

**MONTREAL PROTOCOL
ON SUBSTANCES THAT DEplete
THE OZONE LAYER**



UNEP

**REPORT OF THE
TECHNOLOGY AND ECONOMIC ASSESSMENT PANEL**

AUGUST 2007

**EVALUATIONS OF 2007 CRITICAL USE NOMINATIONS FOR METHYL
BROMIDE AND RELATED MATTERS**

FINAL REPORT

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On Substances that Deplete the Ozone Layer**

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Glossary of Acronyms

1,3-D	1,3-dichloropropene
A5	Article 5 Party
CEIT	Countries with Economies in Transition
CUE	Critical Use Exemption
CUN	Critical Use Nomination
EC	European Commission
EPA	Environmental Protection Agency
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
ISPM	International Standard Phytosanitary Measure
LPBF	Low Permeability Barrier Film
MB	Methyl bromide
MBTOC	Methyl Bromide Technical Options Committee
MBTOC QSC and	Methyl Bromide Technical Options Committee Quarantine, Structures and Commodities Subcommittee
MBTOC S	Methyl Bromide Technical Options Soils Subcommittee
MOP	Meeting of the Parties
MRL	Maximum Residue Level
MS	Metham sodium
NPMA	National Pest Management Association
OEWG	Open Ended Working Group
Pic	Chloropicrin
PMRA	Pest Management Regulatory Agency (of Canada)
QPS	Quarantine and Pre-shipment
SF	Sulfuryl fluoride
TEAP	Technology and Economics Assessment Panel
VIF	Virtually Impermeable Film

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1. Scope of this Report

This 2007 final report provides final evaluations of MBTOC/TEAP on CUNs submitted for methyl bromide use by Parties in 2007, in accordance with Decision IX/6 (refer Annex 1 of this report). CUNs were submitted to the Ozone Secretariat by the Parties in January 2007 and have been assessed following the timetable set out in the Annex 1 referred to by Decision XVI/4 (Annex II). The condensed timetable for preparation of this report was necessary in order to meet the revised schedule this year for the 20th anniversary meeting of the Montreal Protocol.

During the past year, MBTOC has provided an interim CUN Report, Progress Report (TEAP, 2007) and an Assessment Report (MBTOC, 2007) which report on MB production and consumption figures, case studies on alternatives, an update of new information on the performance of alternatives and an estimate of the trends in global emissions of methyl bromide.

This progress report provides the Parties with recommendations of Critical Use Nominations submitted by Parties in 2007 for use of methyl bromide in either 2008 or 2009. The report also provides tables and figures of trend lines in critical use exemptions and the criteria by which CUNs are assessed. A revision of the standard presumptions for some preplant uses of MB is included for consideration at the 19th MOP. This information is submitted in order to meet the requirements to review management strategies submitted by Parties pursuant to Decision Ex.I/4(9d) and to report on the amount of methyl bromide nominated for critical use by the Parties as per Decision XVII/9(10).

In late 2006, TEAP Co-Chairs announced a reorganization of MBTOC, separating it formally into two independent sub-committees, recognizing the differing expertise required for the two main groupings of CUNs, those relating to postharvest and structural uses and those involved with soil fumigation. MBTOC Quarantine, Structures and Commodities (MBTOC QSC) has responsibility for issues concerning methyl bromide uses and alternatives for quarantine, pre-shipment, structural and commodities. Additionally, MBTOC QSC has absorbed the membership of the former Quarantine Task Force. MBTOC Soils has responsibility for the pre-plant uses and alternatives of methyl bromide. Evaluations of CUNs for the two categories are reported separately below.

2. Critical Use Nominations for Methyl Bromide

2.1 Mandate

Under Article 2H of the Montreal Protocol the production and consumption (defined as production plus imports minus exports) of methyl bromide is to be phased out in Parties not operating under Article 5(1) of the Protocol, by 1 January 2005. However, the Parties agreed to a provision enabling exemptions for those uses of methyl bromide that qualify as critical. Parties established criteria, under Decision IX/6 of the Protocol, which all such uses need to meet in order to be granted an exemption. MBTOC provides guidance to the Parties' decisions on critical use exemptions in accordance with Decisions IX/6 and Annex I of Decision XVI/4. Refer to Annexes I and II of this report for copies of these Decisions.

2.2 Fulfilment of Decision IX/6

Decision XVI/2 directed MBTOC to indicate whether all CUNs fully met the requirements of Decision IX/6. When the requirements of Decision IX/6 were met, MBTOC recommended the full amount of the nomination. Where some of the conditions were not fully met, MBTOC recommended a decreased amount, or was unable to assess, depending on its technical and economic evaluation. MBTOC reduced a nomination when a technical alternative was considered effective or, in a few cases, when the Party failed to show that it was not effective. In this round of CUNs, as in previous rounds, MBTOC considered all information provided by the Parties, including to answers to questions requested by MBTOC, up to the date of the final assessment. .

In the past two years, with accumulation of experience, MBTOC has become firmer in judging merits of CUNs in the light of the requirements of Decision IX/6. Applicants and Parties are expected to conduct research and/or evaluate the research conducted by others in the circumstances of their nomination, to document that effort and submit the documents to MBTOC. Documents should take the form of reports of field trials and commercial scale up trials, directly pertinent to the circumstances of that particular nomination. MBTOC has encountered difficulty in assessment when yield losses presented in some nominations differ markedly from those reported in a large number of studies in similar circumstances and are not substantiated by references. In post-harvest where research based economics data is less often available, we are asking Parties to substantiate costs estimates.

Now that alternatives have been identified for most applications, regulations on the use of these alternatives and comparative information on the economic feasibility/infeasibility of their use compared to MB are critical to the outcomes of present and future CUNs. Without this information, further CUNs may not be assessable. In some cases, MBTOC has proposed potential research and regulatory issues to Parties that could assist the phase out of MB. In paragraph 20 of Annex 1 referred to in Decision XVI/4, Parties, inter alia, specifically requested that, in cases where a nomination relies on the economic criteria of Decision IX/6, MBTOC's report should explicitly state the central basis for the Party's economic argument

relating to CUNs. Tables 4 and 8 provide this information for each CUN that relied on economic criteria.

2.3 Consideration of Stocks

One criterion for granting a critical use under Decision IX/6 is that methyl bromide for the use “is not available in sufficient quantity and quality from existing stocks of banked or recycled methyl bromide” (para. 1 (b) (ii)). Parties nominating critical use exemptions are requested under decision Ex.I/4(9f) to submit an accounting framework to the information on stocks. Since the consideration of stocks is an active area of negotiation for the Parties, and given that the information received from the Parties is incomplete, MBTOC has not made an adjustment to a nomination to account for stocks held and has relied on Parties to make this adjustment.

In accordance with Decision XVIII/13(7), a summary of the data on stocks reported by the Parties in 2007 for 2006 has been summarized in Table 2 below. Parties may wish to consider this information in the light of Decision IX/6 1(b)(ii). Tables 1 and 2 show the stock data that have been reported by the Parties in 2006 and 2007.

Table 1. Quantities of MB ‘on hand’ at the beginning and end of 2005, as reported by Parties in 2006 under Decision XVI/6.

Party	Critical use exemptions authorized by MOP for 2005	Quantity of MB as reported by Parties (metric tonnes)				
		Amount on hand at start of 2005	Quantity acquired for CUEs in 2005 (production +imports)	Amount available for use in 2005	Quantity used for CUEs in 2005	Amount on hand at the end of 2005
Australia	146.600	0	114.912	114.912	114.912	0
Canada	61.792	0	48.858	48.858	45.146	3.712
EC	4,392.812	216.198	2,435.319	2,651.517	2,530.099	121.023
Israel	1,089.306	16.358	1,072.350	1,088.708	1,088.708	0
Japan	748.000	0	546.861	546.861	546.861	0
New Zealand	50.000	6.900	40.500	47.400	44.580	2.810
USA(a)	9,552.879		7,613.000	not reported	7,170.000	443.000

(a) Additional information on stocks was reported on US EPA website, September 2006: Methyl bromide inventory held by US companies: 2004 = 12,994 tonnes; 2005 = 9,974 tonnes.

Table 2. Quantities of MB 'on hand' at the beginning and end of 2006, as reported by Parties in 2007 under Decision XVI/6.

Party	Critical use exemptions authorized by MOP for 2006	Quantity of MB as reported by Parties (metric tonnes)				
		Amount on hand at start of 2006	Quantity acquired for CUEs in 2006 (production + imports)	Amount available for use in 2006	Quantity used for CUEs in 2006	Amount at the end of 2006
Australia	75.100	0	55.308		55.308	0
Canada	53.897	3.7	41.967	54.667	Not yet available	Not yet available
EC	3,527.030	114.953	1,472.781	1,587.734	[1,519.184](a)	[68.550](a)
Israel	880.295	-	-	-	-	-
Japan	741.400	70.735	488.810	559.545	540.207	19.338
USA	8,081.753	9,974.000(b) 443.000(c)	6,924.000	16,898.000(d) 443.000 (c)	7,168.000(e)	8,210.000(f) 443.000 (c)

(a) Preliminary data subject to update.

(b) Amount of pre-2005 stock on hand.

(c) Amount of stocks at the end of 2005 from production/imports specifically made for CUEs (acquired in 2005).

(d) The sum of 9,974 of pre-2005 stocks + 6,924 tonnes produced/imported in 2006 for CUEs.

(e) The sum of 6,384 tonnes of production/imports for CUEs plus 784 tonnes used from stocks.

(f) The sum of 539 tonnes of stocks produced/imported in 2006 specifically for CUEs, plus 7,671 tonnes stocks acquired pre-2005.

2.4 Disclosure of Interest

All MBTOC members have prepared disclosure of interest forms relating specifically to their level of national, regional or enterprise involvement for the 2007 CUN process, according to a standardised format developed by TEAP. This was required to ensure that those with a high level of involvement and interest in developing a particular nomination did not bias the process of evaluation through participation in the detailed review. The Disclosure of Interest declarations are found in Annex V. As in previous rounds, some members withdrew from a particular CUN assessment or only provided technical advice on request for those nominations where a potential conflict of interest was declared.

3. Evaluations of CUNs – 2007 Round for 2008 and 2009 Exemptions

Each MBTOC sub-committee held two meetings in 2007 to assess the CUNs. The first meeting of each sub-committee was held concurrently in Alassio, Italy March 19 – 23 to prepare the interim recommendations. Following further clarification from the Parties of issues arising from the initial assessment of the CUNs, each subcommittee required a second meeting to finalise assessments. MBTOC QSC met in College Park, Maryland, June 30 – July 3 and MBTOC Soils in San Jose Costa Rica from July 10-13. These meetings were held earlier than usual in order to meet the report schedule required for the 19 MOP in Canada in September of 2007.

In total, 5 Parties (7 countries - Australia, Canada, Israel, Japan, Poland, Spain and USA), who had previously received CUEs for specific MB uses, submitted 58 nominations in this round, compared to 60 submitted in the previous round in 2006. Nominations were no longer submitted from New Zealand or the EC for the following countries - France, Greece, Ireland, Italy, The Netherlands and United Kingdom. CUNs in this report relate to CUEs sought for 2008 and 2009. Nominations from Spain, Poland were for 2008, Australia, Canada, Japan and USA for 2009 and Israel for both 2008 and 2009. No nominations in this particular round were submitted for longer periods.

For post-harvest uses of MB, Parties submitted 15 CUNs for the use of MB in structures and commodities in 2007. Of the 2007 nominations, 7 were for 2008 for a total of 11.535 tonnes. Of nominations for 2008, MBTOC QSC recommended 9.179 tonnes. This figure does not include a recommendation for Australia rice 2008. The Australia rice evaluation for 2008, and the Meeting report of the 27 OWEG, para 128, explain the declaration of the Government of Australia on this matter. MBTOC did not recommend one CUN.

Of the 2007 post-harvest nominations 8 were for 2009 for a total of 478.719 tonnes. TEAP report of April 2007 report noted this figure as 529.721 tonnes. However, since that report, the USA has withdrawn the cocoa segment of the NPMA CUN (51.002 tonnes). Of the nominations for 2009, MBTOC QSC recommended a total of 451.178 tonnes.

For soil uses, Parties submitted 43 CUNs in total, 15 nominations for 2008 and 28 nominations for 2009. These totalled 1123.146 and 5575.242 metric tonnes respectively. Nominations from Spain and Poland were for 2008, Australia, Canada, Japan and the US for 2009 and Israel for both 2008 and 2009. No nominations in this particular round were submitted for longer periods. A use previously nominated by USA (sweet potato production, including production of nursery stock) was presented for the first time by Israel. The nomination was explained as arising from unprecedented expansion in the sector and is envisaged for 2 years only, whilst a feasible alternative becomes registered.

The US delegation made arrangements to meet with MBTOC Soils during the Alassio and San Jose meetings for discussions with regard to their CUNs, in accordance with paragraph 8 of Annex 1 referred to in Decision XVI/4.

For the 2007 round, MBTOC Soils has recommended a total of 5291.867 tonnes, being 1102.706 tonnes for 2008 and 4189.161 tonnes for 2009. An amount of 91.69 tonnes was not recommended for 2008, and 536.286 tonnes not recommended for 2009. An amount of 848.795 tonnes for 2009 of the Israeli CUNs remained unable to assess pending further information (Table 5).

3.1 Critical Use Nominations Review

A soil subcommittee in MBTOC considered the nominations relating to the use of MB for soil fumigation, while MBTOC QSC considered the nominations relating to the use of MB for fumigation of commodities, structures and objects. This report and decisions of the committee were by consensus, recognizing that different perspectives exist within the committee on certain aspects.

In general, the most recent CUE approved by the Parties for a particular application was used as a benchmark for consideration of continuing nominations. In some instances, this benchmark differed from that used by the nominating Party.

