EU organic logo and its perception by consumers

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Introduction

The organic market in the European Union has developed quite dynamically in the last decade, and total organic sales have increased by 100% between 2004 and 2012 to 20.9 billion € (Schaack *et al*., 2014). Indeed, market shares are still small. European countries with the highest share of organic in all food sales in 2011 were Denmark (7.6%), Switzerland (6.3%), Sweden (3.9%), Germany (3.7%) and France (2.4%). In Estonia (1.6%) and in Poland (0.2%), the corresponding shares are much lower (Schaack *et al.*, 2014).

With the objective of fostering the EU organic market, the EU Commission introduced a mandatory organic label. Organic labeling is nothing new and many organic labels exist in the market. Private organic labels have been developed in accordance with private organic standard setting by organic farmers associations since the 80ies in Europe (a few organic labels had already been created earlier). Since 1992 the term organic and related terms in other languages (ecological, biological and their derivatives) are protected by European law (EC Reg. 2092/91). The number of organic trademarks has increased since then as food retailers developed their own organic labels based on the EC regulation on organic farming. Private labels of organic farmers' associations continued to exist; they were also based on the EU regulation on organic farming but frequently with specific additional production requirements. As a consequence, the common EU standards and certification system did result in a somehow harmonised market since all organic labels had to be based on the EU regulation on organic farming. Nevertheless, a large number of different labels persisted and was assumed to be a 'potential trade barrier against the idea of the single market within the EU' (Michelsen *et al.*, 1999:53).

A common European logo was introduced in 2000 in order to increase the credibility of organic products and to facilitate the identification of organic products in the market. This old EU organic logo was not widely used on organic products even by 2004 (EC, 2004). Use varied between frequent use in some countries (e.g. Italy and Poland) and almost no use in the majority of EU countries, particularly where well established governmental (e.g. Denmark, Germany and France) or private labels for organic food existed (Jansen and Hamm, 2012). It is likely that the main reason for the limited diffusion in the market was the limited added value for producers and processors of organic food: The design of the EU organic logo was similar to other EU logos such as PDO (Protected Designation of Origin) and PGI (Protected Geographical Indication) and might have confused consumers rather than supported them in their decision making at the point of purchase.

Against this background, a new common mandatory EU label for organic food was introduced by the revised Regulation on 'Organic production and labelling of organic products' (EC) 834/2007. This new regulation came into force in January 2010. The requirement for labelling organic food with the EU organic logo took effect in July 2010. A transition period for using existing packages ended in July 2012. The mandatory organic labelling consists of the label or

logo itself, plus the code number of the organic control body, plus the indication of the 'place of production of raw materials' (Figure 1).

- Insert Figure 1 about here-

The introduction of the mandatory labelling acknowledges consumer demand as a key factor for the development of organic farming in the EU. The aim of the European Commission is laid down in Article 1.1 of the EC Reg. 834/2007: 'This Regulation provides the basis for the sustainable development of organic production while ensuring the effective functioning of the internal market, guaranteeing fair competition, ensuring consumer confidence, and protecting consumer interests.' (EC, 2007).

In order to fulfil its aim of improving the functioning of the internal market by reducing consumer confusion, the EU logo has to be widely known to European (organic) consumers (Michelsen *et al*., 1999). It is important to address particularly consumers who are not familiar with existing organic labels. Consumers who have positive attitudes towards organic food and already buy organic food presumably trust in the (organic) quality of organic food even without a common and mandatory EU organic logo. In contrast, consumers who buy organic food only occasionally or never and who may be uncertain about labelling of organic food might be the most important target group of the new EU organic logo when aiming at enlarging the European market.

Against this background, the aim of this paper is first, to elicit the consumers' knowledge and perception of the new EU logo and second to identify consumer segments for improved communication strategies based on their attitudes towards organic farming and EU legislation. On the basis of these results, we elaborate recommendations on how to improve knowledge and thus increase effectiveness of the EU organic logo in order to achieve the aims of the EC Reg. 834/2007.

The paper begins with an elaboration on the theoretical background of (organic food) labelling succeeded by a description of the methodological approach. This section is followed by the presentation of the results on consumers' knowledge of the EU organic logo, their knowledge of organic farming principles, and the clustering of consumers according to their attitudes regarding organic food and its labelling. The contribution closes with a concluding discussion on the potential for improving consumers' knowledge of the EU logo.

Theoretical background

Generally, labelling is a means of addressing consumers and of providing them with information that is supposed to be relevant to their individual purchasing decisions. Labels are used to develop markets and to promote particular production practices (Caswell and Anders, 2011) by educating consumers and altering their purchasing decisions (Teisl *et al.,* 1999). Consumers have to be aware of the issues being communicated and they have to have knowledge of and interest in the product properties under consideration. Only then, may labelling fulfil its aims of providing information and have an impact on consumers' purchasing decisions by influencing their product perception and judgement (Solomon *et al.,* 2010).

Standards and labelling are particularly important if product properties are not observable or verifiable, neither at the point of purchase nor after consumption (Caswell and Anders, 2011; WB, 2011; Janssen and Hamm, 2012). These properties are so-called credence attributes with organic production being an example (Mondelaers *et al.,* 2009; Pearson *et al*., 2011). Credence properties can be altered into search characteristics by means of effective standard setting, certification and labelling (Caswell and Mojduszka, 1996). Consumers require effective labelling in order to be able to make purchase decisions in line with their specific preferences. Effective labelling, in turn, requires consumers' trust in the certification system and in the standards' compliance with their expectations and preferences (Janssen and Hamm 2012). That is why labels have to be based on standards which can be claimed by competitors and consumers (Jahn *et al*., 2005) and which are guaranteed by independent third-party certification systems (Albersmeier *et al*., 2010; Caswell and Anders, 2011).

Governmental labelling is a means to correct for market failure because of asymmetric and imperfect information, fraud protection or indication of unfair competition, to lower transaction costs or to correct for externalities (Golan *et al*., 2001; Gruère *et al*., 2008; Caswell and Anders, 2011). Because of its high potential of influencing consumers' purchase decisions, governmental labelling can be an appropriate tool for achieving social objectives (Golan *et al*. 2001). The achievement of social objectives by means of labelling depends on the market share of products with socially desirable properties. The market share, in turn, depends on consumers' response to the labelling, which again is contingent on the diffusion of the label in the market, on consumers' knowledge of and trust in the label, and its specific thematic relevance for consumers' purchasing decisions (Golan *et al*., 2001). Governmental labelling will only be effective when ensuring a high degree of consumer trust by setting judicious standards and enforcing them. The thematic relevance to consumers can be influenced by the specific content and design of the labelling program, and can be controlled to a certain extent by information and promotion campaigns. These campaigns are also required to impart knowledge of the labelling scheme.

