CODEX ALIMENTARIUS COMMISSION E

Food and Agriculture Organization of the United Nations

World Health Organization

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CODEX COMMITTEE ON FATS AND OILS

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DISCUSSION PAPER ON THE REVISION FOR THE LIMIT FOR CAMPESTEROL IN THE CODEX *STANDARD FOR OLIVE OILS AND OLIVE POMACE OILS*

(CODEX STAN 33-1981)

(Prepared by Australia with the assistance of Brazil, Canada, New Zealand and the United States of America)

BACKGROUND

1. The Codex Committee on Fats and Oils (CCFO), at its 22nd meeting, considered a discussion paper[1] prepared by Australia proposing new work to review the campesterol limit in the *Codex Standard for Olive Oils and Olive Pomace Oils* - CODEX STAN *33-1981 (the Codex Standard).* The Australian delegation noted the importance of maintaining the integrity and quality of olive oil, the need to update Codex standards when new scientific or other information became available, and recalled that commodity standards should reflect global variations and focus on essential characteristics. Some parameters in the Codex standard do not adequately reflect global variations in olive oil, and as a result some high quality olive oils could not be traded internationally. To address this problem, Australia proposed to revise the limit for campesterol to account for new data on the variability of campesterol levels in virgin olive oil. This proposal was supported by some delegations.

2. The Committee noted the information provided by Australia and the USA on national studies on campesterol levels in olive oil, which could be useful to further consider this proposal. The Committee agreed there was insufficient support to initiate the new work at that stage, but that Australia, with Argentina, the USA and any other interested countries, would revise the discussion paper for consideration at the next session, taking into account additional data that would become available in the meantime.

3. The Chair emphasised that for data to be truly representative of global variability, close attention must be paid to: geographical variation, climatic and seasonal variation (over several seasons), plant varieties, and statistically sound data[2].

4. At the 23rd Session of CCFO, Australia introduced the revised discussion paper[3] addressing an impediment to trade. The paper highlighted that the current level of campesterol in the Codex standard discriminates against several growing regions forcing them to mix their high quality olive oil with other olive oils to reduce the campesterol level. The paper noted that some countries had rejected shipments of authentic olive oil from Australia due to elevated campesterol levels. Australia proposed an increase in the level for campesterol from 4% to 4.8% and a change in the level of stigmasterol from <campesterol to <1.9%. These changes would ensure that the identity of the oil could be established and fraud prevented. Authentic olive oil in different parts of the world does not meet the current Codex limit due to geographic variations and plant varieties grown in some countries for their adaptability to climatic conditions.

5. The data presented in the paper were provided by Australia, Argentina and the USA. This included more than 1600 samples, most of which were analysed in International Olive Council (IOC) accredited laboratories. The data are statistically sound and the results published in peer reviewed journals. The samples are from several plant varieties covering different geographic, climatic and seasonal variations. Australia requested the Committee to consider reviewing the Codex limits to prevent impediments to trade and ensure fair trade practices in food. Several delegations supported the proposal.

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[1] CX/FO 11/22/11
[2] Paragraphs 72- 78 REP11/FO
[3] CX/FO 13/23/9

6. The Committee was informed that the IOC had developed a decision tree to address the issue of olive oil with campesterol levels that deviate from the limit stated in the current IOC standard. The Committee was advised that this work was based on approximately 190 samples from 13 countries, but had not yet been published. New work was opposed by several delegations and it was suggested that the Committee should wait for the outcome of the IOC study and publication of the decision tree before continuing any further discussion on this issue. One delegation asked if there was information on how much high campesterol oil is produced and traded internationally and to which countries there was an impediment to trade. The delegation of Australia noted at that time that new trade volume data could be provided at the next session.

7. The Committee concluded that there was no agreement to start new work at this stage. The delegations of Australia and the United States of America expressed their reservation on this matter.

8. The additional trade data requested by the Committee is now provided in this discussion paper. It is also understood that the IOC study report is complete and it is therefore timely to reconsider this issue that continues to be an impediment to trade in authentic high quality olive oils.

ISSUES

9. The limit for campesterol set in Section 3 (Essential Composition and Quality Factors) of the Codex standard is in urgent need of revision. The scientific literature on olive oil composition shows that the campesterol limit is not achieved by a number of varieties in a number of different regions, including in traditional olive-growing countries.

10. Limits for fatty acids, sterols and other minor components of olive oil are used by competent authorities by a number of Codex members to detect and prosecute fraudulent practices, in particular adulteration of olive oil with other edible oils. Compositional limits set for the purpose of detecting fraudulent practices, without regard to the global variability in olive oil composition, act to prevent legitimate trade in authentic virgin olive oil where the composition of such oils falls outside of the restrictive limits due to seasonal, varietal or geo/climatic conditions. Exceptions to several of the compositional limits established in international standards for olive oil are common.

