



Australian Government

Department of Sustainability, Environment, Water, Population and Communities

Mr Marco Gonzalez
Executive Secretary
Ozone Secretariat
P.O. Box 30552
Nairobi 00100
KENYA

Dear Mr Gonzalez,

Australian report under Decision Ex.I/4 paragraph 7.

In accordance with this decision of the Parties at the first Extraordinary Meeting of the Parties, please find enclosed with this letter a summary of Australia's current critical use nominations.

Paragraph 7 of Decision Ex.I/4 decided:

“To request each Party from 1 January 2005 to provide to the Ozone Secretariat a summary of each crop or post harvest nomination containing the following information:

- (a) Name of the nominating Party;
- (b) Descriptive title of the nomination;
- (c) Crop name (open field or protected) or post-harvest use;
- (d) Quantity of methyl bromide requested each year;
- (e) Reason or reasons why alternatives to methyl bromide are not technically and economically feasible;”

The attached report represents Australia's report for its current nomination in accordance with this Decision.

Should you have any concerns regarding the content of the report, please feel free to contact me +612 6274 1035.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Patrick McInerney', with a stylized flourish at the end.

Patrick McInerney
Director
OSGG International and Industry Policy Section
Department of Sustainability, Environment, Water, Population and Communities

1 February 2013

Australian report under Decision Ex.I/4 paragraph 7

A. Name of the nominating Party:

Australia

B. Descriptive title of the nomination:

Re-application by the strawberry runner industry of the Australian State of Victoria for critical use exemption in 2015 towards the phase-out of methyl bromide.

C. Crop name (open field or protected) or post harvest use:

Strawberry runner production (open field)

D. Quantity of methyl bromide requested in each year:

29.76 metric tonnes in 2015

E. Reason or reasons why alternatives to methyl bromide are not technically or economically feasible.

In July 2012, a five-year research program on alternatives to MB for strawberry runners was completed. The project identified methyl iodide/chloropicrin (MI/Pic) as the only short-term replacement for methyl bromide/chloropicrin (MB/Pic) for soil disinfestation in the runner industry.

However, MI/Pic is no longer available as a replacement for MB for the Victorian strawberry runner industry. This is due to the 2012 decision of the manufacturer, Arysta Life Sciences, to withdraw its application to register the product in Australia. Furthermore, in September 2012, the manufacturer of ethanedinitrile (EDN), BOC/Linde advised that research into the possible replacement of MB by EDN within the runner industry was being discontinued.

By 2011/12, the efficacy of methyl iodide/chloropicrin (MI/Pic) as an alternative to MB/Pic for runner production was well established in commercial trials. A bystander safety study on MI/Pic was completed and results submitted to the Australian Pesticides and Veterinary Medicines Authority in 2011/12. The estimated flux of MI from treated soils (MI/Pic 50:50 at 500 kg/ha) in Toolangi, Victoria ranged from 5 $\mu\text{g}/\text{m}^2/\text{sec}$ immediately after application to 7.5 $\mu\text{g}/\text{m}^2/\text{sec}$ after tarp was punched and removed to 0.25 $\mu\text{g}/\text{m}^2/\text{sec}$ at the end of the 10-day monitoring period. Over the 10-day monitoring period only 6% of applied MI was emitted to the atmosphere. Dispersion modelling with PERFUM 2 showed that buffer zones were not necessary when fumigating with MI/Pic in the Toolangi region of Victoria. Following this trial Arysta Lifesciences withdrew their registration application for MI for economic reasons. MI will not be registered in Australia and is no longer available as an alternative for Victorian runner growers.

Small-plot trials with ethanedinitrile (EDN) conducted in 2005 showed its potential as an alternative to MB/Pic for soil disinfestation. Detailed results from trials are commercial-in-confidence and held by BOC/Linde. However, observation showed that weed control with EDN (500 kg/ha) was no better than untreated soils and markedly less compared with MB/Pic (50:50 at 500 kg/ha). In September 2012,

BOC/Linde announced they were ceasing funding of research for the use of EDN in the runner industry.

