United States Department of Agriculture

Office of the Secretary
Washington, D.C. 20250

The Honorable David Scott
Chair
Committee on Agriculture
U.S. House of Representatives
1301 Longworth House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

Section 10116 of the Conference Report for the Agriculture Improvement Act of 2018 directs the U.S. Department of Agriculture (USDA) to conduct a study and submit a report to the President and Congress on methyl bromide use in response to an emergency event. The study directed the following to be addressed:

a. a risk-benefit analysis of authorizing State, local, and Tribal authorities, in accordance with requirements and criteria, to determine when the use of methyl bromide is required and to authorize such use;
b. a risk-benefit analysis authorizing the Secretary, in accordance with the appropriate requirements and criteria, to determine when the use of methyl bromide is required, and to authorize such use.
c. a historic estimate of situations occurring on or after September 15, 1997, that could have been deemed emergency events,
d. a detailed assessment of the adherence of the United States to international obligations, with respect to the prevention of ozone depletion; and
e. an assessment and recommendations on the requirements and criteria to be met to authorize the use of methyl bromide in response to an emergency event, including any recommendations regarding the definition of "emergency event" as provided by the language in Section 10116.

The study and associated appendix are attached. USDA met with career staffs at the Environmental Protection Agency and the Department of State to discuss the Farm Bill language and its meaning. In addition, we met with interested stakeholders as directed in the Farm Bill and discussed the requirements of the study at the Methyl Bromide Alternatives Conference (MBAO). Stakeholders also presented information at the MBAO meetings related to the study for which USDA staffs listened. Finally, USDA received numerous letters from growers describing their specific need for an emergency use of methyl bromide that included pest pressures that are threatening their industries, and how methyl bromide could alleviate those pests. Letters were received from folks across the country that grow a diversity of crops with a diversity of pests as it is not a localized issue. USDA appreciates the time and effort to write those letters as they described their challenges better than anyone else.

Various sectors require the use of fumigants to address pests. Methyl bromide is very efficient
and is more effective than other alternatives. When the United States agreed to phase out methyl bromide as part of the Montreal Protocol, growers were quite alarmed, but were reassured that there were specific exemptions for which they could use if the criteria was met.

However, the emergency use exemption was never made available for to growers in the United States, though it was on the Regulatory Agenda for many years. Basically, this is the only exemption available as the Critical Use Exemptions (CUEs) are unattainable. Other countries have provided this emergency exemption and their growers have benefited. As a result, U.S. growers are at a disadvantage. In this report, we address the requirements, provide information regarding the challenge growers continue to face, and recommend that this provision be provides. We also provide information regarding potential risks that could occur as required by the Farm Bill language. Appendix A includes copies of the letters received from a diversity of growers.

If you have any questions, please have a member of your staff contact USDA's Office of Congressional Relations at (202) 720–7095. A similar letter is being sent to Ranking Member Glenn Thompson.

Sincerely,

ANTHONY SHEA Digitally signed by ANTHONY SHEA
Date: 2021.02.03 20:07:49 -05'00'

Kevin Shea
Acting Secretary

Enclosure

REPORT TO CONGRESS

SEC. 10116 STUDY ON METHYL BROMIDE USE

IN RESPONSE TO AN EMERGENCY EVENT

December 1, 2020

U.S. Department of Agriculture

Office of the Chief Economist

Washington, D.C.

INTRODUCTION

Purpose with Background

This study will examine potential risks and benefits to growers of various ways of legislatively permitting methyl bromide use in response to an emergency event. Though there was real concern expressed by growers in the United States that this key fumigant was being phased out, they were assured that provisions in the Montreal Protocol, including the "Emergency Use" provision, would be available. However, the U.S. has not yet promulgated regulations allowing use of the "Emergency Use" provision for the use of methyl bromide. Other countries have provided a structure for which their growers could use this provision and those growers have used this provision for their benefit. As a result, it provides other countries an economic advantage over US growers. Some will argue that it is a matter of how they define emergency use, but growers in the United States, without better alternatives to address significant pest pressures, know when they have emergencies, and are left to address them with multiple other types of pesticides that are more expensive and result in yield reductions. More important, no other provision, except the "Emergency Use" provision, will address their circumstances. Growers have regularly expressed the need for this provision; their letters describing their challenges are at the end of this report.

Charge from Congress

Congress requested a study of the methyl bromide in response to an emergency event[1]. The charge from Congress was to conduct a risk-benefit analysis of two different methods of authorizing the emergency use of methyl bromide, provide a detailed assessment of the adherence of the United States to the international obligations of the United States with respect to prevention of ozone depletion, and an historic estimate of events after that could have been deemed emergencies. This study examines potential risks and benefits to growers of various ways of legislatively permitting methyl bromide use in response to an emergency event.

Montreal Protocol

The Montreal Protocol on Substances That Deplete the Ozone Layer (hereafter the Montreal Protocol) was adopted on September 16, 1987 and ratified by the United States in 1988. The Montreal Protocol proposed the reduction of methyl bromide use as it is a substance implicated in ozone depletion. Agricultural uses of methyl bromide were scheduled to end on January 1, 2005. Methyl bromide was phased out during a transitional period where commodities could be granted critical use exemptions. Eventually, no more exemptions have been approved by EPA (though still available)despite the absence of cost effective alternatives. Initially, it was a slow phase out of use for various sectors with some sectors being completely eliminated over time. Beginning around 2011, sectors were aggressively eliminated with reasoning that there were alternatives; USDA scientists strongly disagreed. Though research was continuing, few alternatives, if any, were ready for full implementation. As important, not

[1] Section 10116 of Public Law 115-334 Agricultural Improvement Act of 2018

all alternatives could translate for use on crops grown in various locations across the United States. Agriculture cannot be addressed in a "one size fits all" fashion due to the incredible geographical and climatic diversity across the United States. In addition, USDA has always been adamant that one pesticide is not a complete alternative for another as pesticides are not "a cut and paste exercise". Though registrants notified EPA that they were voluntarily cancelling specific fumigant, that information could not be used to support the continued need for methyl bromide as decisions were made based on the *current* landscape (not cancelled yet), though not implemented for use two years in the future. Growers eventually stopped submitting applications for Critical Use Exemptions as the application process had become incredibly burdensome with a predicted result of denial regardless of the validity of the content of the application. The Protocol also addresses the use of methyl bromide in quarantine and preshipment. Under United States law, the Montreal Protocol is implemented under the Clean Air Act and administered by the Environmental Protection Agency using a combination of Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) regulations and Clean Air Act regulations.

Despite the apparent end of critical use exemptions, the Montreal Protocol contemplated situations where small amounts of methyl bromide may be necessary to address pests that otherwise had no technological or feasible management alternative. Decision IX/7 of the Montreal Protocol states, "The *Ninth Meeting of the Parties* decided in *Dec. IX/7* to allow a Party, upon notification to the Secretariat, to use, in response to an emergency event, consumption of quantities not exceeding 20 tonnes of methyl bromide. The Secretariat and the Technology and Economic Assessment Panel will evaluate the use according to the 'critical methyl bromide use' criteria and present this information to the next meeting of the Parties for review and appropriate guidance on future such emergencies, including whether or not the figure of 20 tonnes is appropriate." At present, the United States still has not promulgated any regulations permitting U.S. growers to utilize this exemption.

DISCUSSION - Risk-benefit analysis of various methyl bromide emergency use processes (risk to growers)

In order to assess the risks and benefits of methyl bromide emergency use provisions, first we must establish a baseline.

Structure of the of U.S. Agricultural System and Need for Methyl Bromide

Agriculture in U.S. differs from EU and Australia – much of U.S. agriculture occurs in a warm, moist subtropical climate or by a subtropical regime with mild winters that are frost-free. Weather is a key driver to productivity. The weather regime in the US differs from EU.

Agriculture in the United States is conducted in eleven level I ecoregions of North America and eighty-five level III ecoregions (USEPA, 2013). The diversity of climatic, edaphic and biological constraints in the U.S. suggests that a similar diversity of crop protection and agricultural practices are required to produce agricultural commodities within the U.S. The U.S. is unique among developed countries in that some of its major agricultural regions are located within subtropical climatic regimes (Florida) resulting in frost-free vegetation growth and wet soils. Other major growing regions (Central Valley California) are characterized by hot, dry summers and mild winters. The absence of a killing freeze to reduce pest pressure made methyl bromide particularly useful in these areas. The cold spring soil temperatures in

the Northern States made methyl bromide a more effective early season fumigant in areas such as Michigan.

Methyl bromide use in the U.S. was formerly concentrated in areas with warm summers and mild or frost-free winters. Methyl bromide was used primarily on strawberries, tomatoes, cucurbits, peppers, nursery crops, and orchards, vineyards, and golf courses. Nearly half of the U.S. preplant use of methyl bromide in 1997 was on soil fumigation in advance of planting tomatoes and strawberries (Rosskopf et al., 2005). About 36% of the total U.S. methyl bromide used in 1997 was used in pre-plant systems in Florida with strawberry (9%), pepper (23%) and tomato (62%) making up 94% of the State's pre-plant use (Rosskopf et al. 2005). That same year, California pre-plant treatment accounted for 50% of the 1997 U.S. total pre-plant use of methyl bromide with strawberry (27%), vegetables (26%) and perennials (34%) making up 87% of the State's preplant use of 16 million pounds (Rosskopf et al., 2005).

