



## **SUPPORTING THE REASONABLE AGRICULTURAL PRODUCTION WITH A NEWLY FOUNDED ENVIRONMENTAL LABORATORY IN THE SOUTH EASTERN REGION OF HUNGARY**

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### **Abstract:**

An agricultural and environmental laboratory was founded within the framework of Baross Gábor Program in the summer of 2008 in Mórahalom, South-East Hungary, South Great Plain region. The primary aim of this initiative is making the countryside's agriculture more effective and environmentally aware, and assisting the dynamic development of the region. The laboratory helps agricultural production – the primary financial source of the region's villages – with analytical measures of soil and water samples, counseling about nutrient dosing, organized presentations, and cooperating with local enterprises and with another laboratory analyzing chemical residues in the produced crops. One significant deficiency was compensated by the establishment of SoilChem Laboratory – meeting the conditions set forth by directives of the European Union –, due to the lack of environmental laboratories in the region.

### **Keywords:**

soil and water analyzing laboratory, agriculture, environmentally aware,  
food safety and technology network

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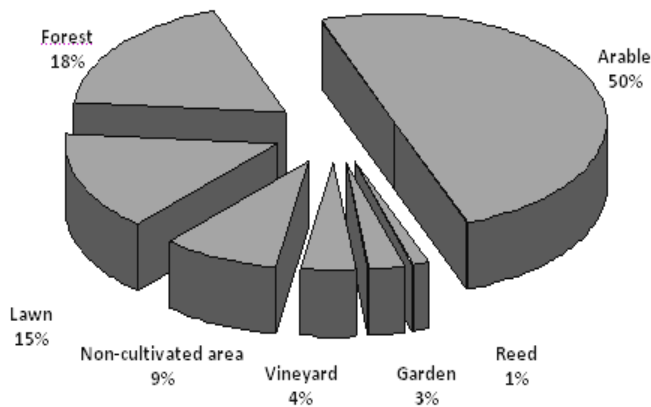
## **1. INTRODUCTION**

With the help of the Baross Gábor Program, conducted by the Homokkert Small-regional Integration Public Company consortium a research and development network and a food safety and food technological subcenter has been set up in the South Great Plain region in Hungary. It is structured around up-to-date technological and metrological solutions and results cooperation of scientific institutions, researcher non-profit organizations and the entrepreneur sector.

The micronetwork and the soil- and water analysis laboratory – coordinated by the Homokkert Public Company – provides agro-innovative services for the cooperatives and partner organizations (DATÉSZ Rt., Mórakert Cooperative). By doing so it improves the local products' competitiveness and the standard of nutrition and quality assurance.

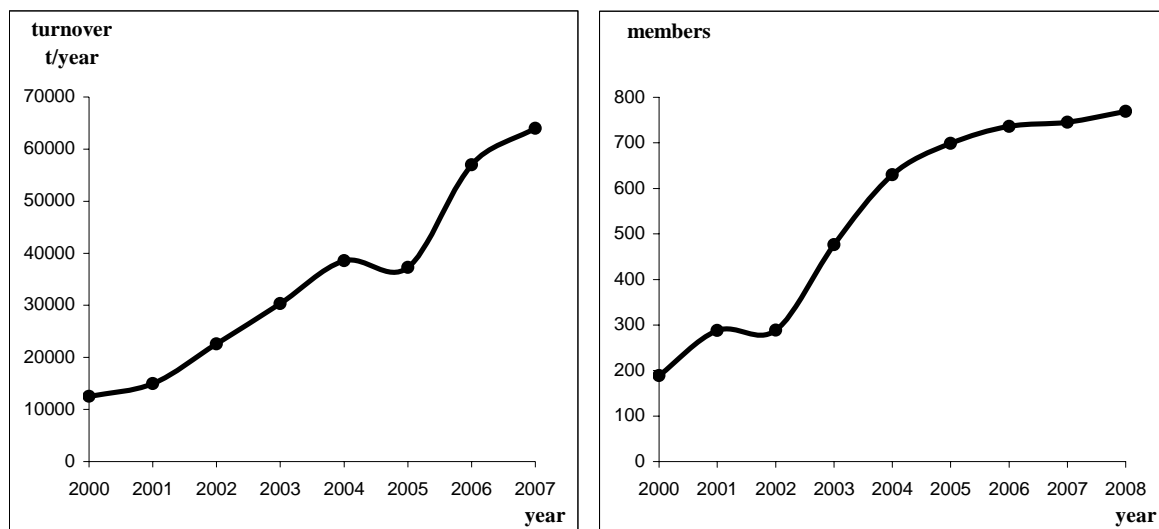
## **2. THE IMPORTANCE OF AGRICULTURE IN THE REGION**

