Soil fumigation updates

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Timeline – Soil Fumigants

Table 5: Projected Methyl Bromide Registration Review Timeline	
Activities	**Estimated Date**
Opening the Docket	
Open Docket and 60-day Public Comment Period	2013 – September
Close Public Comment	2013 – November
Case Development	
Final Work Plan	2014 – February
Issue DCI	2014 April - June
Data Submission	2017 April - June
60-day Public Comment Period for Draft Risk Assessments[12]	2018 October - December
Registration Review Decision	
60-day Public Comment Period for Proposed Registration Review Decision	2019 April - June
Registration Review Decision and Begin Post-Decision Follow-up	2020
Total (years)	7

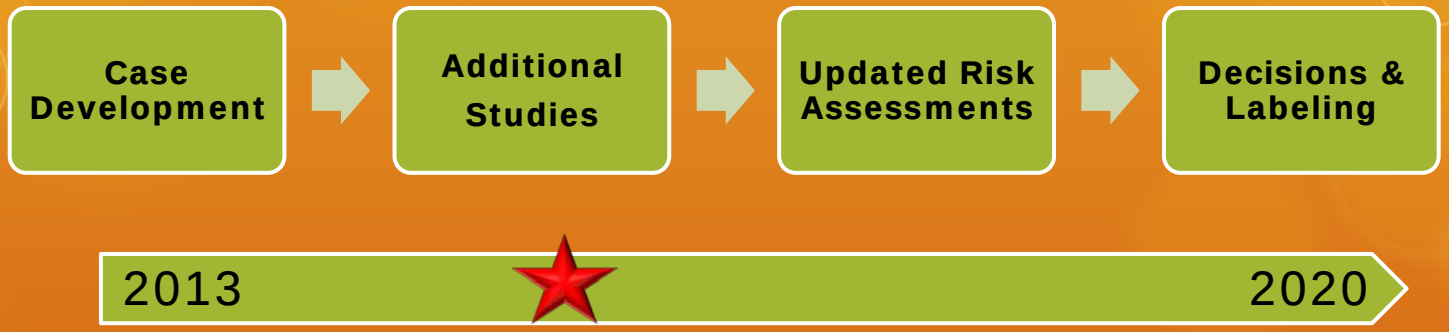
Dow AgroSciences

Solutions for the Growing World

Metam and Pic – EPA Environmental Fate Data Requirements for terrestrial food crops, terrestrial feed crops, terrestrial nonfood crops =forest nurseries

- Aerobic aquatic metabolism (24 mos)
- Algal toxicity (12 mos)
- Environmental Chemistry Methods and Associated Independent Laboratory Validation (12 mos)
- Honeybee acute vapor exposure (24 mos)
- Ambient Air Monitoring (24 mos)

U.S. EPA Registration Review – Overview for Telone



Objectives

- **Preserve uses and use patterns for Telone in U.S.**
- **Leverage the extensive information available**
- **Advance regulatory science (tox, efate, exposure, risk)**
- **Submission to initiate reassessment of cancer classification**
- **Manage costs & timeline**

1,3-D (Telone) Classification Reassessment

- **Toxicology and exposure data strongly support the conclusion that agricultural use of 1,3-D does NOT pose a carcinogenic risk.**

- **New information to inform EPA's assessment**
  - **Two additional lifetime animal studies.**
  - **Kinetic tox study for inhalation route of exposure.**
  - **Peer-reviewed evaluation of gene toxicity.**
  - **Comprehensive weight-of-evidence documentation.**

