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# HUNGARIAN AGRICULTURAL RESEARCH

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**NAKVI** National Agricultural Advisory, Educational  
and Rural Development Institute (NAERDI)

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## Dr. Miklós Faust commemoration ceremony

The 15<sup>th</sup> anniversary of Dr. Miklós Faust's death was commemorated at the Corvinus University of Budapest and in Nagyberény, where the excellent fruit physiologist was born. His unexpected death then led to the foundation of an association, the Faust Miklós American-Hungarian Friendship and Scientific Society. The Society has organized four scientific colloquiums together with its partner university up to now, from which this one can be considered as the most notable. This was made special by the presence of the scientist's widow, daughter, son-in-law and two adult grandchildren who arrived from Washington to the ceremony.



But who was this Miklós Faust, after whom the local school in his birth place was named in 2000 and who was posthumously bestowed the title of the Freeman of the Town of Nagyberény. His father, Elek Faust moved here from Aranyosmarót after the Trianon Peace Treaty, and became the farm manager of the Nagyberény manor. His mother came from Nemesdéd in Somogy county. Once, he told me that as a child he had liked to fish in the Kis-Koppány creek very much, where specialities such as the bitterling could also be found. This was the place where he really became attached to nature.

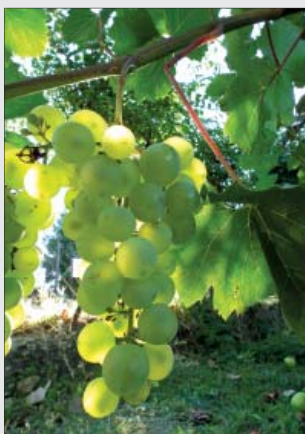
At the end of the secondary school studies, it was almost self-evident that he enrolled to the Faculty

of Horticulture and Viticulture of the University of Agricultural Sciences, and – as was once told by his schoolmate, late Mária V. Németh virologist, Faust was prominent among the others due to his personal and professional qualities. After graduating in 1952, he began working at the State Farm in Császártöltés together with his wife, Mária Spielberg. When the events and the political consolidation appeared unpromising after November 4, 1956, they decided to leave the country. He and his wife could finally escape across Yugoslavia in 1957, when going away was not that easy any more. First they stayed in Sarajevo and Italy, and then they went to the United States.

But prosperity and settled life did not come automatically when they arrived there, although they were generally given a warm welcome by other refugees. At the start, Faust and his wife earned their living from various manual labours. After a banana packaging and processing company, he took job at the Rutgers University and began to study at the same time. His further degree in Horticultural Sciences increased his opportunities, and after studying plant physiology and biochemistry at Cornell University, he obtained the title of doctor in 1962. His wife acquired other qualifications, and she has been working for the famous Smithsonian Institution ever since then and regularly performs research work in Belize. As was told by Miklós Faust, after graduating he was directly asked if he wanted to work in the field of teaching or researching. He chose research



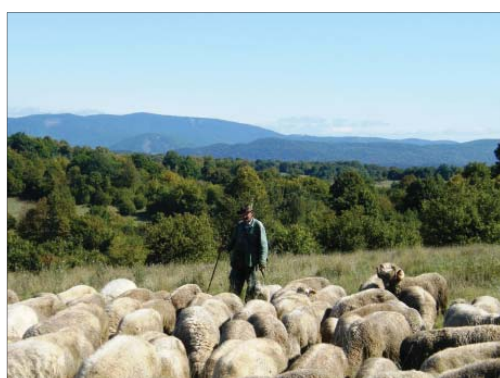
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Autumn (Photo by János Bakk)

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**H-1223 Budapest, Park u. 2. Hungary**  
**[www.agrarlapok.hu](http://www.agrarlapok.hu) | [info@agrarlapok.hu](mailto:info@agrarlapok.hu)**

Editorial Office  
Department of Mechanics and Engineering Design  
Szent István University, Gödöllő | H-2103 Gödöllő, Hungary

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# The suitability of the Hungarian dog breed Kuvasz to guard grazing livestock.

Our organization started its activity in 2007 after three years of field research and data collection in three countries (Hungary, Slovakia and Romania). Beside implementing the two main goals of the program, we actively take part in several related topics as well. The two main goals are to make known, introduce and promote the Kuvasz as a Hungarian livestock guardian breed and the protected large predator species (the wolf, the bear and the lynx) both in Hungary and abroad, and to actively support the protection of the above-mentioned game species native to the Carpathian basin in all the three countries involved, with special regard to the prevention of damages caused by them in the livestock.

Further aims:

- To maintain and preserve the performance traits and skills of the Kuvasz under the original working conditions (the guarding of grazing livestock).

- To collect data on the adaptation, development, reproduction and guarding work of the Kuvasz under the conditions of extensive grazing animal husbandry.

- To reveal the relationship of the Kuvasz and other guard dog breeds and types to large predators. To uncover the interactions and system of relations formed between them.

- To collect information on the past and present of the utilization of the Kuvasz for hunting (driven hunting) as one of its ancient duties.

- To examine the presumed and real correlations of the stock-

breeders' aversion to large mammal predator species, and to decrease it as much as possible.

- To deliver the progenies of the dogs involved in the programme to new study sites to extend the stock performing its original work.

- Gene conservation: to register a part of the progenies of the dogs delivered in the frame of the programme and to replace them in the stock after several generations.

- To publish the data and experience gathered during the programme through publications, lectures, events and media appearances.

- To establish and present, both in Hungary and abroad, an ethnographic collection of objects and documents on the Hungarian shepherd culture and traditions in the Carpathian basin as our cultural heritage.

