

***Japan – Measures Affecting Agricultural Products***

***Report of the Panel***

The report of the Panel on Japan – Measures Affecting Agricultural Products is being circulated to all Members, pursuant to the DSU. The report is being circulated as an unrestricted document from 27 October 1998 pursuant to the Procedures for the Circulation and Derestriction of WTO Documents (WT/L/160/Rev.1). Members are reminded that in accordance with the DSU only parties to the dispute may appeal a panel report. An appeal shall be limited to issues of law covered in the Panel report and legal interpretations developed by the Panel. There shall be no *ex parte* communications with the Panel or Appellate Body concerning matters under consideration by the Panel or Appellate Body.

Note by the Secretariat: This Panel Report shall be adopted by the Dispute Settlement Body (DSB) within 60 days after the date of its circulation unless a party to the dispute decides to appeal or the DSB decides by consensus not to adopt the report. If the Panel Report is appealed to the Appellate Body, it shall not be considered for adoption by the DSB until after the completion of the appeal. Information on the current status of the Panel Report is available from the WTO Secretariat.

## I. INTRODUCTION

1.1 In a communication dated 7 April 1997, the United States requested consultations with Japan pursuant to Article 4 of the Understanding on Rules and Procedures Governing the Settlement of Disputes ("DSU"), Article 11 of the Agreement on the Application of Sanitary and Phytosanitary Measures ("SPS Agreement"), Article XXIII of the General Agreement on Tariffs and Trade 1994 ("GATT 1994"), and Article 19 of the Agreement on Agriculture regarding the prohibition by Japan of imports of certain agricultural products.<sup>1</sup>

1.2 The United States specifically alleged that, for each agricultural product for which Japan required quarantine treatment, Japan prohibited the importation of each variety of that product until the quarantine treatment had been tested for that variety, even though the treatment had proven effective with respect to other varieties of the same product. The United States claimed that Japan's prohibition adversely affected exports of US agricultural products, and, furthermore, that Japan's measure appeared to be inconsistent with the obligations of Japan under the SPS Agreement, the GATT 1994 and the Agreement on Agriculture. The provisions of these agreements with which these measure appeared to be inconsistent included, but were not limited to: (i) SPS Agreement, Articles 2, 4, 5 and 8; (ii) GATT 1994, Article XI; and, (iii) the Agreement on Agriculture, Article 4. The measures also appeared to nullify or impair benefits accruing to the United States directly or indirectly under the cited agreements. Consultations were held on 5 June 1997, but failed to settle the dispute.<sup>2</sup>

1.3 In a communication dated 3 October 1997, the United States requested the Dispute Settlement Body ("DSB") to establish a panel with standard terms of reference as set out in Article 7 of the DSU.<sup>3</sup> The US claims of inconsistency in their Request for the Establishment of a Panel were identical to those set out in their request for consultations, except for an additional claim of inconsistency under Article 7 of the SPS Agreement.

1.4 On 18 November 1997, the DSB established a panel pursuant to the request of the United States, in accordance with Article 6 of the DSU.<sup>4</sup> In accordance with Article 7.1 of the DSU, the terms of reference of the Panel were:

"To examine, in the light of the relevant provisions of the covered agreements cited by the United States in document WT/DS76/2, the matter referred to the DSB by the United States in that document and to make such findings as will assist the DSB in making the recommendations or in giving the rulings provided for in those agreements."

1.5 On 18 December 1997, the Panel was constituted with the following composition:

Chairman: Mr. Kari Bergholm  
Panelists: Mr. Germain Denis  
Mr. Eiríkur Einarsson

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<sup>1</sup> WT/DS76/1 (Request for Consultations by the United States).

<sup>2</sup> WT/DS76/2 (Request for the Establishment of a Panel by the United States).

<sup>3</sup> WT/DS76/2 (Request for the Establishment of a Panel by the United States).

<sup>4</sup> WT/DS76/3 (Constitution of a Panel Established at the Request of the United States).

1.6 The European Communities, Hungary and Brazil reserved their right to participate in the Panel proceedings as third parties.

1.7 The Panel met with the parties on 2 and 3 April 1998. It met with third parties on 3 April 1998. The Panel consulted scientific and technical experts and met with them on 23 June 1998. The Panel held a second meeting with the parties on 24 June 1998.

1.8 On 3 July 1998 the Chairman of the Panel informed the DSB that the Panel had not been able to issue its report within six months. The reasons for that delay were stated in document WT/DS76/4.

1.9 The Panel issued its interim report on 6 August 1998. On 21 September 1998, on request by Japan, an interim review meeting was held with the parties. The Final Report was circulated to the parties on 6 October 1998. The report was circulated to Members in all three languages on [27 October 1998].

## II. FACTUAL ASPECTS

### A. GENERAL

#### 1. Codling moth

2.1 Codling moth (*Cydia pomonella*) is a pest which invades apples, cherries, nectarines and other fruit crops. Newly-hatched larvae of codling moth are known to enter into the fruit. In the United States, the codling moth is a pest of apples and walnuts; it is also known, on occasion, to infest nectarines and cherries. Other hosts of codling moth include apricots, plums, pears and quinces.

2.2 There are four identifiable life stages of the codling moth: egg, larva, pupa and adult. Mated female adults lay their eggs on a suitable substrate such as leaves, nuts or fruit. All life stages are highly dependent upon temperature for development; the higher the temperature, the more rapid the development. After the eggs hatch, newly hatched first stage (instar) larvae find a suitable host to complete their development. They usually burrow into the host. The larvae will molt (shed their skin) four times thereafter inside the fruit, thus producing five larval growth phases called instars. When mature, the fifth instar larvae will exit the host to form a pupae within a silken cocoon. The cocoon is usually formed on the bark of the tree or in the litter at the base of the host plant.

2.3 The next generation of adult moths will exit from the pupae in 1-2 weeks. Depending on temperature, emergence may take longer. Under optimum conditions, developmental time from egg to adult is about 30-40 days. As daylight hours become shorter (10 hours light; 14 hours dark) during the late summer and fall, mature fifth instar larvae will exit the host, but hibernate through the winter as mature larvae within cocoons on bark or litter at the tree base. This larval hibernation (diapause) is a mechanism for survival through the winter. The diapausing larvae will form pupae in the spring when daylight hours and temperature begin to increase toward 14 daylight hours or more. Depending upon temperature, moths will emerge in three to four weeks after the pupae are formed.

2.4 The seasonality of host fruits is important vis-à-vis what life stages of the codling moth might be expected to occur at harvest. In the United States, walnuts are harvested after diapause has been induced in mature larvae. Thus the quarantine treatment for codling moth in walnuts is more severe (using comparatively higher levels of fumigant) than that required for fruits such as cherries and nectarines.

2.5 The fruit development of apples coincides with the time, mid-to-late summer, during which the codling moth is numerous. Severe economic losses can occur if codling moth is not adequately controlled in the field. The quarantine treatment applied to harvested apples is a multiple treatment involving cold temperature and a methyl bromide treatment. The cold treatment destroys most of the codling moth eggs and the fumigation destroys any remaining larvae.

2.6 In contrast to walnuts and apples, cherries are an early spring/early summer crop and only eggs or non-diapausing larvae would be expected to be found. With regard to nectarines, the harvest of nectarines in the United States begins in May and ends in late July to early August, before diapause is induced.

2.7 The Japanese archipelago forms a chain spreading across 3,000 km. from the north to the south between the latitudes 20 to 45 degrees north. Although most of Japan belongs to the temperate monsoon zone, the northern island of Hokkaido lies in a sub-arctic zone and a subtropical climate prevails in the southern edge of the South-western and Ogasawara islands. Ocean currents and prevailing westerly winds contribute to a diversity of climatic conditions. While codling moth is prevalent throughout the temperate zone, the pest has not been discovered in Japan.

2.8 There is no dispute between the parties that Japan is free of codling moth and that it is a pest of quarantine significance to Japan.

## **2. Methyl bromide**

2.9 The Montreal Protocol on Substances that Deplete the Ozone Layer (the "Montreal Protocol") requires developed countries to phase-out the production and importation of methyl bromide beginning in 1999 and ending, with a total phase-out, on 1 January 2005. Developing countries will freeze the production and importation of methyl bromide as of 1 January 2002 and begin a step-down reduction in 2005, with total phase-out by 2015. US law currently calls for a phase-out of methyl bromide production and importation by 1 January 2001.

2.10 Notwithstanding the above, the use of methyl bromide for quarantine and pre-shipment applications is exempted from the phase-out schedule.<sup>5</sup> The US Administration has expressed willingness to consult with the US Congress on changes to US law if alternatives do not exist for control of key pests as the 2001 phase-out date approaches.

## **3. Technical and scientific terms used in the parties' submissions**

### CxT value (Concentration times time)

2.11 The CxT value for a fumigation is an expression of the relationship between fumigant gas concentration and time in the fumigation enclosure or chamber. It is an expression of the active gas dosage to which the pest or test organism is exposed during the time of the treatment. Because the concentration decays during the fumigation time, "concentration" is an average value derived from a number of measurements and requires temperature, load and humidity to be specified for proper definition.

### Dose-mortality test (DMT)

2.12 The dose-mortality test is an experimental procedure in which the response of an organism is estimated for a series of mortality-inducing doses of a specified treatment. Where possible, individual

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<sup>5</sup> Article 2H:6 of the Montreal Protocol.

dose-mortality tests target a specific stage of an organism as the susceptibility to a treatment can vary between life stages. The main purposes of dose-mortality testing are to produce data for analysis used for the determination of parameters categorizing the response of an organism, and the comparisons of efficacies of different treatments. In developing quarantine treatments against codling moth for products exported to Japan, dose-mortality testing is used to produce data for analysis for the determination of the least vulnerable stage of the pest and the prediction of a treatment dose to meet a required level of efficacy. The target organism test unit is usually a sub-sample of 20 – 50 insects; the test is typically replicated three times, at each dose level. For a satisfactory result, five or more dose levels are usually required, evenly spaced between 0 and 100 per cent mortality.

### Fumigation

2.13 To kill pathogens or insects by using gas or fumes. A fumigant is a pesticide which acts upon the target pest as a gas. For the purposes of this report, the fumigant is methyl bromide (MB), and "MB treatment" refers to fumigation with methyl bromide.

### Probit analysis, LD (lethal dose) and probit 9

2.14 Probit analysis is a biometrical technique for analysis of experimental data in which the quantitative response of an organism, usually expressed as mortality, is subjected to regression analysis with respect to treatment dose. Mathematical transformation of mortality to probability units, termed "probits", assists in conversion of the normal distribution (curve) of the response data to a linear distribution to facilitate analysis. Dose data is frequently, but not invariably, logarithmically transformed for the same purpose of linearity. The outcomes of probit analysis are values such as LD (lethal dose), LC (lethal concentration) or LT (lethal time) for a nominated proportion of the population (for example, 50 per cent or 99.99 per cent), together with nominated confidence or fiducial intervals (for example, 95 per cent).<sup>6</sup> The main purposes of probit analysis are (i) to define susceptibility of a population of target organisms to a treatment in terms of LD, LC or LT values; (ii) subsequent comparisons of susceptibility of populations of target organisms, varying response according to substrates, or treatment; and, (iii) the prediction of the dose required for a specific level of treatment efficacy.

2.15 Probit 9 is equivalent to a target level of mortality, or level of treatment efficacy, of 99.9968 per cent mortality.

### Sorption

2.16 The sum of adsorption, absorption and chemisorption. Adsorption is a physical surface effect and results from the attraction of molecules to the surface of products<sup>7</sup> and other materials in the fumigation chamber. Absorption is also a physical process whereby the chemical enters into the product and other materials in the fumigation chamber. Chemisorption is an irreversible reaction in which residues are left in the fumigated products and materials. When the pest takes in the fumigant while in a product, or takes in the fumigant while on the surface of the fruit, it may die.

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<sup>6</sup> Dr. Heather referred to: Steel, R.G.D. and Torrie, J.H., *Principles and Procedures of Statistics with Special Reference to the Biological Sciences*, McGraw-Hill (1960) p.22.

<sup>7</sup> In this report the word "product" is used instead of "commodity" or "species".

Variety

2.17 A category within a species, based on some hereditary difference.<sup>8</sup>

B. JAPAN'S PLANT PROTECTION LAW AND THE ENFORCEMENT REGULATION

**1. General**

2.18 The legislation relevant to this dispute is contained in the Japanese Plant Protection Law, enacted on 4 May 1950, as amended (the "Plant Protection Law").<sup>9</sup> The applicable regulation is the Plant Protection Law Enforcement Regulation (the "Enforcement Regulation"), enacted 30 June 1950, as amended.<sup>10</sup>

2.19 The stated objective of the Plant Protection Law is to ensure the "stabilization and development of agricultural production by inspecting export plants, imported plants and domestic plants, by controlling injurious animals and plants, and by preventing the outbreak or spreading thereof".<sup>11</sup>

2.20 The Plant Protection Law identifies as "quarantine pests" those pests whose existence has not been confirmed in Japan, or those which exist in part of the Japanese territory and are subject to official control (Article 5.2 of the Plant Protection Law). Subsequent to such identification, the Plant Protection Law establishes an inspection mechanism for imported plants and plant products:

- (a) all imported plants and plant products have to be accompanied by a phytosanitary certificate, in principle, which states that the plants and plant products are considered free from the quarantine pests (Article 6, paragraph 1 of the Plant Protection Law);
- (b) in certain cases, a growing-site inspection by the foreign authorities is mandatory (Article 6, paragraph 2). This mechanism was introduced by the 1996 amendment of the Plant Protection Law, and took effect April 1998;
- (c) upon entering the Japanese territory, plants and plant products have to be inspected by plant quarantine officers at one of the 101 major ports (or airports) of entry designated by the Enforcement Regulation (Article 6, paragraph 3; Article 8, paragraph 1); and,
- (d) certain plants may be subjected to post-entry inspection at a post-entry quarantine station for viruses and other pests which might not be detected by the visual inspection at the ports of entry (Article 8, paragraph 7) .

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<sup>8</sup> Webster's Encyclopaedic Unabridged Dictionary of the English Language, 1996 Random House. The International Convention for the Protection of New Varieties of Plants of 2 December 1961, Article 1, (vi) defines "variety" as: "[A] plant grouping within a single botanical taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a breeder's right are fully met, can be – defined by the expression of the characteristics resulting from a given genotype or combination of genotypes, - distinguished from any other plant grouping by the expression of at least one of the said characteristics and – considered as a unit with regard to its suitability for being propagated unchanged ....".

<sup>9</sup> Law No. 151 of 1950; most recently amended in 1996. (Japan, Exhibit 6)

<sup>10</sup> MAFF Ordinance No.73 of 1950. (Japan, Exhibit 7)

<sup>11</sup> The Plant Protection Law, Article 1.

2.21 If a plant or a plant product fails to pass the above inspection, it will either be destroyed or disinfected/disinfested under the Plant Protection Law. In order to counter the risk of inadvertent introduction of particularly harmful quarantine pests, the Plant Protection Law delegates to the Ministry of Agriculture, Forestry and Fisheries ("MAFF") the authority to prohibit importation of certain host plants from countries or areas infested by the pests (Article 7, paragraph 1, item 1).<sup>12</sup> This authority is exercised in the form of a list of prohibited products, which is contained in a table annexed to the Enforcement Regulation.<sup>13</sup> This "Annexed Table" identifies the quarantine pest which constitutes the cause of the import prohibition, the countries or areas from which importation is prohibited, and the prohibited host plants and their specific parts.

2.22 In practice, the confirmation process for efficacy of disinfestation treatment consists of two parts: the process applicable to the initial lifting of the import prohibition and the test for the approval of additional varieties. These are contained in two sets of guidelines developed in 1987 and which have, to date, not been published – although they are available to interested parties.<sup>14</sup> The contents of these are summarized below.

## **2. Initial lifting of prohibition**

2.23 The "Experimental Guideline for Lifting Import Ban - Fumigation" ("Guidelines for initial lifting") outline the procedure applicable to the initial lifting of the prohibition. The procedure includes the following:

### **Basic Tests (small-scale dose-mortality tests)<sup>15</sup>**

- (a) Determination of the most resistant stage of insects to fumigation (a comparative test of susceptibility between development stages) estimated through small-scale dose-mortality tests.
- (b) Estimation of treatment schedule achieving 100 per cent mortality.

### **Large-Scale Mortality Test**

The efficacy of the chosen treatment is tested using 30,000 insects at the most resistant stage on the variety (the representative variety). Japan accepts the efficacy of the treatment if no insect survives, as an approximation of probit 9.

### **On-site confirmatory test**

The results of the test are further confirmed on site by Japanese experts in the on-site test using 10,000 sample insects (on the representative variety).

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<sup>12</sup> In addition, the Plant Protection Law prohibits the importation of quarantine pests, soil or plants contaminated by soil and packages containing these articles (Article 7, paragraph 1, items 2 to 4).

