of factors either neglected or omitted by orthodox economics. The first of them pertains to the relation between economic growth and the state of the environment. The second group of factors can be determined as the social conditions of economic development. The idea of sustainable development (SD) derived from the critique of dominating development tendencies, was presented at the Conference of the UN in Rio de Janeiro in 1992 as a recommendation for governments, national and international organizations as well as individual people, to undertake efforts in order to reorientate these tendencies in the direction of sustainability. The idea of considering the environment as one of the determinants in economic growth is not new; it was being already advocated in the famous report of the Rome Club "The Limits to Growth" of 1972. It is at present termed "sustainable development" which has been commonly accepted.

The idea of SA considered in common with SD can be treated as the idea of system changes pertaining not only to the methods of agricultural production but also to mechanisms of regulation, deciding on the ways of the functioning of this

* Department of Microeconomics, Wrocław University of Economics.

sector. This idea can also be interpreted slightly differently as a postulate to seek an equilibrium in relations between agriculture, the environment and economic efficiency, particularly by agricultural producers in the framework of an existing market order. Also in such a meaning this idea is not new; for some decades it has been advocated and implemented as so-called ecological farming. This movement has at the same time stronger and stronger economic foundations thanks to the trend, arising in more affluent societies, of "healthy food". This makes possible the development of a market for products made by organic methods.

2. TWO INTERPRETATIONS OF THE NOTION OF SA

Although the notion of SA is relatively new, large popular and scientific literature was created on it. V.W. Ruttan (1994) gives a long list of references. It is yet difficult to find its unique definition, which is stressed by W. Lotskeretz (1988) as well as V. Klinkenborg (1995, p. 68), who writes "...sustainable is not yet a word with a clear-cut agricultural definition. It has been defined in many ways, but at its core lies a kind of farming that is, in a commonly used phrase, economically viable, environmentally sound and socially acceptable – a kind of farming that encourages the farmer to earn a decent living growing food on healthy land." As already mentioned this notion is applied in at least two different meanings. The first one pertains to the postulated model of agriculture and the second one to forms of farms existing or emerging besides dominating forms. In the first meaning the definition of SA must contain many elements identical to the definition of SD. This direction of defining leads to the domain of normative theory (Pearce et al. 1990; Pretty 1996). The starting point is the statement that contemporary agriculture belongs to the sectors posing particularly big environmental threats. It pertains not only to modern, commercialized agriculture but also to primitive agriculture in overpopulated areas. From this assumption, the principles which should be obliging for agriculture as for any other economic activity, are derived. The following principles belong here:

- renewable resources must be harvested below their rate of renewal,
- nonrenewable resources must be used not faster than the development of renewables can substitute for them,
- genetic diversity must be maintained,
- wastes must not be discharged into the environment at levels higher than those it can absorb or neutralize without damage,
- potentially high cost risks for environment connected with new technologies should be avoided. (cf. Ekins 1996, p. 1264–5)

At the same time, because the idea of SD and, consequently, SA pertains not only to ecological but also social conditions of development, agriculture, as well as the whole economic system, should be aiming at the realization of welfare, justice and safety, treated as "superior social goals" of long term development (Pearce et al. 1990; Fiedor 1993). Realization of the so understood idea of SA would mean the necessity for radical changes in development mechanisms. The market economy, even with far reaching state interventionism, is not directed at the simultaneous realization of the above goals (Żylicz 1989; Ekins 1996). The problems of protection of environment and safety are solved in the democratic system to such an extent and in such a way as does not threaten the foundations of the market system, in particular the economic liberty of the people aimed at attaining individual gains in production and consumption. The radicalism which can be seen in SA (when it is understood commonly with the idea of SD) should not be interpreted, of course, as a call to a general, world revolution. The world where ecological order, economic order and social order blend in harmony is a postulated, ideal state. It requires societies' willingness – and governments' ability – to move in that direction (Serageldin 1995).

The research aimed at the development of the theory of SA as a normative one does not exceed the initial identification of the problems so far. On one hand it concentrates on the classification of existing agricultural systems, ecological hazards and social problems characteristic of them. On the other hand it tends to determine the criteria of choice of techniques, technologies and organization of agricultural production and relations of agriculture with its environment, conforming with the theory of sustainability (Brookfield 1988–89; Ruttan 1994).

