

## Food losses and waste at stake in international trade: The role of food quality standards for fresh fruit and vegetables

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### 1.- Overview

The article addresses the contribution of international and domestic appearance-related quality standards for fresh fruit and vegetables (FFV) to food losses and waste in the context of international trade.

First, it will start with introducing the issue of food losses and waste in general, by providing a brief review of definitional uncertainties and adverse social and environmental consequences and by framing food quality standards as one of the causes of food losses and waste.

Second, the article will touch upon the role of major international organizations, namely the Codex Alimentarius Commission, the UN Economic Commission for Europe and the OECD in the harmonization of food quality standards, by outlining the objectives of their work, the legal status and scope of application of food quality standards. Third, it will compare the normative content of food quality standards for FFV – in particular, the minimum quality, colouring, size and grading requirements – adopted by the three organizations and identifies aspects which contribute most to food losses and waste. The focus on FFV can be justified by the fact that they account for the largest portion of global food losses and waste and, at the same time, they are among the most traded commodities around the world.<sup>1</sup> Fourth, a comparison will be

drawn between the food quality standards in the EU and the USA, two major net importers of fresh fruit and vegetables from all over the world, which opted for different approaches to the adoption of international standards.<sup>2</sup> Finally, the article will conclude with some suggestions for by-passing or improving food quality standards for fresh fruit and vegetables in order to prevent food losses and waste.

### 2.- Food losses and waste: a global challenge in the context of international trade

It is a rather difficult task to determine how exactly international food trade affects food losses and waste, not to mention measuring their amount attributable to international trade. This problem is exacerbated by the fact that no legally binding definition of food losses and waste has been adopted at international level so far. While confusion prevails in the academic community, the FAO attempted to consolidate the definition on the basis of the stage where they occur. Food discarded or left to spoil by consumers, despite being appropriate for human consumption, can be referred to as food waste. Whereas, food losses mean a “decrease, at all stages of the food chain prior to the consumer level, in mass, of food that was originally intended for human consumption.”<sup>3</sup>

Even though the FAO’s definition is devoid of a legally binding character, it has been already adopted by many researchers, experts and governments in their studies. Yet the recent Italian law on the donation of unsold food – the first one in Europe to lay down a binding definition of food waste – does not limit food waste to the consumer level but extends it to food discarded for commercial or aesthetic reasons, or proximity to the expiry date, from the entire food supply chain despite being edible and appropriate for human consumption.<sup>4</sup> According to the FAO, it is estimated that, each year, one third of food produced globally is never

<sup>(1)</sup> WTO, 2014, p. 9.

<sup>(2)</sup> Johnson, 2016, p. 1; Kelch, 2004, p. 27.

<sup>(3)</sup> HLPE, 2014, p. 22.

<sup>(4)</sup> Italian Law No. 166/2016, Art. 2(d).

eaten, as it ends up lost or wasted along the food supply chain.<sup>5</sup> Saving just one fourth of this food could potentially feed the 795 million people around the world who are suffering from hunger.<sup>6</sup> Not only do food losses and waste undermine food security but they also take a serious toll on the environment. Lost food means waste of natural resources, namely land and water, involved in the agricultural production, processing and consumption. It also negatively contributes to climate change by generating avoidable greenhouse gas emissions, especially in the era of globalization of the food supply chain and relentless expansion of the international food trade, since many foodstuffs are produced, transformed and consumed in very different parts of the world and often travel hundreds or thousands of kilometers before reaching the final consumer.

In order to withstand the long journey and be marketable at the retail stage, foodstuffs are required to comply with common quality standards on the basis of which the international trade operates. To some, 'quality standards' might seem a rather ambiguous term. For the purpose of this article, quality standards will be referred to as requirements concerning only weight, size, shape, colour and visual appearance of foodstuffs in general, in line with the FAO language.

These standards may have different names, such as "commodity standards" under the Codex Alimentarius, "agricultural quality standards" under UNECE or "marketing standards" in the EU.

If foodstuffs fail to meet these requirements, they will be rejected by buyers. This practice leads to food losses at the farm gate.<sup>7</sup>

In Italy, for instance, it was estimated that, in 2009, over 17 million tonnes of agricultural produce were not harvested, amounting to 3.25% of total production.<sup>8</sup> A similar situation is faced in the USA where about 10% of food grown on farms is never harvested each year.<sup>9</sup> The imminent victims of these stan-

dards are mainly fruits and vegetables which are therefore destined to rot at farms or they might be diverted to other uses, such as animal feed or energy production.

