PRODUCER’S RESPONSIBILITY CONCERNING THE ASSURANCE AND STATEMENT OF QUALITY FOR FOODS WITH “ORGANIC IMAGE” BASED ON THE MODEL OF A ROMANIAN COMPANY

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Abstract
The responsibility of organizations to the consumer has now become a permanent concern, the principles of ethics in their activities result in attracting new customers and thus in their remaining within competition.

The present study aims to highlight the importance of producers’ accountability in ensuring the quality of foodstuffs obtained through sustainable methods of production and to correctly and completely inform the consumers.

The research follows the quality analysis of a product with an “organic image” addressed to the market/consumers, by testing the physicochemical and microbiological characteristics in the laboratory of the National Research and Development Institute for Food Bio-Resources in Bucharest, as well as comparing the obtained results with the values stated in the producer’s specifications; the main purpose is checking the conformity and establishing the validity of the published nutritional information and the statements regarding the product’s quality made on the printed label.

Keywords: Producer’s responsibility, organic foodstuff, “organic image” product, certification and labelling of organic foodstuff, food quality.

JEL Classification: D18, L15, O13, Q56

Introduction
We can say that organic farming is a sector heavily promoted both at the European Union and national level. Legislation, existing inspection and certification bodies and specific labelling are the main foundation of this system, which highlights the states interest in preserving the environment, in healthier food sources and a more productive economy.

Food products “with a organic image” are considered intermediate products that are interposed between organic and conventional products (this category contains „farm”

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products as well). To be enclosed in this category, the product must meet the following three cumulative conditions: to be obtained from an agricultural working sector or a farm, the necessary ingredients for obtaining the final product must come from a farm as well, and the product must be obtained through a manufacturing scale, in other words, by practicing specific tradition in the product’s preparation (Constantin, 2013).

The logo "ae" is found on the label of any organic product obtained in Romania, except food products in organic conversion period. For the latter the label can contain information such as: "product under conversion to organic farming" (but in the same size, colour and style of lettering with the market name of the product so none of these words are more highlighted than the other).

The term “organic image product” could help both producer and consumer recognizing and differentiating products that are one step away from the organic certification (Lagrange, 1995). Organic imaged food products can be considered those that are a step away from obtaining an organic certificate and due to its recipe and its production method, the Topoloveni jam can receive this entitling.

1. Organic food certification and labelling - producer’s responsibility for correctly informing the consumer

Besides implementing a well-documented legislation, the European Union’s organic farming strategy includes a very important process, the certification process, which represents the main path for farmers to approach this type of agriculture (Willer, Rohwedder and Wynen, 2009).

So, in order to meet the consumer’s needs, regarding their difficulty in recognizing organic products against conventional ones, the authorities introduced the certification system of organic food. Moreover, this system offers a guarantee that the food products comes from organic farming and that the consumers aren’t defrauded.

The certification in the organic domain represents a confirmation of the product’s conformity with the organic farming standards, confirmation provided by a certification body that we can refer as an independent third party, specialized in inspections and controlling activities in the organic production domain, regarding the stipulations of the Council Regulation (EC) No. 834/2007 (Costin, 2008, p.232).

Beside the certification system, the authorities’ proposals meet the consumers’ needs, helping them in recognizing organic food through the labelling system. In order to correctly inform consumers and to eliminate any confusion or misunderstandings that they might have about the food they purchase, the organic products must have a specific label (Tarabella and Voinea, 2013).

This labelling activity becomes the producer’s responsibility. In this regard, there are a number of national and Community rules governing the correct labelling manner for organic food products. Of these, the most important are common orders no. 417/13.09.2002 and no. 110/7.10.2002 of the Ministry of Agriculture and the President of the National Authority for Consumer’s Protection, for approving the specific rules of organic food labelling.
Under the present legislation, it is mandatory for an organic food label to contain the following indications:

- the name and address of the manufacturer or processor;
- the name of the product, including the organic production method used;
- the name and address of the certification body;
- storage conditions;
- the date of minimum durability;
- prohibition regarding the storage of organic products in the same space with other products.

Also, according to legal regulations, the label of an organic food product must include the abbreviation "ae". This logo gives the consumers a guarantee that the product that has the inscription is obtained by organic farming methods, being in concordance both with Romanian and European Union laws.