By the spreading of system-based nature conservation, the attitude to large predators that were previously persecuted in every way has radically changed, and now these species are considered as specially protected natural values, promoting their survival. Several national and international programmes are operated throughout the world aimed at supporting the protection of the bear, the wolf and the lynx, giving them the chance to regain a part of their living space lost in the past. Livestock guardian dogs are an important factor of these programmes as they can be utilized to prevent damages in grazing farm animals, which would highly contribute to the reduction in destroying the protected predators because of hatred.

This is in fact a system of relations existing for several thousand years, which slightly



*Damage prevention facilitates the suppression of the illegal slaughtering of protected large predators (illustration).*



*Pasturing in the living space of large predators Slovak Karst National Park, Slovakia.*

changed in its conditions and provides long-term mutual benefits for all the participants. For stock-breeders, the possible damages of large predators can be prevented in the grazing season, and what is more, it can be implemented by the help of a traditional protection method with a great past: the utilization of guardian dogs. Large predators would not interfere with human interest by regularly causing damages in the livestock, therefore, they would not get into a situation that reduces, at a local level i.e. in their habitats, the efficiency of measures enacted to protect them. The Kuvasz dogs could, under such working conditions and in close interaction with the predators, utilize and permanently preserve the skills and values that once made them a livestock dog (they have not been used so far in an organized and systematic way in the protection of large predators in spite of their Carpathian basin origin). And the method applied is the most acceptable way of traditional protection in terms of nature conservation that should be supported. (In many cases, landscape utilization is partially carried out through pasturing

in the areas under special nature conservation, actually in the living space of large predators.)

Once, the Kuvasz was widespread throughout the Carpathian basin and was the essential assistant of those dealing with grazing animal husbandry both in the flatlands and highlands, protecting the animal property from wolves, bears and thieves. However, the conditions under which the Kuvasz developed and traditionally worked have ceased or significantly changed by now in many areas, thus the breed has not been used for its original purpose in Hungary for more than 100 years. The wolf and lynx live here only in a very low number,

forming a marginal population or they appear periodically in certain areas. The methods and extent of animal husbandry have also changed substantially in the course of time, the rate of free ranging livestock is insignificant within the sector. Accordingly, the confrontation of stock-breeders with these predators is not likely to occur. As these circumstances do not allow the application of livestock guardian dogs in a programme with such purposes in Hungary, the traditional living spaces of the Kuvasz beyond the borders of the country had to be found. On the basis of the regular local data collections and preliminary information, we seemed to have found suitable sites in Slovakia and Romania. The decision was made on the basis of the available conditions: stable population of large predators (the Slovakian and Hungarian population is closely related), pasturing animal husbandry, the tradition and knowledge in using large dogs, personal connections, experience. The study sites of the programme can be found in two larger areas: in Transylvania in the counties Harghita and Maros, and the Slovak Karst National Park and its vicinity. The two areas significantly differ in terms of conditions and characteristics, which is an important factor of the research. The sites in the Slovak Karst provide essential



*The skull of a Kuvasz dog and a wolf from the study site in Transylvania*

information in terms of the large predator populations in Hungary, while in Transylvania much more comprehensive experience can be obtained.

### Study methods

- Regular field surveys every 3 months on average, and extra field surveys including data collection. Preparation of photos, video and audio recordings and written documentation.

- Gathering information among others on the living conditions, development, work, contact with large predators, reproduction of the Kuvasz dogs delivered.

- Data collection on the actual state and living conditions of large predators living in the areas concerned.

- Field research for the signs showing the presence of large mammal predators.

- Communication with the local experts responsible for nature conservation and hunting.

### Work method, delivering of dogs

The Kuvasz puppies offered by the breeders were delivered to economic organizations and study sites meeting the conditions at the

age of 8-12 weeks after concluding a contract. The majority of the dogs is used for guarding sheep and goats, but in some cases cattle is also guarded (cattle is less threatened by predators, but damage occurred several times also in the organizations we know. During the study period of 2007-2013, 60 dogs were delivered to 22 study sites to farmers' cooperatives and private farms that had been previously threatened by large predators. The number of dogs performing their original duty is continuously increased by adding new puppies and using the progenies of the delivered dogs. The Kuvasz dogs were offered by 19 breeders in 4 countries, Hungary, Romania, Slovakia and Serbia for free of charge in order to enable the long-term accomplishment of the project aims. There are some breeders who offered more than one puppy for the studys.

### Step by step: from puppyhood to active guarding work

The duty of livestock guarding dogs is by no means the killing of predators but to keep them away from the livestock and to quickly alarm the shepherds in case of danger to act jointly. The protection provided by the dogs is based on prevention:

they create a 'clashing zone' between the potential prey and the predator. This ever-changing zone is formed by the dogs themselves due to their physical capacities and training, which make them the first line of protection.

The very first step is to form the bond between the puppies and the young animals of the species (sheep, cattle) to be protected. It is important to introduce the puppies to the livestock as early as at the age of 8 to 12 weeks. Bonding is essential as it considerably determines the efficiency in guarding livestock and the cooperation with other species.

Human intervention and regular control in the behaviour of guardian dogs is indispensable in spite of their independent working. The key factors of their teaching process are the strict and consistent elimination of negative behaviour patterns and the rewarding of desired sets of actions. Daily personal contact, treating them as co-workers and proper treatment manner are crucial issues of success (The guarding of livestock is not the duty of the dogs only but it has to be performed at all times together with the shepherds in order to ensure the highest possible effectiveness. They can meet the often difficult challenges by supplementing and supporting each others' skills.)