### 3.- *International harmonisation of food quality standards*

According to the International Classification of Non-Tariff Measures published by UNCTAD in 2012, quality standards may qualify as technical barriers to trade.<sup>10</sup>

In order to remove, in line with the provisions of the WTO Agreement on Technical Barriers to Trade (TBT),<sup>11</sup> technical barriers to international food trade posed by national regulations setting out standards for the quality of agricultural produce, these standards have been subject to harmonization by numerous international organizations, namely by the Codex Alimentarius Commission (CAC), the United Nations Economic Commission for Europe (UNECE) and the Organization for Economic Cooperation and Development (OECD), which prescribe in what state fresh food should reach consumers.

The ultimate objective of their work is to ensure consumer protection and to facilitate international food trade at the same time. The three organizations work together to avoid duplicity and ensure uniformity in standardization.

With regard to the legal status of standards produced by these IOs, they are not binding as such. They acquire binding force only as a consequence of explicit adoption in the form of national legislation by individual members.

However, the legal status of these standards has increased significantly by virtue of being indirectly referred to in the TBT Agreement as the reference points for evaluating whether national measures are

<sup>(5)</sup> FAO, 2011, p. 4.

<sup>(6)</sup> FAO, IFAD and WFP, 2015, p. 8.

<sup>(7)</sup> Stuart, 2009, p. 102.

<sup>(8)</sup> Segrè and Falasconi, 2011, p. 38.

<sup>(9)</sup> Stuart, 2009, p. 187.

<sup>(10)</sup> [http://unctad.org/en/PublicationsLibrary/ditctab20122\\_en.pdf](http://unctad.org/en/PublicationsLibrary/ditctab20122_en.pdf), at B7.

<sup>(11)</sup> Arts. 1.3 and 2.2.

truly justified to protect food quality.<sup>12</sup> More specifically, it obliges Members to use existing international standards as a basis for their technical regulations (Art.2.4). In such case, if their national standards are in accordance with relevant international standards, they are presumed not to create an unnecessary obstacle to international trade (Art.2.5).

The Codex Alimentarius comprises 212 “commodity standards”<sup>13</sup> drafted by relevant Commodity Committees<sup>14</sup> and setting out minimum requirements on size, colour, physical aspect, tolerances, presentation, classification. While they are intended to protect the consumer and ensure fair practices in trade,<sup>15</sup> they do not take into account the environmental impact of potential food losses they might cause.<sup>16</sup> The Codex standards are deemed scientifically justified and are recognized as the benchmarks for assessment of domestic regulations.

Likewise, UNECE Working Party on Agricultural Quality Standards has a long-standing expertise in standard-setting. Yet, it is striking to observe that its objectives conflict with one another. On the one hand, the standards should promote sustainable production, but on the other hand, they aim to “keep unsatisfactory produce out of the market”.<sup>17</sup> In other words, this objective could be interpreted as encouraging food losses and waste. The Working Party draws up internationally agreed commercial quality standards for agricultural produce based on existing national standards and industry and trade practices for fresh fruit and vegetables, dry and dried produce, seed potatoes, meat and eggs.<sup>18</sup> Its standards have the status of mere recommendations, so their

binding force is limited. Nonetheless, they are used by governments, producers, importers and exporters as well as other international organizations. UNECE standards are considered to be compatible with the TBT Agreement, OECD standards as well as CAC standards. The standards are only regional, as they apply to 56 UNECE members in the northern hemisphere, in particular to Europe, Russia, North America (Canada and United States), Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) and Western Asia (Israel).

The OECD is another important quality standard-setting organization. It provides detailed interpretation of marketing standards. The standards are prepared by the Scheme for the Application of International Standards for Fruit and Vegetables set up in 1962 as a unit of the Trade and Agriculture Directorate. So far the Scheme has adopted numerous standards<sup>19</sup> on fresh and dried fruits and vegetables which are identical to the UNECE standards and apply to 25 countries participating in the Scheme, including most European States (save for the UK), Turkey, Israel, New Zealand, Morocco, South Africa and Kenya.<sup>20</sup>

#### *4.- Normative content of international quality standards for fresh fruit and vegetables*

The cooperation among the three organizations reflects in the identical structure of quality standards which they develop. Each standard comprises:

- a definition of the produce specifying the scope of

<sup>(12)</sup> Appellate Body Report, EC - Sardines, para. 215; Panel Report, EC - Sardines, para. 7.68; Randell, 1997, p. 318; Sikes, 1998, p. 327.