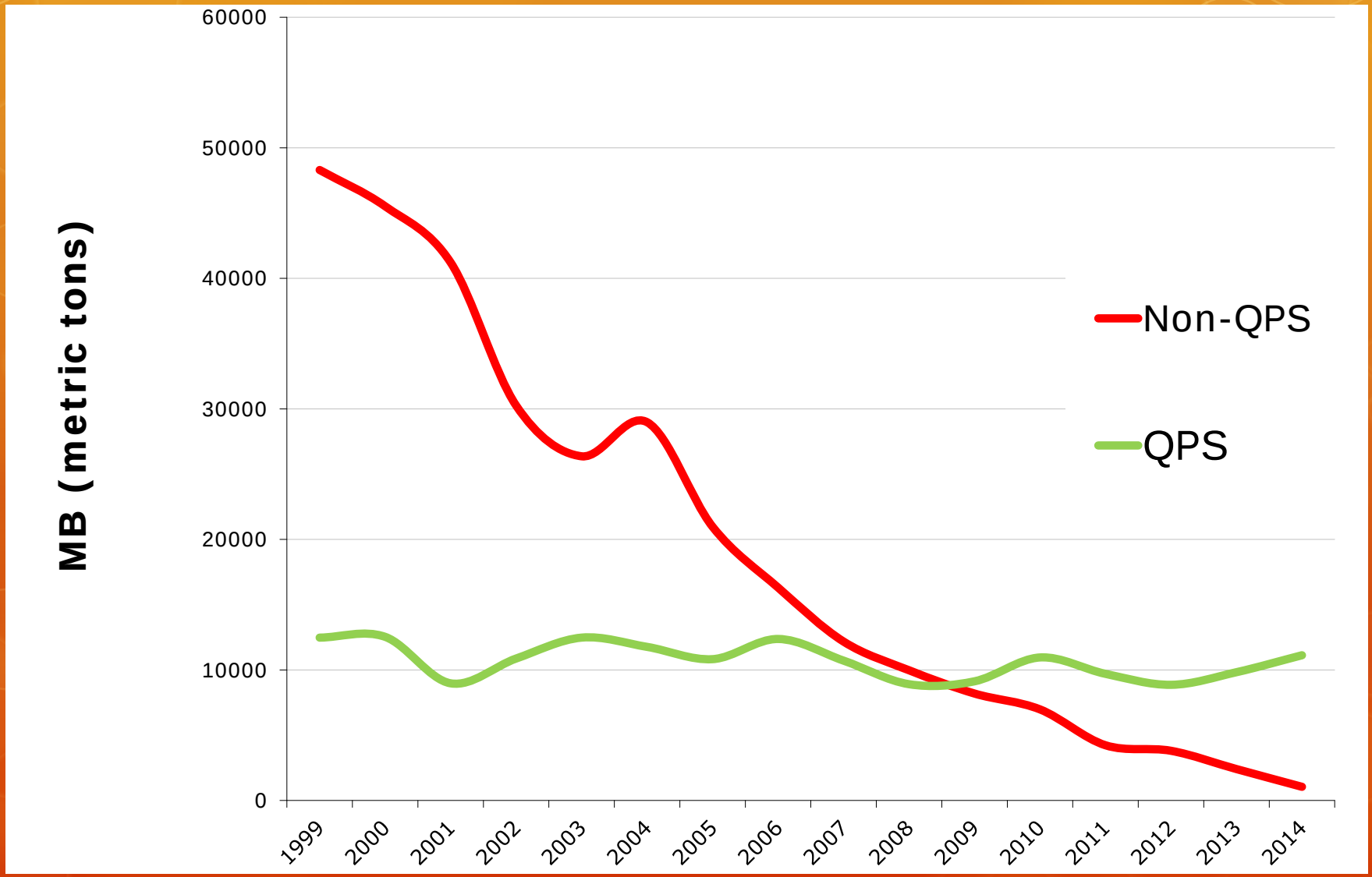
Very strong case for a more favorable classification

