

Article

How Consumers Perceive Water Sustainability (HydroSOStainable) in Food Products and How to Identify It by a Logo

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Abstract: Water is the most essential resource for food production and socioeconomic development worldwide. Currently, industry and agriculture are the most water consuming activities, creating high levels of pollution, and intensifying the scarcity of water especially in arid regions. The term “hydroSOStainable products” has been used to define those foodstuffs grown under irrigation strategies that involve optimized water management. A study to understand how consumers perceive options to save water in the food chain and how to identify the water sustainable products by a logo, was conducted in Brazil, China, India, Mexico, Spain and USA, with 600 consumers per country. In all countries, consumers think that the food categories in which it is possible to save the most water are those linked directly to agricultural products: (i) “grains and grain products” and (ii) “vegetables, nuts and beans”. Also, consumers do not associate processed products, such as snacks, with high water consumption, even though they come from agricultural products such as grains and require more processing. The logo was positively rated by consumers, especially by young generations. There is a need to properly inform consumers about water sustainability to gain their confidence in the hydroSOS logo.

Keywords: consumer behavior; environmental friendly; food category; hydroSOS brand; logo; water footprint

1. Introduction

Different definitions exist for the sustainability concept. Some of the most complete concepts explain sustainability throughout a product life cycle assessment and how it relates to poverty, environment, and the human-, production- and social-capitals left available for future populations [1,2]. In general, discussions of sustainability should include an implementation strategy and this should generate a change that contributes to the development of future generations [3]. Nevertheless, the definition proposed by Moore, Mascarenhas, Bain and Straus [3] could be considered incomplete as they did not consider religion, history, or happiness, as suggested by Shaharir and Alinor [4]. Johnston, et al. [5] highlighted the links between sustainability and ethics.

A focus on environmental issues, due to extreme difficulty in measuring the social and political aspects of global sustainability, makes assessment easier. Consequently, Poore and Nemecek [6] suggested that the term “sustainability” cover measurable features, such as land use, freshwater use

weighted against local water scarcity, and greenhouse gas emissions, acidifying, and eutrophying emissions. In addition, climate change will affect the water cycle including rain patterns, availability, and quality. This in turn will affect agricultural production and ecosystems, as it is expected to lead to frequent and severe droughts in the near future [7,8]. Water is already one of, if not the most, essential resource in world food production and socioeconomic development. With the need for increased food production and environmental issues further affecting the availability of water in the future, improving water efficiency is increasingly necessary [9–11].

Currently, industrial companies compete with agriculture for the use of water, which generates a high level of water stress and pollution, intensifying water scarcity in areas where its use is not sustainable [8]. In this sense, a sustainable use of water is that which does not reduce the quantity or quality of freshwater [10]. The term “hydrosustainable or hydroSOSustainable” has been branded to fruits and vegetables grown under irrigation strategies that require the use of smaller volumes of irrigation water, for example, regulated deficit irrigation. These products have a solid identify based on the increase of their quality and functionality (increase of secondary metabolites) and their water optimization in their production [10]. There are many scientific studies evaluating in detail the effects of deficit irrigation on the composition, functionality and consumer acceptance of different type of agricultural products, such as pistachios [12–15], pomegranates [16,17], table olives and olive oil [11,18], and almonds [19,20]. All these publications provide information to select hydroSOSustainability markers, such as total phenolic content (TPC), oleuropein and oleic acid in extra virgin olive oil and oleic acid in table olives [11], polymeric procyanidins in pistachios [12], anthocyanins, TPC, punicalagin (α and β) and ellagic acid in pomegranates [16,17], etc. In addition, protocols have been prepared to certify whether a product deserves the hydroSOSustainable logo, at two consecutive levels (i) the orchard [9] and (ii) the product itself [11].

Another aspect to be considered is the water footprint (WF). This indicator establishes the consumption (direct and indirect) of fresh water used for the production of a product along the supply chain. The WF is divided into three levels: blue, green and gray. The blue one refers to the consumption of surface and underground water; the green one to the consumption of rainwater; and the gray one defines the volume of fresh water that is needed to assimilate the pollution caused [21]. Addressing water efficiency in supply chains, especially commodities, can encourage the consumption of sustainable products and drive sustainable solutions into water management [22]. Prior research suggests that when consumers understand the antecedents of water use, they are more likely to be more aware of the WF and conserve water [23].