In considering the CUNs submitted in 2007, both MBTOC sub-committees applied the standards contained in Annex I of 16MOP, and, where relevant the standard presumptions given at the start of each sub committee report (Sections 4 and 5). In particular, MBTOC sought to provide consistent treatment of CUNs within and between Parties while at the same time taking local circumstances into consideration for specific crops and situations, and to provide transparency in its processes and conclusions.

3.1.1 Consideration of Alternatives

As in previous years, MBTOC used the guidance given in the Annex I referred to in Decision XVI/4 where ‘alternatives’ were defined as any practice or treatment that can be used in place of methyl bromide. ‘Existing alternatives’ are those alternatives in present or past use in some regions; and ‘potential alternatives’ are those alternatives in the process of investigation or development.

MBTOC also used information on the suitability of alternatives for a nomination by considering the commercial adoption of alternatives in regions nominated for CUNs. Also, adoption in regions with similar climatic zone and cropping practices was used as an indication of the feasibility (technical and economic) of an alternative in a similar region. For example for preplant soil uses of MB, 1,3-dichloropropene/chloropicrin (1,3-D/Pic), metham sodium alone or in combination with Pic, dazomet, substrates and the use of resistant varieties and grafted plants (for solanaceous crops, melons and other cucurbits) have been adopted to replace MB for a range of crops in industries applying for CUNs and in many regions where MB was once used.

MBTOC evaluation of CUNs relating to production of strawberries, tomatoes and some other crops was assisted by information provided by a large number of published studies on MB alternatives and by a meta-analysis (TEAP 2006). The published studies provided additional transparency to MBTOC evaluations, as requested by the Parties in Decision XV/4.

Rate of change in commercial adoption, partly as a result of rapidly changing regulation, challenges MBTOC's ability to make diligent recommendations in the use of alternatives for post-harvest applications, especially when recommendations are considered for one or two years in the future. In post-harvest applications, where research is minimal, but commercial adoption trials are more common, MBTOC needs Parties and the affected industries to release the results of commercial trials, using group reporting methods when data is judged to be proprietary.

For commodity and structural applications, it was assumed that technically and economically feasible alternatives would provide disinfestation to a level that met the objectives of a MB treatment, e.g. meeting infestation standards in finished product from a mill, while ensuring the costs were economically feasible in the context of that nomination, to the extent that could be determined.

Technically feasible alternatives do not necessarily provide superior pest control results than are achieved in practice by MB; economically feasible alternatives do not necessarily cost the same as MB.

MBTOC has to be knowledgeable about regulatory advances, but in post-harvest applications domestic, import and export regulations all play a role that complicates adoption of alternatives. Several post-harvest CUNs indicate that if importing Parties were to set maximum residue levels for fluoride in foods, then the use of alternatives, for both food and structural applications by exporting countries, would improve. This year, as MBTOC was making its final recommendations, some Parties published maximum residue levels for fluoride in several foods, or only in imported foods as in the case of Canada. Given the newness of these announcements, the impact of these publications on actual MB use for 2007 and 2008 was difficult to predict.

3.2 Rate of Adoption of Alternatives

MBTOC recognizes that time is needed to effect phase-in of alternatives and accepts this as a reasonable technical argument for lack of availability to the user *sensu* Decision IX/6.

Some CUNs in the 2007 round argued that time was required to allow the relevant industry to transition to available effective alternatives. Most CUNs showed a reduction in nominated quantity requested from that of the preceding year, reflecting progressive adoption of alternatives; while others had the same or similar quantities of MB nominated to the preceding CUNs. Some CUNs showed comparatively slow rates of adoption, and also indicated that the Party expected that only part of the sector might be able to transition. As a result, MBTOC informs Parties that without change, some CUNs may be submitted for the next 5-8 years.

In some cases, alternatives at varying stages of readiness for adoption, were identified by the Party in the CUN and, in others, they were identified by MBTOC. MBTOC reviewed the technical information on alternatives and the commercial adoption of alternatives by Parties previously using MB in similar sectors to those where CUNs had been sought, i.e. the ability and rate of phase out MB (see Figures 1 and 2) in order to make an assessment. In some cases, MBTOC made adjustments for adoption

rates of alternatives based on the specific circumstances of the nomination. In most instances the adoption rates varied from no adoption up to 25% adoption.

For many CUNs in the soils sector, several industries which have been heavily dependent on MB, e.g. strawberries, tomatoes and other vegetable crops (e.g. Italy, Spain, Belgium, Portugal and other countries of the EC, Australia, New Zealand) have completely adopted alternative technologies (especially those requiring similar application technologies) within a 3 to 4 year period. MBTOC took account of this during assessments.

There is limited guidance from the Parties and data available on what is a reasonable rate of transition to existing and available alternatives, though para. 35 of Annex I referred to in Decision XVI/4 states that “in situations where MBTOC recommends a nomination on grounds that it is necessary to have a period for adoption of alternatives, the basis for calculating the time period” is required to be “fully in the TEAP report. It is also necessary to take fully into account the information provided by the nominating Party, the supplier, the distributor or the manufacturer. For this reason it is important that the Party provide this information as required in para. 35 of Annex 1 on relevant factors for such a calculation including; the number of enterprises that need to transition, e.g., the number of fumigation and pest control companies, estimated training time assuming full effort, opportunities for importing alternative equipment and expertise if not available locally, and costs involved.”

As most Parties did not provide all the information required under Annex 1 of Decision XIV/4, MBTOC used information on effectiveness of alternatives compared to MB from trials and commercial transition rates for other Parties to assist determination of suitable adoption rates in order to provide specific recommendations in this report.

3.3 Sustainable Alternatives

In a large proportion of CUNs, the most currently appropriate alternatives are chemical fumigant alternatives, which themselves, like MB, have issues related to their long term suitability for use. In both the EC and US, MB and most other fumigants are involved in rigorous reviews that could affect future regulations over their use for preplant soil fumigation. MBTOC has been informed that the US government has received a petition to stay (i.e. remove regulatory approval) the pesticide tolerances for SF. Sulfuryl fluoride is a recently approved, important, methyl bromide alternative for several post-harvest applications. A stay or other action that removes the pesticide tolerance for SF would increase significantly pressure to revert to MB in structural and commodity fumigation. For preplant soil uses of MB, the regulatory restrictions on 1,3-dichloropropene and chloropicrin are preventing further adoption of these products and putting pressure on industries to retain MB.

MBTOC urges Parties to consider the long term sustainability of treatments adopted as alternatives to MB, to continue to adopt environmentally sustainable and safe chemical and non-chemical alternatives for the short to medium term and to develop sustainable IPM or non-chemical approaches for the longer term. Decision IX/6 1(a)(ii) refers to alternatives that are ‘acceptable from the standpoint of environment

and health'. MBTOC has consistently interpreted this to mean alternatives that are registered or allowed by the relevant regulatory authorities in individual CUN regions.

3.4 Frequency of Allowed MB Use

In the CUN round for 2007, reductions in MB for both preplant soil and post harvest uses could be achieved in some nominations, where effective alternatives were identified, by reducing the frequency of MB fumigations. In some countries, present regulations already restrict the frequency of use of MB (e.g. to every second year) on similar crops and circumstances to those nominated by other Parties. MBTOC suggests that in these, and other instances, MB may only be required every 2, 3 or 4 years and suggests that Parties further consider reductions where appropriate. Alternation of pest control measures may also help provide or extend user confidence and experience in alternatives. New pest control measures may also be good agricultural practice, reducing risk of development of resistance and providing control of a wider spectrum of pests.

3.5 Use of Disposable Canisters of MB

One Party still used small disposable canisters (i.e. 500 to 750g canisters) for application of MB for preplant soil use under plastic films. This practice is not considered as effective for pathogen control as use of MB/Pic mixtures and also leads to high emissions of methyl bromide. Use of small canisters has been eliminated in most non-Article 5 countries as it is considered a dangerous practice. According to the Party, canisters are used because they provide small-scale farmers with an easy application method and the ability to apply targeted amounts of MB to small areas where injection machinery may be difficult to use.

3.6 Trends in Methyl Bromide Use for CUEs since 2005

Since 2005, there has been a progressive trend by all Parties to reduce their consumption and CUN nominations for preplant soil use, although this has occurred at very different rates. In this round, the phase out of MB for several major uses has slowed. Figs 1 and 2 show the trends in the reduction in amounts approved/nominated by Parties for 'Critical Use' from 2005 to 2009 for some key uses in 2008 and 2009. The trends in phase out of MB by country are shown in Table 3.

Figure 1. Amounts of MB exempted for CUE uses in preplant soil industries from 2005 to 2009. Solid lines indicate trend in CUE methyl bromide. Dashed lines indicate quantity of methyl bromide nominated by the party in either 2008 or 2009.

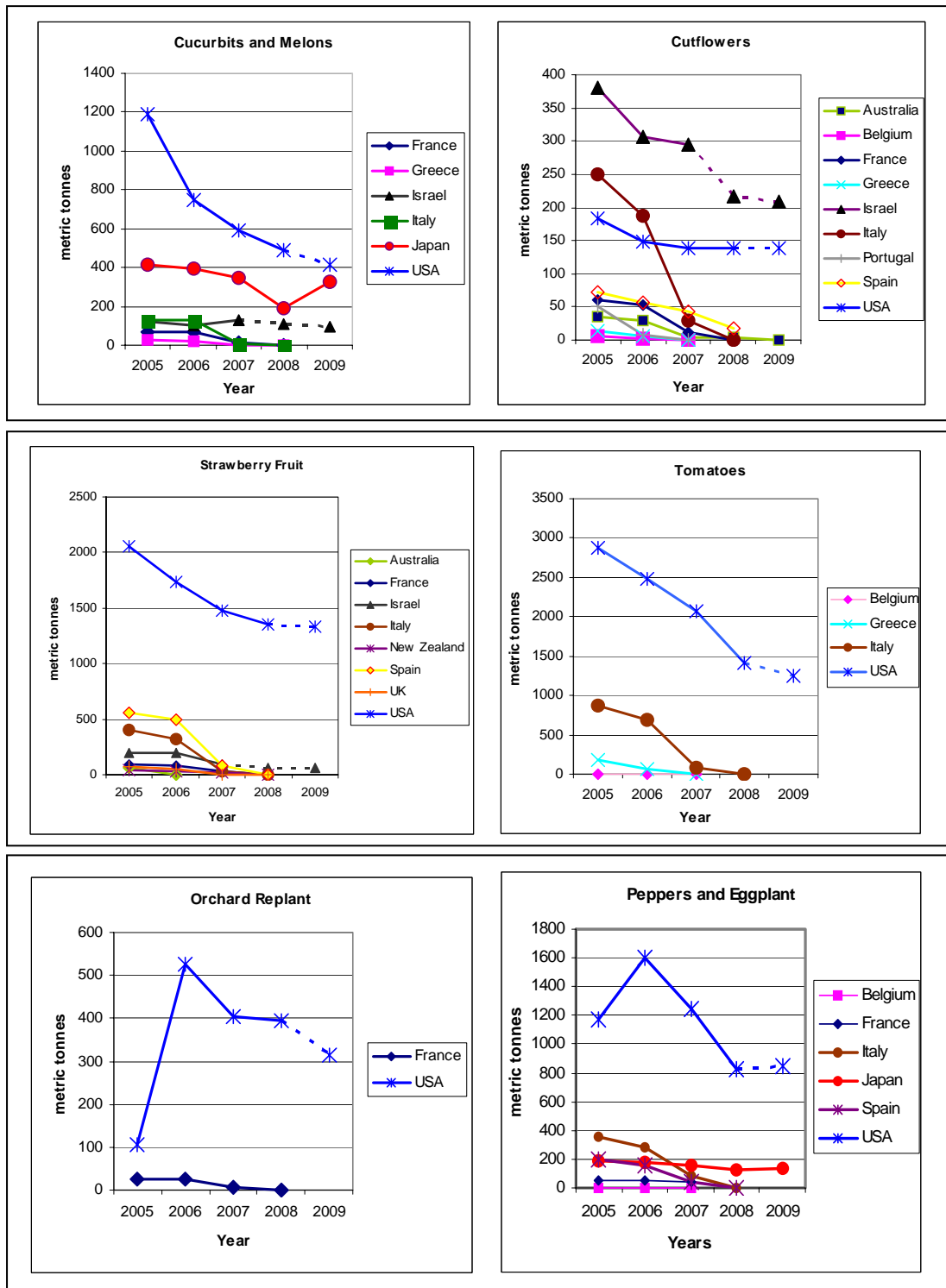


Figure 2. Amounts of MB exempted for CUE uses in mills and food processing facilities from 2005 to 2009. Solid lines indicate trend in CUE methyl bromide. Dashed lines indicate quantity of methyl bromide nominated by the Party in either 2007 or 2008.