Telone®
Everything grows better.™

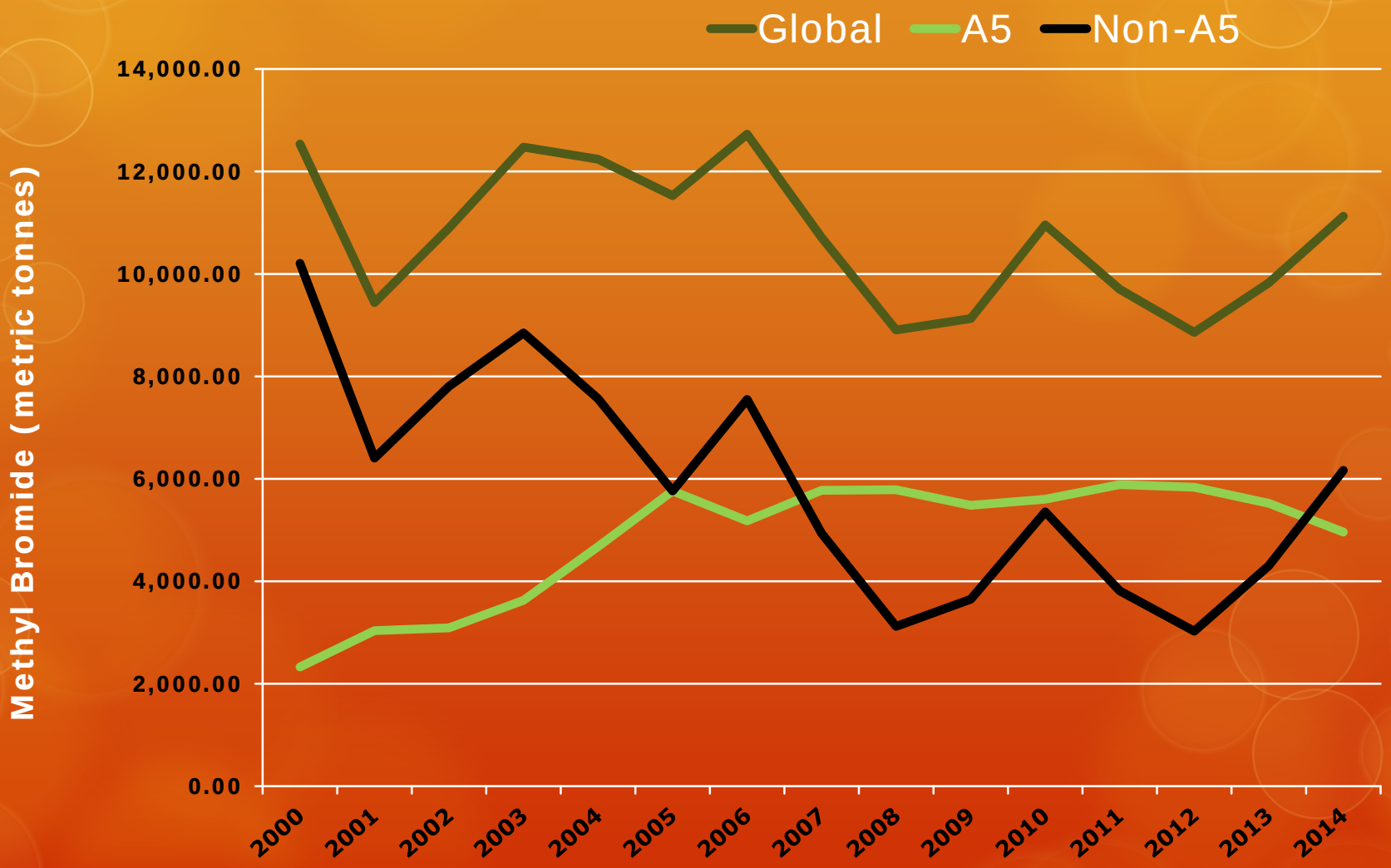
EPA Data Requirements for MBr

- Environmental Chemistry Methods and Associated Independent Laboratory Validation
- Terrestrial Plant Toxicity
- Honeybee acute vapor exposure
- Ambient Air Monitoring
- Registrant work is ongoing for ambient air monitoring
- EPA goal for preliminary risk assessments out in 2018-2019 timeframe