<sup>13</sup> List of the Plants Subject to Import Prohibition, Plant Protection Law Enforcement Regulation Annexed Table 2. (Japan, Exhibit 8)

<sup>14</sup> Contained in Japan, Exhibit 10.

<sup>15</sup> A glossary of technical and scientific terms is contained in paragraphs 2.11 to 2.17.

### 3. Lifting of prohibition for additional varieties

2.24 The guidelines for the approval of additional varieties are set out in "Experimental Guide for Cultivar Comparison Test on Insect Mortality – Fumigation". These include:

#### Basic test (small-scale dose-mortality test)

As the most resistant development stage of the insect is identified when (part of) the species is approved for the first time, this test targets only the comparative efficacy between the approved varieties and the newly proposed varieties. Response of insects in additional varieties is tested for different levels of treatment (e.g., the amount of fumigant, the length of cold treatment). The results are typically analyzed by comparing LD<sub>50</sub> by probit analysis. If the new varieties are found to show equivalent or superior effectiveness compared to approved varieties, no large-scale mortality test is necessary. If the result is significantly less effective, however, a new treatment standard has to be developed and tested by a large-scale experiment.

#### On-site confirmatory test

This test is performed on one representative variety. Japanese experts are sent to confirm the on-site test.

Tests (purpose)	Test insects	Subject varieties	Initial lifting of prohibition	Lifting of prohibition for additional varieties
<u>Large-Scale Confirmation of efficacy</u>	30,000 (10,000 each in three replicates)	ONE	YES	NO*
<u>On-Site Confirmatory Final confirmation</u>	10,000	ONE	YES	YES

\* This assumes that the existing treatment would be found by basic tests to be adequate for new varieties. If not, a new treatment would have to be established and confirmed by large-scale tests.

<sup>16</sup> See paragraph 2.23 (under Large-Scale Mortality Test).

C. RELEVANT INTERNATIONAL STANDARDS, GUIDELINES AND RECOMMENDATIONS - THE IPPC

**1. General**

2.25 The SPS Agreement makes reference, in a number of provisions, to the "relevant international standards, guidelines and recommendations". Annex A:3(c) of the SPS Agreement states that the international standards, guidelines and recommendations relevant for plant health are those developed under the auspices of the Secretariat of the International Plant Protection Convention ("IPPC" or "the Convention") in cooperation with regional organizations operating within the framework of the IPPC.

2.26 The IPPC is an international treaty deposited and administered by the Food and Agriculture Organization of the United Nations (FAO) but implemented through the cooperation of member governments and Regional Plant Protection Organizations. The IPPC currently has 106 contracting parties.

2.27 The purpose of the Convention is to secure common and effective action to prevent the spread and introduction of pests of plants and plant products, and to promote appropriate measures for their control. An important role of the IPPC is that of standard-setting.

2.28 The first text of the international convention was drafted in 1929 and came into force in 1952, adopted by the FAO Conference one year prior to that. Amendments were adopted by the FAO in 1979 and the revised text came into force in 1991. In response to the role of the IPPC in the context of the Uruguay Round and the negotiation of the SPS Agreement, the FAO established a Secretariat for the IPPC in 1992, followed by the formation of the Committee of Experts on Phytosanitary Measures (CEPM) in 1993. Negotiations for amendments to the Convention, in order to reflect contemporary changes, particularly in light of the SPS Agreement, started in 1995 and were finalized in 1997 when the FAO Conference adopted the New Revised Text of the IPPC. The New Revised Text makes provision for the formation of a Commission on Phytosanitary Measures. The amended IPPC will come into force upon ratification by two-thirds of its contracting parties.

**2. Guidelines for Pest Risk Analysis**

2.29 Generally, IPPC standards have their origin in national or regional initiatives, and/or are drafted by expert groups organized by the IPPC Secretariat. The topics and priorities for draft standards are determined by the Secretariat in consultation with Regional Plant Protection Organizations and their members. IPPC standards fall within two categories: reference standards and other standards.

2.30 Among the IPPC's completed standards is the Guidelines for Pest Risk Analysis ("PRA Guidelines"), adopted in 1995.<sup>17</sup> The IPPC describes the PRA Guidelines as consisting of three stages. Stage one involves (a) the identification of a pathway, usually an imported product, that may allow the introduction and/or spread of quarantine pests, and (b) the identification of a pest that may qualify as a quarantine pest. Stage two considers the identified pests individually and examines, for each one, whether the criteria for quarantine pest status are satisfied, that is, that the pest is of "potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled". Finally, based on the information gathered under Stages one and two, Stage three determines the appropriate phytosanitary measure(s) to be adopted. This pest risk management to protect the endangered areas should be proportional to the risk identified in the pest risk assessment. The three stages are summarized in the PRA Guidelines as: "initiating the process for analysing risk", "assessing pest risk" and "managing pest risk", respectively.

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<sup>17</sup> International Standards for Phytosanitary Measures, Guidelines for Pest Risk Analysis, FAO Publication No.2. (US Exhibit 5)

2.31 Pest risk management options include<sup>18</sup>:

- (a) inclusion in list of prohibited pests;
- (b) phytosanitary inspection and certification prior to export;
- (c) definition of requirements to be satisfied before export (e.g. treatment, origin from pest-free area, growing season inspection, certification scheme);
- (d) inspection at entry;
- (e) treatment at point of entry, inspection station or, if appropriate, at place of destination;
- (f) detention in post-entry quarantine;
- (g) post-entry measures (restrictions on use of product, control measures); and,
- (h) prohibition of entry of specific products from specific origins.

2.32 Pest risk management options may also concern ways of reducing risk of damage. The PRA Guidelines state that the efficacy and impact of the various options in reducing risk to an acceptable level should be evaluated in terms of the following factors<sup>19</sup>:

- (a) biological effectiveness;
- (b) cost/benefit of implementation;
- (c) impact on existing regulations;
- (d) commercial impact;
- (e) social impact;
- (f) phytosanitary policy considerations;
- (g) time to implement a new regulation;
- (h) efficacy of option against other quarantine pests; and,
- (i) environmental impact.

2.33 In sum, the PRA Guidelines define a procedure by which a pest risk analysis should be performed, and lay down relevant factors which should be taken into account by the authorities in the process.

### III. CLAIMS OF THE PARTIES

3.1 The **United States** claimed that Japan's varietal testing requirement as it applied to quarantine treatments for codling moth was an unjustified barrier to trade and was inconsistent with the SPS Agreement. As a result of Japan's measure, maintained ostensibly for plant health ("phytosanitary") reasons, Japan effectively blocked access to its market for US varieties that competed with a number of Japanese produced varieties of the same product. The United States claimed that Japan's varietal testing measure had failed each of the following obligations under the SPS Agreement in that it:

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<sup>18</sup> PRA Guidelines, p.20.

<sup>19</sup> PRA Guidelines, p.20.

- (a) was maintained without sufficient scientific evidence (Article 2.2);
- (b) was not based on scientific principles (Article 2.2);
- (c) was not based on an assessment, as appropriate to the circumstances, of the risks to human, animal or plant life or health (Article 5.1);
- (d) had not taken into account available scientific evidence; relevant processes and production methods; relevant inspection, sampling and testing methods; prevalence of specific pests; relevant ecological and environmental conditions; and quarantine or other treatment (Article 5.2);
- (e) was more trade-restrictive than required to achieve the appropriate level of sanitary or phytosanitary protection, taking into account technical and economic feasibility (Article 5.6);
- (f) was not transparent in that one Enquiry Point was not responsible for the provision of answers to all reasonable questions from interested Members regarding the measure and there was furthermore no published source for the measure itself (Article 7); and,
- (g) it was reliant upon control and inspection procedures, and applied to a modified product (i.e. a different variety of a product), was not limited in its information requirements to what was necessary for appropriate control and inspection procedures, and was not limited to what was necessary to determine whether adequate confidence existed that the product still met the regulations concerned (Article 8 and Annex C).

3.2 In its request for consultations, the United States claimed that the fact that Japan's varietal testing requirement was not a legitimate phytosanitary measure meant that it was also inconsistent with Article XI of GATT 1994 and Article 4 of the Agreement on Agriculture. However, the United States did not pursue these claims in its submissions or in its oral statements to the Panel, nor did it request findings with respect to these claims.

3.3 **Japan** claimed that its policy was fully consistent with the relevant articles of the SPS Agreement, Article XI of GATT 1994 and Article 4 of the Agreement on Agriculture. In particular, Japan emphasized that the measure was entirely based on phytosanitary considerations and that the suggestion by the United States to the contrary was false.

**[Parties' arguments in Sections IV and V and Panel's consultations with experts in Section VI deleted from this version]**

## VII. INTERIM REVIEW<sup>217</sup>

7.1 On 1 September 1998, the United States and Japan requested the Panel to review, in accordance with Article 15.2 of the DSU, precise aspects of the interim report that had been issued to them on 6 August 1998. Japan also requested the Panel to hold a further meeting with the parties on the issues identified in its comments on the interim report. We met, accordingly, with the parties on 21 September 1998.

### A. COMMENTS BY THE UNITED STATES

7.2 Following comments from the United States we redrafted paragraphs 8.77, 8.93 and 8.96 in order to clarify that, according to the experts advising the Panel, varietal differences – and the resulting difference in sorption levels between varieties – need to be *significant* to affect the efficacy of the already approved MB treatment.

7.3 With respect to paragraphs 8.82 and 8.99, the United States reiterated its view that – although no disagreement exists as to the level of *mortality* Japan requires – Japan never defined its appropriate level of *protection*. We redrafted these paragraphs to take account of this point of view. We also noted Japan's view that its level of protection is that achieved by the import prohibition and that the level of mortality it requires for lifting the import prohibition is one of the technical requirements to ensure efficacy of an alternative measure.

7.4 As a result of a US comment, we added paragraph 8.102 in order to make clear that our findings under Article 5.6 would stand even if the measure in dispute were not in violation of Article 2.2. Doing so, we agree with Japan that our finding under Article 5.6 is not an alternative finding *stricto sensu*, in the sense that it only stands if we would have decided that Article 2.2 is *not* violated. What we wanted to clarify is that our Article 5.6 finding stands irrespective of our finding under Article 2.2.

7.5 As a result of other comments from the United States, we also slightly redrafted certain other paragraphs of the findings section of our report.

### B. COMMENTS BY JAPAN

7.6 Japan, in turn, provided editorial suggestions to the descriptive part. Where the additions requested had been referred to earlier during the proceedings, we incorporated them in the final report.

7.7 As a result of comments by Japan, a question arose as to the product scope of our finding in paragraph 8.42. Japan submitted that nowhere in the report did it find a *prima facie* case of an Article 2.2 violation established by the United States for the products other than apples, cherries, nectarines and walnuts. Japan argued that the United States did not submit any evidence in respect of these other products and that the Panel made an error in substituting the absent evidence, which parties must submit, with the experts' answer to a Panel question. On that ground, Japan requested us to exclude products other than apples, cherries, nectarines and walnuts from the scope of our Article 2.2 finding in paragraph 8.42. The United States responded that for the other four products in dispute (apricots, pears, plums and quince), the presumption of an Article 2.2 violation was

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<sup>217</sup> According to Article 15.3 of the DSU, "the findings of the final report shall include a discussion of the arguments made at the interim review stage". The following section entitled "Interim Review" is therefore part of the findings of our report.

established as a result of the fact that Japan did not submit any scientific evidence for these products. According to the United States, the SPS Agreement makes it clear that the burden has never been on it to present scientific evidence that varietal testing is *not* required. Instead, the United States argued, Japan has an obligation under Article 2.2 to base its varietal testing requirement for all products covered by this case on sufficient scientific evidence.

7.8 In paragraphs 8.44 and 8.45 we specify that the scope of our finding that Japan maintains the varietal testing requirement without sufficient scientific evidence extends to four of the eight products at issue (apples, cherries, nectarines and walnuts). When addressing the product coverage of our report, we have distinguished two issues. First, the product coverage of our *terms of reference*. In paragraph 8.6 we find that the Panel was given the task to examine the measure in dispute as it applies to eight products. This is not what Japan contested in its comments on the interim report. Second, the product coverage of our *finding that Japan maintains the varietal testing requirement without sufficient scientific evidence*. This is the issue raised by Japan in its comments on the interim report and dealt with in paragraphs 8.44 and 8.45.

7.9 In our view, Japan is correct when it states that it is for the United States to establish a presumption that there is not sufficient scientific evidence in support of the measure in dispute. It is also true, in our opinion, that the United States has to do so for each of the eight products which fall within our terms of reference. However, we do not agree that, in assessing whether such presumption was established, we cannot take into account both the evidence submitted by the United States and the opinions we received from the experts in accordance with Article 13 of the DSU.<sup>218</sup>

7.10 In our view, the *prima facie* case to be established in a WTO dispute settlement proceeding relates to the substantive issue of what a party invoking a fact or claim needs to prove for that fact or claim to be accepted by a panel; that is, evidence (1) which is sufficient to raise a presumption that the alleged fact or claim is correct and (2) that has not been sufficiently rebutted by the opposing party. In deciding whether a fact or claim can thus be accepted, we consider that we are called upon to examine and weigh all the evidence validly submitted to us, including the opinions we received from the experts advising the Panel in accordance with Article 13 of the DSU.

7.11 With respect to paragraphs 8.38 and 8.39, Japan submitted that the only evidence in support of the Panel's reasoning is a quote from Dr. Heather with respect to only one study before the Panel. We recall, however, that a whole series of other evidence is referred to in paragraph 8.40 and footnotes 273 to 276.

7.12 In response to Japan's comment that there is no support for the statement in paragraph 8.42 that "not a single instance has occurred ... where the treatment approved for one variety of a product has had to be modified to ensure an effective treatment for another variety of the same product", we clarified and expanded this paragraph. In so doing, we also addressed Japan's claim that the United States did not submit a *prima facie* case.

7.13 Following a comment by Japan on paragraph 8.46, relating to the quarantine efficacy of the treatment required for apples, we also redrafted that paragraph. We further modified paragraph 8.84 to avoid the possible US misunderstanding that our finding in paragraph 8.84 does not apply to apples.

7.14 With respect to paragraph 8.84, Japan requested the Panel to find that the United States did not establish a *prima facie* case that testing by product would meet Japan's level of protection. In reply we specify in that paragraph that the finding we make is arrived at after a careful examination and weighing of all the evidence before us.

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<sup>218</sup> Article 13 of the DSU provides, in its first paragraph: "Each panel shall have the right to seek information and technical advice from any individual or body which it deems appropriate"; and, in its second paragraph: "Panels may seek information from any relevant source and may consult experts to obtain their opinion on certain aspects of the matter".

7.15 Japan's comments on other parts of our findings also prompted us to slightly redraft certain other paragraphs of our findings.

## VIII. FINDINGS

### A. CLAIMS OF THE PARTIES

8.1 The United States challenges the way Japan lifts its import ban on products that may carry the pest known as codling moth. Japan requires testing and demonstration of quarantine efficacy for each variety of a product that may carry codling moth. Only once this is done will the import ban be lifted and this only for the particular variety or varieties tested. Hereafter we refer to the contested measure as Japan's "varietal testing requirement". The United States claims that this measure is inconsistent with Articles 2, 5, 7 and 8 of the SPS Agreement. Japan requests the Panel to find that its measure is fully consistent with the SPS Agreement.

### B. JAPAN'S PLANT PROTECTION REGIME

8.2 On 4 May 1950, Japan enacted the Plant Protection Law. Article 7 (paragraph 1, item 1) of that Law provides that plants designated by Ministerial Ordinance, which have been shipped from or passed through districts designated by that Ordinance, are prohibited for import into Japan. By Ministerial Ordinance of 30 June 1950 (Plant Protection Law Enforcement Regulations) eight products originating from, *inter alia*, the United States (excluding the Hawaiian Islands) were listed as prohibited plants. These products are: apricot, cherry, plum, pear, quince, peach, apple and walnuts, imported as fresh fruit.<sup>219</sup> They are prohibited for importation on the ground that they are potential hosts of codling moth. The Ministerial Ordinance of 30 June 1950 also lists other products as prohibited for import because they are hosts of other pests. However, there is a possibility to obtain exemptions from the import ban. Such exemptions are granted on a variety-by-variety basis. Since 1969 a series of varieties of certain products, originating from specific areas, have been exempted from the import ban. Moreover, since 1978 the import ban has been lifted for certain varieties of the US products at issue.