<sup>(13)</sup> <http://www.fao.org/fao-who-codexalimentarius/standards/list-of-standards/en/>

<sup>(14)</sup> E.g. Codex Committee on Fresh Fruits and Vegetables.

<sup>(15)</sup> Statutes of the Codex Alimentarius Commission, Art. 1.

<sup>(16)</sup> Food losses and waste leave a severe water, carbon and ecological footprint on the environment. Food which is produced but never eaten occupies about 30% of global agricultural land, consumes approximately 250km<sup>3</sup> of water (which is three times the volume of Lake Geneva) and ranks as the top emitter of greenhouse gas emissions after USA and China. For more information see FAO, *Food wastage footprint: Impacts on natural resources. Summary Report*, Rome, 2013. Cf. Randell, 1997, p. 317.

<sup>(17)</sup> UNECE, 2008, para. 2.

<sup>(18)</sup> <https://www.unece.org/tradewelcome/steering-committee-on-trade-capacity-and-standards/tradeagr/standards-and-recommendations.html>.

<sup>(19)</sup> <http://www.oecd.org/tad/code/oecdfruitandvegetablesstandardsbrochures.htm>.

<sup>(20)</sup> OECD, 2012, p. 12, available online: <http://www.oecd.org/tad/code/49498065.pdf>.

application of the standard to a certain product, e.g. whether it applies to raw or processed produce and to which varieties;

- provisions concerning quality (namely minimum and maturity requirements and classification of the produce into extra class, class I or class II);
- provisions concerning sizing and tolerances; and
- provisions concerning presentation and labeling, in particular packaging, marking of origin, product identity and packer/shipper identity.

This article will examine and compare only the minimum quality requirements, classification, sizing and tolerances for fresh fruit and vegetables which lead to exclusion from market and, by the same token, to food losses and waste. The table below aims to contrast and highlight similarities among standards adopted by CAC, UNECE and OECD.

MINIMUM QUALITY STANDARDS					
STANDARDS	CAC <sup>21</sup>	UNECE <sup>22</sup>	OECD <sup>23</sup>	SCOPE	EXCLUSION FROM MARKET
	whole	intact	intact	free of damage or injury affecting the integrity of the produce	mechanical damage, split fruit/vegetables
	sound	sound	sound	free from disease, <sup>24</sup> physiological disorders or serious deterioration, which appreciably affect their appearance, edibility or keeping quality	produce with early signs of rotting, <sup>25</sup> serious bruising
	clean	clean	clean	practically free of any visible foreign matter, soil or dust	soiled produce

Other common minimum quality requirements encompass standards such as:

- practically free from pests: the odd insect is accepted, but in the event of presence of a colony, the produce will be excluded;
- free from damage caused by pests: produce is accepted unless the damage reaches the flesh;
- free of abnormal external moisture;
- free of any foreign smell/taste;
- fresh in appearance.

Another cause of food losses and waste are the shape and colouring requirements for the purpose of classification of the produce. The table below shows the differences among the internationally agreed classes which have been adopted in the EU legislation but are distinct from the US legislation.

Extra Class	Class I	Class II
superior quality	good quality	reasonable quality and suitable for human consumption
very limited defect allowance – uniformity in colouring	slight shape and skin defects (cracks) and defects in colouring caused by sun allowed	(not serious) defects in shape and in colouring, limited skin defects allowed

Despite the rigorous requirements illustrated above, a certain degree of tolerance is allowed for malformations, skin and colouring defects in each class (5% for Extra class and 10% for Classes I and II). Produce falling beyond the tolerance limit of Class II, such as for instance a heart-shaped potato, will be excluded from market.

Stringent provisions on size determining the minimum/maximum size as well as methods for measuring it often leads to food losses and waste, especially with the requirement for uniformity in size for each package. Only as little as 10% tolerance is granted for produce below or above a set minimum as well as for produce deviating from the allowed and/or indicated size range.

The impact of these standards on the generation of food losses and waste is multiplied by the obligation on the holder or the seller to display, offer for sale, deliver or market only those products which are in conformity with the relevant standards. In case of non-compliance, the holder/seller will be held responsible under national law. It follows that the produce which does not conform with the standards, albeit suitable for human consumption, will be discarded or diverted to an alternative non-food use, thereby contributing to food losses and waste.

(<sup>21</sup>) See Codex Standard 299-2010 for Apples: [http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?Ink=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCODEX%2B299-2010%252FCXS\\_299\\_e.pdf](http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?Ink=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCODEX%2B299-2010%252FCXS_299_e.pdf).