One reason for the popularity of methyl bromide is its effectiveness for reducing nematodes, fungal pathogens, and weed seeds, such as nut sedges. Replacements for methyl bromide often are not cost-effective substitutes over a several year-period. Pest pressure and weed seeds increase in absence of soil fumigation results in yield reduction and require supplementary pesticide treatments such as nematicides, herbicides and fungicides. We examine several case study crops for illustration in the analysis below.

Strawberries

California strawberry production is concentrated in four counties: Monterey, Santa Clara, Santa Barbara and Ventura (USDA NASS, 2018). Strawberries have been grown in this part of California since the 1950's due to the favorable climate and the well-developed agricultural infrastructure and support industries (Tourte et al., 2016). California strawberries can be harvested from April to November due to the mild climate (Geisseler and Howarth, 2014). Between 1960 and 2016, the acreage for strawberries in Santa Cruz and Monterrey tripled while the production increased almost ten-fold. Strawberries are grown in the fall and harvested in the spring. Following strawberry harvest, other crops, such as lettuce or cruciferous vegetables are grown. In the southern strawberry counties, strawberries are planted in the spring and harvested into the fall. Celery, lettuce, and cruciferous vegetables are planted after the strawberry harvest in this area. Strawberries have become an important cash crop in California.

Strawberry production in Florida is centered within a 25 mile radius of Plant City, primarily in Hillsborough county (Rosskopf et al, 2005), although there are smaller growing areas in the southeast and along the northern coast. Most farms are small acreage and interspersed throughout residential area. Florida produces 100% of the winter, domestic harvest Strawberries are grown in raised beds with drip irrigation as an annual crop. Like California, Florida also saw an increase in yields following the use of methyl bromide and plasticulture (Rosskopf et al., 2005).

Tomatoes

Florida and California account for two-thirds of the fresh tomato production in the U.S. California leads the U.S. in production of processing tomatoes and supplies much of the world's processed tomatoes. Most of the production is in Fresno, Yolo, Kings, Merced and San Joaquin counties. In 2019, California had the second lowest tomato yield since 2011. Harvested acreage of California processing tomatoes has been declining since a high of 317,000 acres in 1995 to 236,000 acres in 2019 (USDA, NASS, 2019).

California processing tomato yields have been increasing steadily from the mid-1990s to 2019. Processing tomatoes are planted in beds, primarily using transplanted seedlings (Hartz et al., 2008).

Since the 1960's, tomato production in Florida occurs in raised beds with plastic mulch with drip or seepage irrigation (Rosskopf et al., 2005). Fumigants are applied in the soil and the soil is immediately covered by mulch.

Cucurbits

Michigan produces about 48,000 acres of cucurbits (watermelons, squash, melon and cucumber) in an area with cool, wet springs (Hausbeck et al., 2020).

Impacts of the Methyl Bromide ban

In some areas, the pests and diseases previously controlled by methyl bromide are beginning to increase in prevalence.

Strawberry

Methyl bromide contributed, along with adoption of new agricultural practices, to a positive impact on strawberry yields. In California during the fifties, prior to the use of methyl bromide and drip irrigation, the yield of a California strawberry field was between one and five tons, but after using methyl bromide and drip irrigation, the yields increased to forty tons per acre (Backstrom, 2002; Tourte et al, 2016). Methyl bromide controlled several key pests and diseases in California strawberry fields including Verticillium wilt, black root rot (*Phytophora*), and Fusarium. Combatting the Verticillium wilt was one of the main reasons for the use of methyl bromide in strawberry fields in the 1950's (Holmes et al., 2020). The California strawberry industry grew, in part, due to the impact of methyl bromide on removing harmful pathogens, nematodes, and weed seeds (Holmes et al., 2020). Strawberries began to be produced as an annual rather than a biennial crop, and could be grown annually on the same field instead of in rotation with other crops every other year due to the effects of methyl bromide. The use of fumigants provides more predictable yields and fruit quality and the development of stable markets. Strawberry yields were larger when using fumigant combinations including methyl bromide than those that did not (Shaw and Larson, 1999).

In 2005, only two California counties had *Macrophomina* infestations. By 2015, *Macrophomina* was found in ten California counties, including the four biggest strawberry producers. Similarly, Fusarium wilt was found only in Ventura county in 2006, but by 2014, all four strawberry producing counties and Contra Costa reported infestations.

Florida strawberry production followed a similar pattern to California. In the 40's and 50's, Strawberry acres are often double cropped with other vegetable and fruit crops that also benefit from the methyl bromide fumigation of strawberries (Osteen, 1999). *Macrophomina* is also on the rise in Florida and becoming a problem for some growers. Strawberry growers ranked loss of effective fumigants as one of the six threats or challenges facing the industry, although only 10% of growers surveyed listed this as the top threat (Guan et al., 2013). Mexican competition has steadily been increasing from 15,500 acres in 2010 to 25,000 acres and 600 million pounds of fruit in 2013. (Harvested acreage in Mexico was up to 27,700 in 2017-2018 (Karst, 2018))

Tomatoes

The loss of methyl bromide resulted in higher fumigant costs for Florida tomato growers. Switching from a 67:33 combination of methyl bromide and chloropicrin to PicChlor 60 (a formulated mixture of 1,3-dichloropropene and chloropicrin), the new industry standard, reduced average gross revenue by $3,569/acre and reduced profit by $1,656/acre (Cao et al., 2019). The authors suggest this is a lower bound estimate of losses due to the phase-out of methyl bromide in the tomato industry as the study did not account for losses due to reduced double cropping or increased decline in efficacy of alternatives to methyl bromide due to build-up of pest pressure. Due to the high price of fumigants, some tomato growers in Florida are switching to lower rates of fumigant application (Alves, et al., 2013). Tomato acres in Florida increased from 39,400 harvested acres in 2000 to a high of 45,200 in 2005 before declining to 33,000 acres in 2015. It must be noted that intense competition by Mexico in the winter-fresh tomato market also contributed to reduction in gross revenue and profit (Hodges, et al., 2019).

Important pests for Florida tomatoes include Fusarium wilt, damping off due to Pythium or Rhizoctonia, and in Dade county, Verticillium wilt and Corky brown rot. Fusarium has proven to be a rapid colonizer which persists for long periods and is particularly difficult to control (Zhang, et al, 2015).

Florida had the highest tomato yield among the three, top tomato-producing States until 2009 when yield per acre began dropping (Guan et al., 2017). In 2000, the average yield per acre in Florida was about 40,000 pounds per acre. By 2015, the average yield in Florida had fallen to around 28,788 pounds per acre. The yield reduction is thought to be primarily due to the ban on methyl bromide.

Cucurbits

Michigan produces about 48,000 acres of cucurbits (watermelons, squash, melon and cucumber) in an area with cool, wet springs (Hausbeck et al., 2020).

Current Baseline

Methyl bromide is no longer available for U.S. critical use exemptions for soil pre-plant uses or premises. Alternatives to methyl bromide include other fumigants, other pesticides and the use of resistant varieties of crops. Other fumigants suggested as methyl bromide alternatives include Metham sodium, dazomet, 1,3-dichloropropene, alone or combined with chloropicrin, dimethyl disulfide (DMDS) and iodomethane. Many of these alternative fumigants have had a troubled history of implementation. Air quality concerns limit the use of 1,3-dichloropropene in some California townships to 136,000 lbs total in 2017. This is equivalent to treating about 410 acres per township. Iodomethane, once thought to offer a viable alternative to methyl bromide was cancelled in 2012[2]. Dimethyl disulfide, no longer marketed in the U.S., had not been widely used as an alternative as the other fumigants, such as metham sodium.

- USDA Investments into Alternatives Research

The U.S. Department of Agriculture maintains a robust research program to identify methyl bromide alternatives. Yearly USDA and land-grant university efforts towards methyl bromide alternatives research has been considerable. From 1994 to 2006, the U. S. Government had invested over $150 million in research and innovative technologies to promote alternatives to methyl bromide (USEPA,

[2] Iodomethane; Notice of receipt of request to voluntarily cancel Iodomethane Pesticide Registrations and Amend a Registration. 77 Federal Register 69840, Nov. 21, 2012

2006). The United States Agricultural Research Service expended $18,733,000 in FY 2018 and $19,087,000 in FY 2019 alone (Widmer, 2019). Methyl Bromide Transition grants by the National Institutes for Food and Agriculture to land grant universities have been awarded annually since 2002. From 2002 to 2018, NIFA awarded over $41 million in grants for 99 projects to support research for new, effective pesticides and integrated approaches to managing pests that can replace methyl bromide used in farming, storage, shipment, and quarantine. In FY2018 NIFA awarded $1.8 million for projects in watermelon production, tomato production, ham industry, and the wood products industry (Mengistu, 2018). The projects are approved, based on merit, to transition away from methyl bromide. Research efforts, including by the private sector, continue in 2020 and include non-fumigant approaches. Research progress is presently yearly at the Methyl Bromide Alternatives Outreach (MBAO) Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reductions. Since 1994, agricultural and forestry researchers from governmental, academic and private institutions, as well as extension agents and users have gathered annually to discuss progress on transition. All presentations from 1994 to 2019 are posted at the following site for MBAO (www.mbao.org).

Research into methyl bromide alternatives has been successful depending on the crop and location. For example, Sydorvych (2006) concluded that "Although technical issues currently associated with some of the [methyl bromide] alternatives may exist, results indicate that there are economically feasible fumigation alternatives to [methyl bromide] for production strawberries in the Southeastern United States. A similar conclusion was arrived for tomatoes in North Carolina (Sydorovych, 2008). However, challenges remain such as for crops such as strawberries in California and Florida and tomatoes in Florida.