8.3 In order to obtain an exemption from the import prohibition, Japan imposes the following procedure. The exporting country has to propose an alternative measure which would achieve a level of protection which is equivalent to that met by the import prohibition. The exporting country bears the burden of proving that the proposed alternative would reach the appropriate level of protection. Japan submits that this procedure is a "fundamental policy orientation". It has not been published as a document. In practice, the alternative measure proposed is disinfestation. With respect to hosts of codling moth, disinfestation consists of fumigation with methyl bromide ("MB") or a combination of MB fumigation and cold storage (as required in the treatment approved by Japan for apples). As a model test procedure for confirmation of the efficacy of this quarantine treatment, the Ministry of Agriculture, Forestry and Fisheries of Japan ("MAFF") developed two guidelines: (1) the "Experimental Guideline for Lifting Import Ban – Fumigation" and (2) the "Experimental Guide for Cultivar Comparison Test on Insect Mortality – Fumigation". These guidelines were introduced in 1987 and have, according to Japan, not "generally been published". They are summarized in paragraphs 2.23 - 2.24 of this report.

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<sup>219</sup> With respect to walnuts, the ban also applies to walnuts in the shell.

C. THE PANEL'S PRELIMINARY RULING OF 2 APRIL 1998

8.4 At our first substantive meeting we made the following preliminary ruling at the request of Japan:

"Having carefully reviewed the written submissions made by the parties on the preliminary issues before us and having heard the oral arguments made by Japan in this respect, we rule as follows.

- (i) We first examine Japan's request to exclude Article 7 of the SPS Agreement from our examination on the grounds that it was only mentioned for the first time in the US panel request (document WT/DS76/2) and that no consultations were held on it. We note that our terms of reference (set out in document WT/DS76/3) direct us to examine the matter before us "in the light of the relevant provisions of the covered agreements cited by the United States in document WT/DS76/2". This document, the US panel request, specifically cites Article 7 of the SPS Agreement. We thus consider that claims under that provision fall within our terms of reference.
- (ii) We next address Japan's request for a finding that the phrase "including but not limited to", mentioned in the US panel request, does not constitute part of our terms of reference. We note that the United States, in its first submission, did not make any claim with respect to a provision not specifically mentioned in the US request for this Panel. Japan did not contest this. Consequently, there is no claim before us (other than the one under Article 7 of the SPS Agreement we just dealt with) on which to make a ruling of whether or not it falls within our terms of reference.
- (iii) Thirdly, as to the Japanese measures in dispute, we note that the United States, in its first submission at paragraph 74, limited these to "the prohibition by Japan on the importation of any variety of an agricultural product on which Japan claims that the pest codling moth may occur until such time as the variety has been separately tested with respect to the efficacy of treatment with methyl bromide or treatment with methyl bromide and cold storage". We regard this statement as setting the factual parameters of this case. It limits the scope of this dispute to (1) agricultural products on which Japan claims that the pest codling moth may occur (in its oral statement Japan stated that there are eight such products: apricot, plum, pear, quince, apple, walnut, peach including nectarine, and cherry; in its first submission, the United States only addressed four products: apples, cherries, nectarines and walnuts) and (2) varietal testing with respect to the efficacy of treatment with methyl bromide or treatment with methyl bromide and cold storage".

D. THE SCOPE OF THE MEASURE IN DISPUTE

8.5 The measure at issue in this dispute is only one element of Japan's plant protection regime. The scope of this measure is limited in several respects.<sup>220</sup>

8.6 Firstly, only the varietal testing requirement imposed by Japan for lifting the import prohibition on *US products on which Japan claims that codling moth may occur* is in dispute. The

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<sup>220</sup> See our preliminary ruling at point (iii), quoted in paragraph 8.4.

request for this Panel, which sets out the scope of our mandate<sup>221</sup>, does not further limit the product coverage of the Japanese measure challenged to certain specific products only. At our first substantive meeting, Japan stated that it considers the following US products to be hosts of codling moth: apricots, cherries, plums, pears, quinces, peaches (including nectarines<sup>222</sup>), apples and walnuts. We consider, therefore, that we are called upon to examine the measure before us as it applies to all products covered by the contested measure. However, as we already noted in our preliminary ruling<sup>223</sup>, the parties only submitted evidence with respect to apples, cherries, nectarines and walnuts. We shall, therefore, examine the measure at issue on the basis of that evidence and refer to the experts advising the Panel when it comes to evaluating the relevance of that evidence for the other products covered by the measure in dispute.

8.7 Secondly, we only need to examine Japan's varietal testing requirement to the extent it applies to the demonstration of efficacy of *MB treatment or of MB treatment combined with cold storage* as a treatment against codling moth. We are not called upon to address the varietal testing requirement as it applies to any other treatment or any other pest.

#### E. MATTERS NOT IN DISPUTE

8.8 It is important to note what this dispute is *not* about. The United States does not contest that codling moth is a serious pest of quarantine significance. Nor is it in dispute that codling moth is exotic to Japan (i.e., is not found in Japan); that it does occur in the United States; and that the importation of US fruit infected with codling moth could result in the introduction of codling moth in Japan which, in turn, would have serious consequences for Japan's agricultural and forestry production. The legitimacy and need for Japan to protect its plants against codling moth is not at issue.<sup>224</sup>

8.9 Moreover, the United States does not challenge the original import prohibition imposed on US host plants of codling moth. The United States acknowledges that Japan conducted a risk assessment to determine that codling moth is a pest of quarantine significance for which an original import prohibition *might* be justified.<sup>225</sup> The United States refers rather to the possibility of obtaining exemptions from this import prohibition and contests the conditions imposed for lifting this prohibition, in particular the fact that it is lifted variety-by-variety.

8.10 Even with respect to the conditions for lifting the ban, the United States agrees that, as a general proposition, it is reasonable for Japan to require that the exporting country propose and substantiate the efficacy of an alternative approach or a treatment that achieves Japan's level of phytosanitary protection. Following that line of reasoning, the United States does not contest the testing requirements imposed by Japan for approval of imports of the initial variety of a particular

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<sup>221</sup> Our terms of reference are, in accordance with Article 7.1 of the DSU, defined in document WT/DS76/3 and specify that the matter we need to examine is the one referred to in document WT/DS76/2, i.e., the request for the establishment of this Panel.

<sup>222</sup> According to the experts advising the Panel, it is scientifically correct to say that peach includes nectarine (see their answers to Panel question 18, paragraphs 6.109 - 6.111).

<sup>223</sup> See our preliminary ruling at point (iii), quoted in paragraph 8.4.

<sup>224</sup> See, for example, the expert opinions of Dr. Heather and Mr. Taylor, Transcript, paragraphs 10.204 - 10.210.

<sup>225</sup> However, in so acknowledging, the United States did not take a position as to whether this risk assessment complies with the requirements in the SPS Agreement, arguing that this risk assessment does not relate to the matter in dispute. Nor did the United States state that this risk assessment *does* justify the import ban in accordance with the SPS Agreement. See also the expert opinions referred to in footnote 224 and Dr. Heather and Mr. Taylor's answers to question 7 of the Panel, summarized at paragraphs 6.51 to 6.56.

product, i.e., those contained in the "Experimental Guideline for Lifting Import Ban – Fumigation". The United States contends, however, that after such validation no further testing is necessary for additional varieties. It, therefore, challenges not only the content but the very existence of any guidelines imposed for approval of additional varieties, *in casu*, those contained in the "Experimental Guide for Cultivar Comparison Test on Insect Mortality – Fumigation".

8.11 We further note that there is no disagreement as to the efficacy of the treatment applied to the specific varieties of US apples, cherries, nectarines and walnuts which have so far been exempted from the import prohibition. The United States does not dispute the level of mortality, established by Japan, that any quarantine treatment has to achieve (i.e., complete mortality in large-scale tests on a minimum of 30,000 codling moths<sup>226</sup>), nor does the United States, or Japan, contest that this level of mortality is reached for the varieties already approved for import after they have been treated as required.

8.12 Japan does not contest that the measure at issue is a phytosanitary measure covered by the SPS Agreement, invoked by the United States. Referring to Article 1.1 and paragraph 1 of Annex A of the SPS Agreement<sup>227</sup>, we agree with the parties that the SPS Agreement applies to the measure at issue.

8.13 Finally, with respect to the question of burden of proof under the SPS Agreement, we note that both parties refer to the Appellate Body Report on *EC – Measures Affecting Meat and Meat Products (Hormones)* (hereafter referred to as "*EC – Hormones*").<sup>228</sup> Reviewing this report, we agree with the parties that, in this dispute, it is for the United States to establish a *prima facie* case of inconsistency of the Japanese measure at issue with each of the provisions of the SPS Agreement the United States invokes. Once this is done, it is for Japan to counter or refute the claimed inconsistency. In other words, if "[the United States] adduces sufficient evidence to raise a presumption that what is claimed is true, the burden then shifts to [Japan], who will fail unless it adduces sufficient evidence to rebut the presumption".<sup>229</sup> In response to a Japanese comment on the interim report, we stress that the issue of burden of proof in a WTO dispute settlement proceeding set out above is different and should be distinguished from what a Member requires from an exporting country before it will approve the import of that country's products. The latter issue is dealt with in paragraphs 8.10 and 8.30.

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<sup>226</sup> See paragraph 2.23 under "Large-Scale mortality test". See also answer by Dr. Heather summarized in paragraph 6.117.

<sup>227</sup> Article 1.1 of the SPS Agreement provides that the Agreement applies to "all ... phytosanitary measures which may, directly or indirectly, affect international trade". Paragraph 1 of Annex A to the SPS Agreement clarifies, *inter alia*, that "[a]ny measure applied: (a) to protect ... plant life or health within the territory of the Member from risks arising from the entry, establishment or spread of pests" is a phytosanitary measure for purposes of the SPS Agreement.

<sup>228</sup> Adopted 13 February 1998, WT/DS26/AB/R, stating as follows in paragraph 98: "The initial burden lies on the complaining party, which must establish a *prima facie* case of inconsistency with a particular provision of the *SPS Agreement* on the part of the defending party, or more precisely, of its SPS measure or measures complained about. When that *prima facie* case is made, the burden of proof moves to the defending party, which must in turn counter or refute the claimed inconsistency". See also the Panel Reports on *EC - Hormones*, op. cit., respectively, at paragraphs 8.51 and 8.54.

<sup>229</sup> Appellate Body Report on *United States - Measure Affecting Imports of Woven Wool Shirts and Blouses from India*, adopted 23 May 1997, WT/DS33/AB/R, p.14.

F. SCIENTIFIC BASIS AND RISK ASSESSMENT (ARTICLES 2.2, 5.1, 5.2 AND 5.7)

**1. The SPS provisions invoked and their relationship**

8.14 We first examine the US claims under Articles 2.2, 5.1 and 5.2. In this respect, Japan also invokes Article 5.7. These Articles provide in relevant parts as follows:

Article 2.2:

"Members shall ensure that any ... phytosanitary measure is applied only to the extent necessary to protect ... plant life or health, is based on scientific principles and is not maintained without sufficient scientific evidence, except as provided for in paragraph 7 of Article 5".

Article 5.1:

"Members shall ensure that their ... phytosanitary measures are based on an assessment, as appropriate to the circumstances, of the risks to ... plant life or health, taking into account risk assessment techniques developed by the relevant international organizations".

Article 5.2:

"In the assessment of risks, Members shall take into account available scientific evidence; relevant processes and production methods; relevant inspection, sampling and testing methods; prevalence of specific diseases or pests; existence of pest- or disease-free areas; relevant ecological and environmental conditions; and quarantine or other treatment".

Article 5.7:

"In cases where relevant scientific evidence is insufficient, a Member may provisionally adopt ... phytosanitary measures on the basis of available pertinent information, including that from the relevant international organizations as well as from ... phytosanitary measures applied by other Members. In such circumstances, Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the ... phytosanitary measure accordingly within a reasonable period of time".

8.15 We examine these provisions together, in light of the following statement by the Appellate Body in its report on *EC - Hormones*:

"... Articles 2.2 and 5.1 should constantly be read together. Article 2.2 informs Article 5.1: the elements that define the basic obligation set out in Article 2.2 impart meaning to Article 5.1"<sup>230</sup>

8.16 The United States submits that Article 2.2 does not allow Japan to maintain a phytosanitary measure, in this instance the varietal testing requirement, "without sufficient scientific evidence" and that Article 2.2 requires such measure to be "based on scientific principles". According to the United

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<sup>230</sup> Adopted on 13 February 1998, WT/DS26/AB/R, paragraph 180. See also panel report on *Australia – Measures Affecting Importation of Salmon*, currently on appeal, WT/DS18/R, paragraph 8.51: "We recall that Articles 5.1 and 5.2 may be viewed as one of the specific applications of the basic obligations contained in Article 2.2".

States, Articles 5.1 and 5.2 require Japan to base the varietal testing requirement on a risk assessment. We first examine the US claims under Article 2.2, taking due account of the more specific obligations imposed under Articles 5.1 and 5.2.

## 2. Scientific basis

### (a) Claims and arguments by the Parties<sup>231</sup>

#### (i) *The United States*

8.17 The United States submits that, at a minimum, to base a measure on scientific principles a WTO Member has to identify a particular risk that the measure is designed to protect against, and to conduct some review of scientific evidence or other relevant scientific information to demonstrate that the measure in fact protects against that risk. According to the United States, the risk to be addressed in this case is the risk of introduction of codling moth *in the absence* of the varietal testing requirement.

8.18 The United States notes that the strongest wording Japan has been able to employ is that it is *possible* there *may* be variation in the efficacy of disinfestation if the same quarantine treatment is applied to different varieties. Referring to the descriptions of variations in dose-mortality tests<sup>232</sup> between varieties, offered by Japan in support of the measure<sup>233</sup>, the United States submits that these descriptions ignore the conclusions of the scientific studies carried out on quarantine treatments for codling moth. In this respect, the United States recalls that to date the quarantine treatment approved for one variety of a product has always proven to be effective for all other tested varieties of the same product. The United States submits that it tested seven varieties of apples, nine varieties of cherries, four varieties of walnuts and ten varieties of nectarines and that in every instance the treatment applied for one variety of a product has never varied from that applied to another variety of the same product.

8.19 With respect to the six specific studies submitted by Japan<sup>234</sup>, the United States points out that all of the tests reported therein are dose-mortality tests which are small-scale tests. The United States argues that the differences in dose-mortality tests for different varieties in these studies cannot constitute a valid scientific basis for the varietal testing requirement because it is in the nature of dose-mortality tests to vary among varieties and even within the same variety from year to year. The United States points to leakage of the fumigation chamber, fruit load, experimental errors, sorption by packaging material, natural variation of pest population and fruit-to-fruit variation such as different ripening times, seasonal variations and physical condition of the fruit as factors explaining the differential. According to the United States, confirmatory tests (which are conducted on a larger scale) are a better indicator of efficacy of a treatment: since confirmatory tests take account of the variability in (small-scale) dose-mortality tests, they establish a treatment that is appropriate for all varieties of a product. The United States further submits that the highest minimum dose observed in the dose-mortality tests that scientists believe would achieve the level of protection required by Japan, is supplemented by a 10-20 per cent buffer in the second stage of testing (the confirmatory tests). According to the United States, this buffer will offset all sources of variation in the dose-mortality tests, including any possible varietal differences.

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<sup>231</sup> The parties' arguments with respect to Article 5.7, to which Article 2.2 explicitly refers, are outlined later in paragraphs 8.50 and following.

<sup>232</sup> The meaning of a "dose mortality test" is explained in paragraph 2.12.

<sup>233</sup> Set out in paragraphs 8.21 and 8.23.

<sup>234</sup> *Ibid.*

(ii) *Japan*

8.20 Japan responds that there is a sufficient amount of literature and scientific data which indicates the possible presence of a statistically significant difference in the efficacy of known disinfestation measures across varieties of the same product, and that such a difference could require application of a different treatment.

8.21 First, Japan submits that in the specific case of MB fumigation the link between varietal differences and the divergent efficacy of a fumigation treatment may manifest itself by way of a difference in the CxT value for different varieties, i.e., a difference in the relationship between the fumigant gas concentration in the fumigation chamber and the time-period of fumigation.<sup>235</sup> Japan specifically refers to three studies which allegedly demonstrate a statistically significant difference in CxT values between tested variety samples:<sup>236</sup> (1) 1985 tests on three varieties of American walnuts where, according to Japan, CxT values were significantly different between the Franquett variety and the Payne variety<sup>237</sup>; (2) 1988 tests on three varieties of American nectarines where, according to Japan, CxT values of the May Diamond variety showed a statistically significant difference from the other two cultivars for most of the doses<sup>238</sup>; and (3) 1997 tests on three varieties of Japanese nectarines where there was, according to Japan, a statistically significant difference in CxT values between the Shuhou variety and the Fantasia variety.<sup>239</sup>

8.22 According to Japan, differences in CxT values between varieties could be an indicator of differences in the efficacy of a fumigation treatment. Japan argues as follows: When MB gas is injected into the fumigation chamber to disinfest a particular load of fruit, it is absorbed by the surface or the pulp of the fruit. If the degree of sorption varied depending on the variety of the fruit, the amount of fumigant remaining in the chamber air will vary in an inverse relationship to the sorption. Then the CxT value, which is determined by the gas concentration remaining in the chamber and which is a known indicator to control the degree of efficacy of the treatment, will vary as well depending on the variety of the fruit. According to Japan, the physical and chemical properties of fruits are factors affecting sorption (e.g., differences in oil content or a rougher surface) and can be attributable to varietal characteristics. Therefore, Japan concludes, the reported differences in CxT value are due to varietal differences and are an indicator of differences in the efficacy of a fumigation treatment.