When attempting to change consumer behaviour, an examination of consumers' information search behaviour is helpful. Generally, decisions on food purchase are expected to follow habitual or limited decision making (Grunert, 2005; Aertsens *et al*., 2009; Kroeber-Riel *et al*., 2009); this implies restricted possibilities of influencing consumers purchasing behaviour. But, there are examples of more complex decision-making processes in food consumption, particularly within the increasing 'ethical' market segment (e.g. Browne *et al.*, 2000; Carrigan *et al*., 2004; Newholm and Shaw, 2007; Lusk and Briggeman, 2009; Zander and Hamm, 2012b). The organic food market is part of this ethical market segment.

It is well known that consumers' information search is more extensive if the costs of information search are low, for example, when information is easily accessible. Information acquisition is also more pronounced when the expected benefit is higher, for example, when the purchase decision is felt to be important. This is the case when the decision could, potentially, have negative impacts and/or the product to be bought is important to the decision maker due to his or her personal values and attitudes (Beatty and Smith, 1987). Additionally, situational factors, such as setting and context as well as time pressure, may have an influence on the extent of information search (Prabha *et al*., 2007). Thus, the extent of information

search and the evaluation of alternatives depend on the perceived importance of the purchase decision at hand. The purchase decision is felt to be more important when the consumers' product involvement is higher (Zaichkowsky, 1985; Vermeir and Verbeke, 2006; WB, 2011; Grunert *et al*., 2014). High product involvement refers to the perceived relevance of the product to satisfy underlying needs, attitudes or values (Solomon *et al*., 2010). Consumers with higher product involvement are known to search more intensively for product related information (Zaichkowsky, 1985; Zander and Hamm, 2012). Regular organic consumers are more involved in organic products and purchasing decisions, and therefore conduct a more extensive information search (Grunert and Juhl, 1995; Zanoli and Naspetti, 2002; Padel and Foster, 2005).

Methodological approach

An online survey was conducted with 3000 consumers in 6 European countries (Estonia, France, Germany, Italy, Poland and the UK) in January 2013. The selection of countries took market size and different organic 'labelling traditions' into account and included Member States where (a) the old European logo was the most important organic logo and no well-known national logos exist (Italy and Poland), b) countries where the old EU logo was used additionally to an important national logo (Estonia and France) and c) countries where the old EU logo was of minor relevance and well-established national logos existed (Germany and UK) (see e.g. Padel, 2010 for details). A commercial online panel run by a market research company was used for purposive quota sampling based on some prespecified "control" characteristics of the population. Quotas were set for age (50% between 18 and 45, 50% between 46 and 75) and for gender relations (2/3 women and 1/3 men). This last relation was frequently observed when analysing food purchasing behaviour (e.g. Spiller *et al*., 2004; Zander and Hamm, 2010). No quotas were set for the share of organic food consumption, and all test persons had to be at least co-responsible for food shopping (Table 1). On average, about one fifth of the respondents stated that they never or almost never buy organic food. Approximately half of them buy organic food occasionally and approximately 30% of them buy organic food regularly, at least once per week.

- Insert table 1 about here -

Completion of the on-line survey lasted about 15 minutes on average. Test persons were asked about their knowledge of the new EU organic logo and of the additional mandatory indications, as well as that of other organic labels, their knowledge of organic farming principles, and their understanding of organic product quality. Additionally, they were requested to indicate their degree of agreement or disagreement towards different aspects of organic farming and labelling by completing several batteries of 7-point Likert scales. The batteries contained statements on the perception of organic food and its European labelling, the relevance of the origin of organic food also with regard to the reliability of organic production as well as trust in organic food and its certification procedures. The survey

concluded with several questions on the test persons' current purchasing behaviour regarding organic food, their motivation to buy organic and on socio-demographic indicators.

By means of a principal component analysis, the underlying structure of and interrelations between the responses to different statements on organic food and farming and EU labelling were investigated and condensed in a reduced number of latent variables. A cluster analysis was performed on the factor space with the aim of defining homogenous groups of respondents with regard to their attitudes towards (EU) organic food and its labelling as measured by the latent variables. A two-step clustering algorithm was used and resulted in a four cluster solution. In order to describe the clusters and to develop profiles of the members of each cluster, various variables (socio-demographics, organic consumption behaviour etc.) were tested for potential differences. The analysis provided insights to determine target groups for improved communication about the new EU organic logo, with respect to the simplified pattern of variability provided by the identified latent variables.

Results and discussion

Knowledge of the EU organic logo and of additional mandatory indications

At the very beginning of the interview, respondents were asked in an 'unprompted' manner about their knowledge of the EU organic logo. In order to avoid any context effects, they were not informed about the topic of the research beforehand. The question 'Have you seen this logo before' was answered by a quarter of all test persons with 'yes' (Table 2). This share was highest in Estonia and in France and lowest in Poland and the UK. The share of consumers having seen the EU logo before was significantly higher among regular consumers (36%) than among occasional (23%) and non-organic consumers (13%).

- Insert table 2 about here -

The numbers obtained in this survey, with the exception of the UK, are similar to the respective country results of the Eurobarometer (2012), where on average of all 27 EU countries 24% of the respondents indicated knowledge of the EU logo on organic farming. The corresponding numbers for Germany were 33%, Estonia 34%, France 38%, Italy 24%, Poland 12%, and UK 22% (Eurobarometer, 2012). The reason for slightly higher numbers in some countries in the Eurobarometer study might be that the question on the awareness of this label was put in the context of food, whereas in the present study no context was given at all. However, the agreement in the results is quite high, given that different samples and approaches were used.

According to a French study, on average of all French consumers, the knowledge of the EU logo had increased from about 13% in 2010 to 42% in 2012. In comparison, in 2012 93% of respondents were familiar with the national AB (Agriculture Biologique) label (Agence Bio, 2012). A recent study indicated that only 15% of the German test persons stated knowledge of

the EU organic logo. In contrast, 75% were familiar with the German Biosiegel (Meyer-Höfer and Spiller, 2013).