The normative theory of SA cannot be autonomous with respect to the theory of SD. The discussion initiated by the first proposals of such a theory seems to point out that the intellectual ferment caused by a vague, politically originated concept of SD leads to more and more questions and doubts. It is then far from a state of consent. A fairly good account of the directions in this discussion is given in an encyclopedic treatment by Ekins (1996), supplemented by a long list of references.

The second direction of the interpretation of SA means, as mentioned above, identification of this concept with the notion of so-called ecological, or alternative farming (agriculture). This kind of farming for a long time was identical to so-called organic farming. In the eighties this term was also given to another type, considered as environmentally friendly, defined as integrated farming. Ecological agriculture, especially in its older form of organic farming, has extensive literature both popular and academic, agricultural and economic (Sołtysiak et al. 1993; Ruttan 1994; Radecki et al. 1995). The large experience of organic farming makes it possible to define many regularities characteristic of these types of agricultural activity. The practical orientation of this tendency

is shown in the following characteristic of the essence of SA presented by American agricultural economists:

"Sustainable agriculture does not refer to a prescribed set of practices. Instead, it challenges producers to think about the long-term implications of practices and the broad interactions and dynamics of agricultural systems. It also invites consumers to get more involved in agriculture by learning more about and becoming active participants in their food systems. A key goal is to understand agriculture from an ecological perspective – in terms of nutrient and energy dynamics, and interactions among plants, animals, insects and other organisms in agro-ecosystems – then balance it with profit, community and consumer needs." (*Exploring ...* 1997)

The bridge between a postulated, normative theory of SA and the works of agricultural economics devoted to organic and integrated farming are the works describing and analysing the experience from the realization of programs – running from inspiration and with financial support of particular governments as well as the European Union as a whole, and also international organizations (World Bank, FAO) – aimed at the ecologization of rural areas. The dispersion of such activities, the big diversification of particular goals and also the instability of many programs to a large extent make comparative analysis difficult. There is no accord regarding the criteria of classification of the programs either or an evaluation of their efficiency. But it is exactly here where attempts to develop the principles and research procedures, which would enable to evaluate such programs from the point of view of social costs and gains, were undertaken (Whitby et al. 1996).

3. DIRECTIONS OF IMPLEMENTATION OF SA – GENERAL CHARACTERISTIC

Agriculture can be more or less environmentally friendly, but its very nature implies an intervention in the environment. This intervention must change it to some degree. The question which farming systems conform to the principles of sustainable agriculture gives rise to more theoretical and practical difficulties and doubts, than the question whether an economic development that is sensitive to the environment and social justice problems is possible (Ekins 1996 p. 1263). Similarly as in the case of sustainable development, two assumptions must be stressed. First, humans must use the environment and, to some extent, change it irreversibly, but as J. Pretty says:

"... the basic needs of humanity ... must be met. This involves paying attention to the largely unmet needs of the world's poor, as a world in which poverty is endemic will always be prone to ecological and other catastrophes" (Pretty, 1996).

Second, according to the same author:

"... the limits to development are not absolute but are imposed by the present state of technology and social organization and by their impacts on environmental resources, and on the biosphere's ability to absorb the effect of human activities" (Ibidem).

The answer to the question on the very sense of the notion of sustainable agriculture must take into account the great diversity of agricultural systems, and a still greater multitude of natural conditions in various regions of the world. Due to this richness of systems it is sensible to distinguish two opposite types of agriculture (Ruttan 1994; Pretty 1996; López 1998). The first is called "modernized" or "industrialized", or commonly "high productive". One of the characteristic features of this type is a high share of external non-agriculture input use in agricultural production. That is why this system is also defined as a high external input system. Worth mentioning in this type of agriculture are two subtypes: one is modern agriculture in industrial countries, the second are islands of modern agriculture in developing countries defined as green revolution areas.

The type opposite to the above mentioned one is determined as "traditional", "unimproved" or "low external input - low productive". Of course there is an entire spectrum of intermediate systems, but with such a simplified dichotomic model one is able to expose differences in socio-economic conditions and environmental threats between areas where modernized agriculture dominates and those with domination of traditional agriculture.