11. Deviations from these standards do not reflect any inherent problems with the quality or authenticity of these oils but rather natural variations in oil chemistry. Plant sterols are well recognised as being an important factor in enhancing the reputation of olive oil as being “healthy” oil. They have been found to be effective in lowering elevated cholesterol, and are now being added to a wide range of foods.

12. The limits for campesterol established in the Codex standard act as a barrier to trade for authentic olive oil. Since technical regulations that are aligned with the Codex standard are presumed to be consistent with members’ obligations under the World Trade Organization (WTO) agreements, the limits set for campesterol in the Codex standard must be truly representative of global variability in order to avoid disruptions to trade.

13. A survey of olive oil undertaken by the IOC at the request of CCFO (see CX/FO 05/19/4) and data from the scientific literature (Table 1) indicate that a significant proportion of authentic olive oil from a number of countries regularly exceeds compositional limits established in the Codex standard, in particular the limit for campesterol. (The IOC study referred above was a consideration of the linolenic acid level in section 3.9 of the Standard for olive oils and olive pomace oils survey of the analytical characteristics of edible virgin olive oils by producing area of the producer countries - Report of the Executive Secretariat of the IOOC; data from Australia, Egypt, France, Israel, New Zealand, Saudi Arabia and South Africa covering different crop years.)

Table 1: Selected examples of campesterol outside of Codex specifications

Variety/ Country	Problem	Reference
Cornicabra/ Spain	Between 25% and 75% of samples over 5 seasons >4.0, with average of 4.0 and std dev 0.2	Sterol and alcohol composition of Cornicabra virgin olive oil: the campesterol content exceeds the upper limit of 4% established by EU regulations. Rivera del Álamo, R.M., Fregapane, G., Aranda, F., Gómez-Alonso, S. and M.D. Salvador (2004). Food Chem. 84: 533-537.
Cornicabra/ Spain	>75% of samples over 5 seasons >4.0, with average of 4.2 and std dev 0.15	Cornicabra virgin olive oil: a study of five crop seasons. Composition, quality and oxidative stability. Salvador Rivera, M.D., Aranda, F., Gómez-Alonso, S. and G. Fregapane (2001). Food Chem. 74: 267-274.

Variety/ Country	Problem	Reference
Cornicabra/ Spain	89/102 (87%) of samples >4% over two growing seasons.	Analytical evaluation of 'Cornicabra' virgin olive oil from Castilla-La Mancha, Spain. Alvarruiz1, A., Fernández, E., Montero, F., Granell, J. & Pardo, J.E. (2003). Food, Agriculture & Environment 2: 48-52.
Several/ Australia	Several samples outside of limits	The Natural Chemistry of Australian Extra Virgin Olive Oil. R.J. Mailer (2007). Rural Industries Research and Development Corporation, Canberra.
Barnea/ Australia	16 of 17 samples > 4.0, with average of 4.5 and std dev 0.3	A Survey of Australian Olive Cultivars to Determine Compliance with International Standards. R.J. Mailer & J. Ayton (2008). Rural Industries Research and Development Corporation, Canberra.
Koroneiki/ Australia	4 of 8 samples > 4.0, with average of 3.9 and std dev 0.6	A Survey of Australian Olive Cultivars to Determine Compliance with International Standards. R.J. Mailer & J. Ayton (2008). Rural Industries Research and Development Corporation, Canberra.
Several/ Argentina	All Barnea & 70% Arbequina samples > 4.0, with ranges up to 5.5	Characterization of Monovarietal Argentinean Olive Oils from New Productive Zones. Liliana N. Ceci Æ Amalia A. Carelli (2007). J Am Oil Chem Soc 84: 1125–1136.
Koroneiki/ Greece	Average of 72 samples: 4.2	Effect of Extraction System, Stage of Ripeness, and Kneading Temperature on the Sterol Composition of Virgin Olive Oils. A. Koutsaftakis, F. Kotsifaki & E. Stefanoudaki (1999). J Am Oil Chem Soc 76: 1477–1481.
Several, Australia	33% (291 of 888) samples >4.0, multiple seasons, all regions, all varieties*	Combined database of Australian olive oil analyses, AORL, MOLS, Mailer, R. and NSW Department of Primary Industries, 2012, unpublished.
Several, United States	14 different varietals, collected from Feb – April 2011 in California and Texas. 7 of 60 samples >4.0,**	TASC 2011 Project Report–Composite Chemical Picture of U.S. Olive Oil: Removal of Potential Trade Barriers-Year 2. S. Wang, P. Darragh & B. Golino (2011). United States Department of Agriculture, Washington
International Olive Council (IOC) survey	Campesterol levels above 4%	T.20 - IOC Survey of the chemical composition and varietal identification of virgin olive oils for a three year period from 2010 -2012; referred in REP 13/FO para 119-128 – report awaited
Several, United States	24% of samples (9 of 38) contained >4.5% campesterol	June 2014 report UC Davis Olive Center – analysis conducted at the UC Davis Analytical laboratory
Several, Australia	Average of 107 samples in the last 12 months; most samples within limits	2013 -14 Department of Primary Industries, NSW, Australia - analysed at the AORL*
Several, Australia	Out of 155 samples tested, 53 (34.9%) were > 4.0, with ranges up to 5.0	Analysis performed by Modern Olives Laboratory Services, which is a fully accredited laboratory (ISO, NATA, IOC & AOCS).

