ELEMENT AND ENERGY TRANSPORT MODEL FOR AN AGRICULTURAL SITE
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Introduction
The modern period of the history of mankind can be labelled as the history of environmental pollution and also, the history of fighting against that. About half of the territory of Hungary is covered by field agro-ecosystems. Agri-environmental policies are very important and cannot be carried out without a strict ecological model. So we need a model describing the typical Central-European agricultural field habitat to study ecological connections for avoiding unfavorable influences.

Methods
A new model of ours has been built on the basis of a general food and energy transport model demonstrated in the figure on the top.
Aspects respected through preparing the general model:
- The main limiting factor is ENERGY
- Only 1% of incoming solar power is utilized by green plants
- Only 10% of energy could be transported to a higher trophical level
- Because of the very high amount of loss, there could be only a few trophical levels
- Chains containing more levels have an internal instability because the accidental fluctuations of lower levels rise upwards, so the maximum number of levels is five.

On this basis a new model was developed following the studies made on the experimental field of the SIU Crop Production Institute at Jászárokszállás, Hungary.

Results and discussion
Accordance between the general and our new model:
- We have few trophical levels
- We have the same compartments: producer, primary consumer, secondary consumer, detritor and the environment
- The energy goes through the system
- Materials circulate in the system.

Differences between the general and our new model:
- Wheat (Triticum aestivum L.) is a typical crop in this region (in the average of recent years: 7.8%), it is our producer
- European brown hare (Lepus europaeus Pallas) has a high economical and a typical ecological role in our region, it is our primary consumer
- The main predator consuming both wheat and hare is mankind, as secondary consumer
- All populations appearing in a field are strongly influenced by human, so we can neglect other phytofages and prayers.

Mankind should rest in the frames of given energy and food transport system. The essence of regulation of food and energy transport connecting compartments is to increase incoming energy, and from the other hand, to let humans transmit bigger amounts of that.
According to this system we can say that we produce both wheat and hare. We can change the allocation of food and materials with plant nutrition, by varying the quality parameters we can induce accumulation in the favoured compartment. We can influence both populations (hare and wheat) with classical cropping methods. The base of wise management is the harmonisation of absolute and relative ratio of them.
This environmental management should be the part of sustainable management. The whole system could be regulated easily at that point, where all the materials go through: between the compartments of the environment and the wheat, so we should take special care what to put into the environment of the wheat especially to avoid the accumulation of certain materials in unfavourable compartments.

Conclusion
Generally, we can conclude from our model that energy goes through the system, so energy management means that energy should pass through the levels important for mankind, therefore losses should be reduced at lower levels. On the other hand, it is important to enter more and more energy into the system, that green plants may convert more and more solar energy. The food circulates in the system and the most important point is where it is allocated. The material at higher trophical levels is organised also in a higher manner. In connection with that, because of the recycling we should take care what to put into the system, as that could make difficulties while removing them later.
The final conclusion from our model is that first of all, we have to concentrate our efforts regarding the two compartments from which humans receive food and energy, namely the wheat and the hare. The optimal proportion of this two is depending on the actual feeding situation: if the main target is quantity, than wheat is more important, but if we aim quality, than the importance of hare is increasing. Of course none of them can overcome the other as it is a system. But the proportion of the “cropping” of hare as a field product will have an increase in countries of highly developed agriculture. The use of these resources in a most reasonable way requires harmonisation between crop production and game management.