The first logo of this kind had been granted by the European Union (Figure no. 1), under the form of a custom logo, that each Member State was obliged to use. The differentiations between member countries were made through their native language, in which the words "organic agriculture" were written.

This logo was launched in 1990 and was appended voluntary and not mandatory. The use of this logo officially ceased beginning July 1st 2010, but it can still be found on certain products in the supply chain, that have a much longer date of minimum durability than common food products (certain canned food, flour etc.).

The currently regulated logo, named also the national logo "ae", may be used for a certification - identification purposes or an advertising - informational purposes, being MARD’s propriety and being registered at the State Office for Inventions and Trademarks (Figure no. 2).

In order for the market name under which the food product is sold to contain references to organic production, certain conditions must be met, according to EC Regulation 834/2007 regarding organic production and labelling of organic products:

- at least 95% of the product’s ingredients of agricultural origin are obtained in accordance with organic production rules set by the regulations in effect;
all the product’s ingredients of agricultural origin have permission to be used in organic farming or have been provisionally authorized by a Member State;

- the product or its ingredients are not subjected to treatments involving the use of ionizing radiation;

- product is prepared or imported by an operator which is controlled by an authorized inspection and certification body;

- the names and / or code of the inspection and certification body, that performed the last inspection for the operator, are marked on the label of the food product;

- the product must be produced without the use of genetically modified organisms and / or products derived from such organisms;

- the instructions regarding the organic production system must clearly establish that they refer to an agricultural production method and must be accompanied by an indication regarding the ingredients of agricultural origin, provided that this declaration is not included in the list of ingredients.

Besides the national logo, on the organic food label, the consumer can encounter another logo: the specific logo of the European Union. This logo was created to ease the consumer’s effort in identifying genuine organic products. Also, due to the presence of this logo on the product’s label, consumers can have the assurance that the product is obtained within the community area and is certified by a specialized body, officially recognized in the European Union through its national recognition in each structure with relevant expertise in this domain.

Thus, with the introduction of so-called "eco-leaf" logo, the founding was made for an efficient system of eco-labelling. Since July 2010, the use of the European Union organic logo (shown in Figure no. 3) is mandatory for all pre-packaged organic food in the Union. The logo can be voluntary used for non-pre-packaged organic products, manufactured in the EU territory, or any organic products imported from third countries.

![EU logo for organic farming](http://ec.europa.eu/agriculture/organic/eu-policy/logo_ro)

Regarding the labelling of processed food, the EC Regulation no. 834/2007 stipulates that they can be labelled as organic food by applying European Union logo only when at least 95% of the ingredients, by weight, are raw materials, organically produced. The Regulation also establishes provisions in regard to the labelling of processed food that contain ingredients which cannot be obtained ecologically, here being included products obtained from hunting and fishing of wild animals. The European Union allows the simultaneous use of both the euro-leaf and national logo, the latter varying from one state to other; thus, the certification and statement of quality for organic foodstuff provide better visibility and
promotion of products and also improve the consumer’s protection (Cottingham and Winkler, 2007).


2.1 Justification of the natural plum jam Topoloveni „organic image” classification

The natural plum jam Topoloveni product is obtained based on a traditional recipe from the combination, in amounts well established, of varieties of plums, harvested at full maturity. Selected varieties as well as the harvest time are extremely important issues because there are a number of conditions that the raw material must fulfil, namely: high carbohydrate content (natural sugar) and an optimal level of vitamin C, requirements obtained when plums are at full maturity, after a long period of time, at a moderate temperature. The producer tried to underline the product’s specific characteristics by making a convincing label (Figure no. 4), which evolved with every quality certification obtained:

- Protected Geographical Indication (EU);
- Official Supplier of Royal House of Romania;
- Ambassador of the „Romanian traditional taste”;
- “Attested quality” Certificate – National Centre for Comparative Tests;
- Traditional product recommended by BIO ROMÂNIA;
- Larex certified product.

![Figure no. 4: Label of the Topoloveni natural plum jam](Source: label scanned by authors)

The manufacturer initiated a series of steps necessary for obtaining the official recognition of the product’s quality of being 100% natural, mention that appears on its label; the company managed in 2008 to obtain the necessary certification from Larex2 Romania, stating that the product contains no added sugar and no preservatives.