Increasingly, consumers demand sustainably produced food and many are trying to bring about change [24]. In 2018, according to the 13th Annual Food and Health Survey, carried out by the Foundation of the International Food Information Council (IFIC), 59% of US consumers positively valued food that was purchased and consumed in a sustainable manner; this percentage represented a significant increase (9%) over the previous year [25,26]. However, consumers still do not have a clear vision or perception of the concepts “sustainability”, including “hydroSOSustainability”, due to the abuse of the term, even in inappropriate scenarios. Various authors [27,28] have suggested that terms such as natural, organic, sustainable, and others are all lumped together by consumers into a single concept, which is not actually true.

The aims of this study were (a) to assess which food categories consumers from six countries (representing the Americas, Asia and Europe) believe it is most possible to save water and (b) determine if the use of a hydroSOSustainability logo could provide consumers with a likeable, easy way to identify water sustainability of their products.

2. Materials and Methods

The study was carried out using an online survey, run through the Qualtrics platform (Provo, UT, USA). Six countries were selected (USA, China, Mexico, Brazil, Spain and India) based on availability of databases and to represent large population countries on 4 continents. Qualtrics or its partners

maintain proprietary databases of consumers in each country (usually with more than 1 million respondents per country throughout the country and many more in some countries such as the USA). Of course, as with any on-line survey only those consumers who have access to and are available are used. Consumers who are on-line and accessible are an increasingly large part of the population, but still only a portion of the global population. In some parts of the world such testing is impossible, and those sections are missed in on-line testing regardless of the question format used. China, India, the USA, and Brazil had the highest number of internet users in 2015 (Mexico ranked 7th) and Spain had one of the highest percentages of users [29]. However, some individuals are not accessible using this method and, therefore, are excluded from this type of survey.

No specific criteria regarding food habits or behavior towards the environment were used to qualify the respondents. The survey was completed by 3600 consumers (50% self-identified men and women; 600 consumers per country). Four age ranges were selected (25% of participants for each age range), clearly differentiated: 18–23 years (centennials); 24–41 years (millennials); 42–52 years (gen X) and 53–73 years (baby boomers). Respondents did not receive a financial incentive to complete the online survey, but the Qualtrics database has a reward system to compensate respondents for their time and collaboration.

The questionnaire used included queries related to how to save water in the food chain and about the hydroSOSustainable logo (Figure 1a), which is registered in Spain (Spanish Patent and Trademark Office) and the European Union (European Union Intellectual Property Office). The meaning of the logo was not explained to the respondents, only its design was evaluated; only the text on questions Q4 and Q5 was presented to consumers. The idea behind the questionnaire was to determine what types of products (e.g., agricultural vs. processed foods) were most likely to contribute to water conservation and how consumers understand hydroSOSustainability. This can help in determining whether their perception of water sustainability is similar to the actual concept of the WF, which is an objective marker of the water being used to produce a specific food item. Our working hypothesis was that consumers, in general, understand sustainability as a theoretical and nonconcrete concept but our aim is to transform this subjective image into an objective one, which can be evaluated and measured using objective parameters, as it has already done when controlling hydroSOSustainability at orchards [9] and at the final product [11]. This questionnaire was a part of a broader survey on “global” sustainability, which included general questions on sustainability (including questions on: basic statements or definitions, benefits for local communities, sensory quality, price and purchase intention, health effects, and relevance to consumers) and consumer willingness to pay for sustainable products (including up to 29 food categories). Demographic data also was collected to classify consumers according to the factors to be studied (country, gender, age, education, income) (question Q1, Table 1).

The survey was pretested in English to ensure consumers could easily complete the task and then translated into the languages of the participating countries using a modified translation, review, adjudication, retesting, and documentation (TRAPD) approach [30,31] described by Seninde and Chambers IV [32], which includes a pretesting step in each country. The translations were done for Mandarin Chinese, Spanish, Portuguese and Hindi, and the logo also was translated to those languages. The word “hydroSOSustainable” was presented together with its proper translation in India and China (Figure 1a). The survey was conducted online and in each country was presented in its most common official language or a choice of languages (English and Hindi in India).