* Australian Oils Research Laboratory (AORL) and Modern Olive Laboratory Service (MOLS) are ISO 17025 accredited by the National Association of Testing Authorities, Australia (NATA) as well as American Oil Chemists Society (AOCS) and International Olive Council (IOC) recognised laboratories.

** US analyses conducted by AORL, Wagga Wagga, Australia,

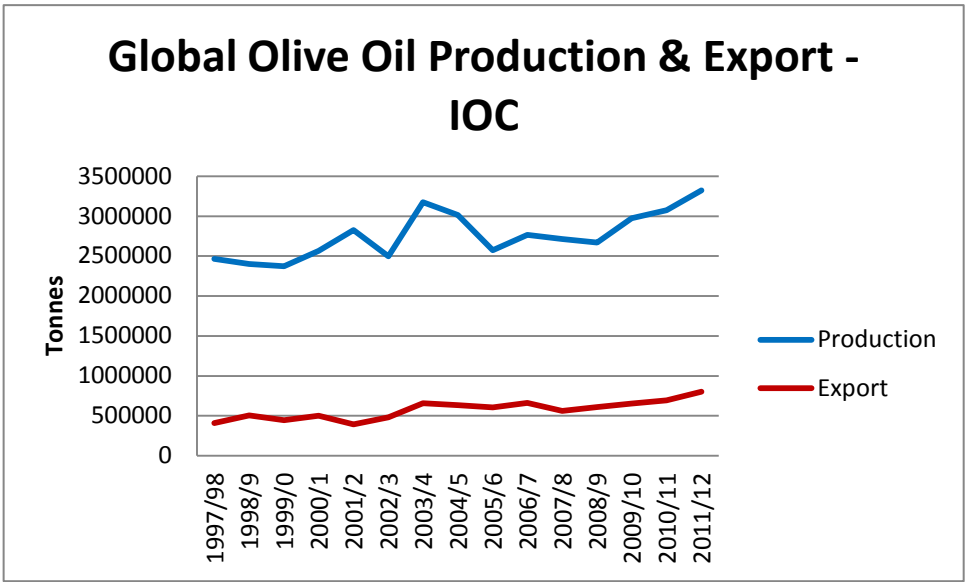
14. The global production of olive oil and virgin olive oil has been increasing steadily over the years. IOC[4] data show that the total global production of olive oil increased from 2 465 500 tonnes in 1997-98 to 3 321 000 tonnes in 2011-12. Total global export of olive oil almost doubled during this period from 407 000 tonnes in 1997-98 to 803 000 tonnes in 2011-12. (The IOC data cover the period from 1 October to 30 September each year.)

Table 2: Global olive oil production and export - IOC

Year	Production (tonnes)	Export (tonnes)
1997/98	2 465 500	407 000
1998/9	2 402 500	506 000
1999/0	2 374 500	444 500
2000/1	2 565 500	502 000
2001/2	2 825 500	394 500
2002/3	2 495 500	483 000
2003/4	3 174 000	657 500
2004/5	3 013 000	633 500
2005/6	2 572 500	603 500

[4] www.internationaloliveoil.org

Year	Production (tonnes)	Export (tonnes)
2006/7	2 767 000	662 000
2007/8	2 713 000	562 500
2008/9	2 669 500	608 500
2009/10	2 973 500	653 000
2010/11	3 075 000	695 500
2011/12	3 321 000	803 000



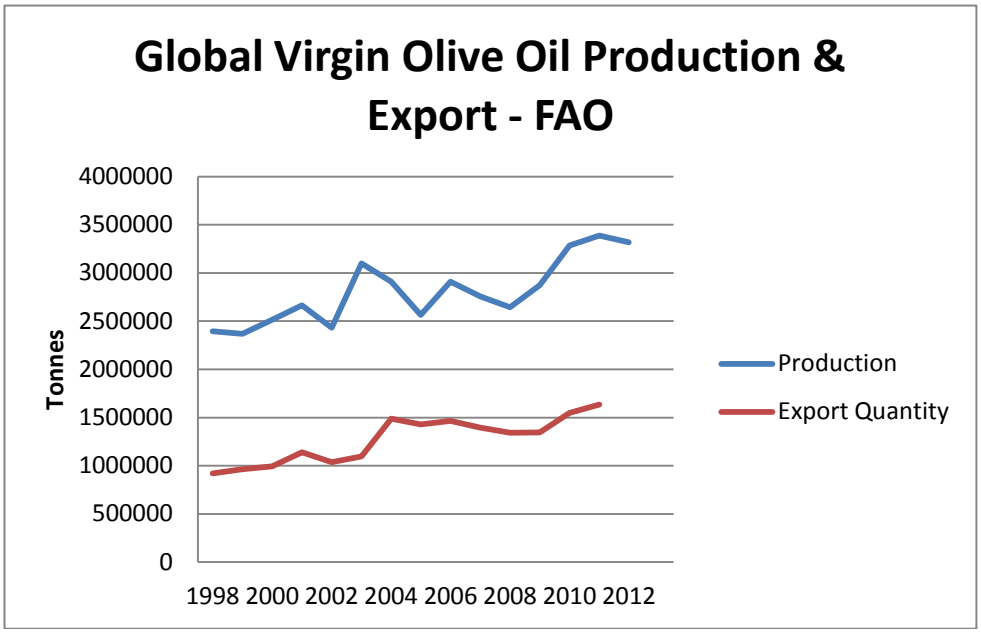
Source: http://www.internationaloliveoil.org/estaticos/view/131-world-olive-oil-figures (Accessed:19/06/2014)

