System Dynamics and Innovation in Food Networks 2013

Proceedings of the 6th International European Forum on System Dynamics and Innovation in Food Networks, organized by the International Center for Food Chain and Network Research, University of Bonn, Germany
February 18-22, 2013, Innsbruck-Igls, Austria
officially endorsed by

EAAE(European Association of Agricultural Economists)
IFAMA (International Food and Agribusiness Management Assoc.)
AIEA2 (Assoc. Intern. di Economia Alimentare e Agro-Industriale)
CIGR (Intern. Commission of Agric. and Biosystems Engineering)
INFITA (Intern. Network for IT in Agric., Food and the Environment)

edited by

U. Rickert and G. Schiefer

© 2013, Universität Bonn-ILB, Germany,
ISSN 2194-511X

Published by
Universität Bonn-ILB Press, Bonn
(Rheinische Friedrich-Wilhelms-Universität Bonn,
Institut für Lebensmittel- und Ressourcenökonomik)

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Printed by
Universitätsdruckerei der Rheinischen Friedrich-Wilhelms-Universität Bonn

The Current Status of the Hungarian Agri-Food Chains Related to Sustainability: Challenges and Barriers

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Abstract

The aim of this study was to identify challenges and barriers related to sustainability issues within the Hungarian agri-food sector. Within the SALSA EU FP7 project a survey was carried out which helped to evaluate the current status of the Hungarian food supply chains related to sustainability challenges.
The specific issues, which have to be considered, is the use of soy products and ingredients containing soy products in food, the consumer concerns about the use of GMO, and the sustainability of the soy and beef supply chains.
In Hungary the general interest related to the sustainability issues is still lower than within the North-West European countries. The results of the survey will be delivered in the presentation and discussed several topics according to the status of the Hungarian agri-food chains members' awareness related to the "Triple Bottom Line".

Keywords: *sustainability, GMO, supply chain, stakeholders, awareness*

1 Objectives

The aim of this study was to identify challenges and barriers related to sustainability issues within the Hungarian agri-food sector.
Within the SALSA EU FP7 project a survey was carried out, which helped to evaluate the current status of the Hungarian soy and beef supply chains related to sustainability issues.
The aim of the Salsa project is to develop strategies to tackle the eco-challenges of Latin American countries by promoting social cohesion and economic development at the same time. It includes the improvement of the market relationships and the competitiveness of the soy and beef supply chains within the EU, and in Latin American and global markets.
One of the work packages was responsible for the assessment of sustainability and market performance of the soy and beef supply chains. It was performed by the involvement of the relevant stakeholders of the selected supply chains in order to collect the different aspects of the stakeholders related to sustainability issues.
Related to this task individual interviews were carried out in Hungary to collect the information according to the perception of the relevant stakeholders of the selected supply chains.
The objective of the individual interviews was to have a wider overview about the perception and claims of the Hungarian stakeholders within the soy and beef supply chains and to identify the bottlenecks, concerns related to sustainability issues.

2 Method for carry out the interviews in Hungary

The first step was to identify the representative stakeholders within the Hungarian soy and beef supply chains and to organize individual interviews with these stakeholders.

The interviews with the representatives of the Hungarian stakeholders were carried out by Campden BRI Ltd. Hungary based on the interview guide prepared by SALSA project to reach the successful performance of the interviews with the stakeholders within the soy and beef supply chains.
The guide covered questions related to different areas such as sustainability, concerns related to the standards, certifications, the amount of the soy products imported, costs and the bottlenecks related to sustainability.
The interviews were carried out on telephone - because the availability of these stakeholders was limited - with the relevant stakeholders of the Hungarian soy and beef supply chains as a feed manufacturing company, a senior consultant of the soy supply chain, a soy breeder, the Hungarian Seed Association, the National Association of Hungarian Grey Cattle Breeders, and a Charolais cattle breeder.
After the interviews the summary of the outcomes was performed.

3 Outcomes of the interviews carried out in Hungary

The agricultural background of Hungary

In Central and Eastern Europe the majority of the agricultural areas are small or medium sized, hence the soy and beef businesses have lower production volumes than e.g. the Latin-American ones, which negatively impacts on their competiveness within the global and the European market.
Hungary is a middle-sized central European country with 9303 thousand hectares.[1] The rate of the areas, which are suitable for agricultural production, is quite high. The agricultural area of Hungary is 5337 thousand hectares, which is more than 60% of the total areas of Hungary.
The geographical circumstances and the climate - which are favourable for almost the all agricultural crops in Hungary - provide a good opportunity to Hungary to achieve a strong position in agriculture, and agricultural production within Europe. Only one main bottleneck, which exists, is the lack of precipitation.
The agricultural production of each region of Hungary is significantly different according to the quality and the yield and the structure of the production. The most productive area according to the agricultural production is the area of the Great Plain[2].
The most of the agricultural areas are arable lands with 4322 thousand hectares in 2011, which is the 58.7% of the agricultural areas of Hungary[3].
The dominant cultivated plants are cereals e.g. the share of the winter wheat and maize is more than 70% of the whole amount of the Hungarian arable lands' production, and sunflower also important as one of the most cultivated crops in Hungary. The production size of maize is increasing[4].
The hybrid maize production has a main role in Hungary. The maize production has started in the early 30's. Since 1954, several hybrids have been bred in the country. Now hybrids provide almost the whole maize production.