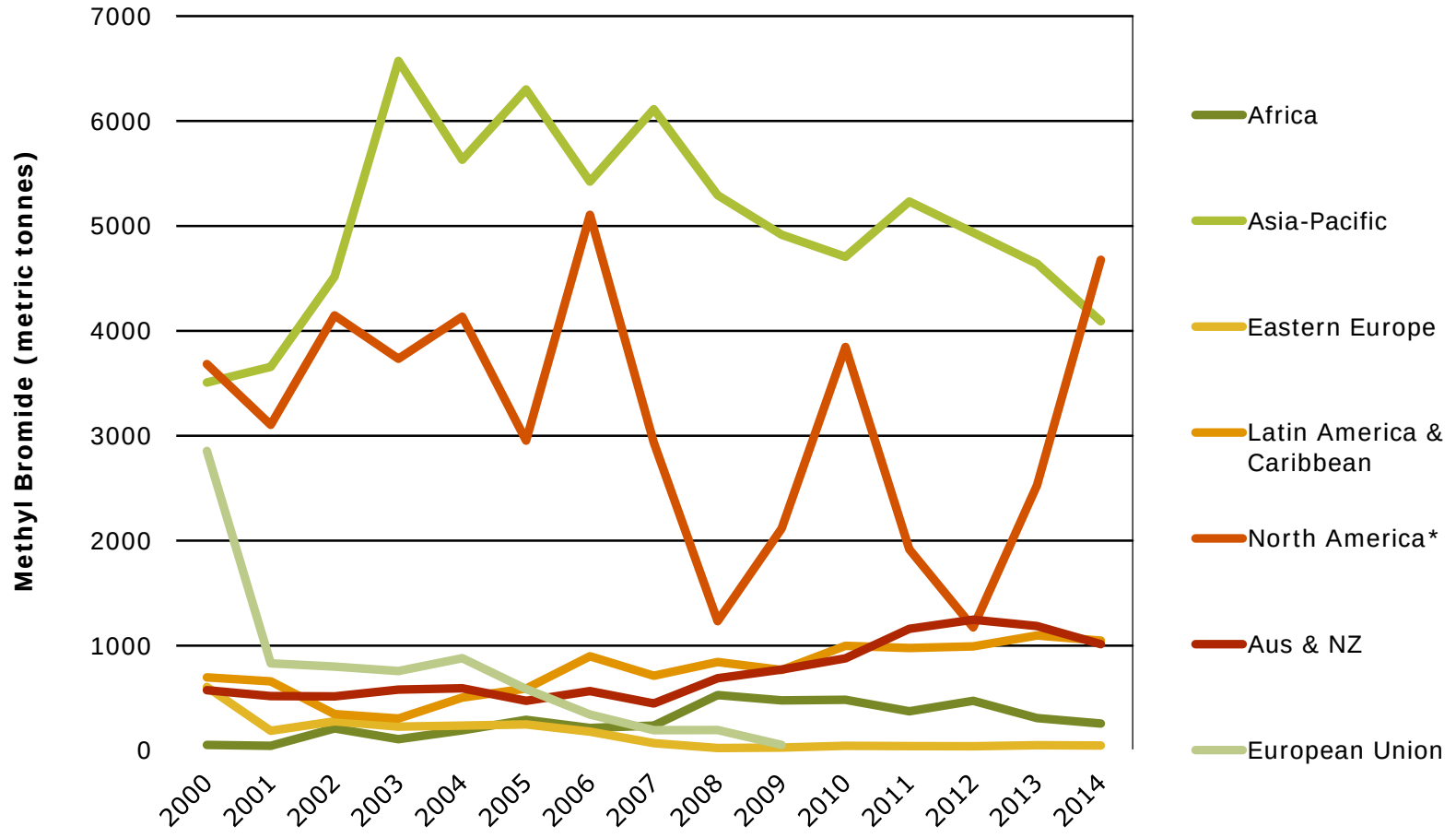
UN Report - Global consumption of MB for controlled and exempted (QPS) uses 1999-2014



MBr consumption for QPS purposes 2000 – 2014. Note: US is a non-A5 Country



MB consumption for QPS purposes by region, 2000-2014



Alternatives to MB for nurseries exempted as QPS

- **“In the US, MBr continues to be used as a pre-plant soil fumigant for the production of various types of nursery materials under the QPS exemption. This exemption applies to a range of nursery industries, including strawberry runners, ornamental plants, turf, fruit and nuts.”**
- **“This exemption also includes the forest nursery industry in the Pacific Northwest in States such as Washington and Oregon (Weilland *et al.*, 2013; Weilland *et al.,* 2016). Research into MBr alternatives and into reducing fumigation rates with the use of high barrier films has reported that reduced rates of metham sodium and 1,3-D applied under Totally Impermeable Film® (TIF) were comparable to MBr (also at reduced dosage under TIF) in particular for controlling *Fusarium* and *Pythium*, two of the most troublesome diseases affecting forest nurseries. Some additional adjustments in rates are still necessary, but it is apparent that these alternative fumigants can provide equivalent results for this application (Weilland *et al,* 2016).”**

Alternatives to MB for nurseries exempted as QPS

- In all other countries such a QPS exemption is not allowed and industries have sought alternatives. For instance, in the EU (MBr was banned for all uses including QPS in 2010) the strawberry runner industry, which includes Spain, one of the largest producers of runners in the world, mainly use crop rotation, dazomet and metham sodium for pest and disease control, with good results (López-Aranda, 2016).