Beside proper genetic basis, lifelong learning is a key factor to make the delivered puppies good livestock guardian dogs. The major elements of guarding and the useful behaviour patterns are continuously learned from the adult dogs in the pack. Puppies raised with well-behaved adult dogs are more likely to meet the complex set of requirements specified for them. The required traits include intelligence, good situation awareness and problem solving skills in everyday life, which come from teaching processes and inherited qualities.



Young Kuvasz bitch



*The puppy learns from the adult dogs. The shepherd exercises control*

It is important to note that the character of guardian dogs becomes fully developed around the age of 2 years, so they can perform full work afterwards. Due to the varying and different hunting strategies of large predator species and the intensive pack life of dogs, their learning process, in fact, covers their entire

life. They have to continuously adapt to the dynamically changing life situations.

### **Contact with large predators**

The most busy time of guarding is the night, especially when it is combined with unfavourable

weather conditions, as predators are usually the most active at such times. However, attacks also occur during the day in our study sites. This is why it is important to provide continuous 24-hour dog guarding, which is unfortunately not always attained. (An interesting fact is that a part of the wolf attacks occurred in the territory of the Bükk National Park in 2010 also happened in daytime in the pasture.)

Usually, the beginning and the end of the grazing season are of major importance from the aspect of the attacks by large predators, especially wolves living in the area. The problem is generated at unsuitably protected flocks by the large number of farm animals appearing in the living spaces of predators in spring and the increased food demand of wolf packs in autumn. The activity of wolf packs in autumn. The activity of bears increases during the



*The wolf is the most tactical predator and the feared enemy of shepherds*

accumulation period of winter fat reserves, however, bears acquiring the habit of eating domestic animals can return more frequently. As for lynx, no reliable data are available at present in connection with the damage they cause, although, they are considered to be continuously present in the majority of the study sites.

Most of the delivered Kuvasz dogs have met bears, wolves attacking the flocks. Some of them showed unexpected courage and assertiveness in spite of their young age during such dangerous attacks. Fortunately, none of them was seriously hurt or killed in such attacks. In Transylvania they meet bears more often, while in Slovakia they have more encounters with wolves. The large predator activity differs in each sheepfold areas and sometimes shows cyclic pattern.

Keeping away wolves require basically different protection method than keeping away bears. Wolves attack in packs using serious and diverse tactical systems, which can make the dogs ambiguous. In such cases, the exemplary behaviour of experienced dogs has an important role. When the predator is a bear, the 'scenario' is much more predictable,

and dogs act in a more efficient, rapid and organized way. The whole pack can focus their power on one intruder, and they can make the most of the tactical superiority lying in the group through assertiveness.

### **The suitability of the Kuvasz breed**

The experience gathered so far revealed that not all Kuvasz dogs are suitable for this complex duty, as is true for local guardian dogs too. The dogs unsuitable for the strict requirements have to be removed from the delivered packs and from breeding as well. In both study areas (Romania, Slovakia), the majority of the Kuvasz dogs can actively and efficiently perform their duty of guarding grazing livestock when the conditions of keeping are appropriate. As a main element of the complex guarding-protecting system, they provide an efficient means of preventing the damages by wolves and bears in the monitored areas. Meanwhile, the complex selection criteria of traditional life and duties have a great influence on the Kuvasz stocks delivered in the frame of the programme.



*Kuvasz bitch, a progeny from the programme, in the demonstration area of the Hortobágy National Park*

Their exploratory guarding is combined with active working against large predators. There are many animal husbandry units where guarding is performed exclusively by Kuvasz dogs. We hope that the number of such units will increase in the future. The damages caused by wolves have been significantly declined in the Slovak Karst and its vicinity. (Earlier wolf packs attacked the cattle herds in the study areas several times, and they also went into the agricultural sites regularly.) The prevention of damages is successful in Transylvania too, even in regions where neighbouring sheep-farms suffer recurrent losses because of large predators. (There were years when grazing had to be suspended as shepherds could not protect the livestock effectively.)

Good-working dogs, beside other factors of protection, are able to efficiently keep predators away, greatly reducing potential damages. All this, together with mind shaping and the distribution of information on protected predator species, actively facilitate the suppression of the illegal killing of them. According to practical experience, the most effective method of the intervention in unwanted processes is acting locally.



*Properly socialized and kept Kuvasz dogs are able to efficiently protect the livestock.*



## Experiences of the programme

Considering the 6 years of the programme so far:

- The Kuvasz dogs were able to fit in the wide-ranging and complex set of requirements specified by the original duties even after a 100-year break. They actively prevent and reduce the damages caused by protected large predator species, which plays an important role, together with mind shaping, in the suppression of the illegal slaughtering of such predators.

- The number of working dogs is continuously increased by adding new puppies and using the progenies of the delivered dogs.

- Gene conservation: to register a part of the progenies of the dogs delivered in the frame of the programme and to replace them in the stock after several generations.

- Through approximately 20 publications issued continuously and in several countries, and 2-3 professional lectures annually, as well as the appearance in television (Duna Tv, Egri Tv), we managed to draw the attention permanently to the subject and the importance of the preservation of the complex elements based on each other.

- Cooperation has been performed at different levels involving the parties (national parks, Kuvasz breeders, animal husbandry cooperatives and private farms, veterinarians, gene conservation organizations, nature conservation experts, supporters, interested people, etc.) interested in the topic from neighbouring countries.

- The performance traits and skills of the Kuvasz are maintained and preserved under the original working conditions, at the place where they once developed.

- The bitch born in the sheepfold in Slovakia was taken to the Puszta Animal Park introducing native



*The maintenance of continuous protection is a primary aspect*



*Puppies with the livestock to be protected by them later*

Hungarian animal species in the Hortobágy National Park where she is introduced to the visitors from Hungary and abroad.