The subsequent question aimed at investigating whether consumers really knew the message of the EU organic logo by putting an open question on their knowledge of the label. The answers were coded according to six categories (Table 3). Only a small fraction of respondents knew that the EU logo indicated organic food according to common European standards (EU organic food). A larger share of the respondents was aware that this label indicates organic food (Organic food). Answers in these two categories were interpreted as correct answers (on average 16%). Another small fraction of the respondents associated the label with Europe or the European Union (Europe, EU) or something natural, ecological, etc. (Nature, environment, natural, ecological). Considering the average of all countries, approximately one third of the answers were incorrect and another 50% of the participants answered 'Don't know, not sure'. Knowledge was particularly low in the UK.

- Insert table 3 about here -

Setting the knowledge of the EU organic logo in relation to the frequency of organic consumption provides a very homogenous picture among the study countries (Figure 2). In all countries knowledge of the EU organic logo is significantly higher with regular than with occasional than with non-organic consumers. These results are in line with the French study by Agence Bio (2012), which was already mentioned above. While on average 13% of all French consumers were familiar with the EU organic logo, this fraction was at 21% among the organic consumers in 2010. The corresponding numbers for 2012 are 42% and 61%, respectively (Agence Bio, 2012).

- Insert Figure 2 about here-

Knowledge of other organic logos

In order to relate the results on knowledge of the EU organic logo with the knowledge of other organic logos, participants were shown 8 to 10 different food logos including some non-organic ones (Table 4). For each country, the new and the old EU organic logo, the German 'Biosiegel'[1], up to three important (national) organic logos (Organic logo 1-3), the Fairtrade logo, an animal welfare logo where available (for Italy another 'green' logo was selected), a non-organic quality food logo and a fake organic logo were presented to the test persons.

[1] The German Biosiegel was presented in all study countries because of its wide dispersion and popularity in all these countries.

- Insert table 4 about here -

When confronted with these food logos and asked to identify those indicating organic food, best known on average were the national organic logos (Organic logo 1 in Estonia and in France and Biosiegel in Germany) (Table 5). The German Biosiegel was also well known in Poland and in Italy for two main reasons: first, imported German organic products bear this logo and second, the logo includes the protected term ‚bio'. In this 'prompted' question the EU organic logo was recognised as organic logo on average by less than 10 % of the respondents. This share was a little higher in the Central and Eastern European countries (Estonia and Poland). In Italy the old EU logo is still better known than the new one.

These results reflect the different histories of organic labelling of food in the study countries. National organic logos were established and were well known in Germany (Biosiegel), France (AB-Agriculture Biologique) and Estonia. In the UK, one private logo (Soil Association) is very prominent in the market, whereas Italy and Poland did not have well known national organic logos. In both countries, the old EU logo was widely used before (e.g. Janssen and Hamm, 2012).

- Insert table 5 about here -

Confusion existed with regard to non-organic labels. In Estonia nearly half and in the UK more than one third of all respondents believed the non-organic quality label to be organic. A very high share of respondents associated the Fairtrade label with organic farming in Germany (52%) and in the UK (70%). Although the share of products which are certified with the Fairtrade and organic standards is increasing, the Fairtrade logo does not certify organic production. Consumers' confusion became particularly obvious when looking at the numbers for the fake organic logo. This logo scores quite high in France, Italy and in Poland. In Poland it was the best known organic logo and in Italy it scored identical with the old EU logo, second after the German Biosiegel. These results indicate that more than 20 years after the coming into force of the first EC Regulation on organic farming, which aimed at setting clear standards and reducing consumer confusion, a large number of consumers is still not certain about organic labelling. This implies that although consumers want to act sustainably by buying organic food, they still can be misled.

Interestingly, the share of respondents identifying non-organic labels as organic labels was significantly higher among regular organic consumers (68%) than among occasional (63%), and then among non-organic consumers (52%) (χ^2: p=0.000). These numbers also clearly show that demand easily can be misdirected.

In order to increase consumers' confidence and 'to avoid deceptive practices' (EC Regulation 834/2007: Recital 27), the EC Reg. 834/2007 defines that in addition to the EU organic logo itself, two additional compulsory indications are to be placed on the product: The 'place of production of raw materials' (EU- or Non-EU agriculture) and the 'code number of the control body' (EC Regulation 834/2007: Art 24).

On average of all countries, only 10% of respondents stated awareness of the additional mandatory indications according to the EU Regulation (Table 6). In total 87% of the test persons knew about the code number of the organic control body and 81% about the indication EU, Non-EU, EU/Non-EU agriculture. Only in Italy was the share of test persons knowing about the additional mandatory indications higher and in particular, the indication of the code number of the control body was rather well known. The reason is presumed to be the fact that in Italy promotion campaigns in favour of this code number as 'true' indicator of organic food were run several years ago. Comparing the answers of organic and non-organic consumers shows that the awareness of additional compulsory indications is highest among regular consumers (19%), followed by occasional (8%) and non-organic consumers (2%) (χ^2: p=0.000).

- Insert table 6 about here -

According to the EC Regulation, products can be labelled with the name of the country if 98% of all raw materials were produced only in one country, which is rarely the case for processed food products (EU Regulation 834/2007, Article 24(c)). In a globalised world, many processed products contain ingredients from EU and non-EU countries. These products therefore have to be labelled with 'EU/non-EU Agriculture' – the information gained will probably be low. Accordingly, test persons only slightly welcomed the existence of the indications 'EU Agriculture' and 'non-EU Agriculture' and on average did not believe this indication to be completely adequate. This result is in line with the results from Janssen and Hamm (2012), who found a lot of 'scepticism' with reference to this indication.

Consumer knowledge of the concept of organic farming

Consumer knowledge of the concept of organic farming is a precondition for any effort to establish a successful labelling system in the long term. Only if consumer knowledge and perception of the concept of organic farming corresponds to the standards and the production reality, will organic farming be credible to consumers (Grunert *et al.* 2014).

Test persons were asked for their specific knowledge of the legal definition of organic farming by various statements, some of them true others false. It turned out that most consumers were aware of important aspects of the concept of organic farming and the specific production requirements since their answers were mostly correct (Table 7). But also some shortcomings in the knowledge became obvious. Only two third of the respondents knew that organic products cannot be grown from genetically modified seeds. This share was markedly lower in the UK and in Germany. Even more test persons were wrong with regard to ionising radiation in processing. The topic of ionising radiation obviously was most prominent in Italy since the share of correct answers was highest. Also, about a quarter of the respondents were not certain about the existence of a third-party inspection and control system; the lowest numbers were found in Germany, Estonia and the UK. Interestingly, less than half of the test persons knew that organic food does not have to be produced on small farms and does not

have to be produced locally. Only about one quarter of the respondents in Estonia and in Poland were able to give correct answers regarding the statement 'Organic food is locally produced' and 'Organic food is produced on small farms'. In fact, the average size of organic farms is larger than that of conventional farms in many countries. This also holds true in Estonia and in Poland (EUROSTAT, 2013).