For a long time the threat to the environment posed by modern agriculture was neglected or omitted in political and scientific debates on environment protection (Whitby et al. 1994). Modernization means increased mechanization, wider use of chemicals (inorganic fertilizers, pesticides, antibiotics, hormones etc.), electric power, water and so on. It means also the specialization of agricultural production and associated with it is the scale of production of specific farms and a rapid reduction of employment in agriculture. Labour has been substituted by an increasing use of physical capital. In these conditions internal resources that were valued in traditional farms (e.g. livestock manure, straw, household organic wastes) has become waste products. What is more, with progress in modernization overproduction became the principal problem of modernized agriculture and which means, that in macroeconomic scale a part of agricultural output becomes waste.

The chronic character of agricultural overproduction is possible only if market self-regulation is permanently distorted by market price support policy. This policy is commonplace in industrial countries. To some extent the task of making the modern agriculture of developed countries more environmentally sensitive is closely tied to changes of governmental aid for the agricultural sector. Economists are not sure whether stopping

governmental intervention in the agricultural products markets can by itself bring results that are desirable from the point of view of decreasing environmental loads. There is a lot of uncertainty related to the reaction of professional farmers when confronted with free market competition.

Both in industrial and developing countries, modernization is closely bound up with the commercialization of agriculture. Even in countries where a large number of more or less unimproved farms exist, their share in the market supply becomes marginal. Due to their nature, they produce mainly for their own needs and the share of their market output is decided mainly by the viability of local markets. Modernization is a process which fundamentally changes not just the farms but also the whole surrounding market. It causes not only rapid growth of agricultural productivity but also changes its supply and sales markets. Traditional local markets become less and less important.

Up to recent times this industrial and commercial modernization of agriculture was supported by governments of industrialized countries. The gradual, more or less consistent, withdrawal of governmental financial aid to agricultural production must lead to more keen competition in agricultural markets; such is one of the goals of the reforms. Without going into details of the problems of changes in agricultural interventionism, we must state that the governments' efforts here are far from being comprehensive and consistent (March 1991; Baborska, forthcoming). It is worth pointing out above all the modification of the Common Agricultural Policy (CAP) of the European Union, called McSharry's reform, implemented in the years 1993–1996. This is treated as the first step of necessary, deep reform. Discussions on continuation of the CAP reform is a part of a wider discussion on the future of common policies in EU within the frame of Agenda 2000. A much farther reaching reform, setting the principles of the policy up to 2006, is the reform of US agricultural policy introduced by the law of 1996.

A specific case is New Zealand, where fundamental deregulation was carried out at the beginning of the eighties and to date has not been abandoned. The boldness of the deregulation in New Zealand was facilitated by the specific conditions of this country. Although it belongs to industrialized countries, its economy is still dominated by agriculture and foods and the cereals processing industry based on its own raw materials. The high competitiveness of these sectors New Zealand owes to the exceptionally favourable natural conditions for agriculture, as well as to previously implemented modernization of agriculture and rural areas, actively supported by the state (*Issues ...* 1988).

In the case of other countries, with less favourable natural conditions, the reaction of agricultural producers to a lowered level of subsidizing cannot be unequivocally foreseen. It is highly probable that without social assistance such

changes can accelerate the process of vanishing small and medium mixed farms economically too weak to withstand more keen competition. It must be noted that maintaining a part of such farms, particularly in areas less favourable from an agricultural point of view is important for environment protection and the economic viability of these territories. But as long as technologies obtain economies of scale, the process of concentration of resources and increasing specialization of production will continue in bigger farms and their industrial character is decisively contrary to the ideal of the ecologization of agriculture. This poses particular environment the threats (Whitby et al. 1996).

The already carried out modifications and discussed reforms of agricultural policies in industrialized countries as a rule establish some special programs, aimed at compensation for expected income losses of agricultural producers, due to a decrease or abolition of market price support. Often these compensation programs are joined with some obligations of their beneficiaries to extensify their production, fallow lands, etc. One of the most desirable effects of agricultural markets deregulation is the lowering rate of growth in the volume of agricultural production in industrialized countries. This creates a chance of an automatic decrease in environment degradation.

The problems of pro-ecological reorientation of agriculture did not find equal place with the traditionally central problem of agricultural policy – financial aid to farmers. This is evident e.g. in the fact that in McSharry reform of 1992 the pro-ecological instruments were classified into a group of accompanying measures. It is worth stressing that the elements of pro-ecological policy in modified agricultural policy do not create any cohesive system. It would be naïve to treat it as a reorientation of interventionism in the direction to support to sustainable agriculture.