- To establish and present an ethnographic collection of objects and documents on the Hungarian shepherd culture and traditions in the Carpathian basin as our cultural heritage.

- To extend the professional knowledge base and prepare documentation in relation to the topic (about 12.000 digital photographs have been taken and 50 hours of

video and audio recordings were recorded, in addition to the written materials).

- A website was created where our activity and findings are presented in several languages and in detail: [www.kuvaszokesnagyragadozok.hu](http://www.kuvaszokesnagyragadozok.hu)

Materials used: The Nature Conservation Programme 'The Kuvasz and Large Predators' (2007-2013)

Written by

## Balázs Barna Corresponding Member of the Hungarian Academy of Sciences

Already in the course of the third year at Eötvös Lóránd University, I started to attend the academic group of professor Gábor Farkas at the Department of Plant Physiology, where I made my diploma thesis on the characterization of a ribonuclease enzyme from virus infected bean leaves. This work determined my scientific interest and career for my whole life. Since that time I have always dealing with the mechanisms of plant diseases and disease resistance.

After the university I joined to the team of Professor Zoltán Király in the Plant Protection Institute, where we worked on the role of the most studied plant resistance form, the hypersensitive reaction (HR). We proved with my colleagues, that the tissue necrosis, the augmented peroxidase and polyphenoloxidase activity, as well as the formation of phytoalexins during the HR are only consequences and not the causes of plant resistance. This work was published in the "Nature", had great response among the scientist and was cited as "a pioneer work" even in the last year.

Although I still work in the Plant Protection Institute, I won several fellowships abroad, which all were very important, and I learned a lot during these research trips.

In 1979. I spent six months as an FAO fellow at the Department of Agricultural Biochemistry, University Nebraska, Lincoln, Nebraska, USA working on the T-toxin of *Helminthosporium maydis* pathogen, which caused very serious epidemic in corn in the USA.

From 1985. to 1986. and in 1990. (altogether 2 years) I was an A. von Humboldt fellow in the Institut für Pflanzpathologie und Pflanzenschutz,

Göttingen, Germany, studying adult plant resistance of wheat to rusts.

In 1999. I spent 10 weeks as an OECD fellow in USDA Beltsville, USA., investigating the resistance of cytokinin overproducing transgenic tobaccos to phytopathogen bacteria.

My last longer stay abroad was in 2000-2001, I spent four months at Lehrstuhl für Phytopathologie, TUM, Freising-Weihenstephan, Germany studying the role of ethylene and lipidperoxidation in disease and stress resistance.

During these years I defended my thesis for candidate of biological sciences (PhD) in 1978, and later, in 1996 my thesis for doctor of agricultural sciences (D.Sc.). I was elected as a corresponding member of the Hungarian Academy of Sciences this year in May.

My recent research interests are:

- The role of reactive oxygen species (ROS) and antioxidants in plant – microbe interactions.
- Specific and non-specific resistance of barley and wheat to powdery mildew and rust diseases in addition to systemic induced and acquired resistance.
- The effect of plant hormones, especially cytokinins, ethylene and brassinosteroids, on disease and stress resistance of plants.

I also participate in the work of universities; have courses and had PhD and other students. I am the honorary professor of Szent István University and of the ELTE.

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*Szandra Purgel, Lajos Bóna<sup>1</sup>*

## Preservation and Innovation Ventures at the 19<sup>th</sup> Plant Breeding Scientific Day

The major platform of Hungarian plant breeding is organized every spring where researchers introduce their latest results and the new plant varieties. The Plant Breeding Scientific Day was organized for the 19<sup>th</sup> time this year on 7<sup>th</sup> March jointly by the Plant Breeding Committee of the Hungarian Academy of Sciences, the Hungarian Plant Breeders Asso-

ciation and the host university at the 216 year-old Georgikon Faculty of the University of Pannonia in Keszthely at Lake Balaton. On the eve of the conference, the participants were invited to a pleasant dinner where they could taste delicious meals and matching local wines. The moderator of the event was László Kocsis, grape breeder, Head of Department, University

Professor, who put the knowledge of the participants in connection with grape and wine to test in a contest.

The Scientific Day aims at introducing the most recent theoretical and practical results. The highlighted objective of the Organizing Committee is to provide opportunity for young researchers working in Hungarian plant breeding



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<sup>1</sup> Hungarian Plant Breeders Association; Szeged 6701, POB 391., Hungary



*Grape berry types from the Carpathian Basin region*



and associated fields to attend and appear, and to praise and acknowledge the senior breeders.

Six plenary lectures were given by lecturers from Mosonmagyaróvár, Gödöllő, Keszthely, Debrecen and Budapest, presenting the breeding activities carried out in the institutes of agricultural and horticultural universities. László Heszky, Academician introduced the results obtained by the Institute of Genetics and Plant Biotechnology of the Faculty of Agricultural and Environmental Sciences, Szent István University in teaching plant breeding sciences and educating future breeders. Ferenc Kajdi, Associate Professor spoke about the breeding activity carried out at the Faculty of Agricultural and Food Sciences, University of West Hungary. László Kocsis, Head of Department, University Professor described the plant breeding and variety development research performed at the Uni-

versity of Pannonia. János Nagy, Doctor of the Hungarian Academy of Sciences presented the plant breeding and variety development activities carried out at the University of Debrecen. Magdolna Tóth, Doctor of the Hungarian Academy of Sciences outlined the breeding work at the Corvinus University of Budapest. Each lecturer laid great emphasis on the preservation, development and utilization of plant gene pool being native to the Carpathian basin or was created in the initial phase of breeding in the given institute. The Chairman of the



Hungarian Plant Breeders Association, Lajos Bóna commemorated the colleagues deceased in the last year, and praised the breeders who were awarded.