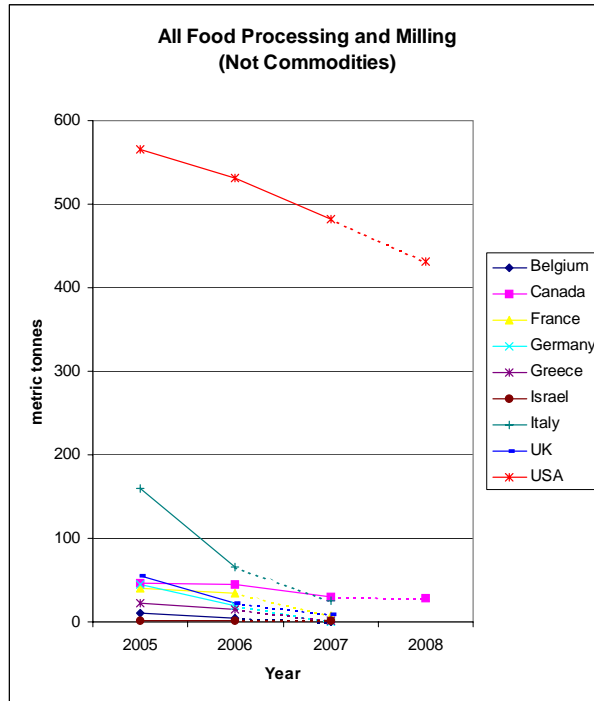


Table 3. Summary of Critical Use Nomination (2005 – 2009 in part) and Exemption (2005 – 2008 in part) Amounts of MB Granted by Parties under the CUN/CUE Process. (Note: A breakdown of CUN and CUE amounts by sector is given in Annex VI)

PARTY	QUANTITIES NOMINATED					QUANTITIES APPROVED			
	Total Nomination For 2005	Total Nomination For 2006	Total nominations for 2007	Nomination for 2008	Nomination for 2009	2005 (1ExMOP and 16MOP)	2006 (16MOP+ 2ExMOP+ 17MOP)	2007 (17MOP + 18MOP)	2008 (18MOP)
Australia	206.950	81.250	52.145	52.900	38.990	146.600	75.100	48.517	48.45
Canada	61.992	53.897	46.745	42.241	34.375	61.792	53.897	52.874	36.112
European Community ¹	5754.361	4213.47	1239.873	245.00	*	4392.812	3536.755	689.142	*
Israel	1117.156	1081.506	1236.517	952.845	851.395	1089.306	880.295	966.715	*
Japan	748.000	738.700	651.700	589.600	508.90	748.000	741.400	636.172	443.775
New Zealand	53.085	53.085	32.573	0	0	50.000	42.000	18.234	0
Switzerland	8.700	7.000	0	0	0	8.700	7.000	0	0
USA	10753.997	9386.229	7417.999	6415.153	4942.227	9552.879	8081.753	6749.060	5355.456
TOTALS	18704.24	15615.135	10677.55	8297.739	6375.955	16050.089	13418.200	9160.714	5883.793

* Not yet available.: ¹ Members of the European Community having CUNs/CUEs include:

2005 – Belgium, France, Germany, Greece, Italy, Netherlands, Poland, Portugal, Spain, and the United Kingdom.

2006 – Belgium, France, Germany, Greece, Ireland, Italy, Latvia, Malta, Netherlands, Poland, Portugal, Spain, and the United Kingdom.

2007 – France, Greece, Ireland, Italy, Netherlands, Poland, Spain, and the United Kingdom

2008 – Poland, Spain

4. MBTOC QSC: Evaluations of 2007 Critical Use Nominations for Methyl Bromide: July 2007

4.1 Introduction

MBTOC Quarantine, Structures and Commodities met in June 2007 in College Park, Maryland, USA to re-review CUNs as requested by Australia and Canada. The CUNs re-reviewed were: Australia rice 2009; Canada pasta manufacturing 2008 and Canada rodenticides and molluscicides 2008. The Parties supplied additional information about the nominations following the publication of the TEAP May 2007 Progress Report, and during bilateral meetings with MBTOC during the Open Ended Working Group meeting in Nairobi, Kenya.

The USA informed MBTOC that research, commercial trials and an economic assessment of the use of sulfuryl fluoride for cocoa beans, resulted in regulatory change that will allow this sector to fully transition away from methyl bromide by 2009. Consequently, the USA has withdrawn the cocoa bean sector of the nomination by the National Pest Management Association.

With the assistance of the USA, MBTOC conducted a field trip to visit processors of Southern dry cure ham (the subject of a critical use nomination), and meet with North Carolina State University Extension and other research scientists who are part of a multi-state research team trying to solve the pest control problem with this commodity.

4.2 ISPM Draft Methyl Bromide Strategy

MBTOC noted the availability of a draft standard for comment by Parties to the IPPC. The standard provides guidance to National Plant Protection Organizations (NPPOs) and Regional Plant Protection Organizations (RPPOs) in the development of a strategy to reduce or replace the use of methyl bromide as a phytosanitary measure, in order to reduce emissions of methyl bromide.

4.3 Quarantine Issues

MBTOC draws the Parties' attention to the potential for economic impact, particularly in Article 5 countries, which may develop when imports of commodities and associated packaging materials are rejected following treatment against quarantine pests with methyl bromide. Methyl bromide quarantine use may be increasing, in part in response to concerns about the consequences of importing quarantine pests. Parties may wish to charge TEAP with further investigation of these matters.

4.4 Regulatory Update

In Australia, the review of the registration application for sulfuryl fluoride for structural, quarantine and commodity use is ongoing.

In Canada, the website of the Pest Management Regulatory Agency (PMRA) has published an interim re-evaluation for aluminium phosphide, and requested more information from registrants. 1,3-D is still under re-evaluation; more information has been requested from registrants. Health Canada has approved import MRLs for sulfur dioxide on imported foods. PMRA is also reviewing new sulfur dioxide submissions, and submissions for the use of CO₂, heat and phosphine as a combination process. PMRA has determined that there are no regulatory barriers to the use of irradiation on rodenticides and molluscicides; however, ethylene oxide is not registered for this use.

The TEAP 2007 May Progress Report (MBTOC chapter) reviews registration issues in the EU.

In Japan, registration review of methyl iodide for both post-harvest and pre-plant uses is continuing and reviewers on the Food Safety Committee have requested additional information from manufacturers.

The USA has confirmed that the legal challenge to the use of sulfur dioxide is ongoing and that there may be future implications for use of SF as an alternative treatment. There is a new USA registrant of SF, which has resulted in two suppliers of the alternative for post-harvest uses. The re-registration review of methyl bromide and several other fumigants used for post-harvest and pre-plant is in public comment period. Decisions on buffer zones based on risk mitigation measures have not yet been made.

4.5 Standard Presumptions Used in Assessment of Nominated Quantities.

These have not changed since presentation to the Parties at 17 MOP.

4.6 Details of Evaluations

Parties submitted 15 CUNs for the use of MB in structures and commodities in 2007.

Of the 2007 nominations, 7 were for 2008 for a total of 11.535 tonnes. Of nominations for 2008, MBTOC QSC recommended 9.179 tonnes. This figure does not include a recommendation for Australia rice for 2008. The text associated with Australia rice for 2008 (Table 4), and the Meeting report of the 27 OWEG, para 128, explain the declaration of Australia on this matter. MBTOC did not recommend one CUN.

Of the 2007 nominations 8 were for 2009 for a total of 478.719 tonnes. TEAP April 2007 progress Report noted this figure as 529.721 tonnes. However, since that report, the USA has withdrawn the cocoa segment of the NPMA CUN (51.002 tonnes). Of the nominations for 2009, MBTOC QSC recommended a total of 451.178 tonnes.

Table 4 below provides the MBTOC QSC final recommendations for the CUNs submitted in 2007.

Table 4. Final evaluations for QSC CUNs submitted in 2007 for 2008 or 2009

Country	Industry	Quantity approved for 2005 (ExMOP1 and MOP16)	Quantity approved for 2006 (MOP16+ ExMOP2+ MOP17)	Quantity approved for 2007 (MOP17+ MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
Australia	Rice	6.150	6.150	9.205	7.400	1.800		9.200	7.82
<p>MBTOC comments: On 2008 CUN: MBTOC's interim report recommended an additional 0.84 tonnes to the 7.4 tonnes of MB already granted by the Parties for rice treatment in 2008. The recommendation was based on the Party's documents indicating it would have a paddy harvest of 261.300 tonnes, milled to 209,000 tonnes and fumigated at 20g/m3 giving a total MB usage of 8.24 tonnes. (Parties had already approved 7.4 tonnes for 2008 at MOP 18.) However, at the 27th Meeting of the OEWG, Australia indicated that the "amount of rice to be treated was 261,300 tonnes and that the full amount of the 1.8 tonnes approved by the Parties at the 18th MOP would be required. MBTOC confirmed it had received this clarification." (27th OEWG Meeting report, para 128)</p> <p>On 2009 CUN: MBTOC recommends a reduced CUE of 7.82 tonnes for this nomination in 2009. This represents a 15% reduction to the amount of MB nominated by the Party, to encourage the beginning of adoption of alternatives, as required by Decision IX/6. The Party has indicated it would begin to adopt alternatives after three years of consecutive high harvests, but harvests have been low. MBTOC, however, finds it reasonable to expect some adoption of alternatives, even in difficult economic times. The applicant has invested in recapture equipment on its largest treatment site with quoted savings of about 45% of MB emissions. There are several technically effective and available alternatives in use worldwide for packaged rice. MBTOC's previous CUN evaluations and reports have discussed these alternatives at length. The Party has indicated a preference for phosphine as an alternative, but indicates quite high costs of transition. CUN documents and discussions with the Party have indicated that the pest of concern is <i>Sitophilus spp.</i>, particularly <i>S. oryzae</i>. This species does not show high levels of resistance to phosphine although it is a species of high natural tolerance. However, the Party has based its economic analysis on an unnecessarily long treatment time of three weeks, which would only apply at temperatures below 15 °C. The unnecessarily long treatment time increases the number of silos to be built, and strongly contributes to the very high economic impact cited by the Party. Research papers submitted by the Party and from other sources, including the quarantine procedure for phosphine published by the European Plant Protection Organisation (EPPO Bulletin 23, 212-214 (1993), shows effective phosphine treatment of <i>Sitophilus spp.</i> can be achieved within 12 days at temperatures above 20°C and 4 days above 30°C, under well-sealed conditions at a dose of about 700ppm.</p> <p>MBTOC comments on economics: The CUN states: drought has made it impossible to undertake investment in phosphine facilities. Estimated costs for up to 100 silos would be Aus \$40 million. CUN states it would involve three years of transition, potentially complete in 2012. However, CUN does not provide annual cost of this capital expenditure. Even if borrowing or raising external capital is not feasible, the calculations of the annual cost have to be based on the amortised capital cost over the economic life of the investment. CUN Tables 3, 4, and 5 compare costs of phosphine and MB treatment on an annual basis. MBTOC analysis concludes that phosphine would costs \$19.02 per ton for each of the first 10 years. For a 1-kilo retail package this amounts to \$0.019, or about 2 cents. With any elasticity of demand and with any branding value, some of this could be is passed on to consumers. Further, per capita domestic use (broadly defined and may include use for beer, pet food, seed and residual) is about 9 kg per person. This suggests an annual cost to consumers if higher fumigation costs were passed fully of about 20 cents per year per person. Some distributional issues remain as certain ethnic groups have much higher than average per capita consumption.</p>									

Country	Industry	Quantity approved for 2005 (ExMOP1 and MOP16)	Quantity approved for 2006 (MOP16+ ExMOP2+ MOP17)	Quantity approved for 2007 (MOP17+ MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
Canada	Mills	47 (included mills and pasta)	34.774	30.167 (included mills only)	28.650			26.913	26.913
	<p>MBTOC comments: MBTOC recommends 26.913 tonnes for flour mill fumigation in 2009 with the understanding that Canadian flour millers continue their rigorous research program and complete reports in 2007. Industry-government commercial scale trials of heat treatment, sulfuryl fluoride and heat, phosphine and carbon dioxide combination, are ongoing. Sulfuryl fluoride is only allowed under conditional registration and can only be used in empty flour mills. No maximum residue levels for fluoride resulting from SF fumigations have been established in Canada. Furthermore, it is unknown if any use limits will be placed on the use of sulfuryl fluoride by Provincial governments. The nomination for 2009 represents a decrease of about 5% relative to 2008 levels. MBTOC would expect a considerable decrease in any further nomination if the trials currently being conducted show economic feasibility and technical efficacy in Canadian climate conditions. MBTOC notes that a growing body of research and practical experience indicates that best results in SF fumigations are obtained when facility temperatures of approximately 30°C are achieved. MBTOC awaits the results of Canadian testing to determine if this result is also observed in Canada.</p>								
	<p>MBTOC comments on economics: CUN states: It appears that heat remains very costly and has not provided comparable efficacy. Lack of trials makes adoption of alternatives unlikely. Technical feasibility issues and lack of registration still exist. This nomination does not rely on economic arguments.</p>								
Canada	Pasta	(see Canada mills)	10.457	6.757		6.067	6.067		
	<p>MBTOC comments: MBTOC recommends 6.067 tonnes for Canada pasta in 2008, with the understanding that commercial trials of alternatives scheduled for this season will be conducted. MBTOC will not be able to recommend any further exemption for this sector without reports of commercial trials of alternative treatments in pasta facilities, detailing effects on pest control and facilities in the Canadian circumstances. The Party may consider a reduced allocation for this sector if trials are successful.</p>								
	<p>MBTOC comments on economics: CUN states: that heat treatment remains a very costly alternative. In general, the pest control service provider estimates the cost to carry out the heat treatment at twice the cost of doing a methyl bromide treatment. The cost of a heat treatment increased to three or four times the cost of methyl bromide when the costs of monitoring to ensure comparable results to a methyl bromide fumigation are included.</p>								