- Geography of Key Production Areas of Strawberries ~~Tomatoes~~ in California and Florida and Tomatoes in Florida

Almost 80% of strawberries are produced in California, primarily in four counties on 36,000 acres (USDA NASS, 2019). Pre-plant use of methyl bromide has not been available since 2017 except for quarantine uses. Strawberry cultivation in California occupies about 36,000 acres in four coastal counties. The use of other fumigants has increased since methyl bromide critical use exemptions expired. The cost and availability of suitable land and under what conditions factor into grower decisions about use of methyl bromide alternatives (Guthman, 2016).

Florida produces most of the domestic strawberries available during the winter months on 208 farms on 9499 acres, primarily in Hillsborough county (USDA, NASS, 2017). *Macrophomina* is a serious problem for many strawberry growers.

~~California produces the most tomatoes with about 75% for processing and 25% for the fresh market. California tomatoes are grown on 255,000 acres with a production of 935 cwt/acres.~~ Florida produces about 50% of U.S. tomatoes on 29,136 acres in 2017, all for the fresh market (USDA, NASS, 2017)

DISCUSSION - Risk-benefit analysis of various methyl bromide emergency use processes

Three alternatives for implementing emergency use provisions are examined below.

a. No-action (current situation)

This alternative extends the current baseline where there is no emergency use of methyl bromide. At the outset of the Montreal Protocol Phaseout of methyl bromide, growers expected to have access to its emergency use provisions. There has been no emergency use of methyl bromide allowed for soil fumigation since the U.S. began implementing the Montreal Protocol in 1997. Currently, there is no mechanism to allow applicants to request an emergency use. The EPA has indicated that they have considered developing an emergency use regulation in their Unified Agenda submissions in 2001,[a] and after a proposed rule was not immediately issued, the emergency use regulation was moved to the EPA long range actions list in 2002,[3] where it remained until it no longer appeared, starting with the Spring Unified Agenda of 2012.[4]

Under this option, methyl bromide would continue to be unavailable for emergency use unless the EPA issues an emergency use regulation. Other alternatives or fumigants are available to address pest and disease conditions but may not be sufficient to control the diseases or pests. There would be a risk that some growers may no longer be able to produce certain crops on some land parcels if treatment for soilborne diseases and pests are not effective, prohibitively expensive or not amenable to implementation on a scale commensurate with agricultural production. The U.S. Department of Agriculture maintains a methyl bromide alternatives research program which could provide treatment options for some of these growers. This alternative would not result in inconsistency between U.S. policy and the requirements of the Montreal Protocol.

b. Establishment of emergency use provisions

An alternative to the present condition where methyl bromide is no longer available would be to allow emergency use of methyl bromide consistent with the emergency provision in the Montreal Protocol. The Montreal Protocol contemplates the use of 20 tonnes of methyl bromide to address an emergency event. The text of Decision IX/7 states, "The *Ninth Meeting of the Parties* decided in *Dec. IX/7* to allow a Party, upon notification to the Secretariat, to use, in response to an emergency event, consumption of quantities not exceeding 20 tonnes of methyl bromide. The Secretariat and the Technology and Economic Assessment Panel will evaluate the use according to the 'critical methyl bromide use' criteria and present this information to the next meeting of the Parties for review and appropriate guidance on future such emergencies, including whether or not the figure of 20 tonnes is appropriate." At present, the United States has not promulgated any regulations permitting U.S. growers or processing and storage facilities to utilize this exemption.

There is not a long history of emergency exemptions recorded in the annual meetings of the parties by the Secretariat of the Montreal Protocol. Emergency uses are noted in a variety of Montreal Protocol documents and are not recorded in a single, searchable source. The Secretariat was notified of the use, but notification was not always prior to the use. The Methyl Bromide Technical Options Committee had

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[3] USEPA, Protection of Stratospheric Ozone: Strategy for Exempting Critical and Emergency Uses of Methyl Bromide, 2002, Long Range Actions see https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=200210&RIN=2060-AJ63

[4] USEPA, Protection of Stratospheric Ozone: Strategy for Exempting Critical and Emergency Uses of Methyl Bromide, 2011, Long Range Actions, Fall 2011 see https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=200210&RIN=2060-AJ63

no objections to any of the uses in Table 1 below. Using more than 20 tonnes could result in a new decision by the Parties on emergency use. None of the emergency uses reported exceed 5 tonnes.

Canada developed an emergency use rule in 1998 (see Ozone-depleting substances and Halocarbon Alternatives Regulations (SOR 2016-137)). Canada has had several emergency exemptions, primarily for strawberry runners when existing CUES were not used and for pasta warehouses. Australia has had emergency exemptions for strawberry runners and recently for rice fumigation as phosphine fumigation was too slow to provide supermarkets with rice quickly enough to satisfy consumer demand during the pandemic. Israel has had emergency exemptions for treating artifacts and library books.

Table 1. Emergency Exemptions Reported in the Annual Report of the Secretariat of the Montreal Protocol

Year	Country	Use Type	Pest Targeted	Amount (tonnes)	Comments
2005	Canada	Strawberry runners			
2006	Australia	Strawberry runners			
2011	Canada	Strawberry runners		1.9	Unused CUE
2013	Canada	Pasta warehouses (2)	Phosphine resistant pests	6,171 kg	MBTOC questioned rate of phosphine used and whether fumigation or destruction was the proper course of action
2016	Israel	Museum	Common Furniture beetle	500 kg	
2019	Israel	Library	Common Furniture beetle	100 kg	
	Jamaica	Flour mill and warehouse		1.5	MBTOC noted that suitable alternatives exist for these uses
2020	Canada	Strawberry runners		1.764	Unused CUE from 2019
2020	Australia	Rice (domestic)	Phosphine fumigation too slow to meet pandemic demand for rice	1.67	0.111 tonnes actually used

Decision IX/7 states that the Secretariat and Technology and Economic Assessment Panel will evaluate the use according to the "critical methyl bromide use," the same standard used to evaluate a critical use nomination during the critical use exemption process. Any regulatory system proposed by legislation would need to incorporate these standards to be consistent with evaluation process used by the Protocol.

Below we examine two scenarios to mitigate the risk of loss of farms and ability to grow commodities due to the current prohibition on use of methyl bromide. The scenarios differ only in the governmental authority responsible for authorizing emergency use of methyl bromide. Both scenarios would require new enabling legislation and have similar constructs. The aspects these scenarios have in common are discussed here while consideration of their unique elements is presented in two successive sections below.

In this report, the term "emergency event" is a situation that 1) occurs where a plant or commodity is grown or produced or a facility providing for the storage of, or other services for which a plant or

commodity is used; 2) for which the lack of availability of methyl bromide for a particular use would result in significant economic loss for the owner, lessee, or operator of the facility or owner, grower, or purchaser of the plant or commodity; and 3) that in light of specific agricultural, meteorological, or other conditions presented, requires the use of methyl bromide to control a pest or disease at the location or facility because there are no technically feasible alternatives to methyl bromide that are easily accessible for an entity at the time and location of the event that are registered by the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. 136 et seq.) for the intended use or pest to be so controlled; and would adequately control the pest or disease presented at the location or facility.

Several aspects of any new system for approving emergency methyl bromide use need to be specified. First, there must be a mechanism to document the circumstances leading to emergency methyl bromide use. The circumstances must be consistent with the "critical methyl bromide use" criteria used by the Secretariat of the Montreal Protocol and the Technical Assessment Evaluation Panel to evaluate the emergency use and present the information at the next Meeting of the Parties. The governmental body authorizing the emergency must have established criteria for evaluating candidate emergency actions. If the criteria used by the authorizing governmental authority diverge from those used by the Montreal Protocol, there is the risk that further requirements could be issued by the Parties to restrict emergency use.

Using the critical use language as a guide, the emergency use would need to document the estimated amount of methyl bromide to be used, the use site, and the purpose of the use. In addition, the applicant would need to list alternative treatments and any technological or regulatory issues associated with them, as well as document any economic loss associated with failing to treat. The name and address of the applicant would also be required. All of this information should be included in the emergency use application and retained by the appropriate body.

An emergency would be expected to occur infrequently. Annual declaration of an emergency for the same parcel would not be consistent with emergency conditions. The use of methyl bromide to knock down a persistent fungal disease or weed infestation after unsuccessful use of methyl bromide alternatives resulting in risk of significant economic loss would be more likely to be an emergency use than successive annual applications of methyl bromide without consideration for use of alternatives.

The Montreal Protocol Secretariat must be notified of the emergency use. Such communication currently requires the State Department to contact the Secretariat. The Montreal Protocol requires notification for each emergency event ensuring that each emergency use not exceed 20 metric tonnes of methyl bromide to be consistent with Decision IX/7 (UNEP, 2020). The definition of what 20 metric tonnes means, i.e., per country, per location, etc. is not specified and would be determined during rulemaking. A notification system would need to be put in place to ensure consistency with the Montreal Protocol. Decision IX/7 contemplates retroactive review of the emergency use so there would be no need to wait for approval by the Secretariat.

The annual permissible amount of methyl bromide would need to be greater than the 20 metric tonnes amount allowed for a single emergency event to benefit more than a few growers. This view is at odds with the history of emergency uses reported by the Secretariat of the Montreal Protocol. Using more than 20 metric tonnes per year could pressure the Secretariat of the Montreal Protocol to develop additional requirements for emergency use in response to increasing methyl bromide use. Nevertheless, the Montreal Protocol is silent on invoking the emergency use provision more than one time per year.