To measure the responses, 2 scales were used: (i) 7-point scale, where 1 meant “dislike very much”, 4 was “neither like nor dislike” and 7 was “like very much” (i.e., question Q4, Table 1) and (ii) 7-point scale, where 1 meant “strongly disagree” and 7 was “strongly agree” (i.e., question Q5, Table 1). In addition, 1 ranking question (Q2) in which consumer ranked 11 food categories regarding their belief that the category could be used to help in saving water) and 1 selection question (Q3, in which consumers checked three food categories, from a total of 11, where the most effort should be made to save water) were also included (Table 1). Finally, the noticeability of logo areas was evaluated by having consumers select the area of the logo that was most eye-catching (Q6).

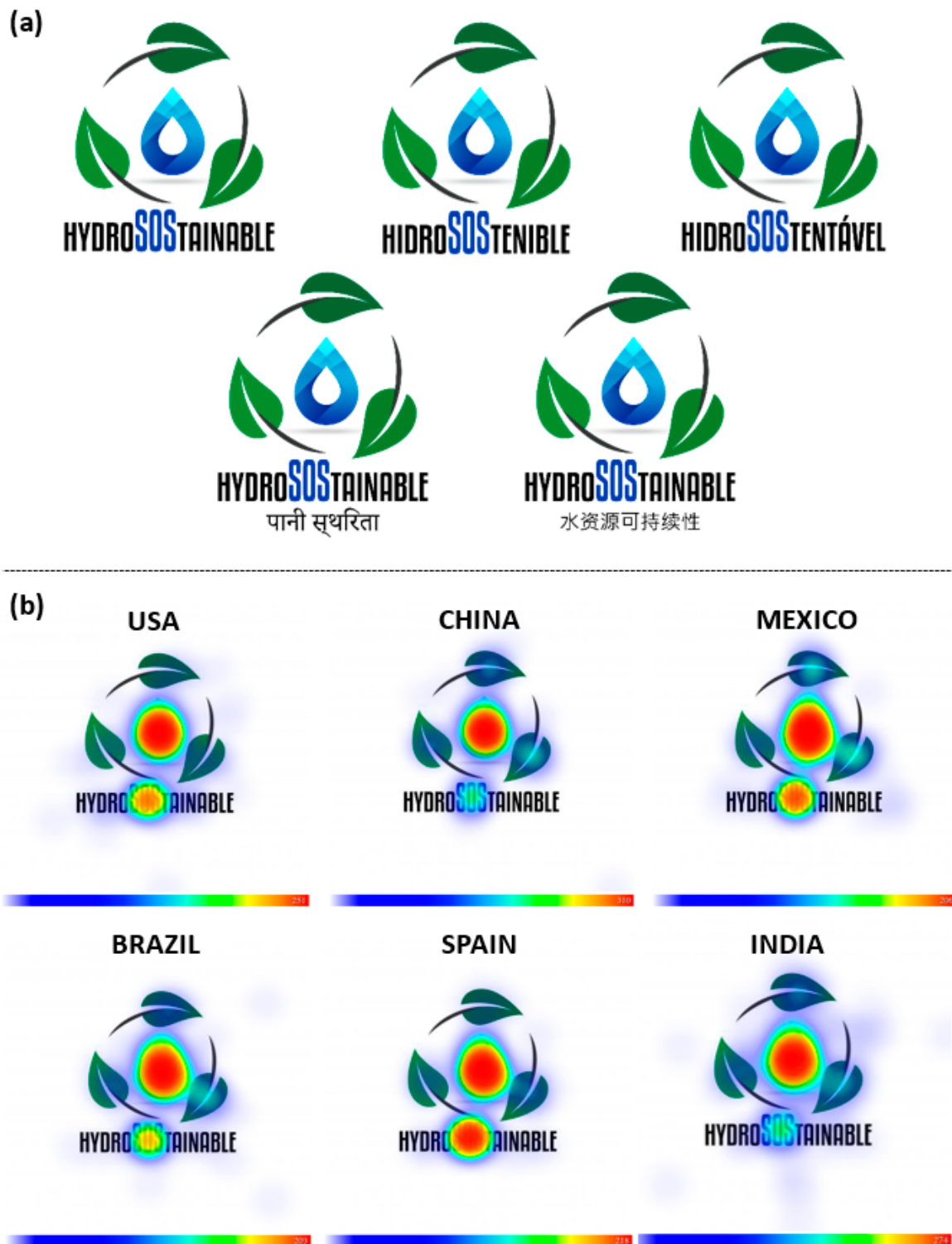


Figure 1. (a) HydroSOStainable logo in the different languages (from left to right and top row to bottom row: English, Spanish, Portuguese, Hindi and Mandarin Chinese); (b) Areas that were considered as most prominent in the logo in each country.

