

SYSTEMS RESEARCH INSTITUTE,
POLISH ACADEMY OF SCIENCES, SZCZECIN DEPARTMENT
AGRICULTURAL UNIVERSITY OF SZCZECIN
FACULTY OF ECONOMICS AND ORGANIZATION OF FOOD ECONOMY

MODELLING OF ECONOMY IN SPECIALLY PROTECTED REGIONS

*Proceedings of the international conference
held on 9-11 june 1994 in Drawno, Poland*

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THE ECOLOGICAL FARMING AS AN ALTERNATIVE TO THE FARM ECONOMICAL SITUATION IN AGRICULTURAL ENTERPRISES AT THIS TIME

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1. The aim of ecological farming and the new orientation of traditional farming

In trade and industry of the Western European states it came to an extensive replacement of human capacity of work by technique and modern management because of division of labour and specialization in the last decades. As a negative side of this development unemployment for redundant workers arose. This production growth, being caused by using scientific technological progress, is the basis of the high average prosperity and it allows the present living standard in Western Europe. In agriculture there was a tendentious similar development. Because of the competition on the market and the securing of earning it was

necessary to specialize and intensify. The farm area was a limited factor, because of this the farms couldn't be enlarged as much as they want. That's why the farmers intensified the production by raising capital input per hectare. Because of the up and down of the product prices the farmers had only the possibility to raise or secure their earnings. In spite of this it was impossible to avoid, that the earnings in agriculture are retarded behind the earnings in trade and industry. Continuous increasing quantities connected of high supply with fertilizer and plant protection products entailed considerable environmental pollution and market surpluses.

In the population of the modern industrial states the opinion has developed, that the intensive (conventional) farming would cause directly or indirectly a high rise of environmental pollution. Experts even give an order of precedence of the endangering. But it's difficult to quantify. Especially for following facts agriculture is held responsible:

- the decline of wildliving species of plants and animals
- increasing endangering of ground water by fertilizer and plant protection products
- impoverishment of crop rotation and tendency to monoculture
- pollution of surface water and cause of erosions
- production of not so valuable food with rests of damaging substances, because of overfertilizing, use of plant protection products or hormone addition in animal feeding.

About 7% of the farming area in Mecklenburg - Vorpommern are farmed ecologically at this time. Structure and size of these farms are very different. In the old federal states of Germany the part of farms producing alternatively is only 0,7%. And 0,8% of the area are run in an alternative way. Cultivation federations with a special trade mark have own directives. The principle is to exclude the encironmental endangering, which were stated already, and to guarantee the production of products with high quality. Important points of these directives are:

- The crop rotation has to be balanced and many - sided with enough possibilities for green manuring and has to use species being resistant against diseases and suiting to the conditions of location of the farm.
- In the cultivation the specific cultivating of the humus content has absolute priority. Measures being adapted have to secure the supply of the soil with nitrogen. For mineral complementary fertilizing there are strong restrictions. Chemical, synthetical nitrogen connections, easy soluble phosphate connections and potash fertilizer including chlorine are forbidden.
- Stable manure and semi- liquid manure have to be prepared and they are only allowed in quantities being well- tolerated by the location.
- Chemical, synthetical plant protection products are not allowed. Biological pest control has priority.
- The weed control has to be made mechanically and by other cultivation measures. Also not allowed are herbicides, preparations regulating growth and preparations killing foliage.

- The livestock has to be supplied by farm fodder of high quality and by only a little bought- in feedstuffs. By using bought- in feedstuff they have to be produced under ecological conditions.
- The stock keeping has to be ecologically friendly. And the extent is has to be adapted to the ecological conditions of the farm.
- Food additives except mineral feed are not permitted.

With these demands the ecological farming demarcates itself very clearly from conventional farming. This is especially referred to the agriculture of the last decades with the enormous yield increase.

The traditional farming will have to adapt to important points of the demands of ecological farming, if it wants to win back its acceptance in the population and if it wants to get through special demands with reference to subsidies in a political way. In the old federal states of Germany and at the time also in the new once there are research beginnings fulfilling this demand. Terms like integrated farming and regular farming were formulated.

2. The need of ecological products and their sales

After the change of power in Germany many farmers decided for ecological farming. Independent farmers have to have a high flexibility and farm economic ability. They must be able to calculate prices and analyse and open up the market. Usually the market will decide about the existence of an ecological farm.