(<sup>22</sup>) See UNECE Standard FFV-50 concerning the marketing and commercial quality of apples: [http://www.unece.org/fileadmin/DAM/trade/agr/standard/standard/fresh/FFV-Std/English/50Apples\\_2014.pdf](http://www.unece.org/fileadmin/DAM/trade/agr/standard/standard/fresh/FFV-Std/English/50Apples_2014.pdf).

(<sup>23</sup>) See OECD International Standards for Fruit and Vegetables: Apples: <https://www.oecd.org/tad/code/46603125.pdf>.

(<sup>24</sup>) Caused by funghi, bacteria or viruses.

(<sup>25</sup>) To be excluded only if the extent of rotting makes the produce unfit for human consumption.

Surprisingly enough, the standards do not contain any provision encouraging their reduction, e.g. by promoting donation of produce not in conformity in line with the food-use-not-waste hierarchy.<sup>26</sup>

## 5.- Food quality standards in the EU and the US

As mentioned earlier, the international food quality standards become binding for food business operators upon their incorporation into national legislation. The particular features of the EU and US standards are worth examining for two reasons: first, their standards for fruits and vegetables are rigorous, and second, both entities have become net importers of fresh fruit and vegetables from Latin/South America, Africa and Asia (even though some of these agricultural commodities are traded even between the EU and US).<sup>27</sup> This means that fruit and vegetables from almost all over the world must comply with stringent food quality standards before crossing the EU and US borders.

On the one hand, in the EU, national marketing standards have been harmonised at the Union level. More specifically, the EU incorporated the UNECE standards into Council Regulation No 1308/2013 and Commission Implementing Regulation 543/2011.<sup>28</sup> The first Regulation, as well known, establishes a common organisation of the markets in agricultural products. It stipulates, *inter alia*, that the holder (incl. importer) of fresh fruit and

vegetables cannot market them in the EU unless they are “sound, fair and of marketable quality” (Art.76). The second Regulation is more focused on FFV standards, distinguishing between the so-called general and specific marketing standards.<sup>29</sup> The former apply to all food commodities,<sup>30</sup> save for those covered by more rigorous specific standards (Art.3.1), and they also show more flexibility in that the classification and sizing of the produce have been abolished and only the minimum quality and maturity requirements must be met. The general standards also provide for 10% tolerance for defect and 2% tolerance for decay.<sup>31</sup> If products comply with the UNECE standards, they are considered as conforming with the general marketing standards (Art.3.1). In contrast, the specific standards maintain rigid sizing requirements and three-tier grading of the produce into Extra Class, Class I and Class II with corresponding lower tolerances.<sup>32</sup> It is worth noting that the specific requirements were repealed in 2009 for a number of fruit and vegetables,<sup>33</sup> which was recognized by the FAO as an important step towards the reduction of food losses at the farm gate.<sup>34</sup>

Moreover, Article 4.1 of Regulation 543/2011 stipulates that products sold on farm, ‘kitchen ready’ products and those intended for animal feed, industrial processing or other non-food use and bearing a relevant label may be exempted by national authorities from marketing standards. This aims to reduce the loss and waste of misshapen or undersized fruit

<sup>(26)</sup> HLPE, 2014, p. 80.

<sup>(27)</sup> Johnson, 2016, p. 1; De Cicco, 2016; EC, 2016.

<sup>(28)</sup> Commission Implementing Regulation 543/2011 lays down detailed rules for the application of Council Regulation (EC) No 1234/2007 in respect of the fruit and vegetables sector. Council Regulation (EC) No 1234/2007 used to govern the agricultural products market and was repealed by Council Regulation No 1308/2013. Nevertheless, its Implementing Regulation is still in force.

<sup>(29)</sup> Currently, there are only 10 specific standards instead of 36, covering apples, citrus fruit, kiwifruit, lettuces, peaches and nectarines, pears, strawberries, sweet peppers, table grapes, tomatoes (Art.3.2), plus bananas which have their own specific marketing standards regulated by Regulation (EC) No 2257/94.

<sup>(30)</sup> See Regulation 1308/2013, Annex I, Part IX.

<sup>(31)</sup> See Implementing Regulation 543/2011, Annex I, Part A.

<sup>(32)</sup> *Ibid*, Part B.