Country	Industry	Quantity approved for 2005 (ExMOP1 and MOP16)	Quantity approved for 2006 (MOP16+ ExMOP2+ MOP17)	Quantity approved for 2007 (MOP17+ MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
Canada	Commodities	0.000	0.000	0.000	0.000	0.068	NR		
<p>MBTOC comments: MBTOC does not recommend a CUE for this specific nomination in 2008. The critical need for methyl bromide has not been demonstrated. There are no data indicating that mould would develop in bait for rodents or molluscs if manufacturing methods were improved and standard good manufacturing practices were used. The applicant states that product may become mouldy while held in the open at room temperatures, awaiting final processing and packaging without any effort made to cool or aerate the product. If the product was dried during processing to less than 75% equilibrium relative humidity the <i>Aspergillus</i> spp, said to be of concern, should not proliferate. Similarly, if the product was stored using standard grain handling techniques of air circulation, aeration, and/or air conditioning in the storage room, mould would also not grow. The applicant has indicated a MB use of approximately 2.7 kg (6 lbs) MB per truckload; the Party indicated 17 – 20 pallets per truck. However, the Party indicates an annual production of 1150 pallets (approx 430 – 540 kg per pallet), and has nominated 68 kg MB. The MB dosage rate (6.8 kg/100m³) is unlikely to control mould growth. Furthermore, most fumigation occurs in winter in an unheated vault, which would further reduce effectiveness, or result in an unnecessarily high requirement for methyl bromide. Irradiation is a technically effective and available alternative, although treatment costs plus shipping were estimated at considerably higher cost than MB treatment. Costs supplied by the Party showed wide variation in shipping and treatment costs, suggesting that lower costs could be obtained by ensuring the irradiation dosage rate has been properly selected for the purpose intended and that economies of scale might lower shipping costs. MBTOC is not aware of any other Party using MB for this purpose.</p>									
<p>MBTOC comments on economics: The cost of post-manufacture sterilization of the rodenticides and molluscicides by irradiation was estimated to cost approximately \$280 CDN to \$380 CDN per pallet of product (shipping included). Trucking costs were suggested to be between \$150 and \$170 (returned) per pallet of material and the cost of goods to be treated was \$120 to \$200 (depending on the strength (interpret as 'dose') required) per pallet of material and the company also included \$10 per pallet for their extra handling. The current cost for the post-manufacture sterilization of the product with methyl bromide is \$8.18 CDN per pallet.</p>									
Israel	Dates	3.444	2.755	2.200		1.800	1.8		
<p>MBTOC comments: MBTOC recommends 1.8 tonnes for dates in 2008. Israel's research programme combined with technology transfer to rural packing houses has allowed the successful adoption of heat treatment by packers of Medjool dates, the main variety. The Party has continued its 20% decrease for the third year. However, heat treatment has not been successful, thus far, for other date varieties. Work continues on this prospective treatment. Controlled atmosphere treatment may provide a technically effective alternative. A heat and carbon dioxide combination treatment has been found to be technically effective for one variety. The 'cocoon' method of vacuum in flexible container has worked for some varieties but requires packing houses to invest and adapt to a non-fumigation technology. At least one date variety is harmed by this method, but the applicant is encouraged to make the investments and shift in thinking to this and other alternatives where technically feasible and where product quality is not harmed. Phosphine is not feasible from the viewpoint of product quality. Sulfuryl fluoride and ethyl formate, although they have proven successful in the treatment of other dried fruit, are not registered.</p>									
<p>MBTOC comments on economics: CUN states: Alternative 3 (Cold) is not technically suitable, alternative 1 (Heat) is being carried out in part for Medjool only while alternative 2 (CO₂), 4 (vacuum) and 5 (Heat + CO₂) require further studies to reveal whether they are economically feasible or not. Otherwise CUN provides no economic data.</p>									

Country	Industry	Quantity approved for 2005 (ExMOP1 and MOP16)	Quantity approved for 2006 (MOP16+ ExMOP2+ MOP17)	Quantity approved for 2007 (MOP17+ MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
Israel	Flour mills	2.140	1.490	1.040		0.800	0.312		
	<p>MBTOC comments: MBTOC recommends 0.312 tonnes for Israel flour mills in 2008, a 61% reduction in the nominated amount of 0.8 tonnes. Adoption of a rigorous IPM program combined with heat treatment seems a likely avenue for success in the circumstances of this nomination. The MB recommended will allow the applicant to complete transition to alternatives. The applicant indicates spot treatment with MB is used in the case of infestation, but in this circumstance spot treatment by heat seems quite possible, especially given the generally high ambient temperature. Although the applicant indicates an intended future reliance on sulfuryl fluoride, it seems unlikely to resolve their infestation problems in the short or middle term since there has not even been an application for registration submitted yet. The applicant indicates it uses 35 g m⁻³ of MB based on the poor penetration of MB through flour residues. Flour residues should be cleaned out before fumigation as a standard sanitation practice and a normal part of IPM. The MBTOC standard dosage rate is 20g m⁻³. This dosage rate is sufficient for full site treatments and would be more than sufficient for spot treatment. The amount of MB recommended was based on the following considerations. Five mills were reported to need to fumigate mills and equipment totalling 15,600m³. When MBTOC standard dosage rate of 20g m⁻³ is used, the result is 0.312 tonnes of MB needed.</p>								
	<p>MBTOC comments on economics: CUN states: that heat treatment is not economically feasible. Suitable equipment might overcome that problem. Otherwise CUN provides no economic analysis.</p>								
Japan	Chestnuts	7.100	6.800	6.500	6.300			5.800	5.800
	<p>MBTOC comments: MBTOC recommends 5.8 tonnes for Japan chestnuts in 2009. The Party has decreased the request for MB use in this sector by 8% by requiring growers and packing houses to amalgamate fumigation loads. The Party is encouraged to continue these improvements and to reduce dosage by increasing fumigation time. The Party has a rigorous research program that, in preliminary results, has identified some effective alternatives. Unfortunately many of the alternatives tested are either ineffective disinfestants or harms this fresh product. More encouraging research results indicate efficacy for methyl iodide which is not yet registered in Japan.</p>								
	<p>MBTOC comments on economics: CUN provides no economic analysis</p>								

Country	Industry	Quantity approved for 2005 (ExMOP1 and MOP16)	Quantity approved for 2006 (MOP16+ ExMOP2+ MOP17)	Quantity approved for 2007 (MOP17+ MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)	
Poland	Coffee & Cocoa Beans	See Medicinal Herbs	2.160	1.420		0.500	0.500			
										MBTOC comments: MBTOC recommends 0.5 tonnes for this use in 2008, a reduction of 64.3% for this sector over last year's nomination. In recent years the Party has significantly reduced its requirement for MB by the reuse of recaptured MB. Additionally, the Party is adopting phosphine as an alternative. Registration of fast generated forms of phosphine is anticipated this year and will increase the rate of transition. If there are delays or ineffectiveness discovered in this planned treatment, another avenue is the use of heat and low oxygen as a combination controlled atmosphere treatment. This treatment, already in use in several ports, would control the mite infestation in an approximate treatment time of 5 days.
										MBTOC comments on economics: CUN states: that phosphine (which is not registered, inter alia because of the expected small market) is 30% more expensive, largely as a result of additional costs associated with fumigation time of 12 days; high cost of speed boxes and phosphine generators. These additional costs make the fumigation treatments with phosphine more expensive by 50 Euro per tonne. CUN states that irradiation is expensive because of the high cost of transportation to the facility.
Poland	Medicinal herbs and mushrooms	4.100	3.560	1.800		0.500	0.500			
										MBTOC comments: MBTOC recommends 0.5 tonnes for this use in 2008, a reduction of 81.5% for this sector over last year's nomination. In recent years the Party significantly reduced MB use in this sector by moving commodities to alternatives as technologies and treatments became available. The CUN this year represents the last remaining uses which are moving to use of carbon dioxide/high pressure.
										MBTOC comments on economics: CUN states: that phosphine (which is not registered, inter alia because of the expected small market) is more expensive, largely as a result of additional costs associated with fumigation time of 12 days; high cost of speed boxes and phosphine generators. These additional costs make the fumigation treatments with phosphine more expensive. CUN states that irradiation is expensive because of the high cost of transportation to the facility.

Country	Industry	Quantity approved for 2005 (ExMOP1 and MOP16)	Quantity approved for 2006 (MOP16+ ExMOP2+ MOP17)	Quantity approved for 2007 (MOP17+ MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
United States	Commodities	89.166	87.719	78.983	58.921 inc. 0.021 for research			58.912	45.623 inc. 0.020 for research
	<p>MBTOC comments: MBTOC recommends 45.623 tonnes for US commodities in 2009. This amount includes 20 kilograms for research. The Party had requested 58.921 tonnes for 2009, which included 21 kilograms for research purposes, but which included no transition to alternatives over the amount granted by the Parties for 2008. MBTOC's recommendation represents a 20% decrease in the nomination for walnuts, dried fruit and dates to allow for transition to alternatives. In the case of dried beans, we did not recommend a 20% reduction this year but reduced the dosage rate from 44g m⁻³ to 20g m⁻³. Therefore, on a sectoral basis the tonnes recommended are: walnuts (28.088); dried fruit (13.928); beans (1.980); dates (1.607). There are several alternatives available for use by this sector. Phosphine is in widespread use, but its slower action sometimes makes it logistically impractical for meeting holiday market windows. Phosphine is registered for treatment of beans in California, but is not registered if the beans are stated to be infested with cowpea weevils. Trials using phosphine and sulfuryl fluoride have been conducted with dates. Sulfuryl fluoride is technically effective and available; MRLs have recently been established in Germany, one of the largest importers of US walnuts. Some importing countries, however, have not yet established MRLs for fluoride residues, which limits its use in some cases. Controlled atmosphere treatment would also be effective and the technology is available on a lease basis.</p>								
	<p>MBTOC comments on economics: CUN provides economic data on alternatives for walnuts and dried fruit other than dates. CUN states: that phosphine fumigant costs are higher because it takes longer to accomplish so sellers don't reach December holiday export market window; its use leading to increased labour costs, and it corrodes equipment. CUN states walnuts and dried fruit all experience substantial additional downtime and subsequent lost revenues if phosphine is used. Net revenues for alternatives are negative. CUN states that profit margin decreases from 13.3% to -7.5% for Walnuts and from 5% to -16.8% for dried fruits. An economic analysis was not done for dates and dried beans.</p>								
United States	Cocoa beans - NPMA subset	61.519	55.367	64.082	53.188			51.002	CUN Withdrawn by USA
	<p>MBTOC comments: The United States has informed MBTOC that research, commercial trials and an economic analysis conducted by cocoa bean fumigators and a supplier of sulfuryl fluoride, followed by regulatory change, will allow this applicant to fully transition to alternatives by 2009. As a consequence, the USA has withdrawn the cocoa bean segment of the critical use nomination by the National Pest Management Association.</p>								
	<p>MBTOC comments on economics:</p>								

Country	Industry	Quantity approved for 2005 (ExMOP1 and MOP16)	Quantity approved for 2006 (MOP16+ ExMOP2+ MOP17)	Quantity approved for 2007 (MOP17+ MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
United States	NPMA food processing structures (cocoa beans removed)	83.344	69.118	82.771	69.208			66.777 cocoa beans removed	54.606
	<p>MBTOC comments: MBTOC recommends 54.606 tonnes for processed food facilities in 2009. Cocoa beans had been disaggregated from this CUN but the nomination for this sector was later withdrawn by USA, as reported elsewhere. The Party has requested 66.777 tonnes for these sectors, cocoa removed. The Party indicates it can achieve a five-year transition at 17% per year of 84% of its facilities in this sector. The constant reduction in absolute tonnes annually of 84% of the total of this CUN is 13.871 tonnes (cocoa and cheese not included). 2009 will be the second year of this transition plan. MBTOC has not included a reduction for cheese stores because no alternatives have been registered, but the Party has reduced its MB nomination in this sector through various improvements. The total tonnage recommended is composed of the following sectoral amounts: processed foods (49.103); herbs and spice facilities (3.238); cheese (2.265). The Party is requested to ensure the recommendation for herb and spice facilities is used only for the facilities and not the commodity, especially not if intended for QPS. There are alternatives for herb and spice commodity in widespread commercial use in the US, and QPS uses cannot be included in critical uses.</p>								
	<p>MBTOC comments on economics: CUN states: For commodities listed in the NPMA CUN, an economic analysis was not conducted because this sector did not have an alternative registered. The comment about alternative registration is incorrect.. For food-processing facilities listed in the NPMA CUN, economic feasibility of such alternatives was not assessed due to the lack of revenue information which is necessary to quantify the economic impacts to food-processing facilities.</p>								
United States	Mills and processors	483.000	461.758	401.889	348.237			291.418	291.418
	<p>MBTOC comments: MBTOC recommends 291.418 tonnes for US mills and structures in 2009. Overall this is a 16.3% decrease for the entire sector. This decrease is distributed over each sector as follows: rice mills 26.7%, bakeries 41.8%, pet food 17.7% and flour millers 11.9%. The Parties granted 348.231 tonnes of MB for this use in 2008. The overall decrease in MB use is also similar to transition estimates by suppliers of alternative products and technologies. The total tonnages of MB recommended can be broken down into sectors as follows: rice mills (48.804); bakeries (8.308); pet food (21.955); and flour mills (212.352). US bakeries are making the fastest transition to alternatives and seem to have resolved earlier facility design problems that resulted in difficulties transitioning to heat. Gastightness should continue to be improved and numerous techniques are available to do so. MB should not be used in facilities that are of poor or very poor gastightness. These situations are especially prevalent in rice and flour mills. Transition to adoption of heat treatments should be encouraged, especially where gastightness is poor.</p>								
	<p>MBTOC comments on economics: The CUN states: that heat will cost 1.5 times and sulfuryl fluoride costs 1.3 times the cost of MB treatment. Heat treatment is reported to result in lost operating days and thus lower throughput and gross revenues. Where sulfuryl fluoride is technically feasible it results in loss of net revenue of 57% (rice millers), but only 4% (bakeries) and 2% (pet food manufacturers and North American Millers Association). Profit margins were added to the economic assessment.</p>								

Country	Industry	Quantity approved for 2005 (ExMOP1 and MOP16)	Quantity approved for 2006 (MOP16+ ExMOP2+ MOP17)	Quantity approved for 2007 (MOP17+ MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
United States	Cured pork	67.907	40.854	18.998	19.669			19.699	18.998
	<p>MBTOC comments: MBTOC recommends 18.998 tonnes for 2009. This amount was also granted by the Parties for this use in 2007, but represents a decrease from the amount granted by the Parties in 2008 of 19.669 tonnes and renominated for 2009. There are no registered alternatives for the treatment of insects and mites on pork hanging in curing houses. Reliable historical use volumes for the largest group of producers in this sector are still not available due to the large number of small units. Therefore there is no justification for increase in use in this sector. A multi-state research project has begun and has released preliminary results. The research will identify potential for improvements in IPM, facility gastightness, processing methods and efficacy of alternatives which may result in decrease in MB use and eventual transition to alternatives. The Party is encouraged to investigate efficacy of non-chemical alternatives for this commodity, which would then allow for faster transition away from MB in this sector. Controlled atmosphere at increased temperature may be effective. An additional avenue for investigation might be dips in hot oil as is done in European countries for similar pork products. (Schillings W. 2006. Methyl Bromide use to combat mite infestation in dry cured ham during production. In: Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reductions, November 3 – 6, 2006 Orlando, Florida, USA.).</p>								
	<p>MBTOC comments on economics: No economic data given. The CUN states this is a minor use and there is little economic incentive to develop alternatives</p>								

* This figure does not include a recommendation for Australia rice 2008. The Australia rice evaluation for 2008, and the Meeting report of the 27th OWEG, para 128, explain the declaration of the Government of Australia on this matter.