- Insert table 7 about here -

These results are in line with earlier research, which indicated that many consumers lack knowledge of the objectives and production standards of organic farming (Harper and Makatouni, 2002; Hughner *et al*., 2007; McEachern and Warnaby, 2008; Mesías Díaz *et al*., 2010; Padel, 2010; Janssen and Hamm, 2012). This includes knowledge of the certification system (Padel and Foster, 2005) - not only in Europe but also e.g. in the United States and in Canada (Sawyer *et al*., 2009) - and of the implications of the introduction of a new EU wide logo for organic farming (Teisl *et al*., 2008; Mesías Díaz *et al*., 2010; Janssen and Hamm, 2012).

Knowledge of the legal definition of organic farming was also tested against respondents' self-assessment of being expert on organic food or not (Table 8).[2] Respondents who felt that they had good knowledge of organic food ('Expert') performed better in all statements. Nevertheless, they still exhibited rather high shares of wrong answers on farm size and local production. Although these results indicate a positive relation of both constructs to measure knowledge - objective knowledge by true/false questions on the one hand and self-assessment on the other hand - the correlation between the number of correct answers and the degree of agreement to the statements on their perception of their own knowledge is weak, 0.176 (Pearson coefficient), but significant ($\alpha = 0.001$).

The comparison of the answers of regular, occasional and non-consumers of organic food shows that the frequency of organic purchases is a good predictor of the knowledge of organic farming principles (Table 8). Increased organic consumption in all cases results in significantly better knowledge of organic farming standards. These results are in line with theoretical considerations indicating that knowledge of the subject under consideration usually is essential for consumers' confidence and purchase decisions (e.g. Hoogland *et al*., 2007; Teisl *et al*., 2008; Janssen and Hamm, 2012; Daugbjerg *et al*., 2013). Using a reliable scale based on 7 (not 9) similar items Zanoli (2004) found regular consumers are significantly more knowledgeable about organic products than occasional consumers. Naspetti and Zanoli (2009) also reported that higher levels of knowledge connected with self-reported higher organic consumption, and Napolitano *et al.* (2010) stressed that reliable information on

[2] Respondents were asked to indicate their degree of agreement with the two following statements on a 7-point-scale (1-totally agree, 7-totally disagree): 'In comparison to an average consumer, I know a lot about organic food' and 'People who know me, consider me as an expert in the field of organic food'. The numbers of both answers were summed up and participants with scores between 2 and 6 were classified as 'Experts', those with scores between 7 and 9 'neither/nor' and those with scores higher than 10 as 'no expert'. Both statements are highly correlated (Cronbachs-alpha = 0.871).

specific aspects of organic farming is a precondition for consumers' increased willingness to pay.

- Insert table 8 about here -

Attitudes of test persons regarding the EU organic food labelling

Attitudes, involvement and trust were presumed to have an impact on the knowledge of the EU organic logo. In order to assess these effects, test persons were confronted with a total of 22 statements on organic food, labelling, geographical origin and trust. A principal component analysis was conducted to reduce complexity (Table 9). Six statements had factor loadings of less than 0.5 and were omitted. The three factors identified were '**Commitment to organic food'**, '**Trust in global organic standards**' and '**Approval of EU organic standard setting and logo'**. The '**Commitment to organic food**' factor combines items which exhibit profound trust in EU organic farming, its labelling and certification: 'In terms of organic products I have a good feeling' and 'I have great trust in the control systems behind the EU-wide organic logo' and items which express the conviction that organic food is of high quality and good for the environment. The second factor '**Trust in global organic standards'** summarises confidence in organic products without any geographical preference: 'I am convinced that, regardless of the country of origin, all products labelled as organic are really organic products'. The third factor '**Approval of EU organic standard setting and logo'** pools statements, which express approval of an EU-wide organic labelling and common organic standards. The Cronbachs-alpha values indicate high internal consistency of the three factors.

- Insert table 9 about here -

Results of the cluster analysis performed on factor scores is shown in Figure 3. The first cluster '**Organic disinterested'** consists of respondents who are almost indifferent with regard to the factors 'Commitment to organic food' and 'Trust in global organic standards'. The negative value for the factor 'Approval of EU organic standards and logo' indicates a complete lack of interest in organic labelling. The second cluster '**Organic sceptics'** unites people who are not committed to organic food and farming. They have only slight reservations with regard to international food trade and standards. This group of respondents appreciates an EU wide standard setting and labelling system for organic products, and therefore might be an interesting target group for improved communication activities on the EU organic logo. The third cluster '**Committed organics'** is characterised by a high value of the factor 'Commitment to organic food'. This group scores low in the second factor 'Trust in global organic standards', which indicates that there is a preference for domestic organic food. Common European legislation and labelling of organic food would be welcomed by this group. The forth cluster '**Pragmatic organics'** is characterised by a high value of the factor 'Trust in global organic standards'. The values of the factors 'Commitment to organic food'

and 'Approval of EU organic standards and logo' are somehow lower but still clearly positive. It might be concluded that there is no concern about organic labelling in general and consequently no or very limited scope for national organic labelling.

- Insert Figure 3 about here-

Although, on average of all countries, almost 30% belonged to the 'Organic disinterested', this share was clearly lower in Italy (IT) and in Poland (PL) (Table 10). The 'Organic sceptics' cluster' is smallest in Estonia (EE) and Poland (PL) and largest in Germany (DE), whereas the 'Committed organics' cluster is largest in Italy (IT) and smallest in Germany (DE). The share of 'Pragmatic organics' is particularly high in Poland (PL).