8.23 Second, Japan submits three studies, derived from dose-mortality tests<sup>240</sup>, which indicate a difference in LD 50 values (i.e., the level of dose required in the tests to kill 50 per cent of all codling moths<sup>241</sup>) between tested variety samples:<sup>242</sup> (1) 1987 tests on six varieties of American nectarines where, according to Japan, one of the varieties tested, namely Summer Grand, was found significantly

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<sup>235</sup> The concept of a CxT value is further explained in paragraph 2.11.

<sup>236</sup> These studies are described in more detail in the descriptive part of our report, paragraphs 4.109 - 4.135.

<sup>237</sup> Vail, P. V. et al., Walnut On-Site Operational (Demonstration) Test Report to Japanese MAFF, USDA/ARS, Horticultural Crops Research Laboratory, Fresno, California, 2-14 December 1985.

<sup>238</sup> Vail, P. V. et al., Report on Efficacy of Methyl Bromide for Codling Moth on Nectarines: Consideration of Nectarines as a Product Group, Prepared for Approval by the Japanese MAFF, Horticultural Crops Research Laboratory, Fresno, California, December 1988.

<sup>239</sup> Research Division, Yokohama Plant Protection Station, MAFF, 1997, Unpublished.

<sup>240</sup> The meaning of a "dose mortality test" is explained in paragraph 2.12.

<sup>241</sup> The notion of LD values is further explained in paragraph 2.14.

<sup>242</sup> These studies are dealt with in more detail in paragraphs 4.81 - 4.108.

more susceptible to MB fumigation (i.e., had a lower LD<sub>50</sub> value) than the others<sup>243</sup>; (2) 1987/1988 tests on five varieties of New Zealand cherries where, according to Japan, the LD<sub>50</sub> value for the Bing variety was significantly lower than that for two of the other varieties tested, namely Rainer and Sam<sup>244</sup>; and (3) 1983/1984 tests on two varieties of New Zealand nectarines where, according to Japan, the Fantasia variety showed a significantly lower LD<sub>50</sub> value than the Redgold variety.<sup>245</sup>

8.24 Japan agrees with the United States that there may be a range of exogenous factors (e.g., differences in leakage of the fumigation chamber, fruit load, experimental errors, sorption by packaging material, natural variation of pest population and fruit-to-fruit variation such as different ripening times, seasonal variations and physical condition of the fruit) which may also account for the differential in CxT and LD<sub>50</sub> values reflected in the studies it refers to. However, Japan claims that most of these other variables can be controlled in such a manner as to minimize their effects and that such control is a normal practice for scientists. The Japanese hypothesis is that characteristics of a particular variety may affect fumigation efficacy and that there is not sufficient evidence to disprove this possibility. This is, according to Japan, a reasonable argument. For Japan, its policy of variety-by-variety testing is therefore based on a scientific hypothesis which, in turn, is supported by empirical data, in full conformity with the obligations contained in Article 2.2.

8.25 Japan acknowledges that existing treatment levels of host plants of codling moth have been found effective for additional varieties. However, for Japan, all this proves is the efficacy of the treatment on the *tested* varieties. According to Japan, this falls short of showing absence of varietal difference within a product altogether. Japan notes that only a limited number of varieties have been tested in full-scale trials. On the question of a buffer, Japan claims that in large-scale trials the buffer is not always added to the "highest minimum dose", as the United States argues. Japan submits that in some instances the amount of fumigant absorbed by, *inter alia*, bins or the interior of warehouses may exceed the 10 to 20 per cent buffer. Japan further refers to Dr. Ducom's response to Panel question 12 relating to the buffer<sup>246</sup> and highlights the uncertainty of the effect of the buffer. On these grounds, Japan concludes that the United States has not performed the required demonstration of efficacy of a treatment across all varieties.

(b) Is the varietal testing requirement maintained without "sufficient scientific evidence" in the sense of Article 2.2?

8.26 We first examine that part of Article 2.2 requiring Japan to "ensure that [the varietal testing requirement] ... is not maintained without sufficient scientific evidence".

8.27 We recall that Article 2.2 provides for an alternative to the requirement not to maintain phytosanitary measures without sufficient scientific evidence, namely to adopt provisional measures in accordance with Article 5.7.<sup>247</sup> Whether Japan can validly invoke Article 5.7 in this dispute, is addressed below in paragraphs 8.48 and following.

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<sup>243</sup> Yokoyama V.Y. et al., Methyl Bromide Fumigation for Quarantine Control of Codling Moth (Lepidoptera: Tortricidae) on Nectarines, *Journal of Economic Entomology* 80, 1987, pp. 840-842.

<sup>244</sup> Waddel, B.C. et al., Disinfestation of New Zealand Cherries, Cultivar Comparison Test 1987/1988, Department of Scientific and Industrial Research, Auckland, June 1988.

<sup>245</sup> Batchelor, T.A. et al., Disinfestation of New Zealand Nectarines 1983/1984, Department of Scientific and Industrial Research, July 1984.

<sup>246</sup> See paragraphs 6.87 and following.

<sup>247</sup> Article 2.2 provides that "Members shall ensure that any ... phytosanitary measure ... is not maintained without sufficient scientific evidence, *except as provided for in paragraph 7 of Article 5*" (emphasis added).

(i) *The meaning of a measure "maintained without sufficient scientific evidence"*

8.28 As referred to above<sup>248</sup>, the general obligations in Article 2.2 have to be read together with the more specific obligation imposed on Japan in Article 5.1, namely the obligation to ensure that the varietal testing requirement is "based on" a risk assessment. The Appellate Body, in its report on *EC – Hormones*, elaborated on the meaning of the term "based on" as used in Article 5.1 as follows:

"We believe that "based on" is appropriately taken to refer to a certain objective relationship between two elements, that is to say, to an objective situation that persists and is observable between an SPS measure and a risk assessment".<sup>249</sup>

"We believe that Article 5.1, when contextually read as it should be, in conjunction with and as informed by Article 2.2 of the SPS Agreement, requires that the results of the risk assessment must sufficiently warrant – that is to say, reasonably support – the SPS measure at stake. The requirement that an SPS measure be "based on" a risk assessment is a substantive requirement that there be a rational relationship between the measure and the risk assessment".<sup>250</sup>

8.29 We consider this statement (with respect to Article 5.1) to provide guidance also for our examination as to whether the varietal testing requirement is "maintained without" sufficient scientific evidence (in the sense of Article 2.2). In our view, for a phytosanitary measure to be "maintained without" sufficient scientific evidence, there needs to be a lack of an objective or rational relationship between, on the one hand, the phytosanitary measure at stake (*in casu*, the varietal testing requirement) and, on the other hand, the scientific evidence submitted before the Panel (*in casu*, in particular the six studies referred to by Japan<sup>251</sup>).

8.30 When conducting this examination, we consider it to be important to make a clear distinction between (1) the Japanese requirement that it is for the exporting country (*in casu*, the United States) to demonstrate the efficacy of the quarantine treatment it proposes in order to gain access to the Japanese market for certain products and (2) the Japanese requirement that the exporting country (*in casu*, the United States) needs to make such demonstration *for each variety* of a given product. The United States does not contest the first requirement.<sup>252</sup> It accepts that it needs to demonstrate quarantine efficacy. Only the fact that it needs to do so for each variety, i.e., only the second requirement (the varietal testing requirement), is at issue in this dispute. Under Article 2.2, Japan has the obligation not to maintain this requirement without sufficient scientific evidence.<sup>253</sup>

8.31 Our task in this dispute is to determine whether or not Japan, *to date*, is in breach of this obligation<sup>254</sup>; not whether *in the future* scientific evidence could be produced which would allow Japan to comply with its obligation.<sup>255</sup> If to date there were not sufficient scientific evidence in

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<sup>248</sup> See paragraph 8.15.

<sup>249</sup> Op. cit., paragraph 189, pp. 76-77, italics in original, underlining added.

<sup>250</sup> Op. cit., paragraph 193, underlining added.

<sup>251</sup> See paragraphs 8.21 and 8.23.

<sup>252</sup> See paragraph 8.10.

<sup>253</sup> Unless the Japanese measure is imposed in accordance with Article 5.7, a provision to which Article 2.2 explicitly refers. As noted earlier, this question is dealt with in paragraphs 8.48 and following.

<sup>254</sup> In this respect, we recall the rules on burden of proof we set out earlier in paragraph 8.13.

<sup>255</sup> Article 11 of the DSU directs us to "make an objective assessment of the matter before [the Panel], including an objective assessment of the facts of the case".

support of the varietal testing requirement, Japan would be in breach of its obligations under the SPS Agreement.<sup>256</sup>

(ii) *The opinions of the scientific experts advising the Panel*

8.32 To determine whether or not the varietal testing requirement is maintained without sufficient scientific evidence (i.e., whether there is a lack of an objective or rational relationship between the measure at issue and the scientific evidence before the Panel), we need to refer to the opinions we received from the experts advising the Panel.<sup>257</sup> We recall that these expert opinions are opinions on the evidence submitted by the parties. We are not empowered, nor are the experts advising the Panel, to conduct our own risk assessment.<sup>258</sup>

8.33 At the end of our meeting with the experts advising the Panel, we requested them to confirm a number of understandings we had drawn from their answers and statements. The experts unanimously confirmed the following understandings:

- First, referring to the evidence before the Panel, there *may* be differences between varieties of the products in dispute which *may*, in turn, be relevant for quarantine purposes, i.e., which *may* affect the efficacy of an MB treatment approved for one variety of a product if applied to another variety of the same product.<sup>259</sup>
- Second, the question whether varietal differences, if any, are significant for quarantine purposes *cannot be determined on the basis of the evidence before the Panel*.<sup>260</sup>

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<sup>256</sup> Assuming the measure cannot be considered to be a provisional measure in accordance with Article 5.7, an issue we examine below in paragraphs 8.48 and following.

<sup>257</sup> For the procedures we followed to appoint these experts and to obtain their views, see paragraphs 6.1 and following.

<sup>258</sup> See also panel report on *Australia – Salmon*, op. cit., paragraphs 8.41, 8.126 and 8.172.

<sup>259</sup> See Transcript, paragraphs 10.268 - 10.273. Dr. Heather stated the following (confirmed by the other two experts):

"My understanding, my belief is not that there are differences but there may be differences. I don't believe that the occurrence of the differences has been proven and that they may be relevant for quarantine purposes. So there are two sets of uncertainties in my mind in this statement. There's no certainty that even if differences exist that they are relevant for quarantine purposes between varieties of the products in dispute" (Transcript paragraph 10.270, underlining added).

<sup>260</sup> See Transcript, paragraphs 10.274 - 10.279. As noted in the previous footnote, Dr. Heather stated unambiguously:

"I don't believe that the occurrence of the differences has been proven and that they may be relevant for quarantine purposes".

See also the introductory statement by Dr. Ducom:

"the questions of the Panel are relevant but often there is no clear response to give because we miss data on the exact subject on variety by variety testing" (Transcript, paragraph 10.39, underlining added).

See also Mr. Taylor:

"one of the things that has come out from this meeting which I have found extremely interesting is that we do need more information before we can say categorically that variety in fruit is a

- Third, if, and to the extent that, differences between varieties are significant for quarantine purposes, they are mainly or even exclusively related to different levels of sorption of the fruit.<sup>261</sup>

As noted earlier<sup>262</sup>, the scientific evidence before the Panel (i.e., the evidence evaluated by the experts advising the Panel) relates to either apples, cherries, nectarines or walnuts. However, in the view of the experts advising the Panel the understandings referred to above equally apply to the other products at issue (apricot, pear, plum and quince).<sup>263</sup>

8.34 Replying to a US question (posed at the meeting with the experts) as to whether the experts are aware of any situation where differences in variety have resulted in a different treatment level for the products at issue in this case, Mr. Taylor stated: "No, I have no information or have seen any published data so the answer I have to give is no"; Dr. Heather replied: "In my experience there have been no differences of this kind. In fact it's been to the contrary. Most of my experience has been with insecticide dips with the material dimethoate and here we find that the same treatment not only goes across varieties but across commodities but I can see that this sorption problem with methyl bromide is something very special and that's why I wish to defer to my colleagues with experience as fumigation experts".<sup>264</sup>

8.35 When we asked the experts advising the Panel whether, in their expert opinion, there is an objective or rational relationship between, on the one hand, the varietal testing requirement imposed by Japan for MB treatment and, on the other hand, any of the evidence submitted by the parties, they stated unanimously that – even though in theory there may be relevant varietal differences – to date there is not sufficient evidence in support of the varietal testing requirement.<sup>265</sup>

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major factor affecting the efficacy of treatment" (Transcript, paragraph 10.266, underlining added).

<sup>261</sup> Transcript, paragraphs 10.280 - 10.285. See also, for example, the introductory statement by Mr. Taylor:

"So I would just say then that sorption seems to me to be something that we need to know more about. If it can be shown that the levels of sorption are such that they are significant enough to remove the fumigant to an extent that it is going to raise some doubt as to the efficacy of the treatment, then of course we could say that varietal testing was necessary. But unless we can show that it seems to me that the need to test by variety does still need to be established." (Transcript, paragraph 10.48, underlining added).

See also Mr. Taylor, Transcript, paragraph 10.140:

"I don't think any of us are in dispute that sorption would be a major factor affecting the efficacy of treatment, and if it can be demonstrated that sorption is of sufficient magnitude between different varieties, this would affect the efficacy of treatment, but I think that this has still to be shown and to be demonstrated" (underlining added).

<sup>262</sup> See paragraph 8.6.

<sup>263</sup> Transcript, paragraphs 10.223 - 10.225.

<sup>264</sup> Transcript, paragraphs 10.155 - 10.158. The question was not directed at Dr. Ducom who did not answer it.

<sup>265</sup> Transcript, paragraphs 10.167 - 10.174:

Dr. Ducom: "... the arguments are not statistically good. Scientifically, they may be good, but in practice they may be too narrow. But the answer is really difficult".

Mr. Taylor: "I have to agree with Dr. Ducom. The answer is very difficult otherwise perhaps we would not be here. Again I think in theory there may be some differences which perhaps exist, but in practice it is difficult to show these and it seems very difficult in fact to say that at this time the differences that might make the difference between treatments efficacious and non-efficacious have not

8.36 In his written answer to Panel question 16, Dr. Ducom states the following:

"The arguments put forth by Japan for requiring varietal trials are not based on scientific data. They are supported by a few experimental data in which varietal difference exists, in terms of LD<sub>50</sub>, among a lot of other data in which it does not. These observations lead them to suspect all existing varieties and even more so those of the future, in which, in their eyes, genetic engineering and biotechnology might well create even greater differences. This is not based on any scientific data".<sup>266</sup>

8.37 According to the experts advising the Panel, there is scientific evidence before us – in the form of small-scale dose-mortality tests<sup>267</sup> carried out on different varieties of the same product – which indicate different test results (either a different CxT value<sup>268</sup> or a different LD<sub>50</sub> value<sup>269</sup>) for different varieties.<sup>270</sup> This cannot be disputed. The statistical and biological relevance of the differences in these test results and, especially, the factors causing them are less clear.

8.38 First, the experts advising the Panel question the value to be attached to the test results for purposes of checking quarantine efficacy.<sup>271</sup> They express doubts as to whether LD<sub>50</sub> values derived from dose-mortality tests can be used to compare the efficacy of quarantine treatment between varieties.<sup>272</sup> They also note that even though the test results – both with respect to CxT and LD<sub>50</sub>

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yet been reached and therefore I think at this moment in time that the evidence is not sufficiently strong although in theory it does have some possible validity. But at this stage, as Dr. Ducom has said, and in practical terms, it's very difficult to say yes there is something which is sufficiently demonstrated to show that there is a real problem which has to be addressed in terms of maybe variety-by-variety testing, and which could lead to differences in the treatment techniques that are used".

Dr. Heather: "More to agree with both of my colleagues. I'd say yes there is a relationship but it is an incomplete one but this is a real world and to totally complete the relationship of these and decide on how important it is, I think would probably be beyond the resources even of the United States and Japan in the time available, and I'm not sure that it would really add anything of great value to the argument".

<sup>266</sup> See paragraphs 6.104 - 6.105.

<sup>267</sup> The concept of a dose-mortality test is explained in paragraph 2.12.

<sup>268</sup> The concept of a CxT value is explained in paragraphs 2.11 and 8.21.

<sup>269</sup> The concept of an LD<sub>50</sub> value is explained in paragraphs 2.14 and 8.23.

<sup>270</sup> See paragraphs 8.21 - 8.23.