Comprehensive opinion polls, which were made under the cu-

stomers in Baden-Württemberg have shown partly unexpected tendencies. They are also important for Mecklenburg - Vorpommern, because they were won in countries with a traditional high consumption of ecological products. About 200 households were analysed (Hamm, Brombacher, Stuttgart-Hohenheim). This means, that in households with a high consumption of ecological products there were made detailed notes about the purchases. Following results of this opinion polls and other evaluations are important for independent farmers in ecological farming:

- Also families of subjectiv opinion, that they live nearly exclusively from ecological products, have overrated the part of ecological foods on their total expenditure for nutrition. They spend a high part on conventional food.
- Households with a high part of ecological products in their nutrition (over 50%) had altogether not so much expenditures than the conventional comparison group. The reason for this fact is the increased consumption of vegetable foodstuff and in a nearly complete renunciation of meat, fat, coffee, alcoholic drinks and meals in restarurants.
- The analysis of the purchasing habits brought following order of priority: weekmarkets, departments of supermarkets, foodstores, farmshops, special shops.

3. The extent of ecological production

A real assessment of the demand for biological products may be very difficult. In Western Europe the extent of the production of ecological farming has increasing tendency. There are already well-founded objections in reference to the development of prices.

Fig. 1 shows the ecological farming in Europe. In Germany is to be seen the greatest dynamics, probably caused by the new federal states of Germany. Different extensification programs in the separate countries influenced farming to play a deciding role. Tab. 1 shows this situation. Till now most farms are in a transitional phase. High losses of yields in this phase will be compensated by extensification bounty. Because of this the internal stability is very strong influenced by subsidies. Safe statement about the ability to survive of this farms as ecological producing farms are premature.

Tab. 1. Number and characterization of the farms of ecological farming in Mecklenburg - Vorpommern 1993

federation	foundation - year	member farms in Meck.-Vorp.	total area in ha
Bioland	1971	22	ca. 2500
GAA working pool for ecological farming	1989	6	ca. 500
Demeter biol.dynam.	1924	13	ca. 1200
Biopark	1990	330	ca. 65700
Naturland	1962	7	1944

Many farms set up conditions for the accommodation of holiday guests. With the "Holiday on the farm" the guests are to get connections to livestocking and to food production being poor in pollutants. The federation "Biopark" differs from the other

federations. In this farms the extensive greenland agriculture in natural parks and in catchment area is an emphasis. The ecological producing farms have in federation "Biopark" an average extent of 207 ha per farm, whereas the full-time farms in the old federal states of Germany have an average extent of 24 ha.

The partly considerable larger farms in Mecklenburg - Vorpommern, compared with the stable farms in Baden - Württemberg, need other marketing methods.

Differences between the federations of ecological farming are in the guidelines and in the farm rough drafts.

4. The farm economical rough copy and the profitability of ecological farming

There is the question, if there are basic differences between the aims of conventional and ecological farming. The indices of production and costs structures have mostly serious differences. But regarding to the profit rate or the profit per family worker there is an approximation. In farm planning the basic rough draft of optimization is applicable but with differences. To look at the farm as a whole and so as a living organism is the special quality. This fact leads in solution beginnings to consideration of much more conditions, and this means much more restrictions in optimization. At this point should be pointed to following fact. The classics of the agricultural management also saw the integrating strength of a farm as priority. The integrating strength "soil use community" and "exploitation community" predominating in ecological farming, because the purchases of fertilizer

and plant protection products or fodder as deintegrating factors stay in the background.

Nowadays well-known exponents of farm management also in the economical behavioral principle of the farmer in ecological and traditional farming show no serious differences. I agree not completely with this opinion, because the methods, which are used in order to reach a farm optimum should be substantially more differentiated and individual. It remains or comes into being an unmistakable activity of independent farmer, in which the connection to nature or the agreement with it have priority.

The ecological products are accepted because of their originality in the quality and this is in spite of higher prices. I agree with the exponents of the opinion, that only a little part of consumers will change their consumption habits to ecologically produced products. The federations have the task to make a right forecast about the extent of ecological products by evaluation of research results.

For a limited extent of farms is the ecological farming a real economic alternative.

The traditionally producing farms have a task to decrease damages and external costs by influencing the issue of more or less damaging elements from the agricultural ecosystem into neighbouring ecosystems.

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