Illegal trade, possible unreported use and other issues

- **“Illegal trade of MBr and unreported stocks continue to be of concern. Article 5 Parties continue to signal problems with possible deviation of MBr imported for QPS, which may end up in controlled uses. Further, MBTOC has found news items that give indication of illegal trade and possibly production in some countries.”**

- **Last year a family on vacation in the Virgin Islands suffered severe reactions arising from exposure to MBr, which was illegally used to fumigate hotel premises. Later in the year there were reports of MBr still being available in Puerto Rico and possibly other Caribbean countries.**

Possible unreported methyl bromide use in India

- India - QPS consumption has been reported every year since 1993. The Party reported MBr production for QPS between 1993 and 2002 (average of about 100 metric tonnes per year) and zero since 2003.
- Although India has not reported production or consumption for controlled uses in more than 15 years, MBTOC has indicated in at least the last three of its most recent Assessment Reports, that various Indian companies offer MBr manufactured in India, as well as fumigation services with this product available for use in their websites.

Possible unreported methyl bromide use in India

- Periodically, MBTOC has also come across news items mentioning MB use in India – for controlled uses.
- "…an incident involving trains' disinfestation to control bedbugs with MBr is reported. Bedbugs are not considered as quarantine pests for which the QPS exempted MB could be used, so this use would fall under the controlled category.
- More recently, aircraft disinfestation (for rodent control) with methyl bromide was also reported: (MBTOC notes that under some circumstances, this treatment could be classified as QPS).

US Position on Methyl Bromide for QPS

- Montreal Protocol Treaty
- - No change in the US position on QPS exemptions.
- A number other countries disagree on the US definition of QPS, which permits state and county phytosanitary restrictions allowing for the quarantine use of methyl bromide for endemic (rather than exotic) pests.
- However, the US believes its regulations are appropriate and in line with the Montreal Protocol.
- US is receptive to gathering additional information on QPS especially since numerous countries have not provided any to date.

Game Plan

- MBIP – Methyl Bromide Industry Panel
- CMTF – Chloropicrin Manufactures Task Force
  - Working group pulling all stakeholders, growers, producers that were involved with the RED together.
  - Periodic & Timely Conference Calls
- SFNMC
  - Collect soil fumigant usage and soil fumigant concerns annually – 2015.
  - Compile and respond to requests from EPA as they appear on Federal Register.
  - Keep Advisory group informed.

Chatter - Regulatory

- TriEst – Contractor for Soil Fumigation
  - “nothing on radar for MBr”
- CMTF – Chloropicrin Manufactures Task Force
  - “everything appears to be on track with schedule, no issues with access”
- USDA / ARS
  - EPA noticed a sharp increase in the use of QPS MBr after regulations went into affect.
  - “The increase in QPS MBr was due to the classification of specific sources of MBr, not a whole scale rush to circumvent the rules. Pound per pound, the amount of MBr ai has decreased in forest tree nurseries”.

Current Nursery Usage – 2015

Time of Fumigation	Number
Fall	25 nurseries
Spring	14 nurseries
Average Acreage	18 acres / fumigation
Total Acreage	528 acres Southern US

Fumigant MBr/Chl	Number	Rates
98/2	2	400 lbs / acre
80/20	19	240 – 350 lbs / acre
67/33	5	350 - 400 lbs / acre
TriFecta / DMDS / Pic +	13	275 – 350 lbs / acre

Plastic	Percent
TIF	98%
HDPE	1%
LDPE	1%

Chatter – Nursery Users

- Any application issues with current soil fumigation rules?
- Any pest or production issues with current rates?