Table 1. Full questionnaire used in this study.

Number	Question												
Q1	Demographics												
Q1.1	What is your gender?												
Q1.2	What is your age?												
Q1.3	What is the highest education level you have completed?												
Q1.4	How many adults live in your household including yourself?												
Q1.5	How many children under the age of 18 are in your household?												
Q1.6	How much is your approximate annual income?												
Q2	Assuming we have the same consumption of products we have today, please rank these 11 food categories from 1 to 11 based on what you think is most likely to help in saving water (if we could change growing, production, and/or preparation). Rank 1 for the product you think we could save the most water when growing/making, then 2 for the second, ... to 11 for the one you think we could have the least impact on water use if we changed the growing/making of this. <table> <tr> <td>Coffee, tea, & cocoa</td><td>Milk & dairy products</td></tr> <tr> <td>Eggs</td><td>Snack foods</td></tr> <tr> <td>Fish & seafood</td><td>Soft drinks & bottled water</td></tr> <tr> <td>Fruits & juices</td><td>Starchy roots & potatoes</td></tr> <tr> <td>Grains & grains products</td><td>Vegetables, nuts &, beans</td></tr> <tr> <td>Meat & meat products</td><td></td></tr> </table>	Coffee, tea, & cocoa	Milk & dairy products	Eggs	Snack foods	Fish & seafood	Soft drinks & bottled water	Fruits & juices	Starchy roots & potatoes	Grains & grains products	Vegetables, nuts &, beans	Meat & meat products	
Coffee, tea, & cocoa	Milk & dairy products												
Eggs	Snack foods												
Fish & seafood	Soft drinks & bottled water												
Fruits & juices	Starchy roots & potatoes												
Grains & grains products	Vegetables, nuts &, beans												
Meat & meat products													
Q3	Assuming we have the same consumption of products we have today, please check which 3 categories of products we should work hardest to save water during growing, production, and preparation. <table> <tr> <td>Coffee, tea, & cocoa</td><td>Milk & dairy products</td></tr> <tr> <td>Eggs</td><td>Snack foods</td></tr> <tr> <td>Fish & seafood</td><td>Soft drinks & bottled water</td></tr> <tr> <td>Fruits & juices</td><td>Starchy roots & potatoes</td></tr> <tr> <td>Grains & grains products</td><td>Vegetables, nuts &, beans</td></tr> <tr> <td>Meat & meat products</td><td></td></tr> </table>	Coffee, tea, & cocoa	Milk & dairy products	Eggs	Snack foods	Fish & seafood	Soft drinks & bottled water	Fruits & juices	Starchy roots & potatoes	Grains & grains products	Vegetables, nuts &, beans	Meat & meat products	
Coffee, tea, & cocoa	Milk & dairy products												
Eggs	Snack foods												
Fish & seafood	Soft drinks & bottled water												
Fruits & juices	Starchy roots & potatoes												
Grains & grains products	Vegetables, nuts &, beans												
Meat & meat products													
Q4	We have developed this logo to identify water sustainable products. How much do you like the logo?												
Q5	How easy do you think it would be to identify products as more water sustainable using this logo?												
Q6	Please, CLICK on the area of the image that stands out most.												

Statistical Analysis

A one-way analysis of variance (ANOVA), Tukey's multiple range test and Friedman analysis, with the subsequent LSD (Least Significant Difference) test, were performed for the analysis of the results. For this, software XLSTAT (2016.02.27444 version, Addinsoft) was used. The confidence interval was 95% and the significant difference was defined as $p < 0.05$. Data were not weighted to represent all demographic classes in a country because equal numbers of consumers in each sex and age category were used for comparison purposes within and across countries. The noticeability of logo areas counted and a "heat map" created that shows the areas where consumers had highlighted.