- Insert table 10 about here -

In order to better describe the test persons who belong to each cluster, several variables were tested for differences between clusters (Table 11). Knowledge of the EU organic logo is highest among 'Committed Organics' and lowest among 'Organic Sceptics'. 'Committed Organics' are presumed to be more involved in the purchase decision on organic food. Consequently, better knowledge of the EU organic logo as a result of more intensive information search is in line with theoretical considerations and with earlier research (Grunert and Juhl, 1995; Zanoli and Naspetti, 2002; Padel and Foster 2005; Vermeir and Verbeke, 2006; Zander and Hamm, 2012; Grunert *et al*., 2014). Accordingly, organic principles are also much better known by 'Committed Organics' than by members of all the other clusters. Not surprisingly, the share of non-organic consumers was highest in the 'Organic disinterested' and 'Organic sceptics' clusters. The share of regular and occasional organic consumers seems to be quite high in the cluster 'Organic disinterested' considering that, according to their answers on the item batteries, they do not care whether they buy organic or not.

All test persons, except those who had indicated that they never or almost never buy organic food were asked for their three most important motives for buying organic food. On average, 'natural products' was the most frequently mentioned motive for buying organic food, followed by 'personal health'. When comparing the motives for purchasing organic food between the clusters, 'low level of residues' and 'GMO free' were most important for 'Committed organics'. 'Pragmatic organics' appreciated 'natural products' just as 'Organic disinterested'. 'Organic sceptics' valued the 'low level of residues' in organic food most highly.

'No residues', 'no additives' and 'freshness' were the most important attributes of a high quality product on average of all respondents. People belonging to the cluster 'Organic disinterested' esteemed 'freshness', 'good taste' and 'healthiness' most. 'Organic sceptics' also appreciated 'freshness'. 'No residues' and 'no additives' were ranked higher. In this group of respondents 'animal welfare' seems to be more important as a quality attribute than in the other clusters. In the 'Pragmatic organics' cluster 'no residues', 'no additives' and 'freshness' were rather important. Although, these attributes were not more important than for

the members of the other clusters. 'Healthiness' as quality attribute was more important than in some of the other groups.

The share of women was lower in the 'Organic disinterested' and 'Organic sceptics' clusters, and 'Organic disinterested' and 'Organic pragmatics' were younger. In accordance with earlier research, 'Committed organics' have a higher education level on average.

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Conclusions

The aim of the introduction of a mandatory EU organic label was to increase consumer awareness and to foster the organic sector. Because of the experiences with the earlier voluntary organic logo, which was not widely used, a mandatory organic logo was launched, in order to augment the speed of extension of the logo. But, it is not only diffusion of the logo on organic products which is needed - instead successful labelling requires consumers' awareness, knowledge and appreciation.

The introduction of a new label always includes the risk of increasing search costs for consumers (Caswell and Anders, 2011). They might be overloaded with too much information, which would result in a decreased quality of their purchasing decisions (Hoogland *et al*., 2007) and might corrode consumer confidence in environmental labelling (Teisl *et al*., 1999). For this reason, pros and cons of the introduction of a new label have to be soundly evaluated.

The potential benefit of the introduction of a common mandatory EU organic logo is increased trade and proliferation of the common organic idea by means of common EU organic standards, certification, enforcement and labelling. This could be achieved by establishing clear parameters for advertising and indication of relevant product's quality attributes but this would have to be reinforced by other forms of education at the consumer level (Golan *et al*., 2001). In order to become decisive for consumers purchase decisions, consumers have to have knowledge about the EU organic logo and its meaning. The results of this study indicate that, although dispersion of the logo on organic food in EU countries is high, consumers' knowledge is limited and other organic labels exist in all study countries, which are better known than the EU organic logo. This is not surprising given that the EU organic logo, although it was introduced to the market in 2010, became compulsory without exceptions only in July 2012. In order to achieve its aim of improving the functioning of the internal market, better knowledge of the EU organic logo is desirable and additional effort is required for information and/or promotion campaigns as well as by making the logo more easily recognisable.

The share of respondents recognising the fake logo as an organic logo was as high as the share of test persons identifying the EU organic logo as an organic logo. In France, Italy and Poland, the shares of respondents who misinterpreted the fake organic logo was even higher. One possible explanation might lie with the fact that the fake logo contains the phrase 'bio',

whereas the EU logo does not have any writing. This highlights a crucial issue not only in the organic market, but also in other ethical market segments: consumers want to purchase 'ethical' products but are misled and therefore fail in their intent to support ethical production. Without clear labelling based on unambiguous standard setting and supported by the provision of well-targeted information to consumers, governmental labelling will only add to the large bundle of existing private labels instead of increasing transparency.

Two areas of action can be identified to increase consumers' knowledge of the logo. First, the information content of the EU organic logo could be improved by adding clear reference to organic farming. To date, the logo does not provide any explanation of itself, except that it is green and some people associate green with organic (see Figure 1). Second, further information and promotion campaigns on the logo and its meaning could be launched as have been carried out in several countries with co-funding from the European Commission

The development of tailor-made campaigns requires consumer segmentation and the identification of target groups according to their specific attitudes and purchase behaviour on organic food (Aertsens *et al.,* 2009).

Our results indicate that consumers can be segmented into four clusters according to their attitudes towards organic food and European labelling. 'Committed organics' exhibit the best knowledge of the EU organic logo. Characteristics of this group are higher frequency of organic consumption and good knowledge of the concept of organic farming. They are assumed to be most involved in organic consumption. Thus, consumers who are more likely to be acquainted with the new EU organic logo already know how to identify organic food. Even if consumers in this group appreciate EU-wide organic labelling, the mere existence of the EU organic logo is not assumed to change their purchasing behaviour.

The 'Pragmatic organics' cluster has a high share of regular and occasional organic consumers although their knowledge of organic principles is not very good. They trust in global organic food and farming and its labelling in any case; thus, this segment does not need any additional organic logo either.

'Organic sceptics' stated that organic products fulfil their expectations of high quality products; but this group distrusted organic labelling. They highly appreciated EU wide organic standard setting and labelling. Thus, information campaigns not only on the EU organic logo but also on organic production and the trustworthiness of organic certification processes are presumed to be efficient measures. Emphasis should be laid on communication of attributes, such as low levels of residues, freedom of GMO and to some extent also animal welfare issues. Freshness was also an important product quality for the members of this group.

The last segment 'Organic disinteresteds' are not at all interested in EU organic standard setting and labelling. Knowledge of organic farming principles is lowest in this group; therefore it could be argued that with increasing information, they would also augment their organic shopping basket. The scores of the two other factors 'commitment to organic farming' and 'trust in global organic standards' are about average, indicating that it is not lack of general trust in labelling but lack of interest. It will be very difficult to reach this consumer segment with information campaigns on organic food and farming.