<sup>271</sup> In this respect, it should, from the outset, be recalled that all the studies referred to by Japan were designed and carried out in order to *comply* with the varietal testing requirement. None of the studies before us specifically examines the appropriateness of the requirement itself.

<sup>272</sup> See answers to Panel question 1 by Dr. Ducom: "In practice, the LD<sub>50</sub> test constitutes a fairly unreliable method to compare the efficacy of quarantine" and Mr. Taylor: "LD<sub>50</sub> values are extremely useful in comparing the toxicity of different chemicals and in the measurement of resistance. However, these values are less useful in investigations of much higher levels of toxic response such as are necessary in relation to quarantine treatments, where LD values of 99 or 99.9 are more appropriate and useful". In his answer to Panel question 12, at para. 6.8, however, Dr. Ducom noted that "while the dose-mortality test (LD<sub>50</sub>) did not give any confidence in respect of the varietal factor, it did give an indication of the relative sensitivity of the products tested". See also Dr. Heather's statement at the meeting with the experts:

"[The LD<sub>50</sub> value] is not a precise numerical measure and of necessity it has had to be used in a rather less precise way than it would otherwise be. It is not a direct measurement on the insect, it is a measurement on the insect where it is influenced by the fruit in the chambers so it is not a precise measurement. In fact, if you look at an LD value it's easy to take one figure but realistically you should be looking at what we call the confidence limits or the fiducial limits and these are ranges within which that value falls and perhaps would lead to a better understanding if we thought of it in that way. As you recall, because the quarantine treatments are not measured at the median dose or the LD<sub>50</sub> dose but at the extreme dose, these limits

values – show statistical differences between varieties, biologically speaking these differences are not pronounced.<sup>273</sup>

8.39 Second, and more importantly, the experts advising the Panel are of the view that even if confidence is given to these differences in the test results there is no evidence before the Panel that these differences – both in CxT and LD<sub>50</sub> values – are due to varietal differences.

8.40 In the studies referred to by Japan, the same tests were carried out on different varieties and in some instances the results differed. However, according to the experts advising the Panel, these differences could have been caused by a series of factors which are *not* related to varietal differences, such as differences in leakage of the fumigation chamber, fruit load, experimental errors, sorption by packaging material, natural variation of the pest population and fruit-to-fruit variation such as different ripening times, seasonal variations and physical condition of the fruit. Japan contends that experimental factors can be and were controlled to the extent possible. However, Japan does not contest that other factors (not related to varietal differences) could also explain the differences in the test results. The differences *might* also be linked to varietal differences. However, on this Dr. Ducom states the following (confirmed by the other two experts advising the Panel<sup>274</sup>):

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become very wide and it is not wise to take arithmetic cognizance" (Transcript, paragraph 10.41).

<sup>273</sup> At the meeting with the experts Dr. Ducom stated:

"... the scientific facts given by Japan are may be too narrow. I mean, for example, when they give some differences between varieties the confidence limit is not a biological fact, it is a statistical fact. I mean, biologically speaking, the difference does not matter ... just one per cent makes, statistically speaking, there is a significant difference while biologically speaking there is no difference" (Transcript, paragraph 10.39. See also Dr. Ducom at Transcript, paragraph 10.186).

See also the statement by Dr. Heather at the meeting with the experts:

"... statistically demonstrated differences ... must always be viewed against the background of the biological conditions which give rise to them. What is biologically unlikely, but statistically shown, must be viewed with some reserve. Biological creditability is just as important as statistical demonstration of differences." (Transcript, paragraph 10.43).

<sup>274</sup> Addressing, for example, a study conducted on three varieties of nectarines and 13 apple varieties (Kawakami, F., et. al., Methyl Bromide Sorption in Fruit Varieties, Research Division, Yokohama Plant Protection Station, Japan Exhibit 36), Dr. Heather, speaking on behalf of all three experts, stated:

"... the authors obviously attributed the differences to varietal characteristics. We are of the opinion that it is not possible to attribute them solely to varietal characteristics on the evidence that's present in this paper. It may well be true but it requires, it would require... to reach that firm conclusion would require more information." (Transcript, paragraph 10.218).

With respect to the same study, Dr. Ducom noted the following:

"This study was very interesting but the problem is that it was made on apples, which were not at the same stage of storage because some were one month in storage and others had three month's storage – so the variety is not the only factor which can change the value we can read. So in practice that means that varieties may be a factor but maybe not very important and maybe some other factors influence that data. The problem of all these studies is that they are just descriptive studies. We take some apples, or peaches, or nectarines, and we look at the concentration but the reason why it differs, we don't know. There is no fundamental work on that and we can just say this works, or it does not work and so on" (Transcript, paragraph 10.259, underlining added).

See also Dr. Heather's answers to Panel question 1: "... where differences between varieties are small, fruit to fruit variation could greatly exceed variety to variety variation. Such variation is an inherent characteristic and is usually overcome by

"It is impossible by a simple DMT [dose-mortality test] to find out the relevant impact of the factors playing a role in the varietal differences ... mainly because varieties ripen at different times ... The DMT presented by the parties are designed to give information on insect sensitivity. The search for possible causes of varietal variations cannot be determined with precision by them, but only with a specific research program".<sup>275</sup>

"There is a lack of precise studies on this subject. *A priori*, one could cite almost anything, the size of the fruit, the nature of the epidermis, the average sugar content, the ripeness of the fruit, its physiological condition, the time between harvest and fumigation, etc. However, in this, there are hypotheses that merit studying".<sup>276</sup>

8.41 The experts advising the Panel point out that so far no attempt has been made to determine whether varietal differences actually constitute a factor which causes the differences in the test results.<sup>277</sup> And this even though, according to the experts advising the Panel, technically speaking such determination can relatively easily be made, for example, by conducting sorption tests on different varieties of a product.<sup>278</sup> Japan did not further test or try to confirm its so-called hypothesis

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ensuring adequate robustness of the treatment"; to Panel question 3: "Although statistical differences are evident between some varietally based experiments, this does not provide an assurance that the origin of the difference lies predominantly in varietal characteristics"; and to Panel question 8: "If the criterion used is statistically significant differences between experimental samples of different varieties there are differences as identified by Japan, but there is no certainty that they are attributable to unique varietal characteristics. In subsequent research on additional varietal samples these differences were too small to cause the efficacy of a treatment based on varieties used in initial trials, to fail in further testing".

<sup>275</sup> Dr. Ducom's answer to Panel question 3.

<sup>276</sup> Dr. Ducom's answer to Panel question 9. Answering a US question at the meeting with the experts – as to whether varietal differences are widely known to result in significant differences in efficacy of treatment as opposed to a number of sources of fruit variation which include temperature, moisture, daylight, rainfall, cultivation conditions and other natural conditions of the harvest year, which according to Japan are not widely known to result in significant differences in efficacy of treatment – Dr. Ducom stated as follows:

"It's the same. My opinion is that differences are of the same [nature], maybe, of the same amount [importance]. I mean, I do not understand what Japan says. I mean why temperature, moisture and so on? Since they are not known they are counted for nothing. That I cannot understand. The same thing for variety. If we use the same argument varieties [aren't more significant than other variables] are just nothing because [we have little data for varieties] we don't know the answer for varieties. Or, if we take into account variety we should take into account daylight, moisture, rainfall and so on" (Transcript, paragraph 10.62).

<sup>277</sup> See footnote 260.

<sup>278</sup> Since, according to the experts advising the Panel, varietal differences, if and to the extent they exist, would mainly or exclusively be due to differences in sorption, tests could, for example, be conducted on different varieties of a product to check whether there are any such differences in sorption. See Dr. Ducom's statement at the meeting with experts:

"I just advise something about sorption. Levels are important for varieties but that means no insects, no LD50 trials to show that sorption is different. I mean we don't need any insects and any dose mortality tests to show that sorption is different and it makes very different, it's very easy, it's easier to run a sorption test than the dose mortality test. That's an important point in practice" (Transcript, paragraph 10.142).

See also the following statement of Mr. Taylor at the meeting with the experts:

"I think we're all agreed that sorption is one of the major factors involved and, I think that, as Dr. Ducom said earlier, one of the things that should be done is the testing of samples just with methyl bromide [no insects to be involved] to see if we can determine the extent to which these varieties do absorb methyl bromide. Also it would be nice to try and relate any differences we find to chemical or physical characteristics more definitely" (Transcript, paragraph 10.266).

See also statements by Dr. Ducom and Mr. Taylor, Transcript, paragraphs 10.187 - 10.196.

according to which varietal differences affect quarantine efficacy. However, as Japan itself notes: "The task of scientific demonstration begins, not ends, with a discovery of variables".<sup>279</sup>

(iii) *Evaluation by the Panel*

8.42 We carefully reviewed all the evidence before the Panel in accordance with the rules on burden of proof we set out earlier.<sup>280</sup> After this review and referring, in particular, to the expert opinions quoted above<sup>281</sup>, we consider that, to date, it has not been sufficiently demonstrated that there is a rational or objective relationship between the varietal testing requirement and the scientific evidence submitted to the Panel. In our view, the United States established – on the basis of scientific reports and with the support of the opinions of the experts advising the Panel<sup>282</sup> – that so far not a single instance has occurred in Japan or any other country, where the treatment approved for one variety of a product has had to be modified to ensure an effective treatment for another variety of the same product. We acknowledge that this part of the evidence before us, of course, only relates to those products and varieties for which to date an application for approval to import was made. The United States further provided evidence, supported by the opinions received from the experts advising the Panel, which suggests that varietal differences do not matter for quarantine efficacy, at least not to the extent reflected in the current Japanese varietal testing requirement.<sup>283</sup> Moreover, even though Japan may have some data – taken from several individual studies – possibly hinting at relevant varietal differences, no evidence before this Panel makes the actual causal link between the differences in the test results and the presence of varietal differences. On these grounds and after having carefully weighed the evidence and opinions of the experts advising the Panel submitted to us, we thus consider that the United States has raised a presumption that Japan's varietal testing requirement is maintained without sufficient scientific evidence and that this presumption has not been sufficiently rebutted by Japan.

8.43 We thus find that Japan maintains the varietal testing requirement without sufficient scientific evidence in the sense of Article 2.2.

8.44 According to the scientific experts advising the Panel, the statements they provided on varietal differences are – to the best of their knowledge – equally valid for all US products here at issue.<sup>284</sup> At the meeting with the experts, we asked them the following:

"You know that the scope of this dispute does not cover only the four products, apples, cherries, nectarines and walnuts, but also apricots, plums, pears and quince, even if we have not received any material from either party concerning those four other products. So now the Panel wants to ask you the following question: To the best of your knowledge is what you have stated about varietal differences concerning apples, cherries, nectarines and walnuts, would that also be valid for apricots, plums, pears and quince?"<sup>285</sup>

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<sup>279</sup> Second submission of Japan, p. 15.

<sup>280</sup> See paragraph 8.13.

<sup>281</sup> See paragraphs 8.32 - 8.41.

<sup>282</sup> See paragraph 8.34.

<sup>283</sup> See, for example, paragraphs 8.35, 8.39 and 8.40.

<sup>284</sup> See paragraph 8.33 *in fine* and footnote 263.

<sup>285</sup> Transcript, paragraphs 10.223 - 10.225.

We put this question before the experts since the scope of our mandate covers all eight products<sup>286</sup> and taking into account the Appellate Body's view that a panel needs to make findings with respect to all products falling within its terms of reference.<sup>287</sup>

8.45 Dr. Heather answered "yes" to this question and the other two experts concurred. However, the experts did not further elaborate on their answer. Nor did any of the parties provide any additional comments or information which could enlighten us as to the existence or relevance of varietal differences for the four products for which no specific studies are before us. After careful examination we do not consider, therefore, that there is sufficient evidence before us to extend our finding in paragraph 8.43 also to apricots, pears, plums and quince. We only find that Japan maintains the varietal testing requirement without sufficient scientific evidence with respect to apples, cherries, nectarines and walnuts.

8.46 With respect to two of the four products to which our finding in paragraph 8.43 does apply (apples and walnuts), the experts advising the Panel made certain additional remarks. First, with respect to apples and the cold treatment they undergo before entering Japan (in addition to fumigation), the experts advising the Panel were even more categorical in their opinion that no evidence before the Panel provides a causal link between varietal differences and a divergent efficacy of the required treatment. Since, according to the experts advising the Panel, the efficacy of cold treatment is not linked to the sorption characteristics of the fruit – the allegedly most important factor which could explain possible varietal differences, if any exist<sup>288</sup> – most (if not all) varietal differences which might exist would be offset by the cold treatment.<sup>289</sup> One expert advising the Panel noted, however, that cold treatment kills the codling moth eggs whereas MB fumigation kills the larvae.<sup>290</sup> The quarantine efficacy across varieties of apples due to the cold treatment would thus only seem to apply to the killing of codling moth eggs.

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<sup>286</sup> See paragraph 8.6.

<sup>287</sup> See Appellate Body report on *Japan – Taxes on Alcoholic Beverages*, adopted on 1 November 1996, WT/DS8/AB/R, p. 26.

<sup>288</sup> See paragraph 8.33 and footnote 261.

<sup>289</sup> In reply to the Panel's question whether "anything in the apples study submitted by Japan [Kawakami, F., et. al., Methyl Bromide Sorption in Fruit Varieties, Research Division, Yokohama Plant Protection Station, Japan Exhibit 36]... change any of your earlier opinions as to the relevance of varietal differences for quarantine efficacy", Dr. Heather replied:

"I don't think there is anything in the apple study which impinges on this. Apples are unique in that they have a combined treatment of cold and of methyl bromide and both of these are quite efficacious in their own way. Perhaps I should say at this stage there was a question also from Japan as to why I believe that apples would not differ very much amongst themselves varietally. The reason for this is that cold treatment as a contributing treatment to the codling moth control does not have a sorption problem so there should not be the same degree of variation between varieties of apples because of this cold treatment factor that you would find in a treatment which relied only on methyl bromide" (Transcript, paragraph 10.257).

See also Dr. Heather's reply to Panel question 17:

"... given the combined lethal potential and broad applicability of MB and cold, it is highly unlikely that there would be any differences in efficacy between any common commercial apple varieties".

<sup>290</sup> In his comments on the Panel's draft findings now contained in paragraphs 8.73 - 8.101 (received according to the procedure outlined in paragraph 6.116), Dr. Ducom clarified that the combined treatments for apples (MB fumigation and cold treatment) affect two different stages of the codling moth: the cold treatment kills the codling moth eggs, the MB fumigation the larvae (see summary in paragraph 6.114). Dr. Ducom noted the following: "There are indeed two treatments for apples, but they apply to two different and separate stages. The cold kills the eggstage and the gas the fifth larval stage" (translation from French)".

8.47 Second, with respect to walnuts, the experts advising the Panel pointed at a specific factor which may influence the sorption level of walnuts, namely their oil or fat content. This could also explain the different test results referred to by Japan.<sup>291</sup> However, according to the experts advising the Panel, so far no information is available which shows that the total oil content is a varietal characteristic which could – by means of a different sorption level – affect the quarantine efficacy of an MB treatment.<sup>292</sup> Therefore, the fact that no evidence before this Panel makes the causal link between the differences in the test results and the presence of varietal differences, also applies to walnuts.

(c) Is the varietal testing requirement a provisional measure under Article 5.7?

8.48 At this juncture – and before we can find, following our considerations and finding in paragraphs 8.42 and 8.43, whether or not Article 2.2 is violated in this dispute – we recall that Article 2.2 provides that "Members shall ensure that any ... phytosanitary measure ... is not maintained without sufficient scientific evidence, *except as provided for in paragraph 7 of Article 5*" (emphasis added). We note that Japan invokes Article 5.7 in support of its varietal testing requirement. We therefore need to examine next whether the varietal testing requirement is a measure meeting the requirements in Article 5.7. If the varietal testing requirement meets these requirements, we cannot find that it violates Article 2.2.

8.49 Article 5.7, in relevant parts, provides as follows:

"In cases where relevant scientific evidence is insufficient, a Member may provisionally adopt ... phytosanitary measures on the basis of available pertinent information, including that from the relevant international organizations as well as from ... phytosanitary measures applied by other Members. In such circumstances,

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<sup>291</sup> See paragraph 8.21.

<sup>292</sup> As outlined in paragraphs 6.112 - 6.115, after the Panel's second substantive meeting, we addressed an additional question to the experts dealing with walnuts (with reference to a study submitted by the United States, Variation in Polyunsaturated Fatty Acids Composition of Persian Walnut, L. Carl Greve, et. al., J. Amer. Soc. Hort. Sci. 117 (3), pp. 518-522, 1992, US Exhibit 40) namely "whether and to what extent the oil or fat content differs between varieties of walnuts *because of varietal characteristics*" and "whether any such differences are significant enough to affect quarantine efficacy" (emphasis in original). Dr. Heather answered, *inter alia*:

"I did not find any information on total oil content as a varietal characteristic ... Therefore, [the US study] does not provide any further clarification of the extent to which oil content of walnuts might affect quarantine treatment efficacy and consequently, quarantine security".