A robust emergency use system would permit more than one emergency use to be permitted if the total amount used for all permitted emergency uses is less or equal to 20 metric tonnes. An allocation system is necessary to prevent the annual total from exceeding the 20 metric tonne limit. A nationwide tracking system would need to be established to record emergency use of methyl bromide. The annual amount of methyl bromide authorized would need to be specified in the legislation.

Establishing an emergency use provision provides benefits for growers when methyl bromide alternatives are not yet technologically or economically feasible or easily accessible. Growers would not need to grow alternative crops or find new uses for their land. Fruits and vegetables production would continue in areas where they had been grown when methyl bromide was available. But methyl bromide use would not be widespread, even if there was an emergency use rule.

Methyl bromide emergency use would require the Environmental Protection Agency to continue to maintain labels for uses that had once been approved uses if the registrant supports the use. Methyl bromide had been registered as a soil use for a wide range turf, fruits and vegetables as well as post-harvest use on stored commodities throughout the country prior to implementation of the Montreal Protocol. Former critical uses as well as other former uses would need to be supported by the registrant for a new label. Human health risks would be minimized by Federal Insecticide, Fungicide and Rodenticide Act regulations that are incorporated on the labels. In addition, the Food Quality Protection Act resulted in strict new mitigations to reduce bystander exposure. Any emergency use would need to comply with these and other Federal or State regulations.

The risk to human health associated with methyl bromide use is documented in EPA risk assessments. A comparative risk assessment is required to determine whether these risks exceed other options available to growers.

The two scenarios below differ only in the governmental authority responsible for authorizing the use of methyl bromide.

A. States, Tribes, or local authority authorization of Emergency Methyl Bromide Use

Under this option, States, Tribes or local authorities would evaluate whether an emergency existed and determine whether methyl bromide use for a specific use pattern in a particular location would be approved. This would require legislation to authorize this system and specify how this system would be implemented.

This option would require the authorizing authority (State, local or Tribal government) to provide the description of the emergency use, the amount used, and the rationale for approval to the State Department to notify the Secretariat of the Montreal Protocol. A national tracking database would need to be created so that the amount of methyl bromide used could be deducted from the total available and other authorizing authorities could be notified.

The authorizing authority would be required to submit notification of the emergency use to the federal government. If the notification is in advance of use, there may be an opportunity to review the facts and offer other alternatives or aid. The notification must include certification that the authority requires the methyl bromide for an emergency use. The notification must also include the

description of the emergency and the economic loss resulting from it and the name of the operator, pest and amount used. The notification would need to be put into a central, probably federal, database to provide other authorizing authorities notice of the amount used and the amount remaining for other uses.

There would be a risk that some State, local or Tribal authorities could authorize use of the entire amount of available methyl bromide within days of it being made available. The amount of demand for methyl bromide demonstrated by grower letters suggests that there is a chance that that the total available methyl bromide would be used every year unless the criteria for its use are very stringent. Total available methyl bromide would need to be defined though previous proposed legislation requested that it "shall not exceed the total amount authorized by the Parties to the Montreal Protocol pursuant to the Montreal Protocol for critical uses in the United States in calendar year 2011 (H.R. 3710, 2015.)

The Protocol is silent on the total amount of methyl bromide available for emergency use each year. It only requires that the amount used in a specific emergency event not exceed 20 metric tonnes. If the United States establishes an aggregate total amount in excess of 20 metric tonnes or authorizes multiple emergency events that exceed 20 metric tonnes, it is likely that the Methyl Bromide Technical Options Committee will reassess the current emergency provisions under the Montreal Protocol. If the individual emergency events authorized under the new emergency use rule are not be chastised in the annual report of the Technical and Economic Assessment Panel Evaluation of Critical Use Nominations, as experienced by Jamaica in 2016[5].

B. Secretary of Agriculture authorization of Emergency Methyl Bromide Use

Under this option, the Secretary of Agriculture would determine whether an emergency existed and determine whether methyl bromide use would be approved for a specific use in a particular location. This would federalize the submission, approval, monitoring and notification processes and decrease the uncertainty that individual authorizing authorities would interpret data differently. Requiring the Secretary of Agriculture to make the determination that the emergency use is necessary would lead to greater consistency in those determinations. The Secretary of Agriculture would also be in a position to work with the Environmental Protection Agency and the State Department than the individual authorizing authorities.

The risk to growers of not having adequate pest management tools until adequate alternatives are developed would be reduced by the emergency use provision. The provision would not provide methyl bromide to all growers who might want to use it, but when growers request the Secretary to authorize an emergency use, it would mobilize the resources of the Department to provide assistance if the strict criteria were met.

As with the previous scenario, if more than 20 metric tonnes of methyl bromide is used, the United States runs the risk of initiating a re-examination of Decision IX/7 and perhaps spurring the Parties to provide further definition of the 20 metric tonne limit on methyl bromide use. There is also a risk that the emergency will not fit the criteria of a critical use exemption closely enough and that the Methyl Bromide Technical Options Committee would disagree as to existence of viable alternatives.

[5] UNEP Technical and Economic Assessment Panel, 2016, Evaluation of the 2016 Critical Use Nominations for Methyl Bromide and Related Matters.

C. Historic estimate of situations on or after Sept. 15, 1997 that could have been deemed emergency events

There are two lines of evidence used to identify situations that could potentially have been designated as emergency events and eligible as an emergency use for methyl bromide. First, USDA documents examples known to us through our experience. Second, stakeholders have submitted examples.

Because agricultural groups could use pre-existing stocks of methyl bromide manufactured before 2005, it is unlikely, though possible, that methyl bromide was needed for emergency use from September 15, 1997 until near 2014. The inventory of existing stocks was approximately 16,422 metric tons in 2003, 12,994 metric tons in 2004, 9,975 metric tons in 2005 (USEPA, 2006). By 2014, there were 158 metric tons of pre-2005 stock (USEPA 2015). Towards 2014, the increased price of a limited supply of methyl bromide inventory (existing stocks) could have deterred some smaller users. Researchers and growers' critical use applications for use in 2015 and 2016 warned of increasing pest problems and disease without the use of methyl bromide. Grower testimony was given in 2012 before Congress on the continuing need for methyl bromide, including emergency use. This study highlights the needs of vegetables in Michigan and Florida and strawberries in California and Florida. Also, summarized and attached are 21 grower support letters submitted recently to USDA indicating that emergency conditions continue in 2020. Growers who have gone out of business, in part due to the loss of methyl bromide and inadequate performance or expense of alternatives would not be expected to be able to send in letters of support.

The following Table 2 lists the commodity sectors who had filed CUE applications in 2013 and/or 2014 citing the continued need for methyl bromide use in 2015 and 2016. The majority failed for insufficient details on economic losses if/when methyl bromide was not used. CUE applications are generally assessed on a regional basis and losses at the farm level were not generally taken into accounted. Handicapping the applicants was quantifying losses during the increasing emergence of soil pathogens, weeds and plant diseases as methyl bromide was being phased out. Also, other hindrances could have been a preference for published scientific papers to prove that alternatives do not work over several years. The need to document annual progress in scientific research for alternatives at the farm level had become too resource intensive. For example, without access to methyl bromide, four cut flower growers on 20 acres in Florida were required to generate data proving that all available post-emergent herbicides would not produce phytotoxicity on the cut flowers varieties they were growing (Riggs, 2013). For all CUE applications, even as pest problems were increasing, the applicants needed to justify what their methyl bromide needs would be three years in advance. A more rapid and timely process for emergency use, if it had been available, could have benefitted certain farms when CUE use was no longer available to them. Going forward in 2020, the various commodity sectors may now have the needed economic information to support emergency use. Table 1 lists the sectors which had requested CUEs in 2012 and/or2013 for use in 2015 and/or 2016.

Table 2: Critical Use Exemption Applications for Use in 2015, 2016 Deemed Having Insufficient Evidence of Loss		
Sector Requesting a CUE	Last Year Approved by Parties of the Montreal Protocol	Comment
Michigan Vegetables - Cucurbits, Eggplant, Pepper, Tomato	2010	Insufficient Evidence of Loss
Florida Vegetables - Eggplant, Pepper, Tomato	2013	Insufficient Evidence of Loss
Florida Strawberry Fruit	2012	Insufficient Evidence of Loss
Commodity Storage - California Dried Plum, California Walnut	2014	Insufficient Evidence of Loss
California Orchard Replant - Stone Fruit, Grape, Walnut, & Almond	2013	Insufficient Evidence of Loss
California Nursery for Tree and Vine	2013	Insufficient Evidence of Loss
Golf Courses in FL, GA, NC, SC	2005	Insufficient Evidence of Loss
National Country Ham	2015	Beginning 2016, had access to limited, diminishing supplies of methyl bromide previously set aside for post-harvest CUE use.
California Strawberry	2015	Agreed to cease methyl bromide use December 31, 2016 on the assumption that new California regulations permitting higher rates of chloropicrin would be sufficient

Challenges for Vegetable Growers in Michigan and Florida and Strawberry Growers in California and Florida as Examples of the Need for Emergency Use of Methyl Bromide.

Following are summaries of some of the major pest issues and challenges facing growers of vegetables in Michigan and Florida and strawberry growers in California and Florida as methyl bromide was being phased out and which support the occurrence of emergency conditions at the present time. This section is followed by a summary of 21 producer/grower support letters submitted to USDA in 2019-2020 in support of the present need for emergency use. The received grower/producer letters are embedded in full in Appendix A.