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2 National Center for Testing and Expertise LAREX (C.N.I.E.P.-LAREX)
In 2009, Topoloveni jam officially became one of the traditional national food products due to its inclusion on the list of geographical indications and protected designations of origin recognized in Romania. The product’s name, “magiun de prune Topoloveni”, is also registered in the protected designations of origin and geographical indications in Europe, after obtaining the notice of the European Commission.

In 2008, the National Organic Products Authority (NAEP - the national body responsible, at the time, for the organic certification inspections) made the first positive findings, the factory meeting all the necessary conditions for the product to be classified as organic. The technical – material bases, processes and production line as well as the packaging and labelling processes were compliant with national and EU organic standard requirements. However, the raw material purchased from local producers was not certified as obtained from an organic exploitation; although tests performed guaranteed absence of chemical substances (pesticides, insecticides, etc.), local producers did not have any certification in this regard and were not interested in obtaining an organic certification for their raw material, due to financial and organizational reasons. Moreover, the long period for perennial conversion crops doesn’t represent a strong point for organic agricultural practice, the period lasting a minimum of 3 years.

Looking for a source of supply for organic plums, the result stated that the number of manufacturers or suppliers of certified organic plums is almost zero in the region; in this case the food product couldn’t acquire the status of an organic one.

Regarding the version that involves achieving its own plum plantation, the company analysed this scenario and realized that they needed a well prepared business plan and some very important financial resources both for opening the plantation and for the purchase of new production equipment in which only organic jam will be made (due to the fact that the ecological agriculture legislation does not allow an organic product to be processed in the same equipment where a conventional product is obtained). Based on this information, it became extremely difficult to put into practice the financial plan, given that the company was in full process of enlarging the product range.

But the company’s prospects include the option of a future organic certification, because one of its main plum suppliers from Olt passed his first year of organic certification and, soon to follow, the Topoloveni jam will be on the organic market.

2.2 Organizing, conducting and interpreting the research results

2.2.1 Objectives of research

In our endeavour we established the following objectives:

- the laboratory determination of physicochemical and microbiological characteristics of the natural plum jam Topoloveni in order to establish the deliverable’s quality for the market/consumer;
- comparing the results with the values prescribed in the company’s specifications for manufacturing in order to verify the conformity of the product;
- establishing the accuracy of the information declared on the nutrition label.

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The main sets of tests prescribed in the specifications notebook of SC SONIMPEX SERV COM LLC, for plum jam Topoloveni are:

- physicochemical analysis – this set of tests are mandatory for each product lot, in order to maintain Larex certificates held so far, and for future maintenance regarding organic agriculture certifications. These analyses include the determination of:
  - Soluble dry matter – according to SR ISO 2173/2008;
  - Total acidity expressed as malic acid - according to ISO 750/2008;
  - Insoluble ash in hydrochloric acid - according to ISO 763/2008.

- microbiological analyses include determining:
  - Yeasts and moulds - according to SR ISO 21527-1/2009;

Various tests such as physical-chemical and microbiological ones represent main activities for numerous national testing laboratories. Besides the importance of these characteristics for the food industry, these tests represent the foundation of a true wide research network existing at national level.

Thus, for this part of the research to take place, one of the most important bodies in this domain was referred, the National Institute for Research - Development for Food Bio-Resources Bucharest.

2.2.2 Methodology and research results

A. Physicochemical characterization of “Topoloveni plum jam”

A series of tests considered necessary to control the quality characteristics of organic food are physicochemical analyses. Through them a number of parameters that define the product and its nutritional value are identified.

Because of the complex chemical structure of any food, it is possible to identify some of its most important characteristics by carrying out physicochemical nature analysis. So, the determination methods used by the agricultural and food industry may find the following usefulness (Dima, 2004, pp. 227-229): developing and applying identity and purity rules, identifying certain substances in food products, detecting any changes in the product’s structure during storage period, studying or improving raw food or processed quality control, determining the nutritional value of food for scientific or dietetic purposes or for the labelling process.