15. The Food and Agriculture Organization (FAO) of the United Nations data[5] show that the total global production of virgin olive oil increased from 2 395 kt in 1998 to 3 388 kt in 2011. Total global export of virgin olive oil also increased during this period from 920 kt in 1998 to 1 636 kt in 2011 (FAO data cover a calendar year).

Table 3: Global virgin olive oil production and export- FAO

Year	Production (tonnes)	Export (tonnes)
1998	2 395 053	919 638
1999	2 368 010	962 926
2000	2 515 343	994 452
2001	2 665 607	1 140 246
2002	2 430 335	1 035 630
2003	3 099 227	1 096 174
2004	2 910 624	1 489 596
2005	2 565 605	1 430 379
2006	2 910 701	1 465 794
2007	2 756 165	1 395 101
2008	2 644 297	1 343 884
2009	2 872 295	1 346 172
2010	3 283 759	1 547 031
2011	3 387 696	1 635 677
2012	3 320 023	-

[5] www.fao.org



Source:http://faostat3.fao.org/faostat-gateway/go/to/download/Q/QD/E (Accessed: 11/07/2014)

16. The IOC and FAO data differ in the leading import and export countries as the FAO data treat the movement of goods between countries of the European Union (EU) as an actual import/export event. The IOC data treat the EU as a single unit for import and export and consequently do not reflect trade in olive oil between EU member states.

17. Traditionally, the Mediterranean region has favourable environmental conditions for growing olives. The Mediterranean region includes countries bordering the Mediterranean Sea (plus Portugal) between about 27° to 47°N and 10°W to 37°E. The region includes Albania, Bosnia-Herzogovina, Croatia, France, Greece, Italy, Malta, Monaco, Montenegro, Serbia, Slovenia, Spain, Algeria, Cyprus, Egypt, Israel, Lebanon, Morocco, Libya, West Bank and Gaza, Syria, Tunisia and Turkey. In the last century, the cultivation of olive trees has spread outside the Mediterranean region and is grown in Argentina, Australia, China, Japan, South Africa, the United States and other countries in both the northern and southern hemispheres.

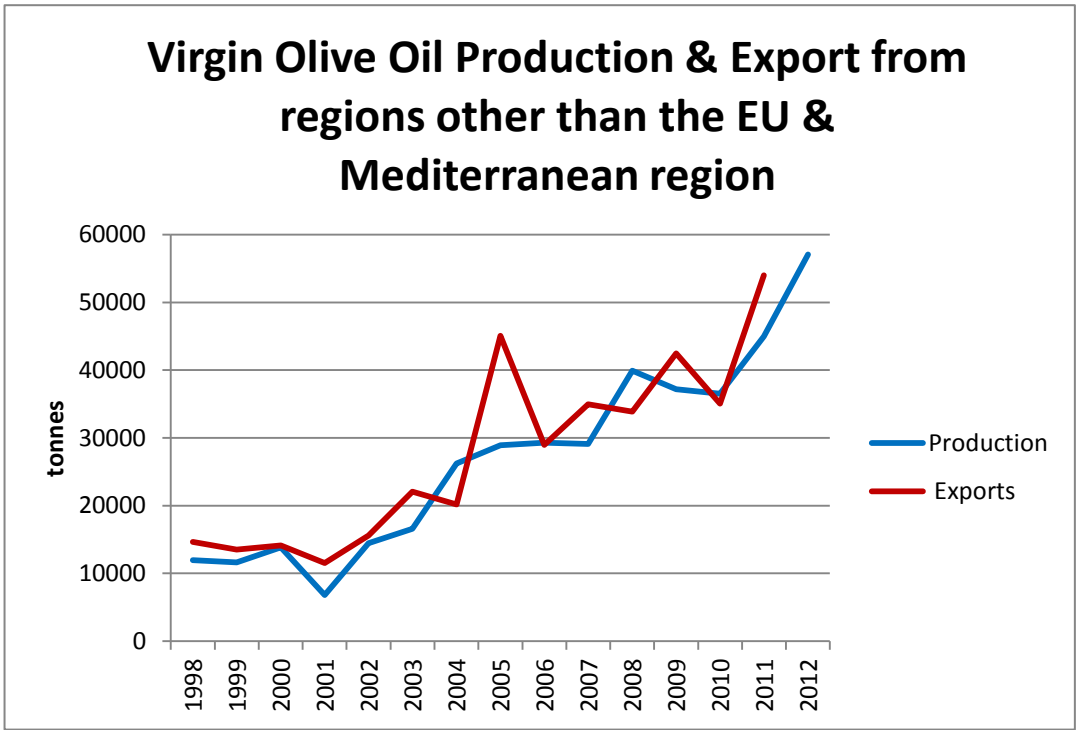
18. For the purposes of this new work proposal and taking into account the countries for which FAO data are available, the following countries have been included in the EU and Mediterranean region: Albania, Algeria, Armenia, Austria, Belgium, Luxembourg, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Malta, Montenegro, Morocco, Netherlands, Norway, West Bank and Gaza, Poland, Portugal, Republic of Moldova, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Syrian Arab Republic, the former Yugoslav Republic of Macedonia, Tunisia, Turkey and United Kingdom. For presenting the following data, countries other than those mentioned above have been included in regions other than the EU and Mediterranean.