This research concentrated on the very immediate attitudes towards organic food labelling and certification. Future research should focus on consumers general attitudes towards (food) labelling and environmental issues in order to better understand information search with regard to (organic) food labelling.

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Figure 1: The EU organic logo in practice

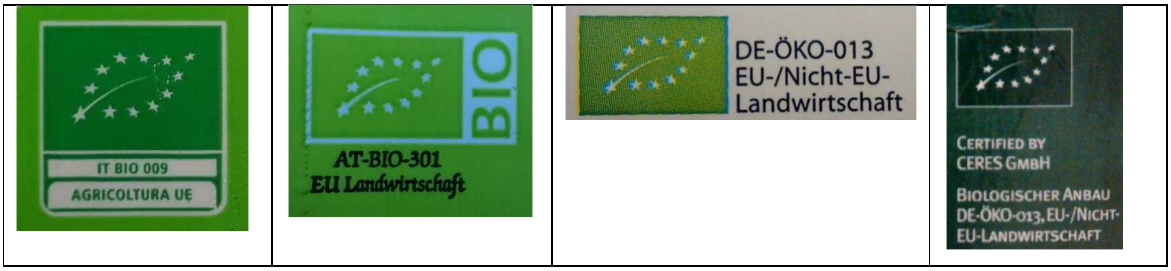
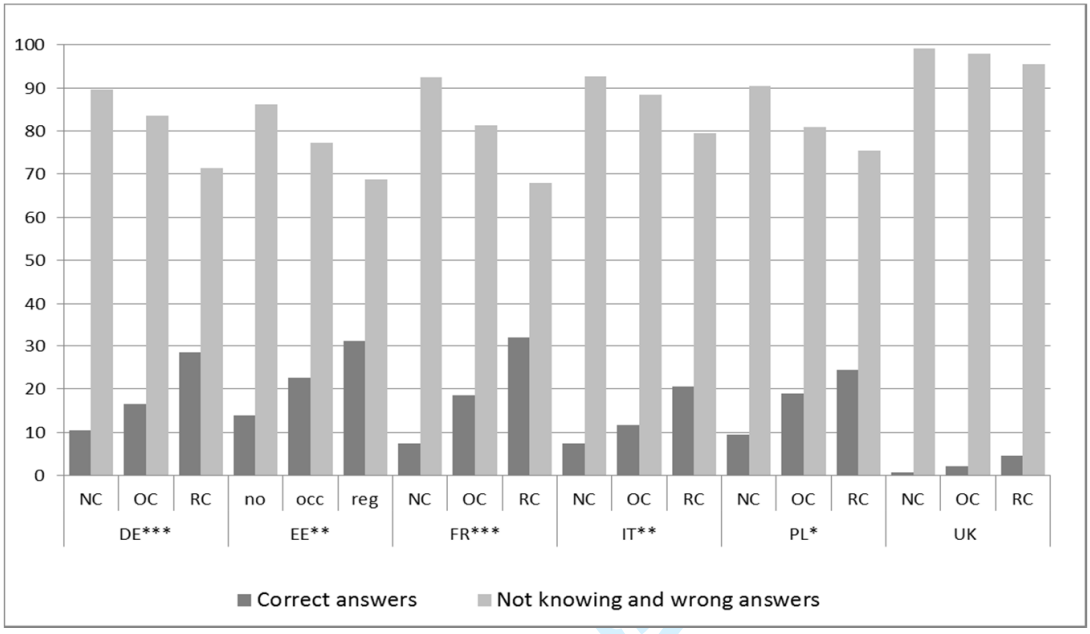


Figure 2: Knowledge of the meaning of the EU organic logo by frequency of organic consumption and country (% of respondents)



NC - non-organic consumer, OC - occasional organic consumer, RC - regular organic consumer

χ^2 - Test: * - p=0.1, ** - p=0.01, *** - p=0.001

Figure 3: Results of the cluster analysis (mean values of factor scores)

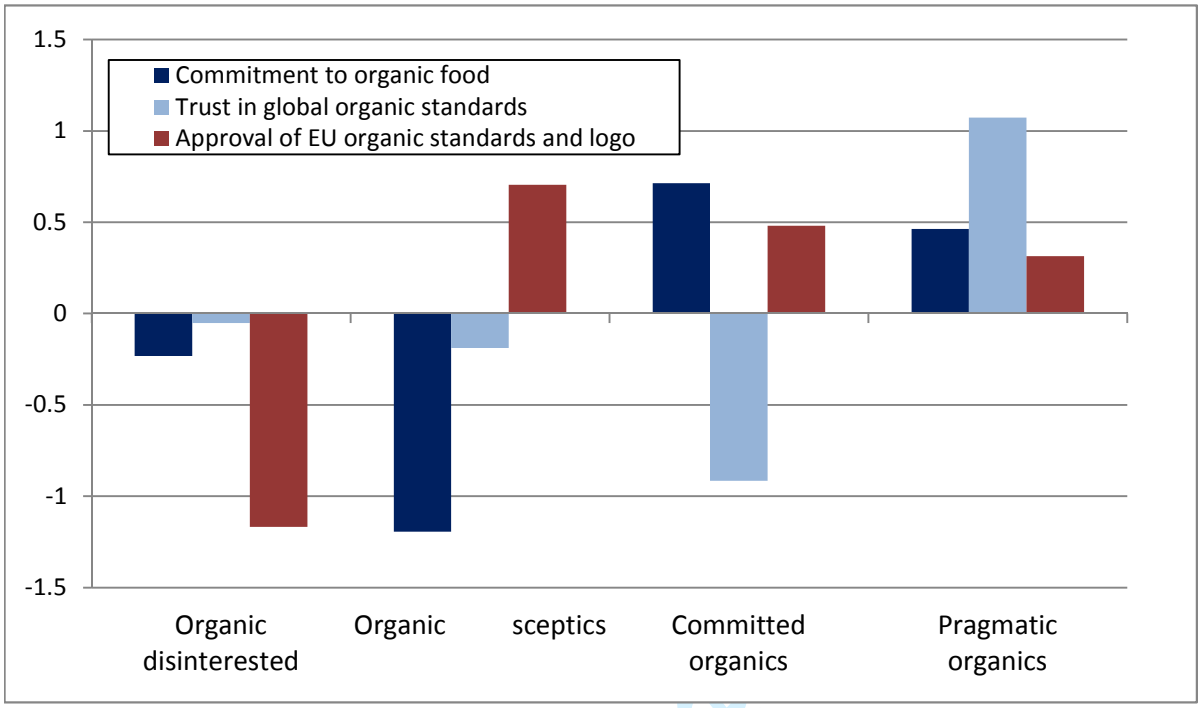


Table 1: Summary statistics for variables on socio-demographic criteria and organic purchase behaviour (%)