45,000 people live in the area of Mórahalom, which is considered the center of the Homokhát Small-region. Most of the people work in agriculture, thus their living is exposed to the competitiveness of the vegetable and fruit grown by them. Agriculture uses 72% of the small-region's land. The rate of forests is high, resulted by the afforestation in the beginning of the last century. The rate of lawns is also high because of the previously existing vast meadows and mowing fields. However vegetable growing is typical in arable farming and in the garden cultivation branches and its economical importance is unquestionable, it occupies relatively small area from the region's land. The volume of land used for pomology and vineyards shows the characteristics of sand farming. Non-cultivated lands and waste lands are the signs of uncertainty of farming and marketing and the disarrays about the ownership of the tenures (Figure 1).



**Figure 1.** Distribution of cultivation branches of the small-region's area

The integrators, the cooperatives and other significant economic operators have to make sure the compliance with the market requirements, which means producing clear, healthy and high quality products. The most significant such integrator is Mórakert Cooperative founded in 1995 and declared as the first fruit and vegetable producer realizer organization by the Ministry of Agriculture and Rural Development in 2002. Its turnover and number of members has increased significantly in the last 10 years (Figure 2).



**Figure 2.** Growth of turnover and number of members of Mórakert Cooperative

### 3. HOMOKKERT PUBLIC COMPANY

The Hommokkert Small-regional Integration Public Company was corporated in 2000 by 9 agrarian cooperatives and the local authority of Mórahalom. The company was comprising producer and marketing cooperatives until the conversion in 2004 when the main profile of the company changed and two strategical directions were developed in connection with the agricultural priorities. These focus on the improvement of the living and income conditions of the rural population.

#### International connections

The Homokkert Public Company cultivates good relations with international partners. Seeking the possibility of cooperation with neighboring countries and participating in common projects are important parts of the company's activity. A recent collaboration was the establishment of a Borderland Commercial Center with Topolya and Temerin, two towns in Vojvodina, within the framework of an inter-regional project in 2008. The primary aim of this center is helping the cross-border trade of the agricultural products in the region.

#### Profiles of the Homokkert Public Company

On the one hand the main profile of the Company is encouraging alternative income activities – the so-called Renewable Energy Information Center was built in support of this objective – and on the other hand the research and development, innovation and innovation intermediation services. The Regional Food Safety and Technological Micronetwork needs to be highlighted here, which was set up in the framework of the Baross Program. The Network was evolved by the partnership of the Homokkert Public Company and Mórakert Cooperative

in Mórahalom, the DABIC Public Company in Szentes and the College of Kecskemét (Figure 3). Its goal is to establish an accredited institute complying with the international standards and placed near big producer-realizer cooperatives (e.g. Mórakert Cooperative).