The main goal, as can be guessed, of many pro-ecological programs in industrialized countries is still subsidizing agricultural producers by means which will to a lesser degree stimulate, the presently most important, problem of interventionism, i.e. the constant rebirth of agricultural overproduction. It is more and more frequently apparent that it is necessary to replace subsidizing agricultural production by farmers' subsidizing bound with their activity as environment stewards, stewards of the traditional rural landscape, etc. This basis for subsidizing has much broader public opinion support than maintaining traditional forms of aid for agriculture, whose effect is growing wastefulness of resources both in the form of excessive agricultural input and output.

The theoretical treatment of the concept of so-called "environment function" (a notion defined by D. Pearce and N. K. Turner, given after B. Fiedor 1993, p.74–79) is still far from the state of making it possible to determine unequivocal characteristics of actions, which would form these new

kinds of farmers' activities in the area of *environmental stewardship*. It is the domain of a trial and error search of practical solutions. The difficulty to assess the real costs and benefits of implementation of the idea of sustainability in agriculture, stimulated by government, is described by the authors of a comparative study encompassing several EU countries (Whitby et al. 1996). They pointed to the relatively low interest and lack of farmers' confidence in governmental programs offering financial bonuses for obligations to undertake or cease specific actions considered advantageous to the environment by specific governmental agendas. From the point of view of public interest, the significant disadvantages of top-down implementation of SA are on one hand very high transaction costs and on the other hand lack of adequate tools to evaluate the effectiveness of such programs.

The implementation of the idea of SA identified with ecological farming seems to evoke less theoretical doubts and can be easier evaluated from the point of view of its effectiveness. For a long time ecological agriculture had been developing as a grassroots movement totally independent from state support. Changes in this domain can be noted from the end of eighties. As an example we can quote, on one side the modifications of CAP in the EU, and on the other hand modifications in the US policy. A good example here is the activity of governmental agenda created by the United States Department of Agriculture (USDA) called the Sustainable Agriculture Research and Education (SARE). Its goal is to support actions comprising studying and spreading information about SA, information that helps to advance knowledge about sustainable practice in farming sector. Thanks to grants given by the SARE, interest in SA quickly gave rise to many initiatives such as the creation of research institutes and departments at American universities, aimed at the study and popularization of SA. Propagation of this concept was done by their state extensions, finally numerous farmers decided to introduce changes defined as sustainable improvement in agriculture (*Exploring ... 1997*).

In the practice of ecological farming, as I mentioned above, two types of farming must be distinguished. The division here has a rather formal character. Organic farms emerge due to farmers' voluntary acceptance of principles enabling self-regulation of this group of producers. Its feature is radicalism in striving to eliminate chemicals in agricultural production. The system of licensing and monitoring which was introduced by the initiators of this tendency makes it possible to protect the distinctive market of "healthy food". Higher prices for food produced in organic farms can compensate for the smaller volume of production achieved in comparable conditions using conventional methods of modern agriculture. The chances and barriers of development of ecological agriculture tendency are, from the beginning of the

transformation in Poland a topic of particular interest, because in this direction of development the chances are seen to alleviate particular problems of the agricultural sector in conditions of system change (Sołtysiak 1993; Radecki et al. 1995; Grykień 1997).

The second type – integrated farming – means a system of economic activity in agriculture based on much wider use – then in conventional modernized agriculture – farms' own resources. Unlike traditional farms, the farms of this type use modern achievements in biology, nutrition of animals as well as of humans, recycling or organization and marketing. They are characterized by the selective implementation of new technologies according to the paramount imperative of harmony with the sustainability principle. In the case of integrated agriculture the crucial factor of its economic feasibility is not the possibility of obtaining higher prices for products. As a rule these products do not meet the specific standards of the food produced by organic methods. The chances to improve or maintain production profitability after conversion from industrial systems of production tie in as a rule with the significant decrease in variable costs. If the reduction in cost exceeds the decrease of income due to the smaller volume of production, the conversion is economically positive. Empirical data is alas yet too small, to state with certainty that transition from conventional farming into integrated system causes, very probably, an improvement in the profitability of farming.