In September and October 2012, meetings were held between federal and state government agencies, university and industry to discuss the loss of these potential alternatives, and identify new research priorities and funding to develop MB alternatives. Three new research and analysis priorities were agreed, these being:

- (a) Development of integrated disinfestation systems to replace MB in the runner industry, based on the combined use of existing chemistries;
- (b) Partial budget analysis of runner production in soil-less systems compared with MB/Pic-treated soils. It is anticipated that this analysis will be available in July 2013; and
- (c) Related research on hazard and risk analysis to assess critical control points, such as soil fumigation with MB and other alternatives, to reduce quarantine and market access risk for strawberry runners. This work incorporates a review of pathogen threshold levels in certified runners.

The proposed new research will evaluate the individual and combined effectiveness of the most promising available chemistries (including the best available soil fumigants, biofumigants, herbicides, nematicides and fungicides) in soils at Toolangi, Victoria on fungal pathogens, nematodes and weeds targeted to meet certification and biosecurity standards for strawberry runners. It is anticipated that PicPlus® (Pic - chloropicrin/petroleum distillates) and/or Telone® (1,3D - dichloropropene/chloropicrin) products will form the basis of these disinfestation systems, due to their established efficacy against soil-borne pathogens and nematodes, respectively.

Research will need to focus on methods to minimise the risk of runner crop losses through phytotoxicity and also measure the potential risk of increased pathogen load on runners compared with existing treatments using MB/Pic. The project will investigate lower rates of alternative fumigants to overcome phytotoxicity issues, different formulations, use of improved barrier films, and changing fumigation schedules to accommodate longer plant-back times. Under current industry conditions, potential alternative fumigant products may also require supporting treatments (e.g. herbicides, metam sodium) to provide better weed control options in order to provide a viable alternative to MB/Pic. For example, previous research has demonstrated the strong potential of isoxaben, napropamide and metolachlor as post-plant herbicides for strawberry runners, and these products may enhance the weed control provided by Pic and 1,3-D formulations. The research has a high likelihood of success because it involves combination and better management of products that are effective against individual soil-borne pests.

Previous Australian research successfully identified and developed alternatives to replace the use of MB in the strawberry fruit industry, such as Telone® and chloropicrin, but these products were not effective on their own in the strawberry runner industry. The problem related to the unique soil type and environment in the major runner district in Australia (Toolangi, Vic), which retained residues of

alternative fumigants and caused crop losses of up to 40% and poor control of soil-borne diseases, weeds, and pests. Results from a trial conducted with Telone C-35 in 2009/2010 continued to show the same trends as in previous research by the runner industry in Toolangi, Victoria. Previous trials showed that Telone C-35 reduces runner crop yields and that this is considered to be due to phytotoxicity. Nonetheless, Telone® products will form an important component of new research proposed by the strawberry runner industry.

Initial trials with PicPlus® (85:15 Pic/petroleum distillates) were conducted over 2011/12. PicPlus® (500 kg/ha) reduced the viability of buried inoculum (sclerotia) of the pathogens *Sclerotium rolfii* and *Verticillium dahliae* from 100% (in untreated plots) to nil. This effect was equivalent to MB/Pic (50:50, 500 kg/ha). However, MB/Pic reduced weed emergence significantly more than PicPlus® (by 93% compared with 27%, respectively) and increased runner yields (compared with untreated plots) significantly more than PicPlus® (by an average of 350% compared with 115%, respectively). Thus, PicPlus® shows promise for pathogen control but needs development of complementary treatments (e.g. herbicides) before being suitable for adoption by the runner industry. Longer term studies into the effects of petroleum distillates upon crop yields and soil health are also needed. Nonetheless PicPlus® will be an important component of new research proposed by the strawberry runner industry.

The Victorian Strawberry Industry Certification Authority (VSICA) commissioned and completed the first season (2011/12) of Foundation stock production (50,000 runners required) using soil-less systems as an alternative to MB. Yields in the first commercial year of operation were 30% lower than previous seasons in MB-treated soils, and were associated with a 15% drop in revenue. Partial budget analysis has been commissioned to further investigate the economic feasibility of expanded soil-less production for the Mother and Certified generations of runners. Technical issues affecting adoption of soil-less systems for production of the Mother and Certified generations, and which may require investigation include: (a) further commercial understanding required on the yields and production of runners in soil-less systems, (b) lack of information and data on accumulated chilling hours, soluble carbohydrate levels and in-field hardening on the physiology of runners (c) how these factors affect the capacity of runners to deliver equivalent strawberry fruit yields to MB-systems over the long-term, and (d) logistical constraints in disposing spent mix in an approved site.