Preliminary stages for the determining activity of the physicochemical characteristics are:

- establishing the set of parameters to be determined, based on the analysis set proposed in the Topoloveni plum jam’s specification workbook and from the recommendations of the National Institute of Research - Development for Food Bio-Resources, namely:
  - soluble dry substance;
  - acidity expressed as malic acid;
  - ash content (total ash, insoluble ash in 10% hydrochloric acid);
  - total energy value (total energy in kcal and kJ, energy value, expressed as protein, lipids, carbohydrates per 100 g of product).

- the reception of the products at the point of reception, for receiving a reception note, for labelling and analysing in terms of specific requirements (storage temperature, for
example) and for sending to the physicochemical laboratory. As a material sample analyses were performed on a total of three 350g jars of lot 26, the expiration date being 09.2014.

- the study of Romanian standards regarding the determination of ash, soluble dry substance, acidity and energy value, according to which the analyses will be made, in order to address any ambiguities concerning the terminology and working mode.

Physicochemical analyses were carried out during 03.04-10.04.2013 and were concerned with:

- **determination of soluble dry substance** for sweet products by refractometry method, using the Abbe refractometer, according to Romanian standard SR ISO 2173/2008 - fruit and vegetable products - Determination of soluble substances (soluble dry extract). For all three samples, the refractive index was 1.4363, resulting a level of about 57.5 degree Brix. This indicator is particularly important for the final product, its degree of preservation depending on it. A value below 56° Brix directly involves the adding of preservative substances or a large amount of sugar to allow the storage of the product throughout its period of validity. So, the value resulted from the analysis is an optimal one, allowing the product’s preservation due to its own natural concentration, whose process involves however additional costs for manufacturers, due to a longer boiling process that will be necessarily, in a steam bath.

- **determination of acidity expressed as malic acid**, based on Romanian standard SR ISO 750/2008 - Determination of titratable acidity. Fruit and vegetables products. The average value resulted is 2.3% malic acid. This value has a very major impact on the final product. Plum jam without added sugar has in general acidity between 0.6% and 3% malic acid, the main factor that causes fluctuation in the sense being the natural sugar quantity retrieved in the final product, quantity that is specific for the plum varieties used in obtaining the jam. But, in the case of the recipe declared by Sonimpex (the mixture of plums varieties stated in the recipe, regarding the quantities shown), the optimal value should be between 2.3% - 2.6% malic acid, this indicator being another control instrument of the quality of the final product.

- **determination of ash insoluble in hydrochloric acid 10%**. This analysis is based on the determination of total ash according to standard STAS 2213/6-68 - Determination of ash for sweet products. Total ash content resulting from the determination made on Topoloveni plum jam was 1.97% of the weight of the sample analysed. Total ash is a very important indicator that shows the consumer the content of minerals and mineral impurities from the product. Ash insoluble in 10% hydrochloric acid is derived from the previous result and is based on the Romanian standard ISO 763:2008 for determination of ash insoluble in hydrochloric acid for products derived from fruits and vegetables. This value has a major relevance for the final product: the higher the value, the higher the level of waste / mineral impurities found in the product or the extent of contamination. Thus, high levels of this indicator reveals either a superficial cleaning / insufficient washing of the raw material before processing or an infiltration of various impurities during processing or packaging either a poor hygiene processing environment. The content of ash insoluble in hydrochloric acid 10% for the tested product was very low (0.02%), this denoting a production, processing and packaging process in accordance with the rules of hygiene and food safety.

- **determination of total energy value**, using the general formula for this calculation, which is based on the trophin content: the overall amount of proteins, fat and carbohydrates. The value offered by trophines calories (carbohydrates, lipids, proteins)
varies from one product to another and is directly influenced by the raw materials from which the product is obtained and the manner in which it is prepared or stored. The preliminary stage of determining the energy value of the product investigated was establishing the methods for determining the trophines.

_Determination of total protein level_ is based on Romanian standard SR ISO 5983-1:2009 - Determination of nitrogen content and calculation of crude protein, by Kjeldahl method, method described in the aforementioned standard. The total protein content resulted after the determination was 1.84%, a value that means 1.84 grams of protein per 100 grams of product.