3. Results and Discussion

The rank of food categories perceived to be most likely to help in saving water during their growing, production and/or preparation is shown in Table 2. In this table, the lower the sum of ranges, the more potential has the food category of saving water, according to the consumer opinion. Results showed that the food categories pointed by international consumers as those needed attention to save water, regardless of country, were: (i) grains and grain products and (ii) vegetables, nuts and beans. In contrast, consumers indicated the least possibility of influencing the saving water in the production

of snack food, soft drinks and bottled water. In question Q3 (Table 1), consumers were asked to choose the 3 food categories in which more attention and work is needed to save water during growing, production and preparation. As one can see in Table 3, consumers pointed out that “grains and grains products”, “fruits and juices” and “vegetables, nuts and beans” were the main 3 products where effort and attention should be paid according to consumers, especially in grains and vegetables. Of course, the use of irrigation in agricultural systems, leads to higher yields and also produces a high impact on water sustainability [33]. However, protein-rich products (e.g., lamb, cheese, pig meat, and peas and nuts), olive oil, and milk are the food items needing the highest volumes of freshwater [6]. In addition, the highest water footprint values in the European Union (EU) are related to the consumption of milk, beef and pork [22].

Table 2. Foods groups that consumer think could save more water as affected by the “country” factor.

	Brazil	China	India	Mexico	Spain	USA
Coffee, tea, & cocoa	3745 cde [†]	4033 ef	3723 cde	3708 d	3688 de	3803 de
Eggs	3716 cde	3364 ab	3558 bc	3712 de	3816 e	3696 cd
Fish & seafood	3794 de	3861 de	3945 efg	3935 ef	4082 f	3815 de
Fruits & juices	3302 a	3540 bc	3513 abc	3402 bc	3548 bcd	3565 c
Grains & grains products	3305 a	3290 a	3344 ab	3177 ab	3326 ab	3250 a
Meat & meat products	3545 bc	3815 de	3973 fg	3561 cd	3665 cde	3692 cd
Milk & dairy products	3583 bcd	3676 cd	3378 ab	3637 d	3743 de	3667 cd
Snack foods	4050 f	4223 fg	3809 def	4350 g	4355 g	4219 f
Soft drinks & bottled water	3868 ef	4312 g	4077 g	4154 fg	4100 f	4000 ef
Starchy roots & potatoes	3460 ab	3463 abc	3623 cd	3523 cd	3457 bc	3710 cd
Vegetables, nuts & beans	3364 ab	3277 a	3317 a	2969 a	3206 a	3305 a

The values correspond to the ranges sum after the Friedman test, in which 11 food categories were ranked according to the potential help in saving water according to consumer opinion. Note: a sample was ranked 1 for the product in which it is possible to save the most possible water when growing/making, then, 2 for the second, and successively ... , and finally 11 for the one that will have the lowest impact on water saving. [†] Values followed by different letters, within the same column were significantly different ($p < 0.05$). Food groups with letter “a” (highlighted in red font) had highest potential to save water according to the consumer opinion.

Table 3. Food groups that consumers think it should work hardest to save water (bold font by $\geq 30\%$ and red font by $\geq 45\%$ of consumers of each country Brazil, China, India, Mexico, Spain and USA).

	Brazil (%)	China (%)	India (%)	Mexico (%)	Spain (%)	USA (%)
Coffee, tea & cocoa	19.5	23.3	22.0	16.8	18.8	15.5
Eggs	9.7	18.8	21.5	6.3	9.3	11.2
Fish & seafood	13.0	23.7	14.7	14.2	10.8	20.5
Fruits & juices	37.8	33.7	31.5	38.0	36.2	32.3
Grains & grains products	46.3	42.3	53.3	37.3	50.0	46.5
Meat & meat products	35.7	22.0	16.7	31.8	30.2	37.5
Milk & dairy products	22.7	24.5	31.3	26.8	20.2	29.2
Snack foods	15.0	22.0	10.7	17.2	15.7	13.5
Soft drinks & bottled water	34.3	29.3	26.5	42.3	26.0	27.5
Starchy roots & potatoes	29.0	29.8	24.3	25.3	33.8	26.3
Vegetables, nuts & beans	38.0	39.8	52.5	47.8	59.5	48.0