** TEAP/MBTOC April 2007 report noted this figure as 529.721, however since that report, Government of the United States has withdrawn the cocoa segment of the NPMA CUN (51.002 tonnes).

5. MBTOC Soils: Evaluations of 2007 Critical Use Nominations for Methyl Bromide: July 2007

5.1 Summary of Outcomes

Of the 43 CUNs submitted for soil uses, recommendations were made on all 2008 and 2009 recommendations, except for 10 nominations from Israel for 2009 which remained unable to assess. MBTOC considered that changes to registration of a key alternative 1,3-D, a review of buffer zone regulations on alternatives and new economic information on substrate use were required before these nominations could be fully assessed.

After the two rounds of the 2007 assessment, MBTOC Soils has recommended a total of 5294.204 tonnes, being 1102.706 tonnes for 2008 and 4191.498 tonnes for 2009. An amount of 91.69 tonnes was not recommended for 2008, and 536.286 tonnes not recommended for 2009. An amount of 858.96 tonnes for 2009 of the Israeli CUNs remained unable to assess pending further information (Table 5).

Table 5. Summary of MBTOC Soils recommendations for 2008 and 2009 by country for CUNs received in 2007 for preplant soil use of methyl bromide (tonnes)

Country	CUE Granted at MOP 18	Additional 2008 CUN Request	2009 CUN Request	MBTOC-S Recommendation	
				2008	2009
Australia	35.75		29.790		29.790
Canada	14.124		7.462		7.462
EC (Poland, Spain)	689.142	244.151		244.146	-
Israel	933.315	950.245	813.045	858.96	Unable{a}
Japan	443.775		502.600		299.580
USA	4806.723		4472.563		3854.666
Total	6922.829	1194.396	5825.460	1102.706	4191.498

(a) Unable to assess 848.795 tonnes for 2009 of the Israeli CUNs pending further information.

5.2 Issues Related to CUN Assessment for Preplant Soil Use

Technical alternatives exist for almost all uses requesting CUNs, but uptake of alternatives varies between countries, crops and the pest pressure. In general, CUNs for preplant soil use of MB resulted mainly from the following issues: regulatory restrictions on one or two specific alternatives, adoption times to implement alternatives, and economic infeasibility of some key technical alternatives, such as the use of methods which avoid the need for MB such as the use of grafted plants.

Two key issues which affect the need for CUNs in the 2007 round were i) regulations on key alternatives, particularly 1,3-D/Pic and, chloropicrin used alone or in mixtures at rates greater than 200 kg/ha (20 g/m²), ii) lack of controls for nutsedge, and iii) lack of studies in specific sectors i.e. orchard replant, and nursery industries.

Unusually large buffer zone restrictions on fumigant alternatives, particularly limit their adoption, especially in Israel. MBTOC urges Parties to consider review of these regulations in view of the ability of barrier films to reduce dose rates of MB and alternatives and associated emissions. As in the previous round, Parties have found alternatives for propagation materials such as strawberry runners and nurseries more difficult to adopt, however the lack of research studies provided with CUNs has also led to difficulties in assessment as these CUNs do not fully satisfy the requirements of Decision IX/6. The impact of current reviews of VOC emissions in California may also have a major impact on MB use and the use of alternatives in California in future nominations. Registration of key alternatives such as 1,3-D/Pic and fludioxonil in Israel and the recent permits for methyl iodide use in Australia and USA are expected to impact on the number of future nominations, and the basis of several CUNs is expected to become economic rather than technical.

MBTOC also notes that a large proportion of MB has been nominated for uses where regulations or legislation prevent reductions of MB dose e.g. the mandatory use of MB at a specified dose for certified propagation material or bans are imposed on the use of barrier films which can reduce MB dose. Also regulations on alternatives are preventing their uptake for a substantial proportion of the remaining CUNs for preplant soil use. MBTOC urges the Parties to align their local policies and regulations with internationally accepted methodologies and MB alternatives that lie within the Montreal Protocol's goals.

In this round, MBTOC has sometimes suggested quantities of MB for 2008 or 2009 different from those nominated. Grounds used for these changes are given in detail after the relevant CUNs in Table 8. The adjustments follow the standard presumptions given in Tables 6 and 7 below, unless indicated otherwise.

A number of recommendations by MBTOC Soils on CUNs in the 2006 round were not accepted by the 18th MOP, and this led to the full or partial restoration of the original CUN amount requested. As MBTOC in most cases uses the technical information from the previous years CUE as the basis for its calculations of future nominations, it was difficult in this round for MBTOC to make accurate assessment of the US nominations this year as the Party did not provide the technical calculations for adjustments made at the 18th MOP.

5.3 Standard Presumptions Used in Assessment of Nominated Quantities.

The tables below (Tables 6 and 7) provide the standard presumptions applied by MBTOC Soils for this round of CUNs. These standard presumptions were first proposed in the MBTOC report of October 2005 and were presented to the Parties at 17th MOP. The rates and practices adopted by MBTOC as standard presumptions are based on maximum rates considered acceptable by published literature and actual commercial practice. A copy of the actual dosage rate of MB in MB/Pic formulations

is shown in Table 7 below. A revision to these presumptions is proposed for consideration at the 19th MOP (Section 9) to more accurately reflect effective maximum feasible doses with methyl bromide/chloropicrin combinations.

As in the evaluations in previous years, MBTOC considered reductions to quantities of MB in particular nominations to a standard rate per treated area where technical evidence supported its use (See Annex III and IV). MBTOC considered the maximum MB application rate for 98% MB to be either 250 or 350 kg/ha (25 to 35 g/m²), in conjunction with low barrier permeability films (e.g., VIF or equivalent), combined with extended exposure periods. Several Parties indicated that 250 kg/ha (25g/m²) of 98:2 were effectively used in standard commercial application. In cases where use of high chloropicrin-containing mixtures (approximately MB: Pic 67:33 or 50:50 or lower) is considered feasible, maximum dosage rates of 175 kg MB/ha (17.5 g/m²) where nutgrass is the key pest and 150 kg/ha (15 g/m²) for pathogens were used as the maximum standard presumptions unless there was a regulatory or technical reason indicated otherwise by the Party.

As a special case, MBTOC accepted a maximum rate of 200 kg/ ha (20 g/m²) for certified strawberry runner production in the absence of data that showed certification standards could be met in the circumstances of particular nominations. However, several Parties indicated that rates of 200 kg/ha (20g/m²) or less (Annex III) of MB: Pic 50:50 were effective with barrier films for production of ‘certified’ nursery material.

The indicative rates used by MBTOC were maximum guideline rates, for the purpose of calculation only. MBTOC recognises that the actual rate appropriate for a specific use may vary with local circumstances, soil conditions and the target pest situation. Some nominations were based on rates lower than these indicative rates.

Lower effective dose rates of MB in MB/Pic formulations of 125 kg MB/ha (12.5 g/m²) for pathogens and 150 kg MB/ha (15.0 g/m²) are proposed for specific crops (eg. strawberry fruit and vegetables) and 200 kg MB/ha (20.0 g/m²) for nursery crops unless otherwise specified by the Party.

Table 6. Standard presumptions used in assessment of CUNs for the 2007 round – soil treatments.

	Comment	CUN adjustment	Exceptions
1. Dosage rates	Maximum guideline rates for MB:Pic 98:2 25 to 35 g/m ² with barrier films (VIF or equivalent); for MB:Pic 67:33 - 15g or 17.5g MB/m ² for pathogens and nutsedge respectively, under barrier films. All rates on a 'per treated hectare' basis.	Amount adjusted to maximum guideline rates. Maximum rates set dependent on formulation and soil type and film availability.	Higher rates accepted if specified under national legislation or where the Party had justified otherwise.
2. Barrier films	All treatments to be carried out under low permeability barrier film (e.g. VIF)	Nomination reduced proportionately to conform to barrier film use.	Where barrier film prohibited or restricted by legislative or regulatory reasons
3. MB/Pic Formulation: Pathogen control	Unless otherwise specified, MB/Pic 50:50 (or similar) was considered to be the standard effective formulation for pathogen control, as a transitional strategy to replace MB/Pic 98:2.	Nominated amount adjusted for use with MB/Pic 50:50 (or similar).	Where MB/Pic 50:50 is not registered, or chloropicrin (Pic) is not registered
4. MB/Pic Formulation: Weeds/nutgrass control	Unless otherwise specified, MB/Pic 67:33 (or similar) was used as the standard effective formulation for control of resistant (tolerant) weeds, as a transitional strategy to replace MB/Pic 98:2.	Nominated amount adjusted for use with MB/Pic 67:33 (or similar).	Where chloropicrin or chloropicrin-containing mixtures are not registered
5. Strip vs. Broadacre	Fumigation with MB and mixtures to be carried out under strip	Where rates were shown in broadacre hectares, the CUN was adjusted to the MB rate relative to strip treatment (i.e. treated area). If not specified, the area under strip treatment was considered to represent 67% of the total area.	Where strip treatment was not feasible e.g. some protected cultivation or open field production of high health propagative material

Table 7. Actual dosage rates applied during preplant fumigation when different rates and formulations of methyl bromide/chloropicrin mixtures are applied with and without barrier films. Rates of application reflect standard commercial applications rates.

Commercial application rates of formulation	MB/Pic formulation (dose of MB in g/m²)			
	98:2	67:33	50:50	30:70
A. With Standard Polyethylene Films				
400	39.2	26.8	20.0	12.0
350	34.3	23.5	17.5	10.5
300	29.4	20.1	15.0	9.0
B. With Low Permeability Barrier Films (LPBF)				
250	24.5	16.8	12.5	7.5
200	19.6	13.4	10.0*	6.0
175	17.2	11.8	8.8	5.3

* Note: Trials from 1996 to 2007 (Annex III) show that a dosage of 10g/m² (e.g. MB/Pic 50:50 at 200kg/ha with LP Barrier Films) is technically feasible for many situations and equivalent to the standard dosage of >20g/m² using standard films

5.4 Use/Emission Reduction Technologies - Low Permeability Barrier Films and Dosage Reduction

Decision IX/6 states in part that critical uses should be permitted only if ‘all technically and economically feasible steps have been taken to minimise the critical use and any associated emission of methyl bromide’. Decision Ex.II/1 also mentions emission minimization techniques, requesting Parties “...to ensure, wherever methyl bromide is authorized for critical-use exemptions, the use of emission minimization techniques such as virtually impermeable films, barrier film technologies, deep shank injection and/or other techniques that promote environmental protection, whenever technically and economically feasible.”

As in past rounds, MBTOC assessed CUNs where possible for reductions in MB application rates and deployment of MB emission reduction technologies, such as use of LPBF, including VIF, or other appropriate sealing and emission control techniques including deep injection of MB, use of formulations with a lower proportion of MB and/ or reduced frequency of application (Annex III).

The use of low permeability barrier films (VIF or equivalent) is compulsory in the 25 member countries of the European Union (EC Regulation 2037/2000). In other regions LPBF films are considered technically feasible and large adoption has occurred, e.g. Israel and SE USA. In Florida the reported use of barrier films in vegetable crops has expanded from 3000 acres 2005/06 to 30,000 acres in 06/07 (Allen, pers. comm.). The exception to the use of barrier films is the State of California in the US where a regulation currently prevents use of VIF with MB (California Code of Regulations Title 3 Section 6450(e) but not the alternatives. This regulation has been set over concerns of possible worker exposure to MB when the film is removed or when seedlings are planted due to altered flux rates of MB.

5.5 Adjustments for Standard Dosage Rates Using MB/Pic Formulations

One key transitional strategy to reduce MB dosage has been the adoption of MB: Pic formulations with lower concentrations of methyl bromide (e.g. MB:Pic 50:50 or less). These formulations are considered to be equally as effective in controlling soilborne pathogens as formulations containing higher quantities of methyl bromide (e.g. 98:2, 67:33) (e. g. Porter *et al.*, 1997; Melgarejo *et al.*, 2000; Lopez-Aranda *et al.*, 2003; Santos *et al.*, 2007). Formulations containing high proportions of chloropicrin in mixtures with methyl bromide have been adopted widely by non-Article 5 countries to meet Montreal Protocol restrictions where such formulations are registered or otherwise permitted. Their use can be achieved with similar application machinery which allows co-injection of methyl bromide and chloropicrin or by use of premixed formulations. Consistent performance has been demonstrated with both barrier (Annex III and IV) and non barrier films. Parties are urged to consider lower dosage rates, i.e. as low as 75 kg/ha of 30:70 or 100 kg/ha of 50:50 MB/Pic in conjunction with barrier films as these have shown similar effectiveness to rates of 335 to 800 kg/ha of MB 98% using standard polyethylene (Annex IV).