<sup>(33)</sup> Namely, for apricots, artichokes, asparagus, aubergines, avocados, beans, Brussels sprouts, carrots, cauliflower, cherries, courgettes, cucumbers, cultivated mushrooms, garlic, hazelnuts in shell, headed cabbages, leeks, melons, onions, peas, plums, ribbed celery, spinach, walnuts in shell, watermelons and chicory. These standards were repealed by Commission Regulation (EC) No 1221/2008 of 5 December 2008 amending Regulation (EC) No 1580/2007 laying down implementing rules of Council Regulations (EC) No 2200/96, (EC) No 2201/96 and (EC) No 1182/2007 in the fruit and vegetable sector as regards marketing standards. This change is reflected in the most recent amendment introduced by Regulation 543/2011 which lists 10 fruits and vegetables subject to specific standards.

<sup>(34)</sup> HLPE, 2014, p. 81.

and vegetables by diverting them to non-food uses. In addition, Article 4.5 allows for more tolerance for the lack of freshness and turgidity and deterioration of fresh fruit and vegetables covered by specific standards in all classes except for the Extra Class, which is an effective tool for the prevention of food being discarded despite its fitness for human consumption.

The responsibility for compliance with the standards is borne by the holders/sellers, i.e. any natural or legal persons who are in physical possession of the products concerned (Art.3).<sup>35</sup> The third-country importers are responsible for ensuring conformity of FFV they import to the EU with the Union or equivalent standards. In some cases, the Commission granted approval of conformity checks to those third countries where the EU marketing standards, or at least equivalent standards, are met for products imported to the EU (Art.15). Not only does such simplification of conformity checks facilitate international trade in perishable foodstuffs, but it might also contribute to the reduction of food losses and waste.<sup>36</sup>

On the other hand, the US quality standards make no reference to and slightly differ from the international standards. They are developed by the Agricultural Marketing Service of the US Department of Agriculture under the Agricultural Marketing Act of 1946 (Section 203(c), 7 U.S.C. 1621-1627). The quality standards for fruit and vegetables subject to the US import requirements can be found in the Code of Federal Regulations.<sup>37</sup> Moreover, pursuant to Section 8e of the Agricultural Marketing Agreement Act of 1937, the imports of certain fruits and vegetables, including tomatoes, kiwifruit, raisins, olives and oranges, must comply

with specific US standards concerning grade, size, quality and maturity contained in the so-called 'Marketing Orders', which might be seen as an obstacle to prevention of food losses and waste.<sup>38</sup> Compared to the EU or internationally agreed standards, the US requirements are more stringent and provide more details. While the minimum requirements concerning cleanliness, maturity and tolerances correspond to the EU standards, the requirements of integrity, absence of pests or foreign smell/taste and soundness have been translated into the absence of or slight defects caused by injury, damage or serious damage. All refer to a defect affecting the colouring or soundness of the produce which detracts, to a certain degree, from the appearance, the edibility or shipping quality of the produce. Whereas for injury, only *more than slight* defects is allowed, damage can *materially* affect the produce. For serious damage, a *serious* defect is permitted.

Another distinct aspect of the US standards are the peculiar grading standards completely different from the EU classes: Extra Fancy, Fancy, No. 1, Utility, Combination, Commercial, No. 2, and No. 3. and other. Not all grades apply to all commodities, on the contrary, each commodity standard will specify different grade designations for different produce on the basis of factors such as size, colour, shape, taste, smell, absence of pests/disease or other defects. The Extra Fancy and Fancy grades guarantee the highest quality, while other grades are the sign of the presence of slight or more serious defects in the produce. From the perspective of the reduction of food losses and waste at the farm gate, Grade No. 3 must be appraised for its high tolerance for misshapen produce and material colour

<sup>(35)</sup> See also Art. 76.3 of Regulation 1308/2013 which establishes and specifies in more detail the holders' responsibility for conformity with marketing standards. It prohibits the holder of products of the fruit and vegetables sector covered by marketing standards, as stipulated in the UNECE standards, from displaying such products, offering them for sale or delivering or marketing them within the Union unless they comply with those standards.

<sup>(36)</sup> The complete list of States and products can be found here: [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52014XC0412\(07\)](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52014XC0412(07)).

<sup>(37)</sup> See CFR, Title 7, Part 51, §51.300- §51.3749 [http://www.ecfr.gov/cgi-bin/text-idx?SID=ff8c93936827bcd1a5afe2303d2b7d28&mc=true&tpl=/ecfrbrowse/Title07/7cfr51\\_main\\_02.tpl](http://www.ecfr.gov/cgi-bin/text-idx?SID=ff8c93936827bcd1a5afe2303d2b7d28&mc=true&tpl=/ecfrbrowse/Title07/7cfr51_main_02.tpl). Other standards can be found on the USDA website – fruit: <https://www.ams.usda.gov/grades-standards/fruits>, vegetables: <https://www.ams.usda.gov/grades-standards/vegetables>.