The cooperation of the senior and junior generation could also be observed at the conference. Oszkár Gyulavári (89) presented the improvements in the creation of maize breeding sources and marker lines using dihaploid technique in a collective poster with his PhD student, Péter Szűcs. Similarly, László Szunics (76) developed the

examinations to reveal the composition and virulence of wheat mildew populations together with his students. The new state registered dessert grape varieties developed by Edit Hajdu and her workmates in Kecskemét were also introduced (Picture 1.). The importance of the maintenance of plant gene banks was strongly emphasized. The preservation of the Carpathian basin gene reservoir of various fruit species is invaluable, as they continuously provide sources of resistance and nutritional values for breeders. Ferenc Dénes and his



workmates from Fertőd gave an interesting lecture on this topic. The plant gene bank stock of over 3000 items (varieties, gene sources for breeding) in Soroksár, the 1500 grape genotypes in Kecskemét-Katonatelep, and the collection including about 2000 taxons in the Arboretum of Buda are exceptional sources of breeding even at an international scale.

The breeders' lectures were divided into six sections. The Cereal research section contained six lectures in connection with the studying of cereals. There were six lectures held in the Maize and other cultures' research section relating to the results obtained and the problems faced in maize, sunflower and soybean breeding. Six lectures took place in the Horticultural plants'

research section, introducing the results and gene bank characteristics of strawberry, paprika, apple, apricot and peach varieties and of the grape variety Olaszrizling. A lecture highlighted the importance of ethnobotany in the preservation of plant diversity. The participants had the opportunity to visit lectures in connection with associated sciences such as genomics and the research on nutritional value and quality, as well as the production of seed and propagation material. In the Molecular genetics research section, six lectures were given by the researchers to summarize their results achieved in gene expression studies, the identification of resistance genes and the utilization of molecular markers. The Breeding and methodology research section provided high standard lectures in relation to methods utilized in plant breeding. The sixth section included the topics of Quality breeding research.

The 19<sup>th</sup> Plant Breeding Scientific Day was visited by 200 professionals involved in agriculture, who were able to get to know each other's newest results. The participants listened to valuable lectures in the fields of breeding and associated sciences. The most recent findings of Hungarian breeders were presented on 6 plenary and 36 section lectures and 80 scientific posters.

# *Consumers' opinion on direct sale in Hungary*

Direct sale is performed directly from producers to end-users and includes sales from farms (direct sales by farms, direct sale in farms/'pick yourself' programs, producers' own shops, catering in restaurants having direct relation with the farm) and sales performed by organizations near consumers such as at markets, market-halls, via home-delivery and on wayside stands (Wirthgen-Maurer, 2000).

Direct sale provides the opportunity for producers to sell their products continuously and at a good price, as well as to obtain additional income. In addition, it is important for the producers to improve the consumers' opinion on food-producing farmers by offering quality products to them (Fehér, 2007).

In order to perform this activity at the highest possible level, producers should be aware of consumers' habits.

Consumer satisfaction during direct sale is influenced most by the product quality, sales personnel characteristics, shop atmosphere, range of choice and the location of the shop (Spiller et al., 2007). Consumers who like farmer shops know that here they have to pay a bit more for products than in supermarkets. Researches performed in foreign countries also demonstrated that prices do not play an important part when buying directly from the producer (Kezis et al., 1998).

Examining the motivations for purchasing, the main motivating

factors are high quality products, safety and prices, irrespective of whether the consumers regularly purchase from the producers or not. Recommendation by friends and family and social relationships play the least important role within the motivating factors. Those purchasing regularly from producers attach greater importance to product range and the supporting of local producers than those who never purchase from producers. Those never purchase from producers consider discounts and comfort as the most important factors (Keeling-Bond, 2006).

Hungarian consumers favour smaller food stores for their daily purchases, which are followed by super- and hypermarkets. Among the forms of direct sale, farmers' markets are ranked high: over one third of the consumers go shopping there. These are followed by discount stores and direct purchases from producers. If the consumer wants to buy food that is guaranteed to be Hungarian, the purchases in hyper- and supermarkets significantly decrease, and the role of smaller store chains and discount shops also declines. At the same time, the rate of purchasing from producers almost triples, and the importance of markets increases by more than 60%, elevating this channel to the first place to get ahead of organized commercial forms. Accordingly, Hungarian consumers grant privilege to various direct sale forms when buying food

of Hungarian origin. The friendly atmosphere of farmers' markets and direct purchase from farmers gives confidence to consumers, therefore, the improvement of direct marketing methods is of key importance from the aspects of the production, sale and consumption of Hungarian foodstuffs (Szakály - G. Szabó, 2009).

In order to reveal the role of each form of direct sale and the factors determining food purchase, a survey was carried out using a national representative sample in the autumn of 2011.

In our research, we wanted to reveal the criteria influencing consumer decisions relating to direct sales. The criteria included both rational aspects (e.g. price, quality, product choice) and emotional aspects (e.g. supporting Hungarian farmers, reducing the burden on the environment).