Table 8. Final evaluations of CUNs for preplant soil use submitted in 2007 for 2008 or 2009

Country	Industry	Quantity approved for 2005 (1ExMOP and 16MOP)	Quantity approved for 2006 (16MOP+ 2ExMOP+ 17MOP)	Quantity approved for 2007 (MOP17+MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
Australia	Strawberry runners	35.750	37.500	35.750	35.750	None	none	29.790	29.790
<p>MBTOC recommends 29.79 tonnes for this use in 2009. The key pests affecting strawberry runner production are fungi (<i>Phytophthora</i>, <i>Pythium</i>, <i>Rhizoctonia</i>, <i>Verticillium</i>) and weeds (<i>S. arvensis</i>, <i>Agrostis tenuis</i>, <i>Raphanus</i> spp, <i>Poa annua</i>, <i>Cyperus</i> spp). The CUN states that MB/Pic 50:50 at a dose of 50 g/m² is required to meet certification standards. The Party's request exceeds MBTOC's standard presumption of 20 g/m² but this rate is not currently registered. The Party is currently examining the efficacy of a rate of 125 kg/ha (12.5 g/m²) of MB using LDPE films. The Party states that the most promising alternative, 1,3-D/Pic, is reported to have been phytotoxic due to the heavy and wet soil in cold climate growing conditions. The CUN provided recent data from specific local trials which indicated phytotoxicity in runners that resulted in a doubling of the time required before planting compared to MB, problems with weed control and inconsistent results [up to a 30% decrease in runner yields]. Other alternatives tested included MS, dazomet, PIC, steam, hot water and solarization. The Party reported that plug plants are possibly a technically feasible alternative, but that the costs associated with this technology are too high and they result in 10% lower yields than bare-rooted runners. Barrier film (VIF) initially reduced emissions 10-fold when compared with standard LDPE films, but off gassing issues when lifting tarps after 4 days posed a potential risk to workers and bystanders. The Party notes that two currently unregistered alternatives appear promising – methyl iodide and cyanogen, and that methyl iodide has been granted a commercial scale up permit for 2007 to 2009. MBTOC encourages the Party to (1) expedite the use of the MB/Pic 50:50 formulation at 25 g/m² with barrier films and (2) to expedite the registration of the two alternatives as quickly as possible.</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The CUN is based on assertion of lack of technically feasible alternatives in circumstances in Australia.</p>									

Country	Industry	Quantity approved for 2005 (1ExMOP and 16MOP)	Quantity approved for 2006 (16MOP+ 2ExMOP+ 17MOP)	Quantity approved for 2007 (MOP17+MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
Canada	Strawberry runners (PEI)	6.840	6.840	7.995	7.462			7.462	7.462
<p>MBTOC recommends 7.462 tonnes for this use in 2009. The key pests affecting strawberry runner production are weeds and nematodes. The nomination states that MB/Pic 67:33 at a dose of 500 kg/ha (50 g/m²) is required to meet the certification standards for strawberry runners. MBTOC's standard presumption is 200 kg/ha (20 g/m²) with low permeability barrier films (LPBF) for propagative materials. The Party's request exceeds MBTOC's standard presumption; however, rates that conform to MBTOC's standard presumption are not currently registered and therefore cannot be used commercially to treat soils. The Party has indicated that in order to register the MBTOC recommended rate of 200 kg/ha (20 g/m²) with LPBF, the Pest Management Regulatory Agency would require the cooperation of the registrant and testing to demonstrate that the rate would be effective. The Party has attempted to replace MB with 1,3-D, but 1,3-D was banned in January 2003 due to groundwater contamination. Chloropicrin has recently been provisionally registered in Canada, but has yet to receive a permit from Prince Edward Island. The sector applying for the nomination has not yet trialled this alternative. Nor has the sector trialled low permeability barrier films (LPBF). MBTOC encourages the Party (1) to finalize the permits necessary for use of chloropicrin and dazomet, (2) implement the use of LPBF which are currently used worldwide and (3) in the absence of an effective alternative becoming available, conduct the necessary trials to support a lower application rate of MB to conform with MBTOC's standard presumption.</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The nomination provides no economic data. CUN is based on technical feasibility reasons.</p>									
Israel	Broomrape	None	none	250.000		250.000	250.000	250.000	U
<p>2008 CUN: MBTOC recommends 250 tonnes for this use in 2008 and is unable to assess the nomination for 2009. MBTOC acknowledges that the CUE amount granted by the Party was not used or produced for this use in 2007 because of exceptional circumstances and that this amount recommended for 2008 is still required. The use is for broomrape eradication and land rehabilitation of 1000 ha in the Upper Galilee and the Golan Heights. A large area, 5700 ha is severely infested with this parasitic plant making it impossible to produce tomatoes in these regions. The recommended CUE is based on a dose of 250 kg/ha (25 g/m²) of MB:Pic 98:2 using LPBF. MB will be used only once in each region and the treatment is expected to bring the pathogen population below the disease threshold allowing for adoption of other alternatives. The Party has identified some alternatives for controlling low infestations of <i>Orobanche</i> (e.g. sulfosulfuron, solarization) but they are considered not adequate for controlling severe infestations of <i>O. aegyptiaca</i>. Additionally, the Party expects some alternatives (1,3-D/Pic, sequential application of 1,3-D and metham sodium) to be registered and/or available in 2007 or 2008 and these could impact on future nominations. MBTOC acknowledges that a registration for chloropicrin is being considered in Israel and that this would possibly allow for lower dosages of MB to be used for <i>Orobanche</i> in the absence of other effective alternatives.</p> <p>2009 CUN: The nomination for 2009 remains unable to assess as key information about the efficacy of alternatives, especially updated information on alternative fumigants and herbicides may alter the suitability of alternatives for this use.</p>									

Country	Industry	Quantity approved for 2005 (1ExMOP and 16MOP)	Quantity approved for 2006 (16MOP+ 2ExMOP+ 17MOP)	Quantity approved for 2007 (MOP17+MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
	<p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The CUN states that broomrape infestation is aggravated by the phase out of MB, as registered alternatives do not prevent area-wide infestation with the parasitic weed. The same is true for agro technical means, long-term fallow cropping and biological control, which in practice and in economic terms do not cope with the long-term vitality of broomrape seeds and their gradual germination mechanism. CUN also states that prospects for the registration of Imazapic are low and the manufacturer is having doubts about the cost-effectiveness of its registration, might refrain from its further development. Further, soil solarization, usually applied on intensive vegetable crops, is too expensive for extensive outdoor crops.</p>								
Israel	Cucumber – protected	None	none	25.000		18.750	18.750	6.250	U
	<p>2008 CUN: MBTOC recommends 18.750 tonnes for this use in 2008. Cucumbers are grown in open ended polyhouses in 3 cropping cycles per annum in the proximity of the residential houses of cooperative family and private family farms. A large proportion, 70%, of the critical use is concentrated in one village (Achituv), where the growers specialized for years in the cultivation of indoor cucumbers for the domestic market. For two out of the three cropping cycles, solutions were found despite the monoculture production pattern, which reflects the specialization of the growers but narrow rotations enhances the pressure from soil-borne pathogens. Additional reasons for this nomination are the appearance of a new race of a fungus, <i>F. oxysporum f. sp. radialis cucumerinum</i>, and buffer zone limitations on the use of the MS+1,3-D mixtures. The pathogen is highly virulent and the infestation level particularly high in the affected location and it could devastate entire greenhouses in a short period of time. MBTOC requested whether this was a contingency use for this pathogen, but no response has been received by the Party. MBTOC encourages the Party to consider the technical and economical feasibility of non-chemical alternatives (steam, substrates, heat, crop rotation) already in use in many parts of the world for this crop. The nominated amount is based on a dosage of 250 kg/ha (25 g/m²) of 98:2 MB/Pic in conjunction with use/ emission reduction technologies. MBTOC further encourages the Party to revise buffer zone regulations in light of the current generalized use of VIF films. The Party is requested to conduct a thorough review of the technically feasible use and economic cost of low cost substrate systems for future nominations.</p> <p>2009 CUN: The nomination for 2009 remains unable to assess as key information about the cost of cheaper substrate systems and buffer zone impacts may alter the suitability of alternatives for this use.</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The CUN states that the costs of grafted seedlings are a limiting factor because the technology in cucumbers is in its infancy in Israel. Furthermore, the CUN states that dazomet is not economically feasible due to its high prices and its low efficacy in the winter in Israel when prevailing soil temperatures are too low for its use.</p>								

Country	Industry	Quantity approved for 2005 (1ExMOP and 16MOP)	Quantity approved for 2006 (16MOP+ 2ExMOP+ 17MOP)	Quantity approved for 2007 (MOP17+MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
Israel	Cut flowers - bulbs - protected	303.000	240.000	220.185		163.400	114.450	155.200	U
<p>2008 CUN: MBTOC recommends 114.45 tonnes for this use in 2008. The nomination is for a variety of cut flowers produced under cover, which are mainly affected by weeds (<i>Cyperus</i> in particular) and nematodes (root-knot but also ectoparasites such as <i>Longidorus</i>) and fungi. MBTOC does not recommend the use of 1.8 tonnes for fumigating substrates used in rose production as alternatives such as steam are efficient for this use. MBTOC has adjusted the amount requested for carnations grown in Ghaza to conform to the standard presumptions of 350 kg/ha (35 g/m²) of MB/Pic 98:2. <i>Fusarium oxysporum f.sp. dianthi</i> is the key pest affecting carnations in the Ghaza region. Lack of registration of key alternatives and chloropicrin mixtures continues to be the major factor restricting adoption of alternatives, which have been identified as technically feasible. MBTOC considers that adoption of substrate production is possible for liliium, calla lilies, gerberas and carnations outside the Ghaza area. A 25% transition rate has been applied for adoption of this alternative in the 104 ha grown with these crops. Steam is a technically feasible alternative for other flower types but the Party states that it is economically unfeasible (economic information provided is however insufficient). 1,3-D and metham sodium are also available and a further 25% reduction was applied for phase-in of these alternatives in those flowers not suited for substrate production. MBTOC encourages the Party to seek registration of alternatives that have been identified as promising through research such as 1,3-D/Pic and to explore different steam application methods and equipment which have proven to be economically feasible in other countries. MBTOC requests the Party to submit a new nomination for 2009 as the envisaged registration of key alternatives could impact this nomination.</p> <p>2009 CUN: The nomination for 2009 remains unable to assess as key information about the cost of cheaper substrate systems and buffer zone impacts may alter the suitability of alternatives for this use.</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The CUN provides partial budgets for MB and the next best alternatives. The net revenue for the next best alternatives is negative in all cases. CUN also states that soil steaming and solarisation is not cost effective. Some net revenue analysis was reported in 2006 round of CUNs.</p>									
Israel	Cut flowers - open field	77.000	67.000	74.540		53.345	44.750	53.345	U
<p>2008 CUN: MBTOC recommends a reduced amount of 44.75 tonnes for this nomination in 2008. The dose of MB proposed by the Party (250 kg/ha or 25 g/m² of 98:2 formulation) conforms to MBTOC's standard presumptions. The nomination is for open field production of cut flowers which are mainly affected by weeds (<i>Cyperus</i> in particular) and nematodes (root-knot but also ectoparasites such as <i>Longidorus</i>) and fungi. Lack of registration of key alternatives on flowers such as 1,3-D+Pic, dazomet and metham sodium, continue to be the major constraints affecting substitution of MB at this time. MB formulations with higher chloropicrin content are also not registered. However MBTOC estimates that, solarisation, plate steaming, substrates and the few chemical alternatives registered allow for 25% reduction in the amount nominated. This reduction is not applied to the 18.95 t requested for nurseries of geophytes where high health plant material needs to be produced, although no certification issues are involved. MBTOC encourages the Party to seek registration of alternatives identified as suitable through research. MBTOC requests the Party to submit a new nomination for 2009 as possible registration of alternatives could impact this nomination.</p> <p>2009 CUN: The nomination for 2009 remains unable to assess as key information about the cost of cheaper substrate systems and buffer zone impacts may alter the suitability of alternatives for this use.</p>									

Country	Industry	Quantity approved for 2005 (1ExMOP and 16MOP)	Quantity approved for 2006 (16MOP+ 2ExMOP+ 17MOP)	Quantity approved for 2007 (MOP17+MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
	MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The CUN states that steaming and solarization are not cost effective while the economic assessment refers the reader to the indoor flowers CUN. However the information provided in the CUN 2006 for indoor flowers is insufficient.								
Israel	Melon - protected and field	125.650	99.400	105.000		87.500	87.500	87.500	U
	<p>2008 CUN: MBTOC recommends 87.5 tonnes for this use for 2008 and is unable to assess the nomination for 2009. <i>Monosporascus cannonballus</i> is the key pathogen in the Arava Valley. <i>Fusarium oxysporum</i> f.sp. <i>melonis</i> and root-knot nematodes, mainly <i>M. javanica</i>, also cause problems. The requested amount at a rate of 250 kg/ha (25 g/m²) of 98:2 MB under barrier films (LDPF) complies with MBTOC's standard presumptions. MBTOC notes that alternatives are already used for 100% of the fall melons grown in the Arava valley and including metham sodium, dazomet, solarization, Formaldehyde + metham and 1,3-D/Pic (only in the southern Arava). The CUN is solely for the winter crop as the alternatives do not control the key pathogens and the plant back time is too short. The nominated amount has been reduced by 12% by the Party, with respect to the 2007 amount approved. MBTOC considers alternatives, such as substrates, grafting and the use of formalin + metham to be effective alternatives and notes recent studies which may assist transition to alternatives (Pivonia <i>et al</i> 2002, 2004). MBTOC notes that Pic and MB/Pic mixtures are effectively used for <i>Monosporascus</i> in other countries under similar conditions (eg. Stanghellini <i>et al</i>. 2003; Martyn, 2002). The Party is requested to conduct a thorough review of the technically feasible use and economic cost of low cost substrate systems for future nominations. Information received by MBTOC after the recommendation indicates that a fungicide, with the active ingredient fludioxonil, is used and effective for suppression of vine decline in cantaloupes (the soil-borne fungus <i>Monosporascus cannonballus</i>) and already registered in several countries (US, Canada, Australia, Japan, EU). In 2007 it is being tested for the first year of the two necessary for registration in Israel. Fludioxonil is a broad-spectrum fungicide, and is classified by the US EPA as a "reduced risk pesticide" due to its good toxicological profile. MBTOC expects that in a short term this product would be commercially available for Israeli growers for control of <i>M. cannonballus</i>. The Party is requested to submit information regarding progress in future nominations.</p> <p>2009 CUN: The nomination for 2009 remains unable to assess as key information about the cost of cheaper substrate systems and buffer zone impacts may alter the suitability of alternatives for this use.</p>								
	MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The CUN provides partial budgets for the next best alternatives. The net revenue for the next best alternatives is negative.								