Strawberries (California and Florida)

CUE applications for strawberries filed in 2013 and 2014 from Florida and California cited the loss of fields when using methyl bromide alternatives. Research reports confirmed the spreading of pests without the use of methyl bromide. In 2020, growers submitted letters citing emergency conditions on their fields.

In 2008, California extension service researchers noted the progressive spread of *Macrophomina* crown rot in California strawberry fields and a need for methyl bromide to counter the build-up of pests after use of alternatives. The most seriously affected fields were those treated with pre-plant alternatives to the methyl bromide + chloropicrin fumigation standard. In the beginning, affected fields were generally small, limited patches. However, for some locations where the disease had developed for more than one season, the patches were "quite large and appear to have spread from the initial problem area. Such patterns are consistent with the spread of a soilborne pathogen." They surmised that "the fungus probably is spread within and between fields mostly by the movement of soil during soil tillage and preparation operations" (Koike, 2008). The CUE application for use in 2016 by the California Strawberry Commission stated "The continued emergence of soilborne diseases caused by *Verticillium dahlia*, *Macrophomina phaseolina* and *Fusarium oxysporum* requires broadcast treatments for effective control [with methyl bromide]."..." Methyl bromide continues to be used in rotation with alternative fumigants. Growers who have used alternatives for several years need to return to a broadcast fumigation treatment to clean up weed and soilborne disease problems. The continued appearance of soilborne disease problems forces many growers to rely on methyl bromide to treat infested fields." Mansouripour (2018) stated that *Macrophomina* crown rot and Verticillium wilt was causing in millions of dollars in yield loss each year for the most popular varieties. Research is ongoing for varieties resistant to both soil pathogens.

Holmes (2020) summarized the current situation for California strawberry growers. "New soilborne diseases have emerged, and historically important soilborne diseases have reemerged. Registration of new fumigants has been difficult and replacement of [methyl bromide] with a new and effective alternative is unlikely in the foreseeable future. Thus, crop losses due to soilborne diseases are likely to increase. Hostplant resistance to soilborne diseases has become a top priority for strawberry breeding programs, and cultivars are increasingly selected for their resistance to soilborne diseases. The intelligent integration of a variety of management tactics is necessary to sustain strawberry production in California."

In Florida, "During the 2015–2016 season, 30% plant mortality due to charcoal rot was reported early in the season and reached more than 60% by the end of the season in some fields." (Peres, 2018). See Figure 1.

Figure 1. Strawberry Field Affected by Charcoal rot during the 2015-2016 season (Credit: Al Herndon, Univ. of Florida, IFAS Extension Publication #PP242 (2018). https://edis.ifas.ufl.edu/pp161#FIGURE%201

Emergency use could have assisted certain California and Florida fields when crown rot had started spreading in 2016 and earlier order to save adjacent fields. Strawberry grower letters in these states indicate that emergency conditions continued in 2020. Florida strawberry researchers are still testing alternative fumigants in various combinations effectively control the weed, purple nutsedge, to reduce losses or improve yield. Experiments in strawberries over three growing seasons ending in 2019 concluded that "the Florida 3-way and modifications of this management system did not effectively control purple nutsedge or improve strawberry yield" Khatri (2020).

California Strawberry Grower Testimony to Congress

In 2012, The California Strawberry Commission testified before Congress (Legard, 2012) and cited a 2008 expert opinion by the University of California on the need for continued use of methyl bromide to counter *Macrophmina* and also a newly discovered Fusarium species in three fields. "In the absence of such treatments, there is a great risk that this pathogen [*Fusarim oxysporum*] will become more widespread and have a significant negative impact on strawberry production throughout California."..."Thus, it appears that at least two different fungal pathogens may be responsible for the increasingly common collapse problems observed in Southern California, As with Fusarium it seems

likely that problems caused by *Macrophomina* will become more common in the absence of recourse to effective fumigants, such as methyl bromide" (Gordon, 2008).

Vegetables (Michigan, Florida)

In Michigan, Hausbeck (2020) reported that for cucurbits, "an entire crop can become diseased" with *P. capsici* if there were unfavorable cool and wet conditions in Michigan when using methyl bromide alternatives." "Under low disease pressure, the untreated control was the most economic option for pepper, eggplant, tomato, and melon when the cost to fumigate and mulch were considered. [Methyl bromide] alternatives caused phytotoxicity in melons and smaller fruit sizes. For eggplants, "the mandatory extended plant-back time (21 days) for two alternatives, reduced yields on the first harvest date by 50% or more. "[Methyl bromide] alternatives resulted in reduced yields and plant vigor for eggplant, melon, tomato, and pepper compared to a [methyl bromide] application. The evaluated MeBr alternatives were not a viable solution for managing soilborne diseases in most cases." (Hausbeck, 2014).

During 2012 testimony before Congress, a Michigan grower, Russell Costanza, conveyed "Our farm has spent a great deal of money and effort seeking viable alternatives to methyl bromide. Research conducted on our farm with Michigan State University found that without methyl bromide, growers can expect yield losses of 70% or more. It also concluded that other fumigants are not suitable for use in cool spring soils and do not allow growers in Michigan to participate in the early vegetable markets that are the most profitable"... "I and other Michigan growers are facing an emergency situation on our farms and for that reason" (Costanza, 2012).

In 2014, a Florida extension plant pathologist for tomatoes reported on "a field from the previous spring that had 30% incidence of [fusarium] wilt at the first pick. By the second pick, it had grown to 80%, with some areas a complete loss...We have seen an expansion of the area impacted as well," he said. "Where we used to have growers report a concentrated problem area in one field, now they are reporting it popping up in many different areas and fields" The researcher described the level of fusarium crown/root rot "infestations in some tomato fields in Manatee County in the fall of 2013 as "shocking".... Even with the standard methyl bromide replacement in use, growers were seeing 10% to 30% incidence by the first pick with the disease growing progressively worse with each picking" (Rusnak, 2014).

Another Florida extension service expert stated that the alternative products "are unbelievably vulnerable to environmental events and impacts which occur after application, most notably rainfall, irrigation, and temperature."..."The problems with movement only get worse if it happens to rain after applications or if it gets cool."..."If you don't kill root-knot nematodes, Fusarium wilt, or nutsedge, they all will increase, requiring action later,"..."Or, you can expect plants collapsing late in the season right about the first pick or shortly thereafter" (Giles, 2014). The Florida vegetable growers' 2013 CUE application for use in 2015 and 2016 indicated that certain tomato, pepper and eggplant growers were experiencing failure through use of alternatives which could be documented and verified for any CUE (Botts, 2013). Subsequent research has substantiated the claims by the growers' CUE application. For Florida bell peppers, the alternative fumigants were evaluated from a multi-season perspective with a

conclusion that "[Methyl Bromide:Chloropicrin] was found to be the most consistent and least risky fumigation for a risk averse decision maker followed by the three-way system.."..." No better alternative to [methyl bromide] in Florida bell pepper production exists that can substitute [methyl bromide] in terms of cost effectiveness and risk efficiency."..."Switching from [methyl bromide] to the current industry standard resulted in a loss of $3,072/ha in profit, while the loss would reduce to $483/ha when adopting three-way treatment" (Biswas, 2018).

Similarly, for Florida tomatoes, Cao (2019) analyzed "the cost effectiveness and economic risk associated with [methyl bromide] and several other commercially available soil fumigant systems using data collected from scientific field trials. The results obtained show that a 67:33 formulation of [methyl bromide]: chloropicrin is the most cost-effective treatment, and no alternative fumigant systems investigated can substitute [methyl bromide] cost-effectively in Florida tomato production. The analysis indicated that switching from [methyl bromide] (67:33) to the new industry standard PicChlor 60 approximately resulted in a loss of $3,569 per acre in gross revenue and $1,656 per acre in profit using market prices in the 2013/14 season."

Florida Tomato Grower Testimony Before Congress

In 2012, Florida tomato growers testified before Congress on "the overall decline in tomato plant health and vigor as production practices have shifted to the alternatives. It has been observed that the general ability of the crops to withstand historical stresses, including weather related phenomena and low levels of pest pressure, have resulted in larger than anticipated impacts from both yield and quality perspectives."..."Since the phase-out of methyl bromide, we have an increasing incidence of soil-borne diseases. You can see it getting worse every year behind methyl bromide and it is going to continue to get worse. We have, you know, Fusarium, Fusarium crown rot, southern blight, which we never had. Fusarium I have in fields this year that I have never had before ever. Weeds, nutsedge is getting out of control and, you know, again these are things that we never had issues with when we had methyl bromide" (DiMare, 2012).

Twenty-one grower letters were submitted to the Department of Agriculture during the development of this report to Congress. These letters are provided in their entirety in Appendix A (below). Many of the growers cite ineffective methyl bromide alternatives as a reason for their support of the emergency use regulation. It is important to note that the response by growers suggests that demand for methyl bromide is likely greater than the supply provided by an emergency event as permitted under the Montreal Protocol. Research into alternatives by the U.S. Department of Agriculture is likely to continue to be important to these growers.
Table 3 summarizes 21 grower letters of support for emergency use by commodity, state and 14 reasons.