Variable / Description	All	Country DE	EE	FR	IT	PL	UK
Number of observations	3000	500	500	500	500	500	500
Age of test persons							
18 to 29 years	18.1	19.8	15.2	18.0	19.4	20.0	16.0
30 to 39 years	19.5	20.8	22.4	18.8	16.6	15.0	23.4
40 to 49 years	21.4	17.6	25.8	21.2	20.2	24.6	19.2
50 to 59 years	21.0	17.8	24.4	22.4	21.6	19.6	20.0
> 59 years	20.0	24.0	13.0	20.0	22.0	21.0	21.0
Gender							
Female	67.0	67.0	67.0	67.0	67.0	67.0	67.0
Male	33.0	33.0	33.0	33.0	33.0	33.0	33.0
Education (years of school visit)							
No formal qualification	2.4	0.4	2.6	4.4	0.2	1.2	5.4
About 10 years of school visit	21.1	48.8	29.6	15.0	7.4	2.0	23.6
12 or 13 years of school visit	31.0	25.0	13.4	34.0	51.0	43.4	19.2
College or university degree	45.6	25.8	54.4	46.6	41.4	53.4	51.8
Organic /no organic consumers							
No organic consumers	**20.8**	**19.2**	**20.2**	**23.8**	**19.0**	**17.0**	**25.4**
Never/almost never	20.8	19.2	20.2	23.8	19.0	17.0	25.4
Occasional organic consumers	**50.3**	**40.0**	**57.4**	**50.6**	**51.8**	**53.6**	**48.2**
Less than once per month	19.7	15.8	22.6	21.8	19.2	19.8	18.8
About once or twice per month	30.6	24.2	34.8	28.8	32.6	33.8	29.4
Regular organic consumers	**29.0**	**40.8**	**22.4**	**25.6**	**29.2**	**29.4**	**26.4**
About once per week	22.1	31.2	16.0	19.6	23.4	20.8	21.8
Several times per week	6.8	9.6	6.4	6.0	5.8	8.6	4.6

Table 2: Respondents having seen the EU logo before (% of respondents)

	All	DE	EE	FR	IT	PL	UK
Yes	25	28	36	35	19	13	17
No	45	37	38	38	51	53	51
Don't know	31	34	26	27	30	34	32
Total	100	100	100	100	100	100	100

Question: We will show you a logo:  Have you seen this logo before?

Table 3: Respondents' knowledge of the meaning of the EU organic logo (% of respondents)

	All	DE	EE	FR	IT	PL	UK
EU Organic food	4.7	6.0	6.4	7.4	2.6	5.2	0.8
Organic food	11.5	14.2	16.4	12.0	10.8	13.8	1.6
Europe, EU	7.4	3.2	5.4	7.8	9.0	15.8	3.2
Nature, environment, natural, ecological	11.4	8.4	14.6	10.8	9.4	19.2	6.0
Other wrong answers	14.8	7.8	10.4	15.6	24.2	21.6	9.4
Don't know, not sure	50.2	60.4	46.8	46.4	44.0	24.4	79.0

Question: Can you tell us in your own words what this logo stands for? 

Table 4: Food logos tested in different countries

	DE	EE	FR	IT	PL	UK
EU organic logo						
Old EU organic logo						
German Biosiegel						
Organic logo 1						
Organic logo 2		n/a			n/a	
Organic logo 3						
Fake organic logo						
Fairtrade logo						
Animal welfare/ 'green' logo		n/a				
Non-organic quality food logo						

Table 5: Respondents who recognised logos as organic logos (% of respondents)

	All	DE	EE	FR	IT	PL	UK
Organic logos							
Organic logo 1	51	54	73	96	19	26	40
German Biosiegel	38	94	22	29	38	41	5
New EU organic logo	22	25	26	25	18	26	10
Old EU organic logo	16	4	15	19	34	21	4
Organic logo 2	15	28	n.e.	27	7	n.e.	27
Organic logo 3	8	36	1	2	5	1	2
Non-organic logos							
Fairtrade logo	28	52	14	14	12	5	70
Non-organic quality food logo	20	12	46	2	6	14	39
Animal welfare logo/green logo	13	10	n.e.	31	17	3	16
Fake organic logo	25	16	18	36	34	44	4
Don't know/remember	12	3	9	2	21	27	8

Table 6: Respondents' awareness and knowledge of additional compulsory indication accompanying the EU organic logo (% of respondents)

	All	DE	EE	FR	IT	PL	UK
Question A							
Aware	10	11	7	9	17	11	4
Not aware	71	76	59	79	68	53	89
Don't Know	19	13	33	15	15	36	6
Question B *							
Bio/Organic	97	98	97	98	97	100	91
Without GMO	81	87	81	70	88	76	68
Code number of the Organic Control Body	87	87	78	98	92	80	73
Country of origin	85	85	70	84	95	75	91
Quality product	76	78	43	77	75	93	86
EU- or Non-EU agriculture	81	76	73	77	88	86	77
Locally produced	63	57	68	44	71	62	82

Question A: Are you aware of additional indications that accompany the EU organic logo?
Question B: We will now show you a list of indications of which some accompany the mandatory EU-logo and some don't. Please state which indications, in your opinion, accompany the EU logo?

* Out of those being aware (Question A) believe X% the following indications to accompany the EU logo

Table 7: Respondents giving a correct answer with regard to the legal definition of specific production requirements of organic food (% of respondents)[a)]

	All	DE	EE	FR	IT	PL	UK
Is grown without the use of chemicals.	86	82	85	85	92	85	90
May be grown from genetically modified seeds.*	67	62	66	73	71	70	57
Is processed without artificial additives.	80	72	79	72	89	87	81
Is processed without ionising radiation.	56	52	52	61	66	58	47
Is subject to a third-party system of control and certification.	71	64	57	81	82	89	55
Is produced on small family farms.*	45	59	27	52	53	24	55
Is produced locally.*	44	49	27	43	52	30	60
Cannot be imported from overseas.*	59	52	57	64	65	58	59
Is produced by methods protecting the environment.	82	67	76	88	94	87	75

* These aspects are not part of the legal definition regarding organic farming. The numbers are the share of correct answers.