[1] https://www.aki.gov.hu/publikaciok/publikacio/a:259/Agrárgazdasági+Figyelő
[2] http://www.globserver.com/en/hungary/agriculture-0
[3] http://www.ksh.hu/docs/hun/xftp/gyor/vet/vet21105.pdf
[4] http://www.vszt.hu/cd.php?page=termesztes&lang=a

The majority of the seed sector is small- and middle-sized enterprises, but the large-sized companies play the main role, particularly the multinational ones.[5]

The Hungarian soy supply chains

The soy production in Hungary is much lower compared to the most dominant plants of the cultivated areas. Between 1930 and 1945 the soy was grown on 1600 hectares of the cultivated areas in Hungary. The amount of the soy grown areas started to increase in 1970 because the soy was recognized as a good source of protein. The maximum size of the soy grown areas was 66000 hectares, which was reached in 1988.
The decrease of the soy production in Hungary was affected by the decrease of the number of the livestock and the increase of the import of the soy. Besides, the most important bottleneck of the soy production in Hungary was that the higher crop producer species of soy has longer breeding-season, since it can't produce a harvest for the duration of a crop year; hence the soy, which is harvested, is unripe. In the recent years the amount of the soy production started to increase, but the use of soy is currently more than the production within Hungary; hence there is a need for the import of soy approximately 600000 - 800000 tonnes per year.
The majority of the import soy comes from the South American countries. This amount of soy import is quite stable or increasing, which might be covered by soy harvested and manufactured in Hungary, if soy production increases to at least that amount of quantity.
According to this statement, one of the specific issues, which has to be considered, is the use of soy products and ingredients containing soy products in food. In Hungary there are consumer concerns about the use of GMO in food products related to food safety, sustainability and ethical issues.

Consumer concerns related to the use of GMO in Hungary

In Hungary there is a legal law on the production of GMO soy for commercial purposes. The legal requirements of the EU are summarized within the Regulation (EC) 1829/2003 on genetically modified food and feed and in the Regulation (EC) 1830/2003 concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms.
The regulations shall not apply to traces of authorised GMOs in a proportion no higher than 0.9 % or lower thresholds but the product must be labelled as containing GMO if the inadvertent GMO content is greater than 0.9% or if it is knowingly added. Beside that the legal requirement contain that the individual GMO ingredients must be identified. If the product contains GMO then must transmit down the chain in writing the GMO ingredient and the unique identifier of the GMO. If the precise identity is not known, the documentation must include the words "may contain GMOs".
The regulation has to ensure that consumers are fully and reliably informed about GMOs and hence the products, foods and feed made thereof. It is a consumer requirement, which ensure them to make an informed decision related to the choice of product.
The Hungarian consumers and the Hungarian Government do not support the production of GMO plants and seeds within the country. There is a need, which is increased by both that to protect and keep Hungary as a GMO free land in Europe as long as it is possible. In the