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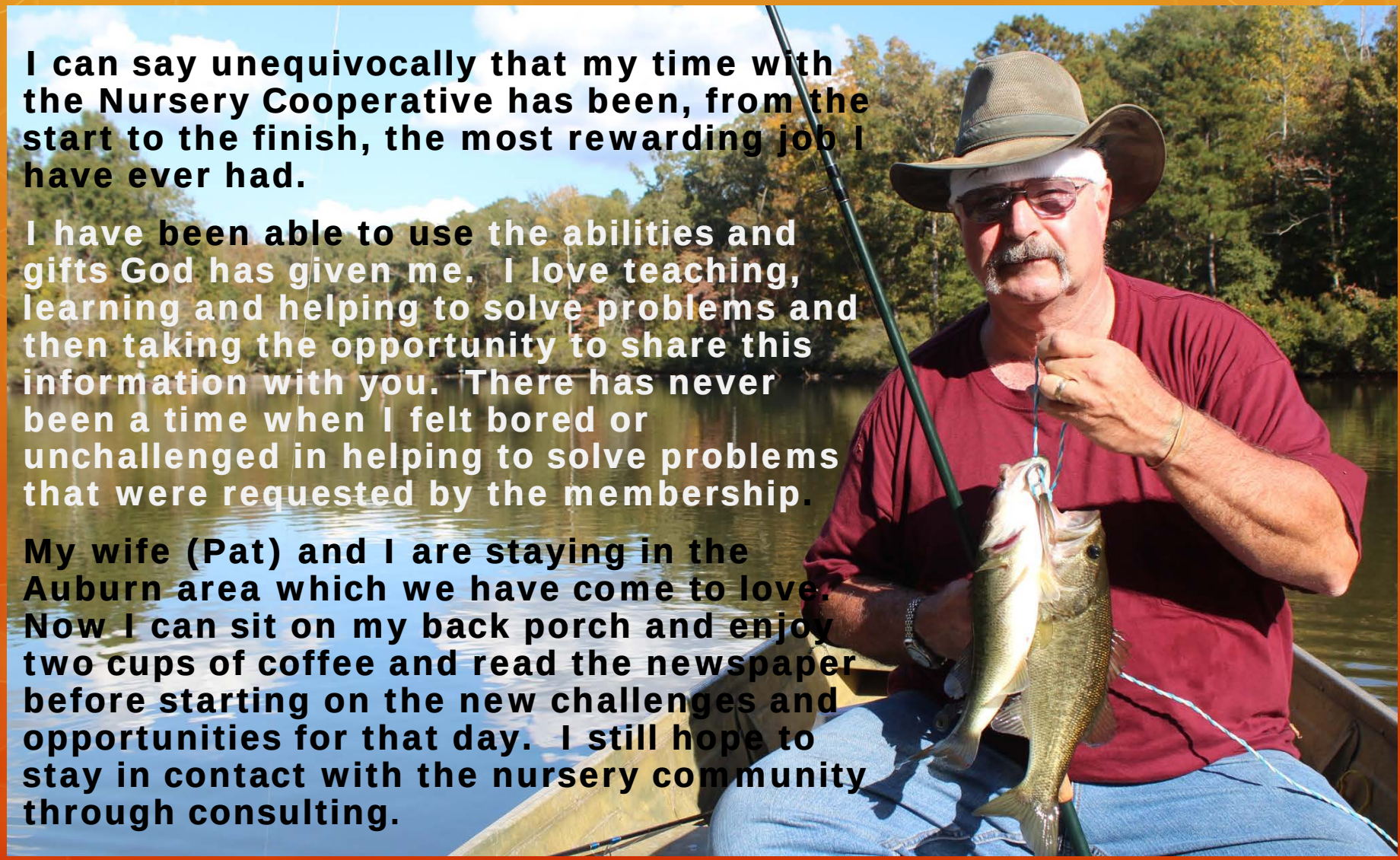

I can say unequivocally that my time with the Nursery Cooperative has been, from the start to the finish, the most rewarding job I have ever had.

I have been able to use the abilities and gifts God has given me. I love teaching, learning and helping to solve problems and then taking the opportunity to share this information with you. There has never been a time when I felt bored or unchallenged in helping to solve problems that were requested by the membership.

My wife (Pat) and I are staying in the Auburn area which we have come to love. Now I can sit on my back porch and enjoy two cups of coffee and read the newspaper before starting on the new challenges and opportunities for that day. I still hope to stay in contact with the nursery community through consulting.