Table 3: Commodity Groups by States Requesting Emergency Use and Their Reasons										
Commodity	**Vegetables (Cucumbers, Tomatoes, Peppers, Vegetables in General)**			**Strawberries**		**Watermelon**	**Stone Fruits (Cherries, Nectarines, Peaches, Plums, Prunes)**	**Country Ham**	**Turf**	**Research**
States	**FL**	**MI**	**GA**	**FL**	**CA**	**FL**	**CA**	**GA, KY, MO, NC, TN, VA**	**GA**	**GA, NC**
Grower Reasons										
Alternatives Not Working on Recurring Pests	✓	✓	✓ ✓	✓✓✓ ✓✓✓ ✓✓	✓	✓	✓✓	✓	✓	✓
Loss of Alternatives			✓							✓
Alternatives Not Efficacious on New Pests				✓						
Alternatives Not Economical		✓				✓	✓			
Environ. Concerns of Alternatives						✓	✓			
State Regulatory Constraints						✓	✓✓			
Cool Soil temperatures		✓								
Missed Optimal Market Window		✓								
Rain Events/ Meteorology	✓									
Loss of Production /Revenue			✓ ✓	✓✓✓ ✓✓	✓	✓				✓
Loss use of Fields/Sold Parts of Farm				✓ ✓	✓					

Loss of Jobs			✓ ✓	✓✓✓		✓				
Non-Availability of Methyl Bromide								✓		
Increased Cost of Methyl Bromide								✓		

Following are excerpts from 21 grower/producer letters of support for emergency use from Michigan, Florida, North Carolina, California, and Georgia. The pdfs of the grower/producer letters are embedded in Appendix A.

Michigan Grower Letters (Cucumbers, Tomatoes, Vegetables in General)

Leitz, F. L., Jr. 2020. Fred Leitz Jr., Proprietor, Leitz Farms LLC in Berrien County, Michigan. Personal Communication to USDA via Email. July 25, 2020.

- "600 acres of cucumbers and tomatoes, located in Berrien county Michigan." "All we seem to be doing now is spreading disease to the whole field. *Phytophthora*, verticillium wilts, root knot nematodes, and a couple of other diseases are showing up and we have no control."
- "We proved, at least in Sodus, that we could not get to market early enough to hit the best prices for our produce."
- "Soil temps keep us from applying alternative fumigants early enough with the plant back requirements that are needed. They also didn't do as good a job on weeds and disease."
- An "emergency event exemption means that periodically me and my neighbors could "clean-up" our fields putting us in a much better position to produce a commercially and economically viable quality crop."

Bird, G., 2020. Greg Bird. Executive Director, Michigan Vegetable Council (MVC). Personal Communication to USDA via Email. July 10, 2020.

- "Growers need access to methyl bromide for emergency treatments when they face major crop losses due to pests that cannot be controlled by any other means.
- Emergency use "will prevent crop losses that will impact farm families and local economies and increase the cost of fresh fruits and vegetables, grain and nuts for American consumers.
- "...researchers have conducted extensive research to find viable alternatives to methyl bromide, but no single alternative has been found. The few alternatives that have been found are not appropriate for all crops or all pest situations."

Florida Grower Letters (Tomatoes, Strawberries, Watermelons)

Astin, S., 2020. Sam Astin III. Proprietor. Astin Farms, Astin Ranch and MPB Farms in Plant City, Florida. Personal Communication to USDA via Email. June 16, 2020.

- "Reoccurring diseases such as charcoal rot caused by the fungus, *macrophomina phaseolus*, which is currently decimating strawberry crops in Florida. Other unfamiliar diseases such as *Pestalotiopsis*, have also created major distress on our farm this past 2019-2020 season. Unfortunately, the alternative methods to methyl bromide are not currently working.

Blake, T., 2020. Tim Blake, Sydney Farms, Inc. in Sydney, Florida. Personal Communication to USDA via Email. June 17, 2020.

- "We are in the business of strawberry production and we are presently facing a sever disease issue called Charcoal Rot. This is caused by a fungus called *Macrophomina Phaseolina*, and has become a significant problem since the loss of methyl bromide."
- "We have tried all of the existing alternatives but none of them are currently working to control this disease issue. Sydney Farms Inc. has lost significant revenue because of Charcoal Rot and this disease issue becomes worse every year because we have nothing available to offer control."
- "Over the last 30 years, that I have been involved in growing of strawberries, we have not experienced any notable issues with Charcoal Rot until the use of methyl bromide was no longer available. I believe that authorizing the emergency use of methyl bromide, as a crop protection tool, will prevent crop losses that are negatively impacting Family farms that comprise the majority of the strawberry industry in Florida."

DiMare, T., 2020. Tony DiMare, Vice President. DiMare Homestead, Inc./Circle D Farms in Homestead, Florida. Personal Communication to USDA via Email. July 13, 2020.

- "615 acres of tomatoes."
- The alternatives are "much slower and don't penetrate the soil as well as Methyl Bromide. The movement only gets worse after rainfall, which we get a lot of in South Florida. The use of alternative products has caused us to experience problems such as transplant loss, root-knot nematodes, fusarium wilt, and an increase in weed inoculation."

Grooms, D. J., 2020. Dustin J. Grooms. On behalf of Fancy Farms, in Plant City, Florida. Personal Communication to USDA via Email. July 17, 2020.

- "Growers like me and my family need access to methyl bromide for emergency treatments when we face major crop losses due to pests that cannot be controlled by any other means."
- "Charcoal rot, caused by the fungus *Macrophomina phaseolina,* is currently decimating strawberry crops in Florida. I have tried alternatives to methyl bromide but none are currently working. Our farm has lost so many plants over the last several years to soil borne diseases that we have had to sell a majority of our farm."
- "If implemented we could protect our strawberry crop and be able to increase our farm size to feed the ever-growing population. We know other farmers who could do the same."

Parke, B., 2020. Bobby Parke, President, Parkesdale Farms in Dover, Florida. Personal Communication to USDA via Email. June 18, 2020.

- "Charcoal rot, caused by the fungus *Macrophomina phaseolina*, is currently decimating strawberry crops in Florida. I have tried alternatives to methyl bromide but none are currently working."
- "If implemented, we could protect our strawberry crop and be able to hire more farm staff as our operations grow. We know other farmers who would also do the same."
- "Over the past decade, industry, grower and government researchers have conducted extensive research to find viable alternatives to methyl bromide but no single alternative has been found."

Parke, M. 2020. Matt Parke, President, Berry Sweet Acres in Dover, Florida. Personal Communication to USDA via Email. May 26, 2020

- "Charcoal rot, caused by the fungus, *Macrophomina phaseolina* and *nematoda*, is currently decimating strawberry crops in Florida. I have tried alternatives to methyl bromide but none are currently working."
- "I believe that authorizing the emergency use of methyl bromide, as a crop protection tool will prevent crop losses that will impact farm families like my family and me."
- "It will also help strengthen local economies and keep the costs of fresh fruits and vegetables reasonable for American consumers."
- "It is vital that the United States authorize the Montreal Protocol's "emergency use" exemption for bonafide pest emergencies that can be verified by a state Department of Agriculture."

Simpson, D., 2020. Douglas Simpson, Jr. on behalf of Simpson Jr. Farms, LLC. in Trenton, Florida. Personal Communication to USDA via Email. June 2, 2020.

- "Fusarium Wilt, caused by the fungus *Fusarium oxysporum*, is currently decimating watermelon crops in Florida. I have tried alternatives to methyl bromide but none are currently working. Our farm could lose up to $300,000.00+ in farm revenue as a result in 2020. We also risk losing jobs if the situation is not remedied."

Williamson, M., 2020. Michelle Williamson, G & F Farms, LLC and Franberry Farms, LLC, in Dover, Florida. Personal Communication to USDA via Email. June 17, 2020.

- "Charcoal rot, caused by the fungus *Macrophomina phaseolina*, is currently decimating strawberry crops in Florida. I have tried alternatives to methyl bromide but none are currently working."
- "Our farm could lose 3.5 million in farm revenue as a result in 2021. We also risk losing 200 jobs if the situation is not remedied."

- "These new and reoccurring diseases can be detrimental to our farms' revenue. When we are unable to harvest our crop, due to these diseases, we also risk losing over 50% of our workforce. It is essential for us to keep these 1,200 farm labor workers active and employed."

Young, A., 2020. Adam Young, BBI Produce in Dover, Florida. Personal Communication to USDA via Email. June 11, 2020.

- "Charcoal rot, caused by the fungus *Macrophomina phaseolina*, is currently decimating strawberry crops in Florida. The sight of diseased fields is very concerning as our way of life is being impacted greatly. Our farm has been a member of the Florida Strawberry Growers Association (FSGA) for over 25 years."
- "The FSGA has spent significant amount of money researching alternatives to methyl bromide. As the "replacement" options have appeared to be plentiful the results have been disheartening, none seem to be working. Farmers like myself could stand to lose their entire livelihood due to having no available options to combat decimating soil diseases. Each year further removed from the last use of Methyl Bromide brings new challenges."
- "...authorizing the emergency use of methyl bromide, as a crop protection tool will prevent crop losses and bring relief to our family farm and many others like it."
- "If implemented we could protect our Florida strawberry crops and be able to provide more jobs as our operations grow. We know other farmers who could do the same."

Young, R., 2020. Ronnie Young, President, Three Star Farms Inc. in Dover Florida. Personal Communication to USDA via Email. June 15, 2020.

- "At present we are facing a problematic disease called Charcoal rot, caused by the fungus *Macrophomina Phaseolina*. This disease is currently decimating our strawberry crops."
- "I have tried all of the alternatives to methyl bromide but none of them are currently working."
- "Three Star Farms Inc. has lost significant revenue from Charcoal Rot in the past and this disease becomes more prevalent every year as we have nothing currently available that offers control of this significant issue."
- "This loss of revenue could be as high as 40% in 2021, and could result in the loss of 30 to 40 jobs on this farm alone if we cannot control Charcoal Rot."