Country	Industry	Quantity approved for 2005 (1ExMOP and 16MOP)	Quantity approved for 2006 (16MOP+ 2ExMOP+ 17MOP)	Quantity approved for 2007 (MOP17+MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
Israel	Potato	239.000	165.000	137.500		93.750	93.750	75.000	U
<p>2008 CUN: MBTOC recommends 93.75 tonnes of MB for this use in 2008. Potatoes are produced in a small cultivable area of the Sharon and Gaza regions where intensive cropping of groundnuts and potato occur in the same year and infestation with fungal and bacterial pathogens, nematodes, parasitic and perennial weeds take place, some of them common to the two predominant crops: <i>Rhizoctonia solani</i>, <i>Verticillium dahliae</i>, root knot nematodes, mainly <i>Meloidogyne javanica</i>, common scab (<i>Streptomyces scabies</i>), deep scab- (<i>Streptomyces</i> spp.), powdery scab (<i>Spongospora subterranea</i>), <i>Orobanche</i> spp. and nutsedge. Volunteer potato plants in the succeeding crop may carry PVY type viruses. The Party has made a 31.8% reduction with respect to the amount approved by the MOP for 2007. The dosage rate of 250 kg/ha (25 g/m²) of MB 98:2 conforms to MBTOC's standard presumptions. The nomination however is for both seed potatoes subjected to high health standards and regular crop production which is normally achieved without MB worldwide in locations where all the pest complexes exist. The applicant identified that 550 of 15,000 ha are located in highly populated areas where winter production occurs, pathogens are high, and regulatory constraints are in place for feasible alternatives such as 1,3 D + Pic (61:35) which as a result of buffer zones prohibit their use. The party indicates that effective control alternatives are in development for the pest complexes and that they are transitioning to these. The CUN indicates that new technologies are allowing increased use of alternatives such as metham sodium and formaldehyde. MBTOC notes that there are effective alternatives but that their use is affected by buffer zones, which are larger than in other countries (for 1,3-D stated as 250m compared to 31m in USA for example). MBTOC urges the Party to consider review of these buffers in the light of use with barrier films. The continuing reduction of requested amounts of methyl bromide is an indication that this strategy is successful.</p> <p>2009 CUN: The nomination for 2009 remains unable to assess as key information about the cost of cheaper substrate systems and buffer zone impacts may alter the suitability of alternatives for this use.</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The CUN provides no economic analysis</p>									
Israel	Strawberry fruit – protected (Sharon and Ghaza)	196.000	196.000	93.000	none	64.125 + 71.250 for Ghaza	57 + 48.96 for Ghaza	57.000 + 67.500 for Ghaza	U
<p>2008 CUN: MBTOC recommends a reduced CUE of 57 tonnes for Sharon and 48.96 tonnes for Ghaza, totalling 105.96 tonnes for 2008. MBTOC has adjusted the nomination to the Sharon nomination for 20% adoption of 1,3-D/Pic and the Ghaza nomination to conform to rates used with barrier films but has not adjusted this part of the nomination for adoption of alternatives in 2008. The Party states that buffer zones restrict the use of alternatives, especially that of a key alternative, 1,3-D/Pic. MBTOC, however, considers low cost substrates to be a potential alternative and urges the Party to consider the feasibility of open field substrate systems for future nominations. Detailed economic information on the suitability of such systems is required. MBTOC urges the Party to consider registration of other alternatives to MB as well as other formulations of MB/Pic (e.g. 67:33 and 50:50) to assist further reductions in the use of MB. To date, the Party has not provided information, as required under Decision IX/6,1(b)(iii), to demonstrate that an appropriate effort is being made to evaluate and commercialise alternatives, and that research programmes are in place to develop and deploy alternatives. The CUN points out that relatively little work has been</p>									

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		<p>done on alternatives since about 2004, and 1,3-D/Pic is the only alternative fumigant that has been registered to date. The national management strategy does not present relevant plans to develop and deploy alternatives in strawberry fruit. MBTOC requests the Party to provide information about plans for transitioning to alternatives, including plans for alternative chemicals, low-cost substrates, combinations of resistant cultivars, registered nematicides and fungicides, cultural practices or other relevant techniques. The key pests affecting strawberry fruit in Israel are fungi (<i>Rhizoctonia solani</i>, <i>Colletotrichum acutatum</i>, <i>Macrophomina phaseolina</i>, <i>Verticillium dahliae</i>, <i>Fusarium</i> spp.), nematodes (<i>Meloidogyne hapla</i>), and weeds (<i>Cyperus rotundus</i>, purple nutsedge). The CUN states that 1,3-D/Pic is effective and used on part of the crop but further adoption is limited to 20% of the Sharon area and 0% in Ghaza due to buffer zones. However, the estimated impact of buffer zones has not been substantiated by any quantitative data to date for Sharon, despite being requested. MBTOC considers that soilless systems are a possible, technically-feasible alternative (López-Medina <i>et al.</i>, 2004; Lieten, 2004; Savvas and Passam, 2002; Mutitu <i>et al.</i>, 2006). Substrates have been used on a small area in this CUN, but the Party states that further uptake is limited by cost. MBTOC is requesting information on the economics of low-cost substrate systems and current MB prices. MBTOC encourages the applicant to consider evaluation and adoption of low-cost substrate systems which are used in similar circumstances in other regions, including warm climates (Mutitu <i>et al.</i> 2006; Vos and Bridge, 2006; MBTOC, 2007; Sonneveld, 2004; Lieten, 2004). Substrates have been adopted at the rate of up to 80 ha/year for protected strawberry in Mediterranean climates in several EC countries (EC 2006). MBTOC has not adjusted this nomination for 2008 for adoption of substrates due to economic uncertainty associated with low cost substrates but urges the Part to consider the feasibility of open field substrate systems for future nominations. MBTOC has reduced the MB dose on the Ghaza nomination to conform to standard presumptions for 100% adoption of VIF and the Sharon nomination for 20% adoption of 1,3-D/Pic. MBTOC recommends that the Party register other alternatives to MB as well as other formulations of MB/PIC (e.g. 67:33 and 50:50).</p> <p>2009 CUN: The nomination for 2009 remains unable to assess as key information about the cost of cheaper substrate systems and buffer zone impacts may alter the suitability of alternatives for this use.</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: CUN shows that the net revenue using MB is lower than for the alternatives. Dazomet and 1,3 D/pic provided net revenues that were 70% and 53% higher than MB at 2005 prices. CUN states that the registered chemical alternatives carry environmental costs [although this also applies to MB]. CUN also states that soilless cultures are a possibility, but not before 2010 due to the high costs of the capital-intensive versions considered in the CUN</p>							

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Israel	Strawberry runners (Sharon and Ghaza)	None	none	0.000		36.625	31.900	35.75	U
<p>CUN 2008: MBTOC recommends a reduced CUE of 31.9 tonnes for 2008 (11.9 t for Ghaza Strip and 20 t for Sharon, Israel). The key pests affecting strawberry runner production are fungi (<i>Rhizotonia solani</i>, <i>Verticillium dahliae</i>, <i>Fusarium</i>, <i>Phytophthora</i>, <i>Sclerotinia sclerotiorum</i>, <i>Macrophomina phaseolina</i>), root knot nematodes and purple nutsedge. The Party stated that MB 98:2 at a rate of 500 kg/ha (50 g/m²) with PE and 250 kg/ha (25 g/m²) with barrier films are necessary to meet certification standards. The requested amount for the Ghaza region has been adjusted to MBTOC's standard presumption of 35 g/m² for 98:2 MB. The Party stated that 1,3-D + PIC mixture has been the leading alternative; however, adoption of this alternative is limited by the required 250 m buffer which significantly limits its use in the Sharon strawberry nursery growing area which is heavily populated. Hot gas application method is used in the Ghaza Strip growing area because the plots are small, adjacent to houses and there are no injection tools or qualified applicators in the area. 10% of the treated area in the Ghaza strip will be tested with barrier films with a reduced application rate. MBTOC encourages faster adoption of LPBF in the Ghaza Strip. 100% of the treated area in Sharon uses barrier films (VIF).</p> <p>2009 CUN: The nomination for 2009 remains unable to assess as key information about the cost of cheaper substrate systems and buffer zone impacts may alter the suitability of alternatives for this use.</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: This CUN is based in regulatory restrictions and lack of technically feasible alternatives.</p>									
Israel	Sweet Potatoes	None	none	None		111.5	111.5	61.25	U
<p>2008 CUN: MBTOC recommends 111.5 tonnes of MB for 2008. This is a new nomination comprising both seed potato requiring high health and regular crop production. The key pests affecting sweet potatoes are root-knot nematodes, sweet potato scab (<i>Streptomyces ipomoea</i>) and <i>Pythium</i> spp. The applicant identified that MB is the only registered chemical for use for sweet potato production in Israel. The rates to be used in the CUN are consistent with MBTOC's standard presumptions under VIF. The party indicates that the only effective control alternative to MB is 1,3-D/Pic (Telopic) but this product is not currently registered for sweet potato. It is expected to receive registration by 2008. The applicant indicates that a 50% transition to this alternative by 2009 is possible and MBTOC recognizes that this is an effective rate of uptake of an alternative. MBTOC notes there are numerous nematode resistant varieties of sweet potato available and these are widely used in countries where nematodes are the primary pest problem (Bello A., pers. comm.). MBTOC suggests that the applicability of these varieties in Israel be investigated.</p> <p>2009 CUN: The nomination for 2009 remains unable to assess as key information about the cost of cheaper substrate systems and buffer zone impacts may alter the suitability of alternatives for this use.</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: Trial data shows that there may be economically feasible alternatives but these need to be verified.</p>									

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Japan	Cucumber	88.300	88.800	72.400	51.450	none	none	61.400	34.30
<p>MBTOC recommends a reduced amount of 34.30 tonnes for 2009. The recommended quantity represents a 33% reduction from the CUE amount for 2008 approved at the 18th MOP. MBTOC has considered this nomination, which is based on the need to control particular viruses of cucumber, since 2005. Globally, such viruses are not considered as soilborne pathogens but can survive in crop debris for several years. The problem mainly arises from continuous monoculture. An integrated program including cultural practices e.g. sanitation, rotation with a non-host, removal and destruction of crop debris, cleaning and sanitation of the greenhouse and the surrounded area, and pathogen free seeds has proven very effective in similar situations around the world. The Party has indicated that rotation to non-susceptible hosts such as tomatoes and strawberries is an effective way to reduce virus incidence (Matsuo and Suga, 1993). As a transition strategy, MBTOC urges the Party to increase adoption of LPBF which allow for reducing MB doses by up to 50%. Since the last nomination the 1,3-D/Pic mixture has become registered, however, farmers fear possible phytotoxicity. MBTOC thus urges the Party to conduct trials on the correct use of this mixture in some cucumber production. MBTOC recognises the unique farming system used for cucumber in Japan which has been in place for many years. However, in many countries cucumber production has already shifted to substrates in greenhouse conditions and has become the most widely used technique for eliminating a wide array of soilborne plant pathogens. Inexpensive and simple systems (buckets, bags, etc.) are available for this kind of production and are widely used in around the world. (Leoni & Ledda, 2004; Budai, 2002; Savvas and Passam 2002; Akkaya & Ozkan, 2004; Engindeniz, 2004). The Party is encouraged to consider substrate production, which implemented correctly can produce higher yields than MB (MBTOC, 2002, 2006; Batchelor 2000, 2002; Savvas and Passam 2002). Studies conducted in Japan support soilless culture as a feasible option (Fukuda and Anami 2002, Sakuma and Suzuki 1995). MBTOC notes however that even when growing in substrates there is a critical need for a high degree of sanitation and for the use of pathogen free transplants. Large numbers of growers can be trained to use substrates systems in a short period of time as experienced in many MLF projects (UNEP/TEAP, 2004). The CUN states that the Aichi Agricultural Research Centre (2005) identified the effectiveness of KGMMV control by methyl iodide in pot tests. MBTOC encourages the Party to continue to pursue the registration of methyl iodide for soil uses (methyl iodide was registered for imported timber in Japan in 2004, under JMAFF registration No. 21407).</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The economic evidence provided shows a reduction in net revenue of more than 90% in capital-intensive soilless systems. As a result capital-intensive soilless culture systems are not economically feasible.</p>									