19. The production and export of virgin olive oil from regions other than the EU and Mediterranean have been increasing steadily over the past decade. FAO[6] data show that production in regions other than the EU and Mediterranean has increased from 11 933 tonnes in 1998 to 57 082 tonnes in 2012. The export of virgin olive oil in regions other than the EU and Mediterranean has increased from 14 640 tonnes in 1998 to 53 994 tonnes in 2011 (the difference between export and production data may be due to the fact that some countries may import, pack and export the imported oil).

[6] FAOSTAT website at http://faostat.fao.org/, search parameters: production quantity, virgin olive oil, world list, years.

Table 4: Virgin olive oil production and export from regions other than the EU and Mediterranean region

Year	Production (tonnes)	Exports (tonnes)
1998	11 934	14 640
1999	11 639	13 509
2000	13 838	14 127
2001	6 828	11 537
2002	14 452	15 595
2003	16 566	22 079
2004	26 236	20 156
2005	28 901	45 050
2006	29 272	28 979
2007	29 118	34 940
2008	39 899	33 854
2009	37 183	42 457
2010	36 531	35 062
2011	44 966	53 994
2012	57 082	-



Source:http://faostat3.fao.org/faostat-gateway/go/to/download/Q/QD/E (Accessed: 11/07/2014)

20. It is therefore crucial for CCFO to examine the evidence that clearly shows the current limit for campesterol acts as a technical barrier to trade in virgin olive oil, and the Codex standard should be reviewed to ensure that it acts as a fair and equitable benchmark for the international trade in olive oil.

21. The absence of consideration of natural variations in the Codex *Standard for Olive Oils and Olive Pomace Oils* (CODEX STAN 33-1981) impacts a proportion of high quality oils produced around the world, which may experience a barrier to trade, loss of market access and lower pricing. Other standards, for example the Codex *Standard for Named Vegetable Oils* (CODEX STAN 210-1999) are able to successfully incorporate consideration of variation. CODEX STAN 210-1999, Section 3 Essential Composition and Quality Factors, states under 3.1 GLC Ranges of Fatty Acid Composition (expressed as percentages): “Samples falling within the appropriate ranges specified in Table 1 are in compliance with the Standard. Supplementary criteria, for example national geographical and/or climatic variations, may be considered, as necessary, to confirm that a sample is in compliance with the Standard”.

22. The effect of diverse factors on campesterol levels in olive oil is borne out in many studies. Recent comprehensive work in Australia[7] demonstrates the strong effect of genetics and the environment on campesterol levels, and clearly rules out adulteration or poor oil quality as causal factors.

23. Changes to the IOC Trade standard applying to olive oils and olive-pomace oils (COI/T.15/NC No 3/Rev.7) in May 2013 included changes to the limits on campesterol in virgin and extra virgin olive oil. The IOC has developed a decision tree to address the issue of olive oil with campesterol levels that deviate from the limits in the previous revision of the IOC standard. The new work proposal closely adheres to one of the mission statements of the IOC of "encouraging the expansion of international trade in olive oil (and table olives), drawing up and updating product trade standards and improving quality".

24. Since the 23rd Session of CCFO, Australia has consulted and worked with the support of Brazil, Canada, New Zealand and the United States to update this new work proposal. Other than the data provided at the 23rd CCFO of more than 1 600 samples, the results of analysis of a further 155 samples have been added to this paper. The data are statistically sound and comprises more than 1 700 samples from several countries covering geographical, climatic and seasonal variation as well as different plant varieties.

