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SOIL HEALTH AS A PREREQUISITE FOR CROP HEALTH

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The dominant model of agriculture intensification didn't provide a sustainable development from economic, ecologic and social points of view. Simplistic approach to agricultural intensification has agravated the economical consequences of increased prices for industrial inputs in the conditions of discrepancy between prices for agricultural commodities and such industrial inputs as: mineral fertilisers, pesticides, fuel etc, especially in the years with higher vulnerability to droughts as a result of global warming.

Market economy is neglecting the consequences of modern technologies of growing crops on the quality of the environment and health of people. It means that prices for agricultural products don't reflect the real prices for the grown crops.

Our researches have been conducted in a long-term field experiment on ecological agriculture with different crop rotations and systems of fertilisation. Simultaneously, crops were grown in permanent cropping on fertilised and unfertilised plots.

The purpose of the experiment was to establish the impact of crop rotations and permanent cropping on the productivity of crops and soil fertility.

The higher level of yields have been achieved in crop rotations both on fertilised and unfertilised plots.

Crop rotations allow to use more efficiently soil moisture and nutrients from soil and applied fertilisers.

A higher extra yields from fertilisation in permanent cropping relatively to crop rotations is indicating on the health of soil. This issue is crucial for modern agriculture.

Farmers have to compensate the lack of crop rotations with higher rates of mineral fertilisers, pesticides, fuel etc, which is making them less competitive on the local and international markets. By feeding soils with carbon and consequently by improving health of the soil as a living organism it would be possible to reduce the dependence from the industrial inputs and to become more competitive on the market and more resilient to climate changes.

Farmers all over the world are looking for alternatives to conventional agriculture based on using nonrenewable sources of energy.

We have to make a transition from the dominant system of agriculture to another system based on principles of circular economy by using preponderently local sources of renewable energy.

Keywords: crop rotation; permanent cropping; fertilization; soil fertility; ecologic agriculture