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Japan	Ginger (field)	119.400	119.400	109.701	84.075			102.200	63.056
<p>MBTOC recommends 63.056 tonnes for this use in 2009. The recommended amount has been reduced 25% from the CUE approved amount for 2008 at the 18th MOP in 2008 as alternatives are considered available. The nomination is for control of <i>Pythium</i> spp. (<i>Pythium ultimum</i> var. <i>ultimum</i>, <i>Pythium zingiberium</i>) in ginger fields using MB (98:2) applied from small cans. This nomination has been submitted several times with no change in production and cultural practices to minimize disease. MBTOC conducted a field visit to Japanese open field ginger production sites in August 2006 and recognized the difficulties that growers have in adopting some alternatives, however dazomet is considered an effective alternative which is economically feasible. Difficulties in applying dazomet occur during wet and cold weather, which sometimes cause phytotoxicity, unacceptable plant back times and reduced crop yields. Chloropicrin is registered in Japan but the Party states that the plant back time for chloropicrin is 40 days which could disrupt crop scheduling and result in delays in planting and lower yields compared to MB treatment. MBTOC urges the Party to encourage adoption of LPBF films and MB formulations with a higher proportion of pic, which would allow for reduced rates of MB. Further, metham sodium and dazomet can be used more efficiently if drip irrigation is adopted. The Party indicates that metalaxyl combined with dazomet is highly effective for managing <i>Pythium</i> diseases but does not refer to cultural practices such as soil drainage, sowing date, organic amendments (Smith et al 1988) or fungicides specific to Oomycetes, such as phosphonates. MBTOC kindly requests that updated information relating to trials with alternatives and a detailed prospect for relevant fumigant\pesticide registration during 2007-2009 are submitted with any future nominations.</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The CUN states that the net revenue for the next best alternative (dazomet) is negative, because of a 58% decline in yield. As a result dazomet is not economically feasible.</p>									
Japan	Ginger (protected)	22.900	22.900	14.471	11.100			12.900	8.325
<p>MBTOC recommends 9.675 tonnes for this use in 2009. The recommended amount has been reduced 25% from the CUE approved amount for 2008 at the 18th MOP as alternatives are considered available. The nomination is for control of <i>Pythium</i> spp. (<i>Pythium ultimum</i> var. <i>ultimum</i>, <i>Pythium zingiberium</i>) in ginger fields using MB (98:2) applied from small cans. This nomination has been submitted several times with no change in production and cultural practices to minimize disease. MBTOC conducted a field visit to Japanese open field ginger production sites in August 2006 and recognized the difficulties that growers have in adopting some alternatives, however dazomet is considered an effective alternative which is economically feasible. Under protected production conditions, difficulties arising with dazomet during wet, cold conditions can be overcome as moisture and temperature can be controlled in protected environments. This would make plant back times more reasonable. MBTOC therefore considers that protected ginger can implement the use of dazomet much more quickly. Chloropicrin is registered in Japan but the Party states that the plant back time for chloropicrin is 40 days which could disrupt crop scheduling and result in delays in planting and lower yields compared to MB treatment. MBTOC urges the Party to encourage adoption of LPBF films and MB formulations with a higher proportion of Pic that allow for reduced rates of MB. The CUN states that metalaxyl does not control <i>Pythium</i> efficiently as resistant strains to this fungicide have been reported. The Party indicates that metalaxyl combined with dazomet is highly effective for managing <i>Pythium</i> diseases but does not refer to cultural practices such as soil drainage, sowing date, organic amendments (Smith et al 1988) or fungicides specific to Oomycetes, such as phosphonates. MBTOC kindly requests that updated information relating to trials with alternatives and a detailed prospect for relevant fumigant\pesticide registration during 2007-2009 are submitted with future nominations.</p>									

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<p>MBTOC comments on economics 2007: The nomination was not based on economic arguments. Economic statements provided in CUN: The CUN states that the net revenue for the next best alternative (Hot water treatment) is positive but 75% less than the net revenue for MB. As a result hot water treatment is not economically feasible.</p>									
Japan	Melon	194.100	203.900	182.200	136.650			168.000	91.1
<p>MBTOC recommends a reduced amount of 91.1 tonnes for 2009. The recommended quantity represents a 33% reduction from the CUE approved amount for 2008 at the 18th MOP as alternatives are considered available. MBTOC has considered this nomination, which is based on the need to control a particular virus of melon, since 2005. Globally, such viruses are not considered as soilborne pathogens but can survive in crop debris for several years. The problem mainly arises from continuous monoculture. An integrated program including cultural practices e.g. sanitation, rotation with a non-host, removal and destruction of crop debris, cleaning and sanitation of the greenhouse and the surrounded area, and pathogen free seeds has proven very effective in similar situations around the world. The Party has indicated that rotation to non-susceptible hosts such as tomatoes and strawberries is an effective way to reduce virus incidence (Matsuo and Suga, 1993). MBTOC urges the Party to increase adoption of LPBF which allow for reducing MB doses by up to 50%. Since the last nomination the 1,3-D/Pic mixture has become registered, however, farmers fear possible phytotoxicity. MBTOC thus urges the Party to conduct demonstration trials on the correct use of this mixture in melon production. MBTOC recognises the unique farming system used for melon in Japan which has been in place for many years. However, in many countries some melon production has already shifted to substrates in greenhouse conditions and has become the most widely used technique for eliminating a wide array of soilborne plant pathogens. Inexpensive and simple systems (buckets, bags, etc.) are available for this kind of production and are widely used in around the world. (Leoni and Ledda, 2004; Budai, 2002; Savvas and Passam 2002; Akkaya & Ozkan, 2004; Engindeniz, 2004). Substrate production, when implemented correctly can produce higher yields than MB (MBTOC, 2002, 2006; Batchelor 2000, 2002; Savvas and Passam 2002). Studies conducted in Japan support soilless culture as a feasible option (Fukuda and Anami 2002, Sakuma and Suzuki 1995). MBTOC notes however that even when growing in substrates there is a critical need for a high degree of sanitation and for the use of pathogen free transplants. Large numbers of growers can be trained to use substrates systems in a short period of time as experienced in many MLF projects (UNEP/TEAP, 2004).</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The economic evidence provided states that resistant varieties (used alone) result in a 70% decrease in net revenue. The yield of the soilless culture is higher, however the unit price of the product is lower because of problems of appearance and uniformity of the fruit. As a result the gross income for this system of soilless culture is lower. In addition costs of capital-intensive soilless culture are higher hence net income is lower. As a result resistant varieties and capital-intensive soilless culture are not economically feasible.</p>									

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Japan	Pepper (green & hot)	187.200	190.700	156.700	121.723			134.400 (including 0.010 t for research)	81.149 Includes 0.010 for research
<p>MBTOC recommends a reduced amount of 81.149 tonnes for 2009. The recommended quantity represents a 33% reduction from the CUE approved amount for 2008 at the 18th MOP as alternatives are considered available. MBTOC has considered this nomination, which is based on the need to control particular viruses of peppers, since 2005. Globally, such viruses are not considered as soilborne pathogens but can survive in crop debris for several years. The problem mainly arises from continuous monoculture. An integrated program including cultural practices e.g. sanitation, rotation with a non-host, removal and destruction of crop debris, cleaning and sanitation of the greenhouse and the surrounded area, and pathogen free seeds has proven very effective in similar situations around the world. The Party has indicated that rotation to non-susceptible hosts such as tomatoes and strawberries is an effective way to reduce virus incidence (Matsuo and Suga, 1993). MBTOC urges the Party to increase adoption of LPBF which allow for reducing MB doses by up to 50%. Since the last nomination the 1,3-D/Pic mixture has become registered, however, farmers fear possible phytotoxicity. MBTOC thus urges the Party to conduct demonstration trials on the correct use of this mixture in pepper production. MBTOC recognises the unique farming system used for peppers in Japan which has been in place for many years. However, in many countries some pepper production has already shifted to substrates in greenhouse conditions and has become the most widely used technique for eliminating a wide array of soilborne plant pathogens. Inexpensive and simple systems (buckets, bags, etc.) are available for this kind of production and are widely used in around the world. (Leoni and Ledda, 2004; Budai, 2002; Savvas and Passam 2002; Akkaya & Ozkan, 2004; Engindeniz, 2004). Substrate production, when implemented correctly can produce higher yields than MB (MBTOC, 2002, 2006; Batchelor 2000, 2002; Savvas and Passam 2002). Studies conducted in Japan support soilless culture as a feasible option (Fukuda and Anami 2002, Sakuma and Suzuki 1995). MBTOC notes however that even when growing in substrates there is a critical need for a high degree of sanitation and for the use of pathogen free transplants. Large numbers of growers can be trained to use substrates systems in a short period of time as experienced in many MLF projects (UNEP/TEAP, 2004)</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. Economic statements provided in CUN: The economic evidence provided shows that the higher cost of soilless culture is largely due to the higher cost of seeds, fertilizers, depreciation and miscellaneous, and is only partly offset by lower costs of pesticides and insurance in capital-intensive systems. Given these data, the net revenue for capital-intensive soilless culture is negative and hence is not economically feasible.</p>									

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Japan	Watermelon	129.000	98.900	94.200	32.475			23.700	21.65
<p>MBTOC recommends a reduced amount of 21.65 tonnes for 2009. The nomination has been reduced over the CUE amount accepted by Parties at the 18 MOP. MBTOC acknowledges that the Party has made a substantial reduction since the previous nomination and this reflects a marked transition to alternatives. The nomination is based on the need to control particular viruses of watermelon, since 2005. Globally, such viruses are not considered as soilborne pathogens but can survive in crop debris for several years. The problem mainly arises from continuous monoculture. An integrated program including cultural practices e.g. sanitation, rotation with a non-host, removal and destruction of crop debris, cleaning and sanitation of the greenhouse and the surrounded area, and pathogen free seeds has proven very effective in similar situations around the world. The Party has indicated that rotation to non-susceptible hosts such as tomatoes and strawberries is an effective way to reduce virus incidence (Matsuo and Suga, 1993). MBTOC urges the Party to increase adoption of LPBF which allow for reducing MB doses by up to 50%. Since the last nomination the 1,3-D/pic mixture has become registered, however, farmers fear possible phytotoxicity. MBTOC thus urges the Party to conduct trials on the correct use of this mixture in watermelon production. MBTOC recognises the unique farming system used for cucumber in Japan which has been in place for many years. However, in many countries watermelon production has already shifted to substrates in greenhouse conditions and has become the most widely used technique for eliminating a wide array of soilborne plant pathogens. Inexpensive and simple systems (buckets, bags, etc.) are available for this kind of production and are widely used in around the world. (Leoni & Ledda, 2004; Budai, 2002; Savvas and Passam 2002; Akkaya & Ozkan, 2004; Engindeniz, 2004). Substrate production, when implemented correctly can produce higher yields than MB (MBTOC, 2002, 2006; Batchelor 2000, 2002; Savvas and Passam 2002). Studies conducted in Japan support soilless culture as a feasible option (Fukuda and Anami 2002). Sakuma and Suzuki 1995). MBTOC notes however that even when growing in substrates there is a critical need for a high degree of sanitation and for the use of pathogen free transplants. Large numbers of growers can be trained to use substrates systems in a short period of time as experienced in many MLF projects (UNEP/TEAP, 2004)</p> <p>MBTOC comments on economics: The nomination was not based on economic arguments. The economic evidence provided shows a reduction in net revenue of more than 50%. As a result soilless culture is not economically feasible.</p>									

Country	Industry	Quantity approved for 2005 (1ExMOP and 16MOP)	Quantity approved for 2006 (16MOP+ 2ExMOP+ 17MOP)	Quantity approved for 2007 (MOP17+MOP18)	Quantity approved for 2008 (MOP18)	Quantity nominated for 2008 (additional or new)	MBTOC recommendation for 2008 (additional or new)	Quantity nominated for 2009 (new)	MBTOC recommendation for 2009 (new)
Poland	Strawberry runners	40.000	40.000	24.500		12.000	11.995		
<p>MBTOC recommends a reduced amount of 11.995 tonnes for this nomination in 2008. The key pests affecting strawberry runner production are fungi (<i>Verticillium dahliae</i>, <i>Phytophthora cactorum</i>, <i>P. fragariae</i>, <i>Fusarium oxysporum</i>), and nematodes (<i>Globodera rostochiensis</i>). The nomination states that a dosage of 98:2 MB of 400 kg/ha with barrier films are needed to meet the certification standards for strawberry runners. The Party's CUN for 2008 is less than 50% of what MBTOC recommended for 2007 (24.5 t). The requested amount has been adjusted to account for the Party's inclusion of the entire amount of the formulation in their nomination instead of the MB portion only (392 kg/ha (39.2 g/m²)). The Party's request exceeds MBTOC's standard presumption of 20 g/m² MB for propagation materials, however formulations enabling the use of these rates are currently not registered. The Party tested a reduced rate [MB/Pic 300 kg/ha (30 g/m²) under VIF], but results indicated that plant vigour, productivity and weed control were too low in the low soil temperatures prevailing during autumn fumigation. Potentially effective alternatives such as 1,3-D & Pic and Pic alone are not currently registered. While dazomet and metham sodium are registered, their slow decomposition and long plant back time in the early spring has precluded expanded use due to production timing using currently available application equipment. Poland has recently acquired (July 2006) improved application equipment such as rotary spader machines which enhance efficiency of metham sodium and dazomet (Runia and Molendijk, 2006; Runia <i>et al.</i> 2007). MBTOC encourages the Party to expedite the adoption of this new application equipment and encourage the registration of Pic and other fumigants if needed.</p> <p>MBTOC comments on economics 2007: The nomination was not based on economic arguments. Economic statements provided in CUN: The Economic Analysis (page 17-18) shows 11 percent yield loss with dazomet and 80 percent loss with metham sodium when applied by traditional methods. The revenue analysis shows net revenue decrease of 54% in year 1, then 10% loss in year 2, and an increase of 7 % over MB in year 3. The increases in net revenue are due to adverse weather conditions in the first year, and is expected that Dazomet will be economically feasible in 3 years.</p>									