_Determination of total fat content_ of the product is based on Romanian standard SR ISO 2213-11/2007 - Sweet products. Determination of fat content. To determine this indicator the Soxhlet method was used, for this is recommended to be used for sweet products in general (chocolate, pastry and confectionery and so on). For our product, the result of this determination was 0.57% and 0.57 grams of fat per 100 grams of product.

_Determination of total carbohydrates_ was based on the iodometric method, more exactly the Luff - Schoorl version (Romanian standard SR ISO 2213-12/2009 - Determination of sugar). The total carbohydrate level (or soluble dry substance) obtained from the calculation is 56.3% which represents 56.3 grams of carbohydrates per 100 g product, from which 34.16% is represented by sugar.

So, knowing the amount of energy substances, the energy value was determined by using a calculation formula (Bobe, 2005), resulting in a total energy of 249 kcal/100g respectively 1055 kJ/100g (to determine the value in kJ, the value in Kcal must be multiply with a coefficient of 4.184). Applying the average coefficient of energy substances’ assimilation of 0.85 is obtained energy value of 207.11 kcal/100 grams.

Although the energy value is not provided as an indicator in the manufacturer’s specifications notebook, its determination was made as it is listed on the nutrition label of the product, the present study aiming for stating the veracity of the product’s nutritional information (content in grams of protein, fat, carbohydrates per 100 grams product and the amount of energy in kcal or kJ per 100 g product).

The table below (table no. 1) compares the obtained values with those stated on the nutritional label:

<table>
<thead>
<tr>
<th>Current no.</th>
<th>Characteristics</th>
<th>Obtained values</th>
<th>Stated values</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Proteins</td>
<td>1.84 g/100 grams</td>
<td>1.83 g/100 grams</td>
</tr>
<tr>
<td>2</td>
<td>Lipids</td>
<td>0.57 g/100 grams</td>
<td>0.53 g/100 grams</td>
</tr>
<tr>
<td>3</td>
<td>Soluble dry substance</td>
<td>56.3 g/100 grams</td>
<td>56.2 g/100 grams</td>
</tr>
<tr>
<td>4</td>
<td>Energetic value</td>
<td>207.11 kcal/100 grams</td>
<td>207 kcal/100 grams</td>
</tr>
</tbody>
</table>

_Source: author’s analysis_
Comparing the values obtained by the laboratory measurements and above mentioned with those included in the nutritional label of the product it can be stated that the values are very similar, the differences falling within the standard tolerances.

After the completion of this series of tests one can notice a correlation between the determined physicochemical quality values (recorded in the test report no. 1599 of 24.04.2013 issued by the National Institute of Research - Development for Food Bio-Resources, Bucharest) and the values prescribed in the specification workbook of the manufacturer.

B. Microbiological characterization of “Topoloveni plum jam”

In addition to physicochemical analyses, microbiological analyses have a particular importance as they are directly related to the presence of certain microorganisms in the final product, which represents a non-conformity of the product, denoting a non-compliance regarding hygiene rules during the production and packaging processes and a mediocrity in the quality control of the concerned products (Dima, Pamfilie and Procopie, 2004).

Thus, in a production unit numerous sources of contamination, from traces of rodent hair to particles of different metal or wood materials, sand etc., can exist, a constant monitoring for identifying possible causes and eliminating them becoming necessary.

Yeasts, moulds, bacteria, considered to be food contaminants difficult to distinguish, require microbiological examinations for them to be recognized and define; the microbial load can result in damage of the final product, sometimes with serious effects on human health (Procopie, 2001).

In order to establish the microbiological parameters for Topoloveni plum jam a set of tests were made in the microbiology laboratory ELISA, the laboratory of the National Institute of Research - Development for Food Bio-Resources. For the reference product, the main sources of contamination were:

- mesophilic aerobic bacteria;
- mesophilic anaerobic bacteria;
- thermophilic anaerobic bacteria;
- non-swelling thermophilic acidification bacteria;
- moulds;
- yeast.