<sup>(38)</sup> See, e.g., the specific requirements for tomato imports: [http://www.ecfr.gov/cgi-bin/text-idx?SID=1b535375748632deef9b7dfc983b4684&node=se7.8.980\\_1212&rgn=div8](http://www.ecfr.gov/cgi-bin/text-idx?SID=1b535375748632deef9b7dfc983b4684&node=se7.8.980_1212&rgn=div8).

defects. If one tried to align the US and EU grading standards according to their requirements, the result would be as shown in the table below.

EU/International GRADES	US GRADES
Extra Class	Extra Fancy, Fancy, No. 1
Class I	No. 1, Utility, Commercial
Class II	Utility, No. 2, No. 3

Furthermore, certain fruits and vegetables which do not meet the requirements of the aforementioned grades are categorized as 'unclassified'. However, the USDA is currently removing this category from each product. The produce which previously fell within this category will be allocated to the existing grades, which will have a positive impact on the reduction of food losses and waste.<sup>39</sup>

Another interesting feature of the US standards is the requirement of "fairly well formed/developed" shape which characterizes Grades Extra Fancy, Fancy and No. 1 and refers to produce which may have a slightly abnormal shape that does not affect *materially* its appearance. Otherwise, badly misshapen produce is considered seriously deformed.

## 6.- The way forward

The analysis of the impact of international quality standards on food losses and waste shows that as long as free international trade is considered a priority, food losses at the farm gate will remain inevitable. What would improve the situation is going from global to local and seasonal. Indeed, Stuart argues that selling fresh fruit and vegetables at farmers markets and shops, thus closer to consumers, without having to conform with the rigorous quality standards plays an important part in reducing the amount of rejected produce.<sup>40</sup> The conditions for such a shift already exist in the EU where crops may be exempted by national authorities from these standards if the products are directly sold by the

producer to the final consumer for personal use.<sup>41</sup> Another solution which does not necessarily imply re-prioritizing international trade is to align national standards and encourage the implementation of international standards so as to prevent discarding of non-compliant products at the customs. Moreover, there is a need for revision of the existing legal framework. Indeed, according to the FAO, simplified requirements and implementation of food quality standards might lead to reducing food losses and waste at international level.<sup>42</sup> For instance, within the UNECE, any Member State may initiate the process of revision by submitting the proposal to the Specialized Section which subsequently passes it to the relevant Working Party. Likewise, national authorities should simplify the standards in order to allow the sale, at a lower price, of misshapen or otherwise defected produce. This could be done by introducing a catch-all grade, similar to the US Grade No.3, which would cover fruits and vegetables that fail the requirements of other classes. Such a measure might have an added value, as it could potentially contribute to feeding some of the world's hungry.

Whichever solution the decision-makers opt for, they should, first and foremost, aim to strike balance between trade, environmental and social concerns, bearing in mind the fact that natural resources are finite and that they should not be compromised by international trade.

## ABSTRACT

*One third of food produced globally is lost or wasted each year, leading to far-reaching social and environmental consequences. Fresh fruit and vegetables are the most susceptible of all agricultural produce to being lost or wasted along the food supply chain, and, at the same time, they are among the*

<sup>(39)</sup> A Rule by the Agricultural Marketing Service on 08/04/2016: <https://www.federalregister.gov/documents/2016/08/04/2016-18451/us-standards-for-grades-of-fresh-fruits-and-vegetables-fruits-and-vegetables-for-processing-nuts-and>.

<sup>(40)</sup> Stuart, 2009, p. 112.

<sup>(41)</sup> Implementing Regulation 543/2011, Art.4.4

<sup>(41)</sup> HLPE, 2014, p. 81.

*most traded commodities around the world. With boosting international trade in fresh fruit and vegetables, food quality standards imposed on these commodities represent a major factor contributing to food losses and waste. This article focuses on the problem that marketing standards related to appearance poses to fresh fruit and vegetables. While analyzing the EU and USA cases, it identifies the*

*provisions affecting food losses and waste. Subsequently, it describes how specific international standards elaborated by international organisations have been translated into the EU and US legal systems and, finally, it investigates whether there is any room for improvement in the international trade. Key words: food losses and waste, food quality standards, international trade.*