**Figure 3.** Centers of the Regional Food Safety and Technological Micronetwork

### **Aims of regional food safety and technological micronetwork**

- a) establishing a regional food safety and technological subcenter with the utilization of results and experiences of the regional center and network maintained by DABIC Public Utility Company
- b) founding an agrarian research workshop with the collaboration of acknowledged researcher-teachers with scientific degree and local experts, and developing an academic practicing section in connection with garden cultures and the safety of horticultural products
- c) establishing an experimental soil and water analyzing laboratory and the publication of results
- d) achieving experimental developments in relation with product innovation and changing production structure in vegetable, fruit and ornamental plant growing
- e) starting continuous horticultural research and development activity based on regional demands
- f) evolving a research and development and innovation micronetwork – with thousands of members - considering the specifics of producer-realizer cooperatives (TÉSZ) and the conditions of local product structure
- g) establishing a consultant network and educational activity
- h) experimental developing of analytical methods, e.g. for fast determination of chemical residues
- i) founding an agrarian research workshop that conduces to the production of high added-value or new products (bioproducts, functional foods) with developing growing methods and technologies

## **4. REASONABILITY OF MICRONETWORK**

### **Directives of the EU – Food safety**

Establishing and maintaining the Regional Food Safety and Technological Micronetwork is reasoned by directives and regulations of the EU. In hygienic overseeing of food producing, the European Union put emphasis on supervision of producing environment instead of the former final product checking in the last years. Therefore application of new analytical methods is required. SoilChem Laboratory – part of Regional Food Safety and Technological Micronetwork – wishes to keep pace with this continuous vocational improvement. Developing analytical procedures to support the development of new technologies – that result healthy and safe food – is one of SoilChem Laboratory's primary goals. Nowadays food safety is number one priority of agrarian economy: organizations in agriculture and food industry must correspond to the higher and higher requirements of food safety and environmental protection, and must meet the consumers' increasing demands.

Considering food safety regulation of the European Union, configuring quality insurance systems and helping producing activity at agrarian small and medium enterprises became indispensably necessary by now. In the interest of competitiveness of these enterprises preventive self-checking food safety systems must function effectively „from field to table”, ensuring the transparency of food chain. Successful food politic demands the absolute traceability of crops, food and their components. This enables the enterprises to

withdraw hazardous forage or food from the market in case of consumers' health is endangered. Healthy and safe food can only be ensured by continuous monitoring of critical points of the producing process and by running quality insurance systems. It is reasonable to establish and upkeep accredited food safety and technological centers and subcenters, placed near farmers in the interest of quantitative and qualitative determinations of health-damaging chemical and microbiological compounds.

**Functions of centers:**

Instrumental tests are indispensable to obtain knowledge of environmental factors and their impacts. Thus we can collect data that help us to intervene in the process of cultivation. Precision nutrition replenishment can be attained only in possession of the knowledge on the soil's current nutrition level. Therefore soil analysis is necessary both before and during every single cultivation process. More detailed information is needed of soil and irrigation water in case of horticultural crops (nutrient rate and quantity, harmful elements).

- a) monitoring chemical residues (pesticides, pharmaceuticals etc.) of crops and food
- b) detection of metal pollutants (lead, cadmium, mercury, arsenic, aluminium, copper, zinc, nickel) in food of plant and animal origin
- c) determination of nitrate in vegetables susceptible for nitrate accumulation
- d) complete analysis of soil and water
- e) microbiological monitoring to increase the hygiene of food processing technologies
- f) forage-safety monitoring
- g) issue accredited certificates

**Economic advantages**

The building up of the Micronetwork is appropriate concerning its economic advantages as well. The current international and domestic consumer habits seem to prefer products with known origin; customers appreciate the value derived from the specific circumstances of the production. Thus the quality advantages in the production lead to market advantages. With the characterization of agricultural and food industrial products grown on excellent soil, using adequate technology and defining the relating quality features and with the conscious perpetuation of these benefits these products can obtain market advantages.

**5. CONCLUSIONS**

The whole sector and region profits from the database of materials endangering food safety, building up and operation of preventive indication systems, meeting the requirements of identification and traceability, and applying new, conventional sampling methods. The Micronetwork's indirect economic effects can be measured in the improvement of competitiveness of the analyzed products, the prevention of the damages caused by loss of consumer trust, and the recognition of the network's trademark.

The operation of SoilChem Laboratory as a service provider, accredited institute makes the non-profit investment self-supporting in the future.

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