Dr. Ducom stated, *inter alia*:

"... the differences between varieties in walnut commodities could be, if any, easily showed since we have a very good tool with the oil content ... variety is one of the different factors which may affect the oil content of the fruit. But the authors have shown that it's influence is less important than the environmental conditions ... Differences like presented in the publications seem to be not large enough to have a noticed influence on the sorption and thus on CT and efficacy. But only trials designed for that purpose could definitively give the good answer".

Mr. Taylor stated, *inter alia*:

"The greater differences in fatty acid content composition found from year to year within the same variety than between varieties in a single year is also very important evidence demonstrating that varietal differences are unlikely to be the most important factor affecting sorption of methyl bromide and, therefore, the efficacy of methyl bromide fumigations".

See also the statements by Mr. Taylor, Transcript, paragraph 10.140 and by Drs. Heather and Ducom, Transcript, paragraphs 10.290 - 10.292.

Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the ... phytosanitary measure accordingly within a reasonable period of time" (underlining added).

(i) *Arguments by the parties*

8.50 Under Article 5.7, Japan argues that the *rationale* for its varietal testing requirement is that "available pertinent information" suggests a possible presence of varietal differences in the efficacy of a disinfection treatment. Once the import prohibition is lifted for a particular variety, Japan expects that new data will be accumulated on the effects of the treatment approved for that variety in order to reach a sufficient level of confidence as to the broader applicability of that treatment to other varieties. Until such level of confidence is achieved, Japan claims to have the right to maintain, on a provisional basis, the import prohibition for all other varieties of the same product. In this respect, Japan further submits that it has not been demonstrated that the present treatment for any of the US products allowed for import will control the risk at the required level with respect to all other varieties.

8.51 Japan recognizes, however, that under Article 5.7 it is required to "seek to obtain the additional information necessary for a more objective assessment of risk and review the ... phytosanitary measure accordingly within a reasonable period of time". In this respect, Japan submits that its obligation to collect information is discharged by Japan's practice of requiring the exporting countries to submit data each time approval of additional varieties is sought, as well as by MAFF at the Yokohama Plant Protection Station (Research Division) which is seeking to collect information and continues to study the effectiveness of the existing treatments for new varieties.

8.52 In response, the United States submits that Japan's construction of Article 5.7 is patently incorrect. For the United States, Article 5.7 has a threshold requirement that in order for a measure to be provisional, there must be an insufficient amount of relevant scientific evidence to be able to perform a risk assessment. According to the United States, in this case there is a sufficient amount of evidence. For the United States, all evidence in this case, including the success of uniform treatments on different varieties exported to Japan and the absence of failures by commodity-based testing regimes in other countries, indicates that varietal differences do not affect treatment efficacy.

8.53 The United States further submits that it strains credulity to describe a 50-year old measure as "provisional". The United States argues that, contrary to what is required in Article 5.7, there is no evidence that Japan has undertaken a process to produce a more objective assessment of risk "within a reasonable period of time" so that it can review whether the "provisional measure" should be continued.

(ii) *Evaluation by the Panel*

8.54 In our view, the first sentence of Article 5.7 allows Members to provisionally adopt phytosanitary measures if two elements, cumulative in nature, are met:

- the measure is imposed in respect of a situation where "relevant scientific information is insufficient"; and
- the measure is adopted "on the basis of available pertinent information".

However, even if a measure meets both of these elements, the second sentence of Article 5.7 imposes additional obligations on the Member provisionally adopting the measure, namely the obligation to

- "seek to obtain the additional information necessary for a more objective assessment of risk"; and
- "review the ... phytosanitary measure accordingly within a reasonable period of time".

8.55 Therefore, even if we were to assume that the varietal testing requirement is a phytosanitary measure provisionally adopted in accordance with the first sentence of Article 5.7, i.e., even if we were to assume that in this case "relevant scientific information is insufficient" *and* there is "available pertinent information" before the Panel on which Japan can base the varietal testing requirement, the second sentence of Article 5.7 obliges Japan to "seek to obtain the additional information necessary for a more objective assessment of risk" *and* to "review the ... phytosanitary measure accordingly within a reasonable period of time".

8.56 As to the obligation imposed on Japan to "*seek to obtain the additional information necessary for a more objective assessment of risk*", Japan refers to the fact that exporting countries provide additional information when they apply for access. We note, however, that the studies these countries provide are designed and carried out to *comply* with the varietal testing requirement. They do not examine the appropriateness of the requirement itself. This is also the case for the two reports before the Panel which were carried out by MAFF's Research Division.<sup>293</sup> No further information or evidence was submitted to us. As pointed out earlier<sup>294</sup>, not a single study before the Panel actually addresses the specific issue as to whether varietal characteristics cause a divergency in quarantine efficacy. The requirement that the information necessary to review an SPS measure must be specific enough, was referred to by the Appellate Body in *EC – Hormones*.<sup>295</sup> In this respect, we further recall that the experts advising the Panel stated that a study or research project to determine whether varietal differences do matter for quarantine efficacy – which would mainly involve sorption tests – could be carried out relatively easily.<sup>296</sup>

8.57 Moreover, with respect to the obligation imposed on Japan to "*review the ... phytosanitary measure accordingly within a reasonable period of time*", we note that, according to Japan, testing variety-by-variety for lifting the import ban imposed in the Plant Protection Law, was first applied in 1969 when the ban was lifted for Hawaiian papayas of the Solo variety, i.e., on a variety basis. For the US products at issue, hosts of codling moth, the import ban was first lifted in 1978. The issue of varietal testing, and the question as to whether it can be scientifically justified, has thus been around for almost 30 years and, with respect to the specific products and pest at issue, for 20 years. During this period of time Japan has been in a position to obtain further information on varietal differences and their relevance to quarantine efficacy. Moreover, since the entry into force of the SPS Agreement on 1 January 1995, Japan has been under an explicit obligation to collect additional information to enable it to more objectively review the appropriateness of the varietal testing requirement.

8.58 On these grounds, we consider that there is no evidence before us which indicates that Japan sought to "obtain the information necessary for a more objective assessment of risk" and reviewed the varietal testing requirement accordingly "within a reasonable period of time". We consider, therefore, that the United States has established a presumption that Japan did not comply with the requirements in the second sentence of Article 5.7. We also consider that Japan has not been able to rebut this presumption.

8.59 Following the rules on burden of proof we set out earlier<sup>297</sup>, we thus find that even if the varietal testing requirement were considered as a provisional measure adopted in accordance with the

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<sup>293</sup> All but two of the studies before the Panel were conducted on behalf of exporting countries. The two exceptions are two studies carried out by MAFF's Research Division (1997 tests on three varieties of Japanese nectarines, Research Division, Yokohama Plant Protection Station, MAFF, 1997, Unpublished, Japan Exhibit 16 and Kawakami, F., et. al., Methyl Bromide Sorption in Fruit Varieties, Research Division, Yokohama Plant Protection Station, Japan Exhibit 36).

<sup>294</sup> See paragraph 8.42: no evidence before this Panel makes the causal link between the differential in the test results and the presence of varietal differences.

<sup>295</sup> Op. cit., paragraph 200.

<sup>296</sup> See footnote 278.

<sup>297</sup> See paragraph 8.13.

first sentence of Article 5.7<sup>298</sup>, Japan has not fulfilled the requirements contained in the second sentence of Article 5.7.

8.60 In its comments on the interim report, Japan noted that the information gathered through successive demonstrations by exporting countries constitutes experience and that experience is a legitimate means to gather information under Article 5.7. We agree with this point of view. Of course, Japan can take into account the evidence submitted so far by exporting countries. However, in our view, this method of collecting information has, to date, not provided the information "necessary for a more objective assessment of risk" and an appropriate review of the varietal testing requirement "within a reasonable period of time".

(d) The Panel's conclusion under Article 2.2

8.61 We have found above that the varietal testing requirement – in so far as it applies to imports of apples, cherries, nectarines and walnuts – is neither (1) maintained with sufficient scientific evidence in the sense of Article 2.2<sup>299</sup> nor (2), in the event it were a provisional measure in accordance with the first sentence of Article 5.7, a measure maintained in conformity with the second sentence of Article 5.7.<sup>300</sup> We recall, however, that Article 2.2 requires Japan to ensure that the varietal testing requirement is "not maintained without sufficient scientific evidence, except as provided for in paragraph 7 of Article 5". Consequently, we come to the conclusion that Japan, by maintaining the varietal testing requirement with respect to apples, cherries, nectarines and walnuts, acts inconsistently with its obligations under Article 2.2.

8.62 Given this conclusion under Article 2.2, we see no need to further examine what is required for a phytosanitary measure to be "based on scientific principles" in the sense of Article 2.2, nor to determine whether in this dispute the varietal testing requirement is so based.

### **3. Risk assessment**

8.63 Since we have found earlier<sup>301</sup> that the varietal testing requirement violates Article 2.2, we see no need to further examine whether it also needs to be based on a risk assessment in accordance with Articles 5.1 and 5.2 nor to determine whether in this dispute it is so based.

## **G. MEASURES NOT MORE TRADE-RESTRICTIVE THAN REQUIRED (ARTICLE 5.6)**

### **1. Arguments by the parties**

8.64 The United States further claims that the Japanese varietal testing requirement is inconsistent with Article 5.6 in that it is significantly more trade-restrictive than required to achieve Japan's appropriate level of phytosanitary protection. The United States submits that because there are no varietal differences that affect the efficacy of a quarantine treatment, the same established treatment will achieve for all varieties of a product the appropriate level of protection. The United States argues that neither it, nor any other country exporting to Japan, has ever had to modify a quarantine treatment for codling moth for additional varieties of the same product. According to the United States, these

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<sup>298</sup> See paragraph 8.54.

<sup>299</sup> See paragraph 8.42.

<sup>300</sup> See paragraph 8.58.

<sup>301</sup> See paragraph 8.61.

results conclusively demonstrate that Japan's varietal testing requirement has no value in providing additional quarantine protection.

8.65 The United States posits testing by product as a reasonable alternative under Article 5.6. The United States accepts that the first variety of a particular product from any source should be subject to the full gamut of testing. However, it is the US view that after such validation, no further testing at all for additional varieties is necessary. Because testing by variety takes a minimum of 2-4 years to complete per variety, is resource intensive and costly to perform, and seriously delays market access of US products, the United States argues that testing by product is also less trade-restrictive.

8.66 The United States submits that to be required to only conduct confirmatory tests for each additional variety (as referred to in a question by the Panel to the United States), would be virtually as time-consuming and burdensome as the current requirement to do dose-mortality tests for each variety and confirmatory testing on representative varieties.

8.67 Although the United States pointed out, in its rebuttal submissions, that it considers testing by product to be the only acceptable quarantine measure in the context of this dispute, in its oral statement at the second substantive meeting it also referred to an alternative measure posited by the experts advising the Panel<sup>302</sup> as a confirmation of the fact that Japan's varietal testing requirement is more trade-restrictive than required.<sup>303</sup> The alternatives submitted by the experts advising the Panel are outlined below.<sup>304</sup>

8.68 Japan responds that its lifting of the import prohibition for specific varieties is a result of the discharge of its obligation under Article 5.6. According to Japan, whenever it finds a measure which achieves its appropriate level of protection and is significantly less restrictive, the import prohibition is replaced with such a measure. In this particular case, however, Japan submits that it found data which suggests the presence of varietal differences in efficacy of MB fumigation, and a hypothesis which explains such a variation. On that basis Japan requires testing by variety. As the United States has not proven product-wide efficacy, Japan concludes that it should not be obliged to accept the US alternative at this stage.

8.69 Japan points out that it already made efforts to alleviate the burden put on exporting countries. First, Japan accepts the concept of a representative variety. This means, for example, that for an application for access of five varieties of a product, a large-scale confirmatory test will only need to be carried out for one of the five varieties, i.e., the variety which is shown to be the least sensitive to the treatment in dose-mortality tests. This is why, Japan submits, there is no requirement of full-scale testing of each variety. Second, for approval of additional varieties, the number of codling moth insects required in large-scale demonstrations has been reduced from 30,000 to 10,000.

## **2. Elements under Article 5.6**

8.70 We note that Article 5.6 provides in relevant part:

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<sup>302</sup> An approach to treatment based on a fixed CxT value to be met by monitoring the MB dose in the fumigation chamber. See additional Panel question 9, posed at the meeting with experts (Transcript, paragraph 10.197), and below paragraph 8.76.

<sup>303</sup> In its answer to an additional Panel question at the second substantive meeting, the United States no longer seemed to consider testing by product as the only alternative, stating that "it remains the *preferred* quarantine measure" (US answers of 24 June 1998, question 1, p.1, emphasis added).

<sup>304</sup> See paragraphs 8.76 and 8.77.

"... when establishing or maintaining ... phytosanitary measures to achieve the appropriate level of ... phytosanitary protection, Members shall ensure that such measures are not more trade-restrictive than required to achieve their appropriate level of ... phytosanitary protection, taking into account technical and economic feasibility" (underlining added).

A footnote to Article 5.6 states the following:

"For purposes of paragraph 6 of Article 5, a measure is not more trade-restrictive than required unless there is another measure, reasonably available taking into account technical and economic feasibility, that achieves the appropriate level of ... phytosanitary protection and is significantly less restrictive to trade".

8.71 Article 5.6 must be read in context. We consider, in particular, that the more specific language of Article 5.6 should be read in light of the more general language in Article 2.2 providing that:

"Members shall ensure that any ... phytosanitary measure is applied only to the extent necessary to protect ... plant life or health" (underlining added).

8.72 In this dispute, Article 5.6 provides that the varietal testing requirement not be "more trade-restrictive than required to achieve [Japan's] appropriate level of ... phytosanitary protection, taking into account technical and economic feasibility". According to the footnote to Article 5.6, the varietal testing requirement shall be considered to be "more trade-restrictive than required" if there is another phytosanitary measure which:

- is "reasonably available taking into account technical and economic feasibility";
- "achieves [Japan's] appropriate level of ... phytosanitary protection"; and
- is "significantly less restrictive to trade" than the varietal testing requirement.

These three elements are cumulative in nature. Only when the United States has raised a presumption, not sufficiently rebutted by Japan, that all three elements are present, can the varietal testing requirement be found to be inconsistent with Article 5.6.

### **3. Alternative measures before the Panel**

#### **(a) Testing by product**

8.73 The first alternative before the Panel is the one posited by the United States. It involves testing product-by-product (instead of variety-by-variety).<sup>305</sup> Once a variety of a product has been approved, no further testing at all would be required for any other varieties of that product.

#### **(b) Alternatives derived from the testing of possible differences in sorption**

8.74 The scientific experts advising the Panel suggest other alternatives based on the testing of possible differences in sorption. We deduced these alternatives from their written answers to our questions and, more particularly, from their statements at the expert meeting. Subsequently, at our second substantive meeting with the parties, both parties have expressed their views on these alternatives. Moreover, before issuing our interim report we sent a draft of those parts addressing these

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<sup>305</sup> See paragraph 8.65.

alternatives to the experts for their comments.<sup>306</sup> We shall, therefore, also examine whether any of these alternatives meet the three elements under Article 5.6.

8.75 We recall that one of the basic understandings confirmed by the experts advising the Panel is that if, and to the extent, there are differences between varieties, these would be mainly or even exclusively related to different levels of sorption of the fruit.<sup>307</sup> Therefore, to control any possible varietal differences, the experts advising the Panel note that, as an alternative to the varietal testing requirement, one could either monitor or test the sorption characteristics of the different varieties of the products at issue.

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<sup>306</sup> See paragraphs 6.116 and following.

<sup>307</sup> See paragraph 8.33 and the references in footnote 261.

(i) *Monitoring a predetermined CxT value during commercial treatment*

8.76 According to the experts advising the Panel, quarantine efficacy against codling moth could be achieved by determining a fixed CxT value, i.e., a certain concentration of the fumigant in the chamber during a certain period of time, to be obtained during quarantine treatment. This CxT value would be so determined that if a codling moth were fumigated with this concentration during this time, it would die, irrespective of the host product or variety on which it occurs. To obtain this CxT value during commercial treatment, the MB concentration in the chamber would need to be monitored. If the concentration drops below that required by the CxT value, an additional dose would need to be injected in the chamber. As long as the CxT value were met, varietal differences (if there are any, such as sorption) would not affect quarantine efficacy nor would any other factors.<sup>308</sup>

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<sup>308</sup> See Dr. Ducom's answer to Panel question 10:

"The notion of the concentration-time product, or here the CT value, is fundamental in fumigation. What kills the insect is not only the dose of gas introduced, but the quantity of gas inhaled during the entire gas exposure period. The measurement of gas concentrations throughout fumigation permits one to correlate the efficacy observed not only at the initial concentration introduced, but also during its evolution over time, that is to say, the CT value. This quantity depends on the gas concentration in the chamber whose variation factors are:

- an initial dose introduced into the chamber,
- the load which could increase or decrease the free concentration of gas according to the sorption of the commodity,
- the sorption of the commodity and of everything present in the chamber,
- eventual leaks.