The very term, integrating agriculture, points to a characteristic for this tendency of integration of biological, physical and cultural tools with chemicals in agricultural practice (the admission of the last one differs this tendency from organic farming) in a way that minimizes economic, health and environmental risk. Also essential here is the integrated management of all resources being under farmer's control i.e. not just the ones directly usable in agriculture. Such a sense has e.g. the protection of wetlands playing a key role in filtering nutrients and pesticides. Their protection is therefore an element of an integrated agricultural practice. At the same time can wetlands provide an excellent habitat for a very diversified wildlife (*Exploring...* 1997; Radecki et al. 1995).

In conclusion it must be said that in the framework of a narrow, pragmatic treatment of SA, the agricultural systems corresponding to this type, as systems featured by smaller use of external resources and better use of farms' own resources, can be determined. It is not possible though to identify the agriculture of this type as traditional, unmodernized agriculture despite the fact that it is also featured by low use of external input. In this sense agricultural ecosystems conforming to SA requirements are similar to traditional agriculture. This similarity is apparent also in the way of use of agricultural production area, characterized by a much bigger differentiation of

agricultural production. Contrary to traditional agriculture, SA is undoubtedly a form of modernized agriculture. Its low demand for industrial factors of agricultural production does not mean a low demand for R&D products. The problem is that a choice of technology has to be made according to two criteria on a par: profitability sustainability.

In relation to the above, the discussion on the popularization of SA in Poland is worth mentioning. The significant interest among scientists and ecological agriculture activists and their support for ecological agriculture understood as organic farming is in contrast to the lack of interest or the attitude towards the idea of integrated farming. Typical here is the opinion expressed by R. Andrzejewski. Writing about ecological situations, ecosystems and physiocenoses, he states among others:

"Presently two directions of agricultural technology seem to compete in determination of the future of agriculture. They are: 1) the direction of technological intensification and particularly intensive use of: biotechnology, chemical compounds, technical equipment, land consolidation and commercialization; 2) ecological direction (or ecologization), whose essence lies in an increase of agricultural production based on the use of relatively natural processes occurring in field ecosystems, with emphasis on product quality, durability of use of field ecosystems, on ecological equilibrium and high biological diversity in agricultural physiocenosis. Proposals of integrated farming pretending to join both these directions are, from the point of view of present state of knowledge rather utopian – they require creation of artificial field ecosystem by humans, while present technology does not yet allow it" (Andrzejewski 1995, p. 103–104. Translation and emphasis of the quote – B. B.)

In the quoted fragment the characteristics of "ecological direction" of agriculture fully corresponds to the above presented concept of SA; it comprises – without clear distinction – both integrating and organic farming. The remark about the utopian character of integrated agriculture is then difficult to understand.

4. CONCLUSIONS

Presently it seems that the comprehensively treated concept of sustainable development seems to be utopian today not only because of a too low level of contemporary ecology, but also because of the radicalism of its fundamental assumptions pertaining to the social and economic order of the world. The pragmatically understood concept of SA is not utopian; thousands of farmers in developed countries and in the Third World implement it. For many reasons though it is improbable that this movement, in its both directions, causes a radical diminishing of the main tendency of development of modern agriculture.