It is important to point out the lack of association between the group “vegetables and fruits” with snacks foods, which were not associated with the term “sustainability” by consumers. This shows that consumers associated water consumption mainly with primary food production, leaving processed food items aside. In fact, in Spain, more than 85% of the organic products consumption is due to fruits and vegetables [34]. There is not a clear connection in the consumers mind linking processed foods, such as snacks, with irrigation water which seems to them only be used for primary products such as fruits and vegetables. That idea is in direct conflict with the WF, which includes much more than just the agricultural input of water [21]; for instance, a large volume of water is needed to produce power energy [35,36]. Therefore, those sectors and products requiring large amounts of electricity and

processing are also heavy water users [36]. For example, the water footprint for pasta production may be double (up to 1336–2847 m³/t) that of wheat (656–1300 m³/t) from which it is made (Table 4). But it is fully understandable that consumers have difficulties in comparing water saving in producing simple products (such as vegetables) with those products generated after more complex processes including several stages in their production.

Table 4. Examples of water footprint for the evaluated foods groups.

Food Category	Water Footprint	Reference
Coffee, tea, & cocoa	Coffee = 140 dm ³ /cup; Tea = 34 dm ³ /cup	[37–39]
Eggs	Eggs = 3265 m ³ /t	[40]
Fish & seafood	Farmed fishes and crustaceans = 1974 m ³ /t	[39,41]
Fruits & juices	Strawberries = 70 m ³ /t; Tomatoes = 120–184 m ³ /t; Tomato sauce = 195 m ³ /t; Dried tomato = 199 m ³ /t; Fruits = 962–1000 m ³ /t	[39,42–45]
Grains & grains products	Maize = 900–1222 m ³ /t; Wheat = 656–1300 m ³ /t; Rice = 1325–3000 m ³ /t; Pasta = 1336–2847 m ³ /t	[39,40,45–48]
Meat & meat products	Chicken = 3900 m ³ /t; Pork = 4900 m ³ /t; Beef = 15,500 m ³ /t	[39,46]
Milk & dairy products	Milk = 1020 m ³ /t	[39,49]
Snack foods	-	
Soft drinks & bottled water	-	
Starchy roots & potatoes	Potatoes = 75–324 m ³ /t; Sweet potatoes = 823 m ³ /t	[39,47,50]
Vegetables, nuts &, beans	Nuts = 9000 m ³ /t; Almonds = 10,240–20,820 m ³ /t; Soy bean = 1816 m ³ /t; Watermelon = 136 m ³ /t; Groundnuts = 1330 m ³ /t; Olive = 3434 m ³ /t (traditional) and 2782 m ³ /t (high-density)	[47,51,52]

Besides, to produce tomato sauce or dried tomato, the water footprint increases up to 195 m³/t and 199 m³/t, respectively as compared to the 184 m³/t needed to produce fresh tomatoes [39]. This consumption of water, damages the water natural cycle, affects the natural thermal regime of rivers and, therefore, affects the availability of oxygen and the metabolism of natural biota [36].

Other studies have shown the importance of developing and agree on a tool that identifies those products or items considered as sustainable including those that show a reduced WF [53]. In this sense, a logo for hydroSOSustainable products was proposed, and has been registered in Spain (Spanish Patent and Trademark Office) and the European Union (European Union Intellectual Property Office) and international consumers were asked on: (i) how much did they like the logo? (ii) how easy they thought it would be to identify products as more “water sustainable” by using this logo? In addition, they were asked to click on the area of the image that stands out the most. The proposed logo consists of a drop of water surrounded by 3 leaves and at the base the word “hydroSOSustainable” (Figure 1a). This logo emerged as an improvement to the first logo proposed for the identification of hydroSOSustainable products in Spanish and English-speaking countries [10]. The results showed that the logo was positively rated by most of the international consumers. In India, the logo was rated as being much more attractive to consumers (5.3) than in countries such as Spain and USA (4.1 and 4.3, respectively); although it should be noted that in all countries it received positive ratings (Table 5).

Table 5. Consumers opinion on the hydroSOStainable logo as affected by country, age, gender, income and education factors.