PROPOSAL

25. The limit for campesterol should be raised to a value which does not arbitrarily discriminate against authentic olive oil. Based on available evidence, we believe the limit should be set to 4.8%, a value that would encompass the great majority of oils produced from Barnea, Arbequina, Koreneiki, Cornicabra and similar high-campesterol varieties, regardless of where they are grown.

26. Anticipating the counter-argument that such a level increases the prospects of adulteration of olive oil, we believe that a concomitant change of the limit for stigmasterol from the current limit, which reads "<*campesterol*"(which effectively allows up to 3.9% stigmasterol in olive oil), to a specific limit of ≤1.9%, along with the existing limits for brassicasterol (≤0.1% for grades other than olive pomace oil), ∆7-stigmastenol (currently ≤0.5%) and apparent β–sitosterol (≥93%), will safeguard the integrity of olive oil and ensure fair practices in trade. In addition, CCFO could consider if any new test methods are required in the Codex standard to safeguard the integrity of authentic olive oil, particularly against new fraudulent practices such as deodorisation.

27. The proposed values are based on an analysis of 888 samples collected in Australia over several years, and represent a range of seasons and varieties. Campesterol levels were 3.71 ± 0.67% (mean ± standard deviation). Two hundred and ninety samples (33%) had a campesterol level higher than 4.0%, and 283 of those were in the range 4.0-4.8%.

28. In order to establish that the proposed revised values will neither exclude authentic olive oil with a campesterol level of 4.0-4.8% nor enable greater amounts of adulterated oils to meet the standard, the proposal has been analysed against several datasets: the US data for 60 samples presented in Table 1, Argentinean data for 418 samples having campesterol level higher than 4.0%, and Canadian inspection data of 371 oils in the market place covering 2005–2010. The Canadian samples were consumer samples, taken at the retail level of trade, labelled as olive oil, and of unknown authenticity.

29. The US data show that all seven of the oils with campesterol in the range 4.0–4.8% have a stigmasterol level of ≤1.9% and would meet the current proposal. A similar result is seen for the 283 Australian samples with campesterol levels of 4.0–4.8%. All but two have a stigmasterol level of ≤1.9% and would meet the current proposal.

30. The 418 Argentinean oil samples included 395 with campesterol in the range 4.0–4.8%. Of these, 389 (98%) have stigmasterol ≤1.9% and would meet the current proposal.

31. The Canadian testing data show that for oils with campesterol in the range 4.0-4.8%, cases of adulteration with pomace oil, refined oil or other seed oils were clearly identifiable through aberrant results for other parameters — particularly brassicasterol, stigmastadiene, ∆7-stigmastenol, apparent β-sitosterol and erythrodiol/uvaol — while those oils with very high levels of campesterol (>4.8%) tended to have very high stigmasterol levels in addition to other defects.

32. The most recent analysis of 155 samples of Australian olive oils, representing approximately 75% of the oil produced in Australia in 2014, confirms the results obtained with the historical analysis of 888 samples collected in Australia over several years. In 2014, campesterol levels were 3.80 ± 0.44% (mean ± std dev). Fifty-three samples (34.2%) had a campesterol level >4.0%, with 45 of those in the range 4.0-4.8%.

[7] *Sterols in Australian Olive Oils: the effects of technological and biological factors*, Guillaume, C., Ravetti, L. & Johnson, J. (2010), Rural Industries Research and Development Corporation Publication No. 10/173.

CONCLUSIONS

33. The Committee is invited to consider the issues raised in the discussion paper and recommend that the 38th Session of the Codex Alimentarius Commission approve new work to review the campesterol and stigmasterol limit in the Codex *Standard for Olive Oils and Olive Pomace Oils* (CODEX STAN 33-1981) to establish a limit that is truly representative of the global variability of this parameter in olive oil.

APPENDIX 1

PROPOSAL FOR NEW WORK – CODEX COMMITTEE ON FATS AND OILS

Prepared by

Australia with the assistance of Brazil, Canada, New Zealand and the United States of America

1. Purpose and Scope of the Proposed Work

To review Section 3 of the current Codex *Standard for Olive Oils and Olive Pomace Oils* (CODEX STAN 33-1981, the Codex standard) to establish compositional parameters truly representative of global variability for olive oil – in particular to revise the limit for campesterol, along with a consequential change to the limit for stigmasterol.

2. Its Relevance and Timeliness

The proposed work is within the Codex Committee on Fats and Oils (CCFO) terms of reference: *"To elaborate world wide standards for fats and oils of animal, vegetable and marine origin including margarine and olive oil."*

The proposed work fulfils Codex's strategic vision and its core values of collaboration, inclusiveness, consensus building and transparency.

A global survey of olive oil undertaken by the International Olive Council (IOC) at the request of CCFO (see CX/FO 05/19/4) and data from the scientific literature indicate that a significant proportion of authentic olive oil from a number of member countries regularly exceeds compositional limits established in the Codex standard, in particular the limit for campesterol.