Georgia Grower Letters (Peppers, Tomatoes, Vegetables in General, Research)

Carter, J. B., 2020. Josh B. Carter, CEO, Deep South Vegetables, Inc. in Homerville, Georgia. Personal Communication to USDA via Email. June 2, 2020.

- "Phytophora *and nutsedge in peppers and tomatoes in Georgia."*
- *"50% loss in revenue in 2020. Risk of losing 60 jobs."*

De Witt, R., 2020. Randy De Witt, Proprietor. De Witt Farms and DeWitt Produce Co., Inc., in Morven, Georgia. Personal Communication to USDA via Email. June 10, 2020.

- *"...need access to methyl bromide for treating soil borne diseases that cannot be controlled by the alternative treatments that are available at this time."*
- *"I have tried alternatives to methyl bromide but none are effective in controlling the build-up of soil borne diseases in our produce crops in Georgia at this time."*
- *"DeWitt Farms and DeWitt Produce Co., has cut production, seasonal labor force, and lost revenue as a result of not being able to use methyl bromide to control soil borne disease."*
- *"If implemented we could protect our produce crops and be able to increase our production and labor force as our operations grow. We know other farmers who would also benefit by having access to methyl bromide."*

Schwartz, B., 2020. Brian Schwartz. Associate Professor, College of Agricultural and Environmental Sciences Department of Crop and Soil Sciences, University of Georgia. Personal Communication to USDA via Email. June 24, 2020.

- "Methyl Bromide Needed for the Research and Development of New Plant Cultivars"
- Methyl bromide for R&D is needed for "Genetic purity through the elimination of contaminating "off-types." "...a reduction of non-uniform environmental influences such as soil-borne plant pathogenic nematodes and diseases are desperately needed by plant breeding research programs in the Southeastern United States."
- "Because there is not a quarantine and pre-shipment (QPS) exemption for the use of Methyl Bromide fumigation for plant breeding research, we are no longer achieving the highest annual genetic gains possible.'
- "This directly results in a loss of market share for American seed/sod producers to competitors in other countries, as well as lower profit for American farmers from reduced yields/performance."
- "My experience with the alternative fumigants and soil sterilants that have been researched at the University of Georgia is that they have not effectively, economically, or safely killed previously planted vegetative materials, their seedbank, or soil pathogens."
- "Hopefully an "emergency use exemption" for R&D will be approved in the near future, which will have long-term positive effects on American public and private researchers, the industries they serve, and the consumers across the globe that utilize our crops."

California Grower Letters (Strawberry Plants, Cherries. Nectarines, Peaches, Plums, Prunes)

Stringer, C., 2020. Caroline Stringer. Trade Director, California Fresh Fruit Association in Fresno, California. Personal communication to USDA. August 24, 2020.

- "The following comments pertain to the stone fruit: nectarines, peaches, and plums."
- "Methyl bromide would be a critically important tool to help ensure that stone fruit growers remain viable in an increasingly competitive industry.'
- "Stone fruit orchards are typically replanted every 15 - 25 years and are prone to a myriad of problems that can suppress growth and productivity."

- "Preplant soil fumigation with methyl bromide has been both highly effective and economical in controlling for these replant problems."
- "Alternatives available to growers have proven to be less successful due to factors including local regulations restricting seasonal use and difficulties replicating research trial applications in working orchards."

Thomas, D., 2020. Douglas Thomas, President, California Strawberry Plant Growers Association (CSPGA). Personal Communication to USDA via Email. June 5, 2020.

- "The California Strawberry Plant Grower's Association grows and distributes almost all the strawberry plants used in the United States. It is our responsibility to provide our customers with the healthiest and cleanest plant possible. Since the fruit growing industry has lost the use of Methyl Bromide under the critical use exemption, we have seen increases of soil diseases, particularly *Fusarium*, in fruiting fields that prevent the cultivation of strawberries in those fields. The fields are essentially lost forever."
- "MeBr is the only effective soil fumigant for treating these diseased areas and making them viable again. Since the banning of MeBr much private and public research has been done to find alternatives. These include various chemistries, soil solarization and steam treatments. These have been found to be ineffective or too expensive on many of the most damaging soil diseases."
- "If MeBr were to be used in the events of soil infection with diseases and nematodes of economic consequence growers would be able to salvage these fields.'
- "We cannot understate the importance of having the use of MeBr in limited emergency situations."

Van Sickle, G. W., 2020. Gary W. Van Sickle, Executive Director, California Specialty Crops Council in Visalia, California. Personal Communication to USDA via Email. August 24, 2020.

- "A cost-effective orchard requires that cherries not be replanted following a previous stone fruit orchard (including almonds), without fumigation."
- "Telone has proven effective where nematodes are present, but the California Department of Pesticide Regulations has restrictive township caps which limit growers' use to the winter, when it is less effective."
- "While Anaerobic Soil Disinfestation (ASD) has appeared effective in research plots, growers are not using it due to difficulties in managing its treatment."
- "Additionally, ASD is costly and could contribute to excessive amounts of nitrogen in soil and water aquifers."

Zea, D., 2020. Donn Zea, Executive Director, California Prune Board in Roseville, California. Personal communication to USDA via email. July 13, 2020.

- "...represents approximately 800 prune growers and 28 prune, juice, and ingredient handlers."
- "40,000 bearing acres of prune orchards concentrated in the Sacramento and San Joaquin Valleys."

- "California provides over 90 percent of the U.S. prune supply and approximately 40 percent of the world's supply, exporting to over 50 different countries each year."
- "Methyl bromide served as an excellent pre-plant soil fumigant. It was an incredibly effective and affordable way to sterilize the soil, eliminating harmful plant pests and diseases, thus providing the California Prune industry with the best opportunity to produce quality crops."
- "When methyl bromide was no longer available, our growers tried a variety of products with different treatment regimens to address plant pest and disease problems associated with California Prunes. While the U.S. advised our industry there were satisfactory alternatives to methyl bromide, we have found none to be as effective."
- "Often, results obtained with an alternative in the field were not the same as those experienced by researchers in a lab."
- "As an example, our growers experienced significant problems with oak root fungus (*Armillaria*), *Phytophthora spp.*, Bacterial Canker (*Pseudomonas syringa*), Crown Gall, plus other diseases and nematodes more resistant to the alternatives to methyl bromide."
- "Like many other commodities, a cost-effective orchard requires that prunes not be replanted following a previous prune, or other stone fruit orchard including almonds without fumigation Telone has proven effective where nematodes are present, but the California Department of Pesticide Regulations has restrictive township caps which limit growers use to the winter when it is less effective."
- "While Anaerobic Soil Disinfestation (has appeared effective in research plots, growers are not using it due to difficulties in managing its treatment. Additionally, ASD is costly and could contribute to excessive amounts of nitrogen in soil and water aquifers."
- "...access to the chemical would allow for a periodic "clean- up" of their orchards, better positioning them to produce commercially and economically viable, quality crops. Agriculture is experiencing particularly tough times. Making methyl bromide available would provide a critically important tool to help ensure that they remain competitive."

North Carolina Letters (Country Ham for GA, KY, MO, NC, TN, and VA, Vegetables, Turf, Research)

Cansler, C., 2019. Candace Cansler, Executive Director, National Country Ham Association in Conover, North Carolina. Personal Communication to USDA via Email. August 30, 2019.

- "It is very likely that some European dry cured ham producers have access to methyl bromide in their country and dry cured meats in Europe are allowed to have mites on the ham when put into trade in Europe or the United States."..."When dry cured hams are aged for 4 months or longer, the product has potential to attract the ham mite, *Tyrophagus putrescentiae*."
- "However, the US produced dry cured ham market must comply with USDA zero tolerance for ham mites on US product where in Europe ham mites are allowed on the product when sold to the consumer and therefore imported into the US. This inhibits the U.S. producers to effectively compete with European producers and grow their industry."
- "Currently, there is a critical use exemption that allows dry cured ham producers to use methyl bromide. Even though our industry appreciates this allocation, it is still very difficult for us to obtain and afford methyl bromide. For example, local distributors do not carry food grade methyl bromide."

- "Some of us must purchase MeBr from sources farther away i.e. TX instead of VA, KY or NC.
- The "shortage" has increased the cost of MeBr by more than 500% since 2006. We need assistance from our legislators to assure that the methyl bromide that is allocated for our industry to be used by our industry."
- "It is the National Country Ham Association's position that we are already in an emergency situation in that we are being forced to dangerously reduce and eventually stop using MeBr without an effective alternative to MeBr. Without MeBr, we are unable to protect our product from the ham mite. We must have MeBr to continue to produce dry cured hams."

Godbehere. S., 2020. Steve Godbehere. Vice President Research, TriEst Ag Group in North Carolina, Georgia and Florida. Personal Communication to USDA via Email. June 1, 2020.