Factor	Q4	Q5
ANOVA Test [†]		
Country	***	***
Age	***	***
Gender	NS	NS
Income	NS	***
Education	NS	***
Tukey's Test [‡]		
<i>Country</i>		
Brazil	4.9 b	5.8 ab
China	4.5 cd	4.8 d
India	5.3 a	5.7 bc
Mexico	4.5 c	6.0 a
Spain	4.1 e	5.8 ab
USA	4.3 de	5.5 c
<i>Age (years)</i>		
18–23	4.6 ab	5.5 b
24–41	4.8 a	5.7 a
42–52	4.6 b	5.7 a
53–73	4.4 c	5.5 b
<i>Gender</i>		
Male	4.6	5.5
Female	4.6	5.6
<i>Income (US dollars)</i>		
25,000 or less	4.6	5.7
25,001–50,000	4.7	5.7
50,001–100,000	4.6	5.5
100,000+	4.6	5.4
<i>Education</i>		
Primary school or less	4.5	4.9 c
High school diploma	4.5	5.5 b
Associate's degree	4.4	5.6 ab
Bachelor's degree	4.6	5.5 b
Graduate degree or higher	4.7	5.8 a

Q4 = How much do you like the logo? Q5 = How easy do you think it would be to identify products as more water sustainable using this logo? [†] NS, not significant ($p > 0.05$), *** significant differences $p < 0.001$. [‡] Values followed by different letters, within the same column and factor, were significantly different ($p < 0.05$). Age: 18–23 years old (centennials); 24–41 years old (millennials); 42–52 years old (gen X) and 53–73 years old (baby boomers).

In a study on the commercialization of organic products, Prentice, et al. [54] suggested that, for Chinese consumers, the most important factor for the purchase of organic products and that demonstrates their authenticity, is their certification and labeling. Also, although Indian consumers are more likely to accept organic products, they do not trust their authenticity due to fraud in certification systems [55,56]. This logo and the development of a transparent certification procedure could be an important option to make consumers trust hydroSOStainable products and be sure of the quality and origin of the product to be bought. In this sense, indicators of hydroSOStainability have been developed to provide the specific requirements that orchards/farms [9] and products (starting with extra virgin olive oil and processed table olives; [11] must fulfil to be able to be branded under the logo hydroSOStainable. The products that achieve this certification meet the environmental requirements to be sustainable regarding irrigation water. However, farmers, producers and distributors must ensure the other aspects of the whole sustainability concept.

Young generations (centennials, millennials and gen X) rated the logo higher (4.6, 4.8 and 4.6, respectively) than older generations (baby boomers, 4.4). This shows that, in general, the level of satisfaction with the logo decreased as the consumers age increased. Young consumers seem to be

more focused on visual information than the old ones, who are more focused on written information; successful case studies supporting this statement are the use of social networks and emoji by youngsters. Also, young generations are more concerned about the environment and sustainability and have greater confidence in food labeling as a source of information [57]. There were no statistical significant differences for the factors gender, annual income, or educational level. Concerning the use of the logo, consumers in Mexico, Brazil and Spain (6.0, 5.8 and 5.8, respectively) were the ones who most agreed that the logo made easier the identification of hydroSOSustainable products (question Q5, Table 1), whereas Chinese consumers (4.8) were in the opposite side, although they also agreed with the help of using this logo (Table 5). These results could be due to an important percentage of Chinese consumers not understand English language and making more difficult to understand the term (hydroSOSustainable) which was written in English (capital letters) and subtitled in Mandarin Chinese. Probably the expression SOS losses its power when translated into other languages without Latin alphabet. In this way, it should be noted that those countries that saw the greatest utility in the use of the logo were the countries whose language use the Latin alphabet. Nowadays, consumers at the market may find more than 200 logos referring to products with healthy and sustainable aspects. In addition, these labels compete with each other, which creates confusion and distrust among consumers [58]. In this regard, an important work should be done day by day to disseminate the meaning (increased accumulation of bioactive compounds as a response to water stress) and controls (at farm and at the product to be marketed) done on the hydroSOSustainable logo to make it widely accepted by international consumers. Although it will be difficult, there is no other way to get consumer confidence and trust in this special type of agronomic products; there is a need to inform consumers based on all scientific findings supporting the use of the hydroSOSustainable logo. The most important tool to gain consumers trust would be to ensure complete transparency in the certification process, which must be based on scientific findings and indicators.