A CT value is universal once the target stage and the treatment temperature are defined. All the other factors matter little, even the nature of the commodity, since they are accounted for by the measurement of gas concentration ... The difference [with the current Japanese testing requirements] is that the CT is definitively acquired and that one could then vary the different initial parameters. On the contrary, the present conditions to impose a recognized effective treatment consists in fixing initial intangible draconian conditions (temperature, treatment length, gas tightness of the chamber, nature of the packing material and load) that would make any variation impossible. ... Finally, I completely agree to admit that the confirmatory test constitutes a necessary condition to define the quarantine level for a given species of pest. One can also associate the test to a CT value which is then acquired once and for all ... This objective CT value could become the sole criterion for success in quarantine treatment" (See also Dr. Ducom's written answers to the Panel's questions, p. 11).

See also Dr. Heather's answer to Panel question 11:

"If the CxT value for a required efficacy against a pest is known then a fumigation treatment that meets or exceeds that specification can be expected to achieve the quarantine security level required. This should hold true for all batches of a commodity, including those of differing varieties, provided that temperature, load and any other relevant requirements are met".

See also the experts' answers to additional Panel question 9 at the meeting with the experts, Transcript, paragraph 10.198 - 10.202. See also Mr. Taylor's closing statement at the meeting with experts, Transcript, paragraph 10.267:

"I would like to say in conclusion that I found one of the most interesting parts of the meeting came in question 9 when the Panel asked us if in that statement rather, whether their understanding of what we were talking about was in fact the case and I think it is clear we are saying here that if you have the right amount of gas for the right amount of time it will kill the pest because basically that's what fumigation's all about. It doesn't matter which gas you're using. If you have the lethal concentration for the required time this will kill the pest and that's really what we want to try and achieve, so this long and somewhat complicated discussion about CxT products is in fact very relevant because if we do achieve the desired CxT product in a commercial treatment we should end up with an efficacious treatment which should satisfy the requirements for quarantine".

(ii) Determine whether the sorption level of additional varieties differs from that of the already approved variety

8.77 For the approval of additional varieties of a product for which a treatment for one or more varieties has already been accepted, Japan currently imposes dose-mortality tests for all varieties and an on-site confirmatory test – preceded, if required<sup>309</sup>, by a large-scale confirmatory test – for one representative variety.<sup>310</sup> Instead, the experts advising the Panel suggest that Japan could simply determine the sorption level of each of the additional varieties when treated as required for the already approved varieties.<sup>311</sup> For those additional varieties which do not exceed the sorption level of the already approved varieties, there would be no need for further testing or confirmation. The commercial treatment (i.e., a fixed dose-temperature-time relationship, as is the case today) for the initial variety could then also be approved for the additional variety. For those additional varieties which do have a higher sorption level, it could then be determined – if need be by means of additional tests – whether the level of sorption is of sufficient magnitude to reduce the concentration of MB gas below the level of insect mortality required by Japan.<sup>312</sup> If this were to be the case, a different commercial treatment for the additional variety could then be imposed.

#### 4. Does any alternative meet all of the elements in Article 5.6?

(a) Testing by product<sup>313</sup>

8.78 Japan does not contest that testing by product is "reasonably available taking into account technical and economic feasibility" (i.e., it meets the first element under Article 5.6). We agree.

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<sup>309</sup> *In casu*, in the event any of the additional varieties demonstrate, in the dose-mortality tests, significantly lower disinfestation effects than the already approved varieties.

<sup>310</sup> See paragraph 2.24.

<sup>311</sup> See answer by Dr. Ducom to Panel question 11:

"If varieties are tested to find the CT value, then no further testing is necessary. The success of the system implies: (1) that the trials be conducted according to precise guidelines approved by both parties. In particular, the number of fruits should be quite large in each replicate to minimize the effects of sampling; (2) that the treatment standard clarify the CT value necessary to obtain the desired efficacy. This value is the one found in the confirmatory test, for example for nectarines, 68 gh/m<sup>3</sup> (Yokoyama, 1990.) The results of these tests are sufficient in themselves to give confidence in the conformity of the varietal candidate without having to include the reference variety and insects for efficacy confirmation. This would not bring any supplementary information".

See also answer by Mr. Taylor to Panel question 11:

"CxT values are used to indicate the fumigant concentration and exposure period required to achieve a 99% mortality of all development stages of an insect at a particular temperature and humidity under practical conditions. If these values were obtained for additional varieties and were found to fall within the range already observed for other varieties it would be difficult to justify why further testing would be necessary".

See further the answers to additional Panel question 9 at the meeting with the experts, Transcript, paragraph 10.198 - 10.202. See also the experts' answers to questions by Japan dealing with this alternative approach, Transcript, paragraphs 10.233 - 10.253.

<sup>312</sup> The experts advising the Panel noted that the differences in sorption would need to be significant in order to affect treatment efficacy. See Mr. Taylor's answer to Panel question 9, at paragraph 6.67 and his statement at the meeting with the experts, Transcript, paragraph 10.82; Dr. Heather's answer to Panel question 10, at paragraph 6.81.

<sup>313</sup> See paragraph 8.65.

Technically and economically speaking it is easier to implement testing by product, both for Japan and the exporting country, than the various tests and procedural steps currently imposed to obtain approval for additional varieties. Indeed, under the testing by product alternative no further testing at all of additional varieties would be required.

8.79 Japan does not contest either that testing by product is "significantly less restrictive to trade" than the varietal testing requirement (i.e., it meets the third element under Article 5.6). We agree. Under the testing by product alternative, market access for additional varieties would be automatic. No additional testing would be required.

8.80 Japan only contests the remaining element under Article 5.6, namely whether testing by product would "achieve [Japan's] appropriate level of ... phytosanitary protection".

8.81 Both parties agree that it is up to Japan to determine its appropriate level of phytosanitary protection with respect to codling moth. We agree since the SPS Agreement (in paragraph 5 of Annex A) defines the "appropriate level of ... phytosanitary protection" as "[t]he level of protection *deemed appropriate by the Member* establishing a ... phytosanitary measure to protect ... plant life or health within its territory"<sup>314</sup>, *in casu*, the level deemed appropriate by Japan.

8.82 Both parties also agree on the level of mortality that Japan is seeking with respect to codling moth.<sup>315</sup> We consider that, for present purposes, this level of mortality can be regarded as Japan's appropriate level of protection. Japan will lift the import prohibition if it can be replaced by a measure which achieves the same level of protection as that reached by the import prohibition. With respect to measures imposing disinfection, this level is complete mortality in large-scale tests on a minimum of 30,000 codling moths.<sup>316</sup> For the testing by product alternative, the question thus becomes *whether the treatment approved for the first variety of a product would meet the same level of protection, i.e., complete mortality in large-scale tests on a minimum of 30,000 codling moths, with respect to all other varieties of that product.*

8.83 Referring to the opinions we received from the experts advising the Panel, we consider that – to date and on the basis of the evidence before the Panel – it is not possible to state with an appropriate degree of certainty that one and the same treatment would be effective for all varieties of a product. In the view of the experts advising the Panel, there is no evidence before us which establishes a causal link between divergent quarantine efficacy and the presence of varietal differences (i.e., evidence which could justify Japan's varietal testing requirement).<sup>317</sup> However, at least one of the experts advising the Panel made equally clear that the US alternative of one treatment for all varieties, including those to be developed in the future, does not, to date, have a scientific basis either. In his answer to Panel question 16, Dr. Ducom states:

"The arguments put forth by Japan for requiring varietal trials are not based on scientific data. They are supported by a few experimental data in which varietal difference exists, in terms of LD<sub>50</sub>, among a lot of other data in which it does not ...

The arguments put forth by the USA are based on a large number of experiments, of which Japan has thoroughly made use.

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<sup>314</sup> Emphasis added.

<sup>315</sup> See paragraph 8.11.

<sup>316</sup> See paragraph 2.23 under "Large-Scale mortality test" and paragraph 8.11. See also answer by Dr. Heather summarized in paragraph 6.117.

<sup>317</sup> See paragraph 8.42.

Varietal difference appears several times, but each time, the confirmatory test has revealed sufficient efficacy. Extrapolation to all available varieties is no more scientific than the Japanese's contrary assertion. This sort of extrapolation is something along the order of intuition. It is unfortunate that there has not been a research program on the subject in order to try to present some scientific proof.<sup>318</sup>

8.84 Therefore, after having carefully examined all the evidence before us in light of the opinions we received from the experts advising the Panel, we are not convinced that there is sufficient evidence before us to find that testing by product would achieve Japan's appropriate level of protection for any of the products at issue.

(b) Alternatives derived from the testing of possible differences in sorption

(i) *Monitoring a predetermined CxT value during commercial treatment*<sup>319</sup>

8.85 The United States recognizes that the process of monitoring a predetermined CxT value could be less trade-restrictive than the current regime of testing by variety. For the United States, this would depend on a number of assumptions, including (1) the new treatment methodology would not apply for varieties already approved for entry to Japan nor for those varieties for which an application is currently pending; (2) with respect to new commodities, the initial variety on the basis of which the fixed CxT value would be determined, would not be subject to an on-site confirmatory test; and (3) since the treatment of apples also involves cold treatment, which is not affected by sorption, the approved treatment for some varieties of apples should be extended to all varieties of apples without further testing.

8.86 The United States submits that the question of technical and economic feasibility requires more extensive research and examination. The United States notes that increasing the time and/or dose of an MB treatment to achieve a particular CxT value could result in residues unacceptable for reasons of human health and/or conflict with applicable US environmental laws and regulations.<sup>320</sup> The United States also points out that in order to conduct precise measurements of CxT values, gas chromatographs would be required. However, for commercial applications of MB a fumiscope (which is less precise) is much more commonly available. Fumiscopes are also significantly less expensive and simpler to operate than gas chromatographs. The United States further argues that since monitoring of each treatment would be required, treatments would become more labour intensive than current applications of accepted treatments.

8.87 Japan submits that it does not have information on whether the process of monitoring a predetermined CxT value would be technically or economically feasible for exporting countries. Consequently, Japan is not certain if the process would be less trade-restrictive than the present regime.

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<sup>318</sup> Dr. Ducom's written answers, pp. 10-11, underlining added. At the meeting with the experts, Japan referred to this statement, noting that Dr. Ducom seems to concur "that there is no valid scientific ground to conclude that a treatment established for a particular variety by confirmatory tests would be efficacious for any additional variety" (Transcript, paragraph 10.92). Dr. Ducom replied as follows: " Yes that is correct. I mean I cannot see any more scientific basis on the Japanese side than on the USA's side to say [that each] variety must be carefully treated ... or for one we can have all varieties. I hope you understand. In my opinion it is not scientific to say that one variety is equal to all others ..." (Transcript, paragraph 10.93).

<sup>319</sup> This alternative is outlined in paragraph 8.76.

<sup>320</sup> In answering an additional Panel question, the parties referred to the Montreal Protocol on Substances that Deplete the Ozone Layer which mandates the phasing-out of MB in developed countries by 2005 (Article 2H). However, they also noted that the use of MB for quarantine and pre-shipment application is exempted from this phasing-out schedule (Article 2H:6). According to the United States, the production and importation of MB is to be phased-out in the United States by 1 January 2001. The United States noted that its administration has expressed a willingness to consult with the US Congress on changes to US law if alternatives do not exist for control of key pests as the 2001 phase-out date approaches.

8.88 When we asked the experts advising the Panel whether in their expert opinion the process would be technically and economically feasible, Dr. Ducom answered "yes".<sup>321</sup> Mr. Taylor stated that it is technically feasible, but reserved his judgment on the economic feasibility, adding that it is probably economically feasible.<sup>322</sup> Dr. Heather deferred to the other two experts.<sup>323</sup>

8.89 Referring to the arguments made by the parties<sup>324</sup>, the evidence before us and the opinions of the experts advising the Panel, we are of the view that, to date, there is not enough evidence before the Panel to enable us to find that the process of monitoring a predetermined CxT value would be technically and economically feasible and significantly less restrictive to trade than the current regime (i.e., fulfils the first and third element under Article 5.6).

8.90 We note, however, that according to the opinions of the experts advising the Panel<sup>325</sup>, this alternative would not only guarantee, to a high probability, quarantine efficacy irrespective of possible varietal differences, but also irrespective of any other variables such as crop-to-crop and year-to-year differences within the same variety, i.e., differences which are not taken into account under the current regime.<sup>326</sup>

(ii) *Determine whether the sorption level of additional varieties differs from that of the already approved variety*<sup>327</sup>

8.91 Japan does not contest that determining the sorption level of additional varieties, and comparing it with the sorption level of an approved variety, is "reasonably available taking into account technical and economic feasibility". The United States has given views which are consistent with this.<sup>328</sup>

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<sup>321</sup> See Transcript, paragraph 10.198.

<sup>322</sup> Mr. Taylor stated:

"Yes I have to agree with Dr. Ducom. In many cases of course of fumigation of other situations, such as the treatment of flour mills, there is regular monitoring, as we call it, of the fumigant level. It may be necessary to increase the fumigant concentration by adding more fumigant for example, because of some factor, maybe leakage, etc., so I mean this is certainly something that can be done, and is done, and if this type of technology was employed whereby the concentration is monitored regularly and it is found to reach the required level, in other words, you will end up with the CxT product value that you have said is necessary, then this will be an effective treatment and I mean so this is technically feasible. I will reserve judgment on the economic feasibility to those that know more about the topic than myself. But probably it is. I would think it to be probably technically and economically feasible." (Transcript, paragraph 10.200).

<sup>323</sup> Dr. Heather stated:

"I'd have to defer to my colleagues who know more, who have more practical experience of fumigation, but I am aware that grain in my home State is controlled by the use of a CxT approach rather than an outright dose" (Transcript, paragraph 10.202).

<sup>324</sup> See paragraphs 8.85-8.87.

<sup>325</sup> See paragraph 8.76 and footnote 308.

<sup>326</sup> See, for example, the statement by Dr. Ducom that

"[a] CT value is universal once the target stage and the treatment temperature are defined. All the other factors matter little, even the nature of the commodity, since they are accounted for by the measurement of gas concentration" (Dr. Ducom's answer to Panel question 10).

<sup>327</sup> This alternative is outlined in paragraph 8.77.

8.92 Under this alternative, the initial variety of a product would be subject to the existing testing requirements; a certain treatment (including a fixed exposure time, dose and temperature) would then be determined. For additional varieties there would only be a need to determine to what extent, if any, the sorption characteristics of the additional varieties differ from those already approved. Such determination would only require a one-time test for each additional variety. According to the experts advising the Panel, this test would be a relatively easy one; at least easier to conduct than the currently required dose-mortality test since it involves neither codling moths nor LD trials. In this respect, Dr. Ducom notes the following:

"I just advise something about sorption. Levels are important for varieties but that means no insects, no LD<sub>50</sub> trials to show that sorption is different. I mean we don't need any insects and any dose mortality tests to show that sorption is different and it makes very different, it's very easy, it's easier to run a sorption test than the dose mortality test. That's an important point in practice".<sup>329</sup>

Mr. Taylor, in turn, states:

"... there are quite well known methods by which accurate levels of sorption can be tested ... certainly techniques such as these have been conducted over many years so there should be no problem in actually conducting these trials. As Dr. Ducom said, to determine the sorption of fumigant would not involve insects in these test, just the gas and the commodity, and from these tests to see to what extent there is a difference between varieties as between commodities, and to determine just to what extent this is an important factor and whether the level of sorption is very high or very little difference exists between the two".<sup>330</sup>

8.93 If, as a result of sorption tests, the sorption level of the additional variety is *not* higher than the sorption level of the initial variety, the same treatment can be applied for both varieties, without further testing or confirmation. If the sorption level of the additional variety *is* higher than that of the initial variety, it could then be determined – if need be by means of additional tests – whether the level of sorption is of sufficient magnitude to reduce the concentration of MB gas below the level of insect mortality required by Japan.<sup>331</sup> If this were to be the case, a different commercial treatment for the additional variety could then be imposed.

8.94 On these grounds, we consider that the process of determining the sorption level of additional varieties can be presumed to be "reasonably available taking into account technical and economic feasibility" (i.e., to meet the first element under Article 5.6).

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<sup>328</sup> The United States did not specifically address the technical and economic feasibility of this third alternative. However, the Panel considered all other US arguments in this respect. None of these arguments go against the idea that this third alternative would be technically and economically feasible.

<sup>329</sup> Transcript, paragraph 10.142. See also Dr. Ducom's statement, Transcript, paragraph 10.188.