To reveal the structure of variables listed during the survey, factor analysis was carried out and two main factor groups could be identified:

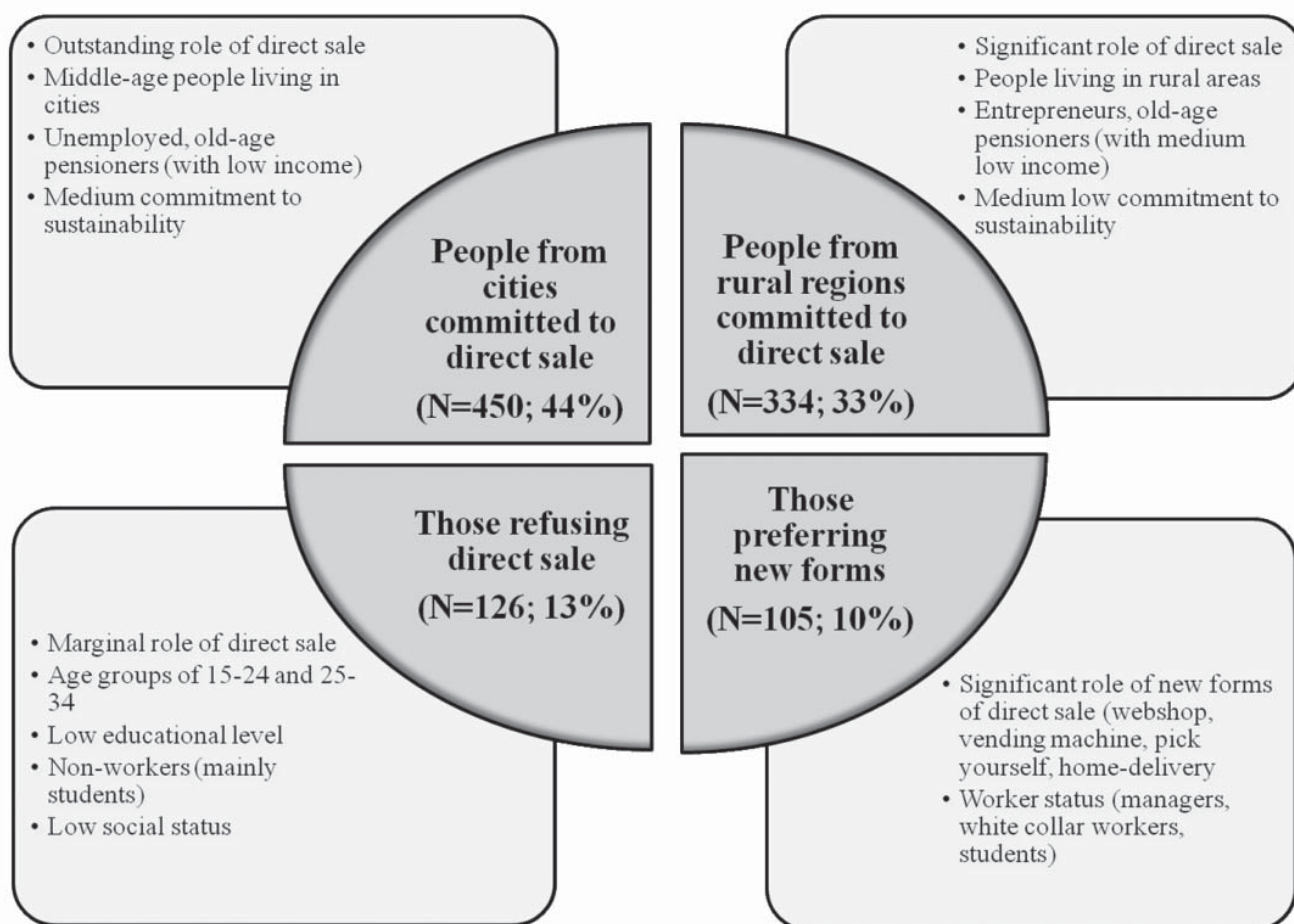
**Factor 1: Abstract and concrete product characteristics** (explained variance: 28.09%): this factor includes the items that determine consumer decisions in an objective way.

**Factor 2: Social values** (explained variance: 23.31%): this factor includes the items that determine consumer decisions in a subjective way. This means that

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1 SZIE, GTK, Marketing Institute, director, university professor, DSc, lehota.jozsef@gtk.szie.hu

2 SZIE, GTK, Marketing Institute, assistant lecturer, macsai.eva@gtk.szie.hu



The characteristics of consumer groups in relation to sociodemographic criteria [ábra]

Source: own research, 2011.

these items depend on customers' value judgement in contrast to the items in Factor 1 which can be defined by product characteristics.

To sum up it can be stated that factors determining food purchase can be clearly divided into factors relating to certain product characteristics and factors relating to social values. However, it has to be emphasized that the effect of factors relating to product characteristics seems to be much more pronounced than those connected to social values, which means they play a larger role during consumer decisions than social values.

Factor analysis was followed by cluster analysis to segment Hungarian consumers along the factors determining food purchase. With regard to the large number of

samples (N=1015), k-means method was used during the cluster analysis to define the consumer groups.

Four consumer segments were identified along the items examined. The results obtained are shown in Table 1.

**Cluster 1. (N=450; 44%): People from cities committed to direct sale**

The members of this cluster attach above-average importance both to abstract and concrete product characteristics and social values, especially to social values influencing food purchase. They regularly buy products directly from the producer and assign a priority during food purchase to various forms of direct sale, primarily sale in farms, farmers' markets

and farmers' shops, through 'pick yourself' programs and community initiations. Overall, it can be stated that consumers in Cluster 1 take advantage of the opportunities provided by direct sale most often.

Typically, the members of this cluster are middle-age people living in cities. In the sample, unemployed people and old-age pensioners are overrepresented, which is consistent with the fact that the cluster is mainly formed by consumers with low income. From the aspect of the consumers' commitment to sustainability, this cluster is characterised mainly by consumers with medium level of commitment.

**Cluster 2 (N=334; 33%): People from rural regions committed to direct sale**



Similarly to Cluster 3, they attach average importance to abstract and concrete product characteristics influencing food purchase. In addition, they attach average importance to social values determining food purchase, unlike Cluster 3 that attaches much less importance to these factors.