Consumers in the middle age groups (millennials and gen X) agreed more with the usefulness of the proposed logo, while consumers on extreme ages (the youngest and the oldest ones) gave lower scores (Table 2). This may be due to the fact that the elderly prefer to read the labeling rather than base their choice on visual aspects, whereas the youngest, despite being the most technologically developed, are still not entirely familiar with the purchasing process. Consumers who believe that their behavior can reduce environmental impact tend to pay more attention to label information and drive their choices accordingly [59]. But in any case, the mean score for this question was 5.6 (with 5 = agree somewhat and 6 = agree) was high and clearly demonstrated that the use of the logo or the implementation of the hydroSOS brand would serve to create a means of differentiation for consumers. Also, the participants level of education had a significant influence on consumer opinion on the logo, with consumers having the lowest education (primary school holders) giving the lowest scores (4.9) contrary to those with associate's degree or higher (mean of 5.6). These results are similar to those obtained by Ditlevsen, et al. [60], who reported that in general highly educated consumers were the biggest buyers of organic food. However, there were no statistically significant differences due to gender and annual income for the logo usefulness. These results agreed with our initial hypothesis regarding the need to provide more information to consumers specifying that they are environment friendly. The development of a hydroSOSustainable logo would mean providing the necessary information to the consumer, and with it, providing full transparency, derived from a certification process associated with the logo, that the consumer needs to trust and buy the product [11,55]. This logo would help consumers to easily identify the products in which water has been saved in their production and also in their transport and distribution. This logo provides full information about the product and its farming, and ensures that irrigation water was optimized, water usage was controlled by farmers and final quality of the product was increased by water stress produced on the plant/tree [9,11].

With respect to the area of the logo that stands out the most (Figure 1b), the water drop was getting the attention of most of the consumers in all studied countries. The word "hydro" is well associated with the water drop which is located in the center of the image and therefore plays a key

role in the logo. The next most attractive area was the expression “SOS” which was highly relevant in all countries except in China and India, which could be due to the difference in grammar and how easy was to understand the concept of SOS as asking for help (e.g., save our ship or save our souls). Previous studies revealed that consumers prefer simple and easy to understand labels compared to labels more complexed labels although more detailed information is provided [61]. Therefore, understanding consumer perception is essential to understand why some marketing campaigns do not reach their targeted goals.

Water consumption of the products generates an impact on water resources, mostly indirectly, either through packaging, transport, etc. Therefore, it is also necessary to include transport and packaging in the carbon footprint and the water footprint of the product. For this, the longer the distance between the farm where the vegetable is produced and the shop where it is sold, the less hydroSOSustainable it will be because its water footprint will be higher [21,22,39,62]. In general, transport is often eliminated from the calculation of the water footprint [21]. However, transport consumes a lot of energy, especially if includes the use of biofuels or hydroelectric energy (energies that have a high water footprint because irrigation water must be used for the first one and dams must be built and water is lost by evaporation); thus, transporting a product to its final destination can generate a considerable contribution to the water footprint of the product [21,63]. As an example, Page, et al. [64] found that the transportation of tomatoes to the market was a key factor in determining the carbon footprint of the product. Therefore, it was important to reduce the energy involved in transportation (reduce the millage between the farm and the shop) to minimize the carbon footprint and water use [21].

4. Conclusions

Given the complexity of the term sustainability and consumer behavior (the fact of expressing an opinion in a survey does not necessarily have to be reflected in their behavior) establishing concrete results is complicated; thus, it is necessary to continue carrying out studies to fully understand both the opinion and commercial actions taken by consumers regarding water-saving products. In all countries, consumers think that the food categories in which more water can be saved during their full production and distribution chain are (i) “grains and grains products” and (ii) “vegetables, nuts and beans”. This finding clearly shows that consumers do not associate processed products (e.g., snacks) with significant water consumption. In general, the logo proposed for hydroSOSustainable products was positively rated, especially by young generations, and it was considered useful for the identification of these sustainable foods. However, spreading its meaning and to provide confidence in the hydroSOS brand is essential. The development of a certification will guarantee the quality and origin of the product to consumers, helping them to easily identify them in their markets.

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