- " I have been involved with Methyl Bromide alternative research with University and USDA Scientists, Research Groups such as the Auburn University Forest Nursery Cooperative, growers and grower groups such as GFVGA, FFVA, FSC, and have worked with all the companies that had a compound that could be considered a methyl bromide alternative. This goes back over 20 years."
- "One of the first alternatives we evaluated was Methyl Iodide [aka iodomethane], later known as Midas. Because this compound eventually was registered and marketed, EPA significantly reduced the CUE allocation to growers. Midas was very expensive to produce, required a new type of expensive lined cylinder, and had a lower vapor pressure than Methyl Bromide - these factors led to a very expensive product that was not economically or efficaciously feasible. The company later withdrew from the market because there were no commercial sales. At that time, we expected EPA to reallocate the CUE pounds back to the growers, but that was not the case."
- "Another alternative that came to market was Dimethyl Disulfide (DMDS), known as Paladin. This product was efficacious when mixed with Chloropicrin, however the market (row mulch vegetable production in the South East US) was so limited the manufacture of Paladin withdrew from the market due to not being able to sell enough volume to recover cost and overhead. DMDS also required significant stewardship due to odor issues that was noticed by the general public."
- "Other alternatives that have been evaluated are Ethylene Dinitrile (EDN): not registered, high cylinder pressure, special Chromalloy cylinders (very expensive), difficult for growers to apply due to low boiling point, and I would expect very expensive on a per-acre basis; Allyl Isothiocyanate (AITC trade name Dominus): registered but very low vapor pressure, limited use due to efficacy and cost, and Hexafluoropropane (HFP): evaluated but not registered due to economics."
- "Growers are experiencing increased pest pressure post Methyl Bromide. Methyl Bromide is the only compound that they can use to effectively reduce weed pressure to an economic level in the fields they are farming."
- "Other groups that need Methyl Bromide are USDA and University Turf Researchers in the South East US and University and Private Company research farms. In order to evaluate new turf grasses, researchers must have fields completely free of weeds and grasses. Research farms evaluating herbicides must have clean fields so that they can propagate specific weeds and grasses to evaluate herbicidal action. Currently they do not have any way of cleaning up the fields. I get request from Research Scientists on a monthly basis asking what they can do."

- "The few alternatives that have been found are not appropriate for all crops or all pest situations, are too expensive, have been withdrawn from the market, or have not been registered."

D. ASSESSMENT OF THE ADHERENCE OF THE UNITED STATES TO INTERNATIONAL OBLIGATIONS WITH RESPECT TO THE PREVENTION OF OZONE DEPLETION

Regarding the detailed assessment of adherence of the US to international obligations of the US with respect to the prevention of ozone, the United States has been extremely transparent and has worked tirelessly to ensure adherence to the obligations of the Treaty. With regard to the Emergency Use provision, the US has *no* provision and therefore has not been out of compliance with that specific provision of the Treaty. However, should the provision be made available, the United States, no doubt, will meet all required obligations.

E. ASSESSMENT AND RECOMMENDATION ON REQUIREMENTS AND CRITERIA TO BE MET AND THE DEFINITION OF AN EMERGENCY EVENT.

The Montreal Protocol very clearly describes the requirement and criteria that must be met in order to qualify for an emergency event. The definition of emergency has been the stumbling block over many years as some decision makers described events, such as hurricanes, as not emergencies as they can be predicted. Congress has provided an excellent definition of an emergency event for which any agricultural producer could recognize and accept.

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Appendix A

Twenty-One Grower/Producer Letters of Support for Emergency Use Sent to USDA Listed by State: Michigan, Florida, North Carolina, California, and Georgia.

Michigan Grower Letters (Cucumbers, Tomatoes, Vegetables in General)

Leitz, F. L., Jr. 2020. Fred Leitz Jr., Proprietor, Leitz Farms LLC in Berrien County, Michigan. Personal Communication to USDA via Email. July 25, 2020.

Bird, G., 2020. Greg Bird. Executive Director, Michigan Vegetable Council (MVC). Personal Communication to USDA via Email. July 10, 2020.

Florida Grower Letters (Tomatoes, Strawberries, Watermelons)

Astin, S., 2020. Sam Astin III. Proprietor. Astin Farms, Astin Ranch and MPB Farms in Plant City, Florida. Personal Communication to USDA via Email. June 16, 2020.

Blake, T., 2020. Tim Blake, Sydney Farms, Inc. in Sydney, Florida. Personal Communication to USDA via Email. June 17, 2020.

DiMare, T., 2020. Tony DiMare, Vice President. DiMare Homestead, Inc./Circle D Farms in Homestead, Florida. Personal Communication to USDA via Email. July 13, 2020.

Grooms, D. J., 2020. Dustin J. Grooms. On behalf of Fancy Farms, in Plant City, Florida. Personal Communication to USDA via Email. July 17, 2020.

Parke, B., 2020. Bobby Parke, President, Parkesdale Farms in Dover, Florida. Personal Communication to USDA via Email. June 18, 2020.

Parke, M. 2020. Matt Parke, President, Berry Sweet Acres in Dover, Florida. Personal Communication to USDA via Email. May 26, 2020

Simpson, D., 2020. Douglas Simpson, Jr. on behalf of Simpson Jr. Farms, LLC. in Trenton, Florida. Personal Communication to USDA via Email. June 2, 2020.

Williamson, M., 2020. Michelle Williamson, G & F Farms, LLC and Franberry Farms, LLC, in Dover, Florida. Personal Communication to USDA via Email. June 17, 2020.

Young, A., 2020. Adam Young, BBI Produce in Dover, Florida. Personal Communication to USDA via Email. June 11, 2020.

Young, R., 2020. Ronnie Young, President, Three Star Farms Inc. in Dover Florida. Personal Communication to USDA via Email. June 15, 2020.

Georgia Grower Letters (Peppers, Tomatoes, Vegetables in General, Research)

Carter, J. B., 2020. Josh B. Carter, CEO, Deep South Vegetables, Inc. in Homerville, Georgia. Personal Communication to USDA via Email. June 2, 2020.

De Witt, R., 2020. Randy De Witt, Proprietor. De Witt Farms and DeWitt Produce Co., Inc., in Morven, Georgia. Personal Communication to USDA via Email. June 10, 2020.

Schwartz, B., 2020. Brian Schwartz. Associate Professor, College of Agricultural and Environmental Sciences Department of Crop and Soil Sciences, University of Georgia. Personal Communication to USDA via Email. June 24, 2020.

California Grower Letters (Strawberry Plants, Cherries. Nectarines, Peaches, Plums, Prunes)

Stringer, C., 2020. Caroline Stringer. Trade Director, California Fresh Fruit Association in Fresno, California. Personal communication to USDA. August 24, 2020.

Thomas, D., 2020. Douglas Thomas, President, California Strawberry Plant Growers Association (CSPGA). Personal Communication to USDA via Email. June 5, 2020.

Van Sickle, G. W., 2020. Gary W. Van Sickle, Executive Director, California Specialty Crops Council in Visalia, California. Personal Communication to USDA via Email. August 24, 2020.

Zea, D., 2020. Donn Zea, Executive Director, California Prune Board in Roseville, California. Personal communication to USDA via email. July 13, 2020.

North Carolina Letters (Country Ham for GA, KY, MO, NC, TN, and VA, Vegetables, Turf, Research)

Cansler, C., 2019. Candace Cansler, Executive Director, National Country Ham Association in Conover, North Carolina. Personal Communication to USDA via Email. August 30, 2019.

Godbehere. S., 2020. Steve Godbehere. Vice President Research, TriEst Ag Group in North Carolina, Georgia and Florida. Personal Communication to USDA via Email. June 1, 2020.

Sheryl H. Kunickis, Ph.D., Director
Office of Pest Management Policy
U.S. Department of Agriculture -
South Building, Room 3871
1400 Independence Ave., SW
Washington, D.C. 20250-3817

Regarding: U. S. Department of Agriculture Report on a Methyl Bromide Emergency Event Exemption

Dear Dr. Kunickis,

I understand that as required by the 2018 Farm Bill, your office is in the process of preparing a report concerning the potential use of methyl bromide in response to an emergency event. While the Department has not formally requested comment on the importance of methyl bromide to growers, I wanted to provide some information concerning why access to methyl bromide is important to my farming operation.

I farm approximately 600 acres of cucumbers and tomatoes, located in Berrien county Michigan. I farm with three brothers and we have the 5th generation working for and with us. We started using methyl bromide in 1990, and it helped clear up a lot of issues we were having with diseases. It probably was a crutch, because it did such a good job we got a little lazy and never updated and changed cultural practices. After we lost methyl bromide, we used some of the alternatives and they did not do as good a job as well as being more costly. Today we use many different soil amendments to try and do what soil fumigants did. But, we now are seeing problem areas crop up in our fields. Not all of the field, but parts. All we seem to be doing now is spreading disease to the whole field. Phytophthora, verticillium wilts, root knot nematodes, and a couple of other diseases are showing up and we have no control.

Methyl bromide was an excellent pre-plant soil fumigant. It was an incredibly effective and affordable way to sterilize the soil, eliminating harmful plant pests and diseases. This gave me the best opportunity to produce a quality crop. While the US EPA kept telling us there were satisfactory alternatives to methyl bromide, apparently they were not actually farming because

that was simply not the case. In many situations, the experience obtained with an alternative in the field was not the same as researchers had in a lab. Our farm did one of the largest fumigation trials in the country under the guidance of Dr. Mary Hausbeck from Michigan State University. We proved, at least in Sodus, that we could not get to market early enough to hit the best prices for our produce. Soil temps keep us from applying alternative fumigants early enough with the plant back requirements that are needed. They also didn't do as good a job on weeds and disease.

If methyl bromide were available for use under an emergency event exemption, I would use it. Having access to the chemical at least through an emergency event exemption means that periodically me and my neighbors could "clean-up" our fields putting us in a much better position to produce a commercially and economically viable quality crop. Agriculture is going through particularly tough times. Making methyl bromide available would help increase our chances of successfully getting through them.

We greatly appreciate your efforts in producing an objective study report. Please let me know if you need any additional information or have any questions concerning my farm operation and the important role methyl bromide can play in it.

Sincerely,

Fred Leitz Jr
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