The members of the cluster regularly buy vegetables, fruits, slaughtered poultry, meat preparations, dairy products, eggs and occasionally buy milk honey directly from the producers.

From the aspect of the location of purchase, those occasionally buy in farms are overrepresented in the cluster. It can also be seen that almost half (49.0%) of the cluster members regularly purchase at farmers' markets.

With regard to sociodemographic criteria, people living in rural areas, entrepreneurs and old-age pensioners are overrepresented. As for income, those with medium high income, as for educational level, those with medium or low educational level and medium low commitment to sustainability are overrepresented in the cluster.

#### **Cluster 3 (N=126; 13%): Those refusing direct sale**

They attach, similarly to Cluster 2, average importance to abstract and concrete product characteristics influencing food purchase. However, they attach below-average importance to social values, in the same way as those in Cluster 4.

Those refusing direct sale only occasionally buy vegetables, fruits and eggs directly from the producer and never buy slaughtered poultry, meat preparations, milk, dairy products and honey through this channel.

As for the location of purchase, they never buy in farms, through 'pick yourself' programs and social initiations, on wayside stands and

in producers' shops. With regard to the form of direct sale, 37.2% of the members regularly buy, while 27.7% occasionally buy at farmers' markets. Accordingly, it can be stated that even though several forms of direct sale are refused by this consumer group, farmers' markets still play an important part in the purchases of this cluster's members.

From the aspect of sociodemographic criteria, the age groups of 15-24 and 25-34 with lower social commitment are overrepresented within the cluster. In addition, non-working inhabitants of the capital (mainly students) with low educational level and low social status are overrepresented in this cluster.

#### **Cluster 4 (N=105; 10%): Those preferring new forms**

They typically attach below-average importance to all factors influencing food purchase.

With regard to product groups, those regularly buy vegetables, eggs, honey from the producers are underrepresented, while those occasionally buy dairy products from the producers are overrepresented.

As for the location of purchase, those regularly buy in farms, farmers' markets and on wayside stands are underrepresented, while those regularly buy in webshops/online stores, vending machines, 'pick yourself' programs and through home-delivery are overrepresented.

From the aspect of sociodemographic criteria, the age group of 65+ is underrepresented. In terms of educational level, those with medium educational level are overrepresented, while as for job status, workers, especially managers, white collar workers and students are overrepresented.

The results of our survey indicate that abstract and concrete product characteristics play a significant part in the food purchase decisions of Hungarian consumers. Such characteristics include price, quality, freshness, food safety and product choice. Social values, for instance the personal relationship with the producer, the method of food production and reducing the burden on the environment are less important for the consumers, although cluster analysis reveal the appearance of a consumer group that attach major importance to social values as well. Typically, these consumers give preference to various forms of direct sale during food purchase. It can be stated that this consumer group can be the main target group of direct sale.

Being aware of the factors determining the food purchases of Hungarian consumers, the benefits originating from the abstract and concrete product characteristics are advised to be highlighted in addition to the social advantages during social marketing and individual marketing programs in order to popularise direct sale as they have priority in the food purchase decisions of consumers.

The more and more unclear food trade raises the importance of direct sales. In our survey, we review the trends in the international research on consumer behaviour relating to direct sales, and examine the role of direct sales in the food purchase decisions made by Hungarian consumers.

Our research was carried out in September 2011 in the frame of the Omnibus representative national data collection performed by the market research company Cognative Piackutató Kft. In addition to descriptive statistics, bi- and multivariate correlation analyses, as well as contingency table, variance, factor and cluster analyses were performed. The results of our

survey indicate that abstract and concrete product characteristics play a significant part in the food purchase decisions of Hungarian consumers and social values are less important for the consumers.

However, the appearance of a consumer group that attaches major importance to social values has been revealed as well. Typically, these consumers give preference to various forms of direct sale during food purchase. It can be stated that this consumer group can be the main target group of agricultural producers that sell directly to consumers.

## Literature

**Wirthgen, B., Maurer, O.** (2000): Direktvermarktung – Verarbeitung, Absatz, Rentabilität, Recht, Verlag Eugen Ulmer GmbH & Co., Stuttgart

**Fehér, I.** (2007): Marketing possibilities of direct food sale and its relation to rural development, RENE Congree and Direct Marketing Forum, Mosonmagyaróvár, 14-16. February 2007.

**Spiller, A., Zühlsdorf, A., Mellin, M.**: Farmer-to Consumer Direct Marketing: The Role of Consumer Satisfaction Measurement for Service Innovations, 1<sup>st</sup> International

European Forum on Innovation and System Dynamics in Food Networks, Innsbruck-Igls, AUstria February 15-17, 2007. 244-354.o

**Kezis, A., Gwebu, T., Peavey, S., Cheng, H.** (1998): A Study Of Consumers At A Small Farmers' Market In Maine: Results From A 1995 Survey, Journal of Food Distribution Research, 29. Vol., 1998/1 (February); 91-99.o.

**Szakály, Z., Szabó, G. G.** (2009): Az élelmiszer-önrendelkezés aspektusainak elemzése termelői és fogyasztó szemszögből, LI. Georgikon Napok, 2009. október 1-2., 861-870.o.

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work and began to work in the Research Centre of the United States Department of Agriculture, Beltsville, Maryland, where he became the Head of Fruit Research Department in a few years.

He received recognition for clarifying the biological and biochemical processes of fruit ripening, examining the skin colour of various fruit species (particularly apple and cherry) and the problems of shelf life. Later, he was more and more interested in the requirements of generating dwarf trees, i.e. reducing stem growth and of flower bud development, as well as the questions of endodormancy. He was not a cloistered type of scholar at all, he worked actively and completed coordinating tasks in both American and worldwide horticultural associations.