[a)] Question: The following statements refer to the legal definition of organic food products. To the best of your knowledge, please indicate whether they are true or false.

Table 8: Respondents giving a correct answer with regard to the legal definition of specific production requirements of organic food differentiated by the level of expertise and consumption of organic food (% of respondents)

	Expert			Organic Consumer			
	Yes	No	a)	RC	OC	NC	a)
Is grown without the use of chemicals.	88	86	*	90	88	79	***
May be grown from genetically modified seeds.	70	65	***	71	68	56	***
Is processed without artificial additives.	85	78	***	85	81	71	***
Is processed without ionising radiation.	68	51	***	61	57	47	***
Is subject to a third-party system of control and certification.	84	65	***	80	73	56	***
Is produced on small family farms.	49	46	***	50	43	44	***
Is produced locally.	45	44	***	47	42	42	***
Cannot be imported from overseas.	68	58	***	64	59	53	***
Is produced by methods protecting the environment.	89	78	***	85	83	70	***

NC - non-organic consumer, OC - occasional organic consumer, RC - regular organic consumer

a) Pearson X^2, Probability of error: * α=0.1, *** α=0.001

Table 9: Factor loadings of different items on trust and organic labelling[a)]

	Commitment to organic food α=0.913	Trust in global organic standards α=0.780	Approval of EU organic standard setting α=0.787
Organic products fulfil strict rules.	0.822	0.092	0.238
In terms of organic products, I do have a good feeling.	0.819	0.038	0.212
I am sure that products sold as organic are really organic products.	0.814	0.250	0.113
The EU logo for organic products guarantees that the products are really organic.	0.718	0.184	0.395
Organic products meet my expectations of a high quality product.	0.652	0.062	0.463
Organic production meets my expectations of protecting the environment.	0.601	0.043	0.496
I have great trust in the control system behind an EU-wide organic logo.	0.591	0.224	0.475
Organic products produced outside of Europe are of the same quality as European organic products.	0.159	0.821	-0.035
Organic products from other European countries are of the same quality as organic domestic products.	0.214	0.803	0.112
I do not check the country of origin when I buy organic products.	-0.135	0.711	-0.010
I am convinced that, regardless of the country of origin, all products labelled as organic are really organic products.	0.422	0.708	0.085
It's a good idea to have an EU-wide logo for certified organic products.	0.244	0.085	0.800
I welcome the fact that the new EU organic logo differentiates between 'EU agriculture' and 'Non-EU agriculture'.	0.274	-0.081	0.775
It is a good idea to have the same minimum standards for organic products all over the EU.	0.255	0.016	0.715
Without the mandatory EU organic logo, some food products are hard to identify as organic in the store.	0.136	0.052	0.708

[a)] Principal component analysis, Varimax rotation. 66% of variance explained.

α = Cronbachs-alpha

Table 10: Respondents in each cluster by country (% of respondents) [a)]

	All	DE	EE	FR	IT	PL	UK
Organic disinterested	29.2	31.9 a	32.0 a,b	33.2 a,b	18.3 c	24.2 d	39.4 b
Organic sceptics	19.5	29.0 a	15.0 b	18.0 b,c	22.9 a,c	15.4 b	14.7 b
Committed organics	25.1	16.8 a	29.6 b,c	28.5 b	35.5 c	23.1 b	15.4 a
Pragmatic organics	26.2	22.3 a	23.3 a,b	20.3 a	23.4 a	37.4 c	30.5 b,c

[a)] a,b,c indicate subsets of frequencies which do not differ significantly (α= 0.05)

Table 11: Profiles of the four clusters[a)]

	Organic disinterested	Organic sceptics	Committed organics	Pragmatic organics	all	Sig. X^2
Knowledge of EU organic logo Yes (%)	12.9 a	14.1 a	24.6 b	20.2 b	18	0.000
Knowledge of organic principles good (%)	22.8 a	24.4 a	34.6 b	26.1 a	26.9	0.000
Regular organic consumers (%)	23.8 a	23.3 a	48.7 b	37.4 c	33.5	0.000
Occasional organic consumers (%)	55.6 a	50.8 a,b	46.7 b	53.2 a	51.8	0.028
Non organic consumers (%)	20.6 a	25.9 a	4.6 b	9.4 c	14.7	0.000
Motives (multiple answers)*						
Animal welfare	26.3 a,b	28.7 b	25.3 a,b	21.9 a	25.2	0.173
Low level of residues	45.4 a,b	50.9 b,c	53.9 c	42.5 a	48.0	0.003
Better taste	14.9 a	15.5 a	16.7 a	15.5 a	15.7	0.900
Natural products	58.6 a	47.0 b	49.0 b	60.0 a	54.2	0.000
Environmental protection	34.3 a	30.6 a	33.3 a	33.9 a	33.2	0.767
GMO free	40.8 a	44.0 a,b	48.2 b	40.9 a	43.5	0.091
Personal health	51.8 a	52.4 a	54.8 a	53.7 a	53.3	0.821
Quality (multiple answers)						
Organic production	20.4 a	21.3 a	43.3 b	33.2 c	29.7	0.000
Animal welfare	22.5 a,b	27.9 b	24.2 a,b	20.6 a	23.5	0.066
No residues	35.0 a	49.2 b	52.1 b	40.5 a	43.5	0.000
No additives	35.8 a	47.7 b	44.9 b	37.0 a	40.7	0.000
Freshness	42.4 a	39.7a,b	27.9 c	35.7 b	36.5	0.000
High hygienic standards	17.5 a	23.8 b	24.0 b	21.9 a,b	21.5	0.034
Good taste	29.7 a	22.1 b	15.6 c	26.0 a,b	23.7	0.000
Naturalness	24.2 a	19.2 a	23.8 a	24.6 a	23.2	0.218
Healthiness	26.8 a	17.4 b	19.0 b	24.8 a	22.5	0.001
Socio-demografics						
Share female (%)	59.9 a	63.6 a,b	68.5 b	66.8 b	64.6	0.016
Age years (mean) (t-test)	43.5 a	47.3 b	46.2 b	42.4 a	44.9	p<0.05
Higher education (college or university degree) (%)	44.4 a	41.5 a	51.3 b	47.7 a,b	46.4	0.020

[a)] a,b,c,d indicate subsets of frequencies which do not differ significantly (α= 0.05)

* non organic consumers were not asked for their motives