Australia and other countries have encountered difficulties in the trade of authentic olive oil when compositional limits established in the Codex standard were not met. As Codex standards are referenced under the World Trade Organization (WTO) agreements, the compositional limits set for sterols in olive oil need to be truly representative of the global variability in these parameters in order to ensure that unrepresentative limits do not act as potential technical barriers to trade in authentic olive oil.

It is necessary to review the limit for campesterol in Section 3 (Essential Composition and Quality Factors) of the Codex standard to take account of the global variability in sterol composition in olive oil, given the increasing production and trade in olive oil from all member nations.

3. The Main Aspects to be covered

The main aspect to be covered is revising the limit for campesterol and, as a consequence, the limit for stigmasterol, in Section 3 (Essential Composition and Quality Factors) of the Codex standard, with regard to global data on olive oil composition.

4. An Assessment against the *Criteria for the Establishment of Work Priorities*

This new work proposal is consistent with the following criteria applicable to commodities:

(a) Consumer protection from the point of view of health, food safety, ensuring fair practices in the food trade and taking into account the identified needs of developing countries.

The compositional limit for campesterol in the Codex standard is not relevant for protecting public health and safety. The limit was established to ensure fair practices in global food trade by enabling the identification of adulteration of olive oil with other edible oils. Campesterol is not the only measurement parameter in olive oil that can be used for this purpose. A compositional limit for campesterol for authentic olive oil that is not globally representative can act as a technical barrier to trade where such oils fall outside the limit due to seasonal, varietal or geo/climatic reasons.

(b) Volume of production and consumption in individual countries and volume and pattern of trade between countries.

The IOC publishes production, import and export data on olive oil collected for 1 October to 30 September each year. According to these data[8], global olive oil production in 2011-2012 was 3 321 kilotonnes (kt) with the top five producers of the European Union (2 395 kt, approximately 72% of global production), Syria (198 kt, 6%), Tunisia (182 kt, 5.5%), Turkey (191 kt, 5.75%) and Morocco (120 kt, 3.6%). For the same time period, the top five (provisional data) exporting states or countries were the EU (555.5 kt, approximately 69%

[8] www.internationaloliveoil.org

of global exports), Tunisia (129.5 kt, 16%), Turkey (20 kt, 2.5%), Morocco (11 kt, 1.3%) and Argentina (23.5 kt, 2.9%). The top five importing states or countries in 2011-2012 were the USA (300 kt, approximately 39% of global imports), the EU (96.5 kt, 12.5%), Brazil (68 kt, 8.8%), Japan (43 kt, 5.6%) and Canada (39.5 kt, 5.1%). For the same time, the top five consumers were the EU (1 790 kt, approximately 58%), the USA (300 kt, 9.7%), Turkey (150 kt, 4.8%), Syria (135.5 kt, 4.4%), and Morocco (122 kt, 3.9%).

The FAO publishes data on the production and trade in virgin olive oil[9]. In the calendar year 2012, the five leading countries for producing virgin olive oil were Spain (1 383.9 kt), Italy (572 kt), Greece (350.2 kt), Syria (200 kt) and Tunisia (192.6 kt). The latest data covering the trade in virgin olive oil is drawn from 2011 with the leading exporters of virgin olive oil being Spain (846.1 kt), Italy (363.6 kt), Tunisia (100.3 kt), Greece (86.8 kt) and Portugal (64.9 kt). The leading importers for the same period were Italy (583.9 kt), the USA (276 kt), France (113.5 kt), Portugal (84.3 kt) and Germany (65.1 kt).

The IOC and FAO data differ in the leading import and export countries as the FAO data treat the movement of goods between countries of the European Union (EU) as an actual import/export event. The IOC data treat the EU as a single unit for import and export and consequently do not reflect trade in olive oil between EU member states.

(c) Diversification of national legislations and apparent resultant or potential impediments to international trade.

The Codex standard may be used as a benchmark for standards by member countries in setting their domestic regulations.

The WTO Agreement on Technical Barriers to Trade provides that where a member adopts a technical regulation that is in accordance with a relevant international standard, it shall be *presumed not to create an unnecessary obstacle to international trade* (Article 2.5). A standard that is not underpinned by a rigorous evidence-based scientific framework provides scope for unjustified barriers to trade. There is sound scientific evidence that the global variation of campesterol levels regularly exceeds those in the Codex Standard and the IOC olive oil standard.

In 2010, the US Department of Agriculture (USDA) revised the *United States Standards for Grades of Olive Oil and Olive-Pomace Oil*. In revising the standard, the USDA set a limit of ≤4.5% for campesterol, which diverges from the Codex standard though this limit, being less restrictive, does not operate as an impediment to international trade.