<sup>330</sup> Transcript, paragraph 10.192. See also Dr. Ducom's written answers, p. 8 ("Research on the CT per variety is an operation which could be rapidly conducted, since only the variety of fruit to be tested is used. Fumigation only lasts two hours and the result is known immediately") and p. 11 ("For the USA, this system is quick and low-cost").

<sup>331</sup> The experts advising the Panel noted that the differences in sorption would need to be significant in order to affect treatment efficacy. See Mr. Taylor's answer to Panel question 9, at paragraph 6.67 and his statement at the meeting with the experts, Transcript, paragraph 10.82; Dr. Heather's answer to Panel question 10, at paragraph 6.81;

8.95 Japan does not contest that the process of determining the sorption level of additional varieties is "significantly less restrictive to trade" than the varietal testing requirement. The United States has given views which are consistent with this.<sup>332</sup>

8.96 Under this alternative, testing for most (if not all) additional varieties would be limited to a sorption test. If the sorption level is *not* higher than that of already approved varieties, no further testing or confirmation would be required. In that event, market access would be obtained significantly more easily than under the current regime. If the sorption level *is* higher than that of already approved varieties, further examination and, if need be, additional testing could then be required. In that case, market access would be obtained in circumstances no more difficult than under the current regime.

8.97 On these grounds, we consider that the process of determining the sorption level of additional varieties can be presumed to be "significantly less restrictive to trade" than the varietal testing requirement (i.e., to meet the third element under Article 5.6).

8.98 Japan has *not* accepted that the process of determining the sorption level of additional varieties would achieve its appropriate level of protection. The United States, on the other hand, suggests that this process *would* meet Japan's appropriate level of protection".<sup>333</sup>

8.99 We recall that it is for Japan to determine its level of phytosanitary protection and that, in this case, the level of mortality sought by Japan for codling moth is not in dispute.<sup>334</sup> Japan's level of mortality is complete mortality in large-scale tests on a minimum of 30,000 codling moths.<sup>335</sup> For the alternative of determining the sorption level of additional varieties, the question thus becomes *whether the treatment approved for the initial variety of a product would meet the same level of protection, i.e., complete mortality in large-scale tests on a minimum of 30,000 codling moths, with respect to all other varieties of that product which have the same (or lower) sorption levels as the initial variety.*

8.100 According to the experts advising the Panel, this would be the case.<sup>336</sup> Dr. Ducom notes, for example:

"If varieties are tested to find the CT value [an indication of the amount of fumigant sorbed], then no further testing is necessary ... The results of these tests are sufficient in themselves to give confidence in the conformity of the varietal candidate without having to include the reference variety and insects for efficacy confirmation".<sup>337</sup>

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<sup>332</sup> The United States did not specifically address whether this third alternative is significantly less trade-restrictive. However, the Panel considered all other US arguments in this respect. None of these arguments go against the idea that this third alternative would be significantly less trade-restrictive.

<sup>333</sup> The United States did not specifically address whether this third alternative would meet Japan's appropriate level of protection. However, the United States submits that testing by product would meet Japan's level of protection. Since this third alternative is more stringent than testing by product, it can thus be presumed that the US view on this alternative would be that it *a fortiori* meets Japan's level of protection.

<sup>334</sup> See paragraphs 8.81-8.82.

<sup>335</sup> See paragraph 2.23 under "Large-Scale mortality test" and paragraph 8.11. See also answer by Dr. Heather summarized in paragraph 6.117.

<sup>336</sup> See the expert opinions referred to in footnote 311.

<sup>337</sup> Dr. Ducom's written answer to Panel question 11, underlining added. See also Dr. Ducom's written answers to the Panel's question, p. 11: "For Japan, [the alternative] is acceptable in terms of efficacy". Dr. Ducom then refers to a statement by Japan itself according to which "the CT value, a known indicator to control the degree of efficacy of the treatment, will vary as well depending on the variety of the fruit" (First submission of Japan, paragraph 78).

Mr. Taylor, in turn, states:

"CxT values are used to indicate the fumigant concentration and exposure period required to achieve a 99% mortality of all development stages of an insect at a particular temperature and humidity under practical conditions. If these values were obtained for additional varieties and were found to fall within the range already observed for other varieties it would be difficult to justify why further testing would be necessary".<sup>338</sup>

8.101 On the basis of the evidence before the Panel and the views we received from the experts advising the Panel, we thus consider that it can be presumed that the process of determining the sorption levels of additional varieties – so as to ensure that these levels do not differ in a way which would affect the efficacy of MB treatment – "achieves [Japan's] appropriate level of ... phytosanitary protection" (i.e., meets the second element under Article 5.6). We also consider that Japan has not been able to rebut this presumption.

(c) The Panel's conclusion under Article 5.6

8.102 Irrespective of whether Article 2.2 is violated in this case, we offer the following conclusion with respect to Article 5.6. Indeed, even if we were to have found that Japan's measure is maintained with sufficient scientific evidence in accordance with Article 2.2, we would then be called upon to examine whether the measure is consistent with Article 5.6.

8.103 We have considered above that – on the basis of the evidence before the Panel and the opinions of the experts advising the Panel – it can be presumed that an alternative measure exists (i.e., determining the sorption level of additional varieties as described in paragraphs 8.76 and 8.91 and following) which would meet all of the elements under Article 5.6.<sup>339</sup> In so doing, we are not endorsing this or any other specific alternative measure as the measure to be put in place by Japan.

8.104 We thus conclude that the varietal testing requirement maintained by Japan is more trade-restrictive than required within the meaning of Article 5.6. For the same reasons as those outlined in paragraphs 8.44 and 8.45, on the basis of the evidence before us, we only make this finding with respect to apples, cherries, nectarines and walnuts.

## H. TRANSPARENCY OF PHYTOSANITARY MEASURES (ARTICLE 7 AND ANNEX B OF THE SPS AGREEMENT)

### 1. Arguments by the parties

8.105 The United States also claims that the varietal testing requirement has not been published, making it inconsistent with Article 7 of the SPS Agreement.

8.106 Japan does not contest that the varietal testing requirement is in effect and applied. Japan acknowledges, moreover, that it has not been published. Japan argues, however, that the guidelines developed by the MAFF concerning confirmation of efficacy of a disinfestation treatment have been distributed to foreign plant quarantine authorities for the purpose of transparency. Japan stresses, moreover, that these guidelines are available to any interested foreign government through Japan's

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<sup>338</sup> Mr. Taylor's written answer to Panel question 11, underlining added.

<sup>339</sup> See paragraphs 8.94, 8.97 and 8.101.

Enquiry Point in accordance with paragraph 3 (b) of Annex B to the SPS Agreement and that anyone who wants to know more about approved products can refer to the MAFF notifications published in the Official Gazette or contact MAFF itself. Japan further contends that the guidelines do not constitute enforceable phytosanitary "regulations" under paragraph 1 of Annex B. According to Japan, they are only a model and are not mandatory since exporting countries may choose to demonstrate efficacy of treatment by other means. Finally, according to Japan, these guidelines are not generally published because they are a highly technical document addressed to foreign plant quarantine authorities.

8.107 In response, the United States submits that irrespective of the informal process by which US scientists, in consultation with Japan, have devised procedures to test by variety, the fact remains that the varietal testing requirement itself should be published. According to the United States, the net result is that absent such publication, an exporter has no way to discern what is necessary to move a product from the prohibited list to a list approved by Japan for entry.

## 2. Evaluation by the Panel

8.108 We note that Article 7 provides in relevant part:

"Members ... shall provide information on their ... phytosanitary measures in accordance with the provisions of Annex B".

Paragraph 1 of Annex B, in turn, states that:

"Members shall ensure that all ... phytosanitary regulations which have been adopted are published promptly in such a manner as to enable interested Members to become acquainted with them".

A footnote to this paragraph specifies that the "phytosanitary regulations" referred to are:

"phytosanitary measures such as laws, decrees or ordinances which are applicable generally".

8.109 Therefore, in our view, for a measure to be subject to the publication requirement in Annex B, three conditions apply: (1) the measure "[has] been adopted"<sup>340</sup>; (2) the measure is a "phytosanitary regulation"<sup>341</sup>, namely a phytosanitary measure such as a law, decree or ordinance<sup>342</sup>, which is (3) "applicable generally".<sup>343</sup>

8.110 The fact that the varietal testing requirement challenged by the United States "[has] been adopted" and is "applicable generally" is not in dispute. We only need to examine whether this requirement is a "phytosanitary regulation" in the sense of paragraph 1 of Annex B.

8.111 Even though the varietal testing requirement is not mandatory – in that exporting countries can demonstrate quarantine efficiency by other means – in our view, it does constitute a "phytosanitary regulation" subject to the publication requirement in Annex B. The footnote to paragraph 1 of Annex B refers in general terms to "phytosanitary measures such as laws, decrees or

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<sup>340</sup> See paragraph 1 of Annex B of the SPS Agreement.

<sup>341</sup> *Ibid.*

<sup>342</sup> See footnote to paragraph 1 of Annex B.

<sup>343</sup> *Ibid.*

ordinances".<sup>344</sup> Nowhere does the wording of this paragraph require such measures to be mandatory or legally enforceable. Moreover, Paragraph 1 of Annex A to the SPS Agreement makes clear that "phytosanitary measures include all relevant laws, decrees, regulations, requirements and procedures". It does not, in turn, require that such measures be mandatory or legally enforceable. The interpretation that measures need not be mandatory to be subject to WTO disciplines is confirmed by the context of the relevant SPS provisions, a context which includes provisions of other WTO agreements and the way these provisions define "measure", "requirement" or "restriction"<sup>345</sup>, as interpreted in GATT and WTO jurisprudence.<sup>346</sup> This context indicates that a non-mandatory government measure is also subject to WTO provisions in the event compliance with this measure is necessary to obtain an advantage from the government or, in other words, if sufficient incentives or disincentives exist for that measure to be abided by.

8.112 We consider that in this case the varietal testing requirement, as set out in the "Experimental Guide for Cultivar Comparison Test on Insect Mortality – Fumigation" (hereafter referred to as "the guidelines"), does provide sufficient incentives for it to take effect. Indeed, if an exporting country abides by the guidelines, its request for entry of a certain variety of a product will be granted. If an exporting country accepts the varietal testing requirement and follows the guidelines, it will do so in order to obtain an advantage from the government. We thus consider that the varietal testing requirement is a phytosanitary regulation in the sense of paragraph 1 of Annex B.

8.113 We note, moreover, that even though Japan submits that the guidelines are only a test model and that exporting governments may choose to demonstrate efficacy of treatment by other means, Japan asserts that so far no exporting government ever proposed such other means<sup>347</sup> and that Japan, accordingly, never accepted any alternative means.

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<sup>344</sup> In accordance with Article 3.2 of the DSU and established WTO jurisprudence, we shall interpret these terms in paragraph 1 of Annex A in accordance with the interpretative rules of the 1969 Vienna Convention on the Law of Treaties ("Vienna Convention"), in particular Article 31 thereof which provides in relevant part as follows: "1. A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in light of its object and purpose".

<sup>345</sup> For example, the Illustrative List of Trade-Related Investment Measures ("TRIMs") contained in the Annex to the Agreement on TRIMs indicates that TRIMs inconsistent with Articles III:4 and XI:1 of the GATT include those which are "mandatory or enforceable under domestic law or under administrative rulings, or compliance with which is necessary to obtain an advantage" (emphasis added).

<sup>346</sup> Recently, for example, the panel on *Japan – Measures Affecting Consumer Photographic Film and Paper* (adopted on 22 April 1998, WT/DS44/R), addressing a claim of non-violation nullification and impairment under Article XXIII:1(b) of the GATT, stated the following (at paragraph 10.49):

"a government policy or action need not necessarily have a substantially binding or compulsory nature for it to entail a likelihood of compliance by private actors in a way so as to nullify or impair legitimately expected benefits within the purview of Article XXIII:1(b). Indeed, it is clear that non-binding actions, which include sufficient incentives or disincentives for private parties to act in a particular manner, can potentially have adverse effects on competitive conditions of market access".

See also the panel report on *Japan – Trade in Semi-Conductors* (adopted on 4 May 1988, BISD 35 S/116), where the panel found (at paragraph 109) that although measures are not mandatory, they could be considered as "restrictions" subject to Article XI:1 of the GATT in the event "sufficient incentives or disincentives existed for non-mandatory measures to take effect". Similarly, the panel on *EEC – Regulation on Imports of Parts and Components* (adopted on 16 May 1990, BISD 37S/132) considered (at paragraph 5.21) that the term "laws, regulations or requirements" contained in Article III:4 of the GATT included requirements "which an enterprise voluntarily accepts in order to obtain an advantage from the government".

<sup>347</sup> The United States, however, asserts that it did propose alternatives, including 100 per cent inspection of certain apples and inspection for certification of cherries (in both instances without fumigation) and the use of a systems approach for nectarines, but that Japan rejected these alternatives.

8.114 We thus find that the varietal testing requirement meets all three conditions for a measure to be subject to the publication requirement in paragraph 1 of Annex B. The requirement thus needs to be "published promptly in such a manner as to enable interested Members to become acquainted with them".

8.115 Japan acknowledges that it has not published the varietal testing requirement. The fact that Japan distributed the guidelines to foreign plant quarantine authorities does not mitigate the lack of publication. In our view, distribution to a limited number of addressees and MAFF's general availability to answer any queries, does not equal prompt publication which enables interested Members to become acquainted with the varietal testing requirement. The publication by MAFF of the protocols relating to approved products does not ensure publication of the varietal testing requirement itself. It only informs Members of products which have met this requirement. Moreover, we do not consider that the highly technical nature of the varietal testing requirement can excuse Japan from publishing it.

### **3. The Panel's conclusion under Article 7**

8.116 On these grounds<sup>348</sup> we conclude that Japan, by not having published the varietal testing requirement, acts inconsistently with its obligations under paragraph 1 of Annex B of the SPS Agreement and, for that reason, with its obligations contained in Article 7 of that Agreement. Since Japan has not published the measure at issue with respect to any of the products falling within our mandate, our finding applies to all of these products.

#### **I. OBLIGATIONS WITH RESPECT TO CONTROL, INSPECTION AND APPROVAL PROCEDURES (ARTICLE 8 AND ANNEX C OF THE SPS AGREEMENT)**

8.117 Given that we have found earlier that the varietal testing requirement is inconsistent with the requirements of Articles 2.2<sup>349</sup>, 5.6<sup>350</sup> and 7<sup>351</sup> of the SPS Agreement, we see no need to further examine whether it is also inconsistent with Article 8, referring to Annex C, of that Agreement.

#### **J. CONCLUDING REMARK**

8.118 In footnote 320, we noted that the parties to this dispute referred to the fact that the substance methyl bromide – used in the quarantine treatments at issue here – needs to be phased-out in accordance with the Montreal Protocol on Substances that Deplete the Ozone Layer ("Montreal Protocol"). However, the parties to this dispute also noted that Article 2H:6 of the Montreal Protocol exempts the use of Methyl Bromide for quarantine and preshipment application from this phasing-out schedule.

8.119 Without embarking on an examination of the Montreal Protocol, we do want to stress that nothing in this report should be read in a way which would affect the rights and obligations of WTO Members party to the Montreal Protocol.

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<sup>348</sup> See paragraphs 8.108 - 8.115.

<sup>349</sup> See paragraph 8.61.

<sup>350</sup> See paragraph 8.104.

<sup>351</sup> See paragraph 8.116.

## IX. CONCLUSIONS

9.1 In light of the findings above, we reach the conclusion that Japan

- (i) by maintaining the varietal testing requirement in dispute with respect to apples, cherries, nectarines and walnuts, acts inconsistently with its obligation under Article 2.2 of the SPS Agreement not to maintain phytosanitary measures "without sufficient scientific evidence, except as provided for in paragraph 7 of Article 5"; and
- (ii) by maintaining the varietal testing requirement in dispute with respect to apples, cherries, nectarines and walnuts, acts inconsistently with its obligation in Article 5.6 of the SPS Agreement to "ensure that [its phytosanitary] measures are not more trade-restrictive than required to achieve [Japan's] appropriate level of ... phytosanitary protection, taking into account technical and economic feasibility"; and
- (iii) by not having published the varietal testing requirement in dispute with respect to any of the products at issue, acts inconsistently with its obligations under paragraph 1 of Annex B of the SPS Agreement and, for that reason, with its obligations contained in Article 7 of that Agreement.

9.2 Since Article 3.8 of the DSU provides that "[i]n cases where there is an infringement of the obligations assumed under a covered agreement [including the SPS Agreement], the action is considered *prima facie* to constitute a case of nullification or impairment", we conclude that to the extent Japan has acted inconsistently with the SPS Agreement it has nullified or impaired the benefits accruing to the United States under the SPS Agreement.

9.3 We *recommend* that the Dispute Settlement Body request Japan to bring its measure in dispute into conformity with its obligations under the SPS Agreement.