[5] http://www.vszt.hu/cd.php?page=termesztes&lang=a

agriculture in Hungary only GMO free soybeans are produced, but it is a small quantity, related to the quantity of the imported soybean and soy products.
The problem related to the import soybean is that usually these are not GMO free. Hence there is a high risk that GMO free soybeans and the products made thereof are cross-contaminated with GMO containing soy during the production, handling, storage, transport and processing.
In addition to that there are very strong activities of NGOs, which demand the complete ban of GM materials in food and also in feed.
According to the current EU and the equivalent Hungarian legislation the GMO labelling requirements shall not be applied to traces of authorised GMOs until their proportion is not higher than 0.9 %.
The legal requirement is laid down prescribes also that the sources and the unintended or adventitious contaminants with GMOs must be proven. As the GMO containing ingredient moves along the food chain the interpretation of the term of inadvertent or accidental use is changing by the usual integration of the food control authorities. Once the GMO content of an ingredient has been established by testing, even if this is lower than the labelling threshold, the further use of this ingredient can't be considered as an inadvertent one, if it can't be proven that all necessary measures had been carried out to prevent the GM contamination.
Besides the legal requirements of the EU, other applications are able to prevent the cross-contamination of GMO. These can be the voluntary certification schemes, which are existed to verify the GMO free status. A good example for voluntary schemes is the case of Identity Preserved Soybean. This scheme guarantees the GMO free status.
The requirements of the standards start with the specification of required growing and harvesting practices and includes clear purchasing specifications, the application of segregation zones at harvesting, cleaning of machinery with GMO free materials at change over after GMO containing materials. Beside that the buyer may require a legal right to visit the production, operation site of the supplier at any time. The requirements of standards contain a combination of a detailed record keeping along all steps of the chain, a laboratory testing at several stages and third party verification is also applied.
In addition at the Hungarian stakeholders' view, it is difficult for the producers to supply certified GMO-free seed with the adequate quality and quantity within the soy and beef supply chains. Besides, within the soy supply chain there is a barrier related to the retail sale and supply that small enterprises or farmers might have difficulties or problems in the performance or to meet the requirements of the standards and certification schemes, which might encourage them in producing soy.
The initiatives of the civil society movements' promote the approach that the unintended use can be proven only if the product is coming from identity preserved sources. This interpretation is applied by the food control authorities in some countries in Europe. This interpretation is causing difficulties in the use of ingredients made of non-identity preserved soy for food in Europe, since these ingredients frequently contain some GMOs, but under the labelling threshold.
The total area of Hungary is 9.303.036 hectares. The dominant plants are wheat, corn and sunflower. These plants have 2.500.000 hectares for areas under cultivation. In Hungary there are 35.000 hectares under cultivation of soy and the average yield is 2.4 tonnes per

hectares. On the contrary, within the LA only Argentina has more than 18.000.000 hectares for areas under cultivation of soy.[6]
According to the amount of soy, which is used in Hungary is more than the production; hence there is a need for import of soy approximately 800.000 tonnes per year. This amount of soy import is quite stable or increasing. The approximately 800.000 tonnes of import soy might be covered by soy harvested and manufactured in Hungary if soy production increases to at least that amount of quantity (800.000 - 1 million tonnes per year). It might be a good opportunity to adapt soy cultivation into the Hungarian crop production, because it fits well in the system of crop rotation and it can be also used to break the monoculture. Beside the cultivation of soy have several benefits. Within the Hungarian agriculture it is important related to sustainability that the cultivated areas of the pulses have increased in the recent years, which show that they have realized that continuous development should be followed, to strengthen the reparation of soil conditions. One of the advantages of the pulses is that they produce nitrogen by nitrogen-fixing of Bacterium radicola; hence the adaption of the cultivation of these species (particularly soy) into the Hungarian crop production might be beneficial for the country. The cultivation of pulses can provide the basis of sustainable crop production within Hungary. To achieve the changes it is needed to tackle with sustainable challenges from the crop and plant production as the first step of the supply chain and continue along the supply chain until the end user, or the consumer.

The Hungarian beef supply chains

The livestock production of Hungary has decreased in the recent years. In 2008 the number of the bovine livestock was 701000 and on the 1st of December, 2011 this quantity was 698000. In addition increases can be observed in relation to the amount of beef cattle.
The amount of the beef slaughtering in Hungary was decreased in the recent years similarly to the decrease of the amount of bovine livestock (including the amount of beef and dairy cattle) and lots of slaughterhouses were closed down at the same time. Besides, the majority of beef cattle are exported because of the higher price of beef. The amount of the slaughtered cattle livestock was 100101 in 2011, the live weight of this amount was 51111 tonnes. There is an expectation by the Hungarian experts that the production of beef cattle will be increased within a few years.
The EU requirements related to the identification and registration of bovine animals and regarding the labelling of beef and beef products are laid down in the Regulation 1760/2000 (EC). It describes that the origin needs to be indicated (e.g. import from third country: “Origin: non-EC” or “Slaughtered in (name of third country)”).
The legal requirements are different in the LA and in the EU, which results in different quality products. For example in Latin-America only the slaughter of those hormone-treated animals is forbidden, which were treated within 60 days before the slaughter. In the EU the requirements are applied that the use of growth hormones is absolutely forbidden along the whole supply chain.
In relation with the Hungarian beef production consumers have concerns and broken trust on quality, because the majority of the high quality meat and the animals is sold abroad, thus in domestic markets there are lower quality meat.[7]

[6] http://lacs.ipni.net/article/LACS-1012
[7] http://www.kormany.hu/download/a/85/80000/AF_2012_1.pdf

According to this problem, one of the main barriers of the Hungarian beef sale in domestic markets is the relatively high price of the high quality meat. The quality of the Hungarian beef cattle is prominently good, but beef became very expensive and at the same time there is a lack of Hungarian beef slaughterhouses. These bottlenecks and the consumer concerns create barriers for the domestic selling.
There is an increasing need of the Hungarian farmers and producers to enhance the domestic beef market. It is a difficult issue because in Hungary the hypermarket chains have strong bargaining power related to the prices. It can be an opportunity to deal with the feasibility of the branded Hungarian beef programme, and to enhance the awareness of the consumers about the high quality national beef and national products.