In Australia, the Australian Olive Association developed the Australian olive industry code of practice and the voluntary Australian Standard for olive oils and olive-pomace oils (AS 5264—2011). Similar to the approach of the USDA, the Australian Standard also adopts a less restrictive limit for campesterol (≤4.8%), so authentic olive oils are not excluded, while safeguarding the authenticity of olive oil through a tighter limit for stigmastadiene and introduced tests for pyropheophytins and diacylglycerols.

Several other olive oil standards have been developed by various countries, such as the National Standard of the People's Republic of China, Food Safety and Standards Authority of India Notification F. No. 5/15015/30/2012 on 12 July 2013, the California Department of Food and Agriculture Grade and Labeling Standards for Olive Oil, Refined-Olive Oil and Olive-Pomace Oil effective 26 September 2014, and the draft South African standard SANS 1377.

(d) International or regional market potential.

While the EU, Tunisia, Turkey and Morocco are likely to remain the leading exporters of olive oil in the near future, considerable expansion of production in a number of other countries (e.g. Argentina, Israel, Brazil, South Africa, China and Australia) is likely to change trading patterns in the medium term. The Codex standard should be relevant to product from regions other than the EU and Mediterranean region.

Australia's largest olive and extra virgin olive oil producer experienced a significant loss in trade opportunities since 2002 as a consequence of the maximum levels of campesterol in the Codex standard. The maximum level of 4.0% campesterol has been a technical barrier to trade for exporting some of the company's olive oils. Over the past 12 years, shipments of high quality extra virgin olive oil were rejected at their destination due to their higher campesterol level, resulting in authentic extra virgin olive oil being downgraded to "just vegetable oil". Lower than market prices were offered solely due to the higher campesterol levels even though the company is a leading player in the olive industry and produces internationally award winning extra virgin olive oils.

[9] www.fao.org

(e) Amenability of the commodity to standardisation.

The Codex standard has been in place since 1981 and incorporates sections and provisions in line with Codex requirements for commodity standards. However, as different varieties emerge and production occurs under new geo/climatic conditions, differences in compositional parameters are becoming more apparent. Standardisation of olive oil parameters will require consideration of compositional data from new varieties, a broader range of countries and different production practices.

(f) Coverage of the main consumer protection and trade issues by existing or proposed general standards.

Natural compositional variation attributable to olive variety, season and geo/climatic conditions is not adequately addressed in the existing Codex standard.

(g) Work already undertaken by other international organizations in this field and/or suggested by the relevant international intergovernmental body(ies).

The IOC carried out a survey of fatty acid profiles of olive oil to inform adoption of a limit for linolenic acid in the Codex standard and development and amendment of its own standards for olive oil. Responses were obtained from Australia, Egypt, France, Israel, New Zealand, Saudi Arabia and South Africa. Data from Australia, France, Israel, and Saudi Arabia all showed that a proportion of production consistently exceeded limits in the Codex and IOC standards.

Data gathered independently and from the scientific literature show that olive oil from a number of countries, both traditional and emerging producers, consistently exceeds the limits for campesterol.

5. Relevance to the Codex Strategic Objectives

The new work proposed would contribute to ensuring fair practices in the international trade in olive oil, taking into account the needs and special concerns of all countries, by satisfying the following strategic objectives and priorities elaborated in *Codex Alimentarius Commission: Strategic Plan 2014-2019*.

Goal 1: Establish international food standards that address current and emerging food issue: –

1.2.2 Develop and revise international and regional standards as needed, in response to needs identified by Members and in response to factors that affect food safety, nutrition and fair practices in the food trade.

Developing more globally representative Codex standards will help to ensure their widest adoption by member countries, minimising the potential negative effects of technical regulations on international trade by ensuring that they do not act as technical barriers to trade.

Goal 2: Ensure the application of risk analysis principles in the development of Codex standards.

The proposed work will promote the development of Codex commodity standards based on rigorous scientific analysis of data collected from all regions of the world, so that the compositional parameters are globally relevant.

Goal 4: Implement effective and efficient work management systems and practices: - 4.2 Enhance capacity to arrive at consensus in standards setting process.

Codex and member countries will continue to work closely with the IOC to collect and analyse data and develop more globally applicable requirements in the Codex and IOC standards.

6. Information on the Relation Between the Proposal and Other Existing Codex Documents

7. Identification of any Requirement for and Availability of Expert Scientific Advice

None

8. Identification of any Need for Technical Input to the Standard from External Bodies so that this can be Planned for

Continued involvement of the IOC in revising the Codex standard would be expected.

9. The Proposed Timeline for Completion of the New Work, (including the start date, the proposed date for adoption at Step 5, and the proposed date for adoption by the Commission; the time frame for developing a standard should not normally exceed five years.)

Approval as new work by the 38th Session of the CAC in 2015.

Proposed draft amendments considered at step 4 by the 25th Session of CCFO in 2017.

Since the proposed amendment is limited and involves only the revision of selected provisions in Section 3, it could be sent to the Commission in 2017 for adoption at Step 5/8 with the omission of steps 6 and 7 in the Codex process.