The preliminary stages of determining the microbiological characteristics were:

- establishing a set of parameters to be determined, based on the set of analysis proposed in the specifications workbook of Topoloveni jam as well as the recommendations of ELISA Microbiology Laboratory of the National Institute of Research - Development for Food Bio-Resources;
- the reception of the food products for analysis at the reception point, for receiving a reception note, for labelling and analysing in terms of specific requirements: identifying of any defects (corrosion, deformation, physical or biological swell, leaked of content, improper closure etc.) and registration of the identified issues; sending the samples collected from 5 glass jars of 350g with twist-off closure type, of the 26 lot and expire date 09.2014 to the microbiology laboratory;
the study of the reference set of documents considered essential for carrying out these analyses, documents referring mainly to Romanian standards, in order to address any ambiguities concerning the terminology and working methods.

After examining the jars, the containers found complied with the requirements of the manufacturer's specifications workbook.

Microbiological analyses were carried out from 26.03 to 15.04.2013 and were conducted in accordance to ISO 8924-1995 standards - microbiological analysis of food in hermetically sealed cans (for bacteria) and ISO 21527-1/2009 - Determination of yeasts and moulds. Food products and the following results were recorded (according to test report no. 1700 of 05.10.2013 issued by the National Institute of Research - Development for Food Bioresources, Bucharest):

- mesophilic aerobic bacteria, anaerobic mesophilic bacteria, thermophilic anaerobic bacteria, non-swelling thermophilic acidification bacteria - absent;
- moulds and yeasts - absent.

It can be seen that from a microbiological point of view the product falls within the requirements of a rigorous quality control as well as in the pattern imposed by the hygiene and production safety rules.

Conclusions

Due to the novelty that it involves, the organic sector often faces the lack of consumer trust, which represents a defining barrier with direct impact on the level of national consumption. This barrier is more difficult to overcome, as the consumers do not have access to information and clear methods for recognition the organic products, through the label’s specifications. This is why assuming the responsibility in the assurance and statement of quality in the case of organic products or products with an “organic image” becomes for the producer a sine-qua-non condition for remaining competitive.

In this context, EU logo highlights the following guarantees:

- at least 95% of the product was obtained from organic ingredients;
- the product meets the official scheme inspection rules;
- the product comes directly from the manufacturer and processor in sealed packages;
- the product mentions the name of the manufacturer, processor or vendor and the inspection body’s code.

The product chosen for the case study – “Topoloveni plum Jam” – is a food product that can be enclosed in the category of products with a green or organic imagine, due to the fact that the product meets the prerequisites of obtaining an organic certificate, on the strength of its production recipe and its Larex certification. The product is obtained only from natural ingredients (100% plums) with no added sugar or chemicals and the raw material is certified by Larex Romania not having any added chemicals; its selection process for the present case study was based on notoriety, the Romanian product being officially recognized in the European Union. Its designation has been recorded in the Register of protected designations of origin and geographical indications protected across Europe after obtaining the approval of the European Commission, being the only national product that could be found in the European Register.
The establishing of product for our case study was based on the criteria of choosing a Romanian producer seeking to eliminate unsustainable methods of production and consumption, thus adding new valences to its business:

- economical valences (competitive advantage, export potential, improved image);
- ecological valences (applying the principles of ecological agriculture, environmental protection and sustainable development);
- social valences (producer responsibility, protection of consumer health, their complete and accurate information).

The research focused on establish the quality of this product, comparing the results with the values prescribed in the company’s specifications for manufacturing in order to verify the conformity of the product and establishing the accuracy of the information declared on the nutrition label.

The laboratory determination of physicochemical and microbiological characteristics has a major importance for the quality of the final product, their values being directly influenced by the raw material, by the processing method, by the packaging and storage processes.

To prove the responsibility of the producer, S.C. Sonimpex S.R.L., regarding the statement of quality through claims such as "100% natural product, no added sugar", it was necessary to determine the physicochemical and microbiological parameters in the laboratory and the results were compared with the indications on the nutritional label of the product Topoloveni natural plum jam.

The comparison between the values obtained by laboratory measurements with those included in the nutritional label of the product demonstrates compliance with the values prescribed in the specifications of the manufacturer and the veracity of the information declared by the producer.

Thus, we can confirm that controlling physical-chemical and microbiological indicators has a significant impact on the quality’s assurance of the final product, demonstrating both the producer’s responsibility regarding quality and safety of the product safety and the responsibility regarding the consumer and its information through public statements and label mentions.

References