The perception of the Hungarian stakeholders according to sustainability

During the interviews it became clear that there is a need for a clear definition of sustainability by the stakeholders within the Hungarian soy and beef supply chains because there is a modest awareness related to sustainability challenges and environmental performance.
The interest is modest related to sustainability issues and sustainability development within the current situation in Hungary compared to the northern European countries. Initiatives are observed by the Hungarian enterprises related to the achievement of sustainability, but significant activities or changes within the approaches have not been made yet. It is important to be concerned about sustainability to improve the balance according to the "Triple bottom line" (UNEP, 2007).
Sustainable development should be a highlighted issue, because it is important to preserve the environment for the next generations by the enhancement of the aware of eco-efficient and environmental-friendly approaches within the country.
In the Hungarian stakeholders' opinion the need for sustainability is export oriented and incurred by the demand of the end users (particularly consumers) that they are aware of the impacts of the production processes. Since there is a need for sustainability by multinational companies, since they pressurize on the crop and livestock production to comply the requirements of related standards to satisfy the claims of the end users. The main objective of sustainability within the Hungarian industry should be the concept of producing the best quality product by the most efficient use of the natural resources.
The awareness of the consumers has increased in the recent years related to sustainability issues. At the present it is highly important for the producers to provide safety products for the consumers to enhance their trust. The negative impacts of the production as the environmental, social, economic impacts can lead to their broken trust. Hence the participants of the interviews all agreed in that the certification schemes might provide good opportunities to assure consumers' trust. They highlighted that the impacts of the production processes cannot be ungrouped, because these are in interaction with each other. The balance must be kept between these impacts. The acceptable level of the impacts of the production is if the production ensures safety for human health and avoids any hazards in each step along the whole supply chain.
In Hungary, there exists a National Council for Sustainable Development (NFFT), which was established by the decision of the Parliament.[8]The Council was prepared a draft Framework Strategy, which was aimed to provide a long term concept for the political decision-making

[8] http://www.nfft.hu/main_page/

system. The main objective of the Framework Strategy was to contribute to the Hungarian compliance according to sustainability. Four resources are highlighted in this document; these are the human, environmental, social and economic resources.
The definition of sustainable development prepared by the Hungarian National Council for Sustainable Development, which was included in the National Sustainable Strategy is "Sustainable development is aimed at preserving and improving the quality of life permanently and in the long run".[9]
Within Hungary there are social initiatives to improve sustainability e.g. "Collect up your trash" but the awareness of sustainability should be raised up during the infant and primary school. Good practices are known in foreign countries for example show centres, renewable energy centres, which demonstrate several solutions to achieve sustainable development for everyone who is interested in these solutions. But in the participants' opinion the performance of the individual initiatives and voluntary certification or standards might be difficult and sometimes impossible, because these are not compulsory; hence there is no pressure on each stakeholder along the chain to compass the requirements. As a consequence, this is a self-interest business.
There is a need by the stakeholders upstream and downstream equally for the enhancement of the performance of the standards and for the adequate traceability to identify the origin of the product, because it can generate a competitive advantage for the stakeholders along the supply chain. In addition it might increase the profit by the premium price of the products, because these certified products are provided for the niche market not for the mainstream one (exception of feed production). According to this, the current statement is that the certified soy is only approximately 10% of the whole amount of soy production in Hungary.
To achieve sustainability it is important to minimize the import of Hungary from distant lands, particularly soy import from Latin American countries and at the same time it might be an opportunity to maximize the soy production within the domestic lands or within other EU countries.
This advantage and the stringent interpretation of the labelling legislation by the food control authorities may create a niche market for smaller soy producers within Hungary to supply identity preserved – non-GM soy material for food use for a price bonus.
One other barrier, which should be considered, is the associated costs of sustainability, which sometimes can be high. But in order to make profit, at first investments are needed. If there was an increased need for sustainable production and products in Hungary, there would be no risk of the performance of the sustainability standards, because there will be a demand for these products. Besides, the premium price of these products might be accepted by the consumers, because these products might be made for niche market.

[9] http://www.nfft.hu/dynamic/national_sustainable_development_strategy.pdf

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5 Acknowledge

This document is developed under the programme SALSA project (Grant Agreement n. 265927), which is funded by the European Commission under the theme FP7 KBBE (Knowledge-Based Bio-Economy), topic KBBE.2010.2.5-02 "Eco-challenges in the food chain of the Latin American region – SICA (Latin America)".