In FAO and USA programs, he cared about the importance of supporting the developing world and, of course, Eastern Europe. One of his latest works was about China. This laboursome project studied the circumstances and opportunities the world's largest country might face in 2030. At the same time, he started to think about a similar program in Hungary to improve the declining fruit production sector. But this was not the first time when he assisted Hungarian scientists, as he had given support, through grants



or personally, to about fifty researchers, lecturers and engineers up to that time, as he did not keep his talents and office only for himself. He was to come to Budapest for the first meeting of the Hungarian program a few days after his death.

The awards he obtained in the U.S. (the Gourley Award, twice), the title of Honorary Doctor given by the University of Horticulture and Food Industry in Hungary, the honours conferred by the Ministry of Agriculture and Rural Development in Hungary and by the People's Republic of China expressed the appreciation that his work was far more than just the studying of rarities. There are over 200 scientific



papers, books (e.g. the *Physiology of temperate zone fruit trees*), book chapters connected to his name, but they are all eclipsed by the fact that he is still remembered by his workmates even though he was ‘just’ an immigrant. A few years before his death, he started publishing the series ‘Origin and dissemination...’ together with his Hungarian colleagues. These reviews, published by Wiley and Sons, analysed the questions relating to the botany, breeding, production history and actual economy of each stone fruit species. These works practically became the forerunners of historical ecology and the paradigm of biodiversity, and were issued together again by ISHS (Leuven) in 2011 as the 11<sup>th</sup> volume of *Scripta Horticulturae*.

The commemorative events at the university and in his native village gave a true reflection of Miklós Faust’s human and research character. After the words of welcome by *László Palkovics*, scientific vice-rector, the lecture given by *Károly Hrotkó*, dean implied that the present Hungarian-Chinese cooperative and development program was brought into life by Faust himself. *Béla Timon* presented the history of the Faust foundation in a well-documented lecture, then *István Kajati–Tamás Bubán– Pál Sallai– Ede Böszörményi* introduced the celebrated scholar as their master. *Dezső Surányi* delivered a lecture on the Hungarian production history of apple (Faust’s beloved fruit species), referring to the sorrowful event that the mentioned essay series broke off because of the death of Miklós Faust.

The Faust family, together with the Cornell

University, established a foundation in 1998. Up to now, the foundation enabled four young Hungarian researchers to spend half a year in the United States as scholars. At the colloquium held during the commemoration ceremony, these young researchers presented the major results of their work performed there.

The commemoration in Nagyberény was just as solemn as the scientific colloquium. Although he and his work were not unknown in his birthplace, it seemed reasonable to brush up the knowledge of the present schoolchildren. The program diffused the same vitalising warmth as Faust felt and cherished all through his life towards his native

country. After wreathing the emblem of the school named after him, the memorial plaque on the school’s wall, the mass was celebrated by *Andor Bara*, parson.

Following the anthems of Hungary and the United States, the participants of the ceremony was greeted by *András Károly Tóth*, the Mayor of Nagyberény and *Judit Quasney*, Miklós Faust’s daughter.

The school performance was announced by *Kabály-Csötönyi Anikó*.

At the end of the performance, the speech given by *Mrs. Gábor Szász*, headmaster, dealt with the question if Miklós Faust would have been proud of them for their teaching and talent management activity, but the answer was, in fact, already given during the performance.

The participants then visited the farm manager house, where he was born, that is now the headquarter of the agricultural company, *Berényi Agrár Zrt.*. The commemorative plaque prepared due to the organisational work of *Mária Kölber* was inaugurated and was then wreathed by the Faust family, the school of Nagyberény, the Local Government Office and the Faust Miklós Friendship and Scientific Society. The Chairman of the Society closed the ceremony, stating that they want to increase the number of members both locally and from newly graduated professionals and foundation grant holders. Just as there are manuscripts written by Miklós Faust whose publishing in Hungarian language would be advantageous for the country.

**Dezső Surányi**



Főoldal

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Üdvözlöm honlapunkon, mint a VM Vidékfejlesztési, Képzési és Szaktanácsadási Intézet (VM VKSZI) főigazgatója és a Vidékfejlesztési Minisztérium (VM) által alapított tudományos lapok kiadója.

A VM döntése alapján 2012. január 1-jétől kilenc agrárszaklap kiadása került a VM VKSZI-hez. Arra törekszünk, hogy ezek a folyóiratok továbbra is az agrártudományok színvonalas fórumai legyenek és biztosítsák a tudományos műhelyekben, valamint a hazai és határon túli doktori iskolákban zajló kutatások eredményeinek közzétételét a szakmai közvélemény számára. Az említett lapcsalád mellett Intézetünk adja ki *A falu* című folyóiratot és a *Magyar Vidéki Mozaik* magazint is, amelyek főként a vidékfejlesztés aktuális kérdéseit és eseményeit mutatják be évszakonkénti megjelenéssel.

Intézetünk tevékenységében a vidékfejlesztés területén kiemelt jelentőségű az Új Magyarország Vidékfejlesztési Program (ÚMVP) és a Darányi Ignác Terv kommunikációs feladatainak ellátása. Ebben jelentős szerepet kap különböző rendezvények, fórumok és továbbképzések szervezése és lebonyolítása. Igen fontos ezen felül, hogy a vidékfejlesztésben a LEADER helyi akciócsoportokkal kapcsolatban folyamatos monitoring tevékenységet végzünk. Ennek eredménye reményeink szerint, hogy az akciócsoportok munkája, valamint a vidékfejlesztés megítélése is javul országos és európai