REFERENCES

- Andrzejewski, R. (1995): *Sytuacje ekologiczne decydujące o rozwoju społeczno-gospodarczym i przekształcaniach przestrzennego zagospodarowania kraju w XXI wieku [Ecological Situations Decisive in Socio-Economic Development and Transformations in Regional Planning]*, in: Kolodziejski, J., ed.: *Koncepcja polityki przestrzennego zagospodarowania kraju, Polska 2000 plus [The Concept of Policy of Spatial Planning of the Country, Poland 2000+]*. CUP, Warszawa, vol. 1, pp. 99–110.
- Baborska, B. (1999): *Korzyści ekologiczne jako efekty zewnętrzne zmodyfikowanej polityki rolnej Unii Europejskiej i USA [Ecological Benefits as Externalities of the Modified Agricultural Policy of the EU]*, in: Becla, A., Czaja, S., Fiedor, B., eds.: *Ekonomiczne aspekty dostosowania polskiego prawa, regulacji i instytucji w ochronie środowiska do rozwiązań Unii Europejskiej [Economic Aspects of Adjusting Polish Law, Regulations and Institutions in Ecology to European Community Solutions]*, AE, Wrocław, and PIN – Instytut Śląski w Opolu, series: Biblioteka "Ekonomia i Środowisko" no. 24, pp. 89–95, conference materials.
- Brookfield, H. (1988–1989): "Sustainable Development" and the Environment (Review Article), "The Journal of Development Studies" vol. 25, pp. 126–134.
- Ekins, P. (1996): *Environmental and Resource Economics. The Search for Sustainable Development*, in: Warner, M., ed.: *International Encyclopedia of Business and Management*. Rutledge, London, vol. 2, pp. 1262–1265.
- Exploring Sustainability in Agriculture*. USDA/SARE, (1997). <http://www.sare.org/sar/htdocs/pubs/explore>
- Fiedor, B. (1993): *Koncepcja stałego rozwoju (Sustainable Development) [The Concept of Sustainable Development]*, in: *Środowiskowe bariery rozwoju gospodarczego w Polsce [Environmental Barriers of Poland's Economic Development]*, Europejskie Stowarzyszenie Ekonomistów Środowiska Zasobów Naturalnych, Jarmoltówek 28–30 May, series: Biblioteka "Ekonomia i Środowisko" no. 9, conference materials
- Grykiel, S. (1997): *Rozwój rolnictwa ekologicznego w Polsce [The Development of Ecological Farming in Poland]*, "Wiś i Rolnictwo" no. 2, p. 188–203.
- Issues and Challenges for OECD Agriculture in the 1980s*. (1988). Report OECD, Paris
- Klinkenberg, V. (1995): *A Farming Revolution. Sustainable Agriculture* "National Geographic" vol. 188, no. 6.
- Kolodziejski, J. (1995): *Kształtowanie polityki przestrzennej państwa w procesie transformacji systemowej [Shaping the State Spatial Policy in the Process of System Transformation]*, in: Kolodziejski, J., ed.: *Koncepcja polityki przestrzennego zagospodarowania kraju, Polska 2000 plus [The Concept of Policy of Spatial Planning of the Country, Poland 2000+]*. CUP, Warszawa, vol. 1, pp. 11–8.
- Kozłowski, S. (1997): *W drodze do ekorozwoju [On the Road to Sustainable Development]*. PWN, Warszawa.
- López, R. (1998): *Agricultural Intensification, Common Property Resources and the Farm Households*, "Environmental and Resources Economics" vol. 11, nos. 3–4, pp. 443–458.
- Lockeretz, W. (1988): *Open Questions in Sustainable Agriculture*, "American Journal of Alternative Agriculture", vol. 6, pp. 174–181.
- March, J., ed. (1991): *The Changing Role of the Common Agriculture Policy: the Future of Farming in Europe*. Bellhaven Press, London.
- Nelson, F. J., Schertz, L. P., eds. (1997): *Provisions of the Federal Agriculture Improvement and Reform Act of 1996*. USDA Agriculture Information Bulletin no. 729, Washington D.C.

- Pretty, J. (1996): *Sustainable Development*. Microsoft Encarta Encyclopedia: 'Resources for Agricultural Systems'.
- Radecki, A., Bednarek, A., Zawadzki, B., Łabętowicz, J., eds. (1995): *Ekologiczne i integrowane rolnictwo w Polsce. Raport z badań [Ecological and Integrated Farming in Poland. Research Report]* Fundacja Rozwoju SGGW, Warszawa.
- Ruttan, V. W. (1994): *Agriculture, Environment and Health: Sustainable Development in the 21 Century*. University of Minnesota, St. Paul.
- Serageldin, I. (1995): *Development Challenges and Opportunities in the Global Village*, in: Umali-Deininger, D., Maguire, C., eds.: *Agriculture in Liberalizing Economies: Changing Roles for Governments*. The World Bank, Washington DC, pp. 439-444.
- Sołtysiak, U., ed. (1993): *Rolnictwo ekologiczne: od teorii do praktyki [Ecological Farming: From Theory to Practice]*. Ekoland and Leben und Umwelt, Warszawa.
- Whitby, M., ed. (1996): *The European Environment and CAP Reform. Policies and Prospects for Conservation*. CAB International, Vallingford.
- Żylicz, T. (1989): *Ekonomia wobec problemów środowiska przyrodniczego [Economics and Natural Environment Problems]*. PWN, Warszawa.

Received: 04.01.99; revised version 27.04.99