http://ir4.rutgers.edu/Ornamental/ornamentalSummaryReports.cfm

IR-4 Ornamental Horticulture Program
Imazamox Crop Safety

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Acknowledgements
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Abstract

Imazamox (Clearcast™) was registered for the control of vegetation in and around aquatic sites and terrestrial non-crop sites. in the United States in 2008. In 2009 and 2010, the IR-4 Project through researchers Beste & Frank conducted 17 trials on 14 ornamental plant species / genera examining phytotoxicity related to imazamox applications. For all 14 genera/species in these trials, more information is needed because only 1 or 2 trials were conducted (Table 4).

Introduction

Imazamox (Clearcast™) was registered for the control of vegetation in and around aquatic sites and terrestrial non-crop sites in the United States in 2008. In 2009 and 2010, the IR-4 Project, through researchers Beste & Frank, conducted 17 trials on 14 ornamental plant species / genera examining phytotoxicity related to imazamox applications.

Materials and Methods

Imazamox mixed with a non-ionic surfactant was tested as a single over-the-top application. The application rates were 0.031, 0.062 and 0.094 lb ai per acre as the 1X, 2X and 3X rates, plus a water treated control. A minimum of four plants (replicate treatments) were required. Phytotoxicity was recorded on a scale of 0 to 10 (0 = No phytotoxicity; 10 = Complete kill) one to four times from 1 to 8 weeks after initial application. For IR-4 testing, protocol 10-010 was used. For more detailed materials and methods, please see protocol at http://ir4.rutgers.edu/ornamental/OrnamentalDrafts.cfm

Imazamox was supplied to researchers (See researchers in Appendix 1) by SePro.

Results and Summary

Phytotoxicity

Based on the type and nature of injury seen with pesticide applications, tested plant species /genera were placed into three categories: 1) no significant phytotoxicity or growth differences from the untreated check or any injury was transitory, 2) no or minimal transitory injury seen at the 1X rate, but the 2X and/or 4X rates did cause significant phytotoxicity, 3) significant injury sufficient to recommend growers not utilizes imazamox, and 4) more data is needed to make informed recommendations.

For all 14 genera/species in these trials, more information is needed because only 1 or 2 trials were conducted (Table 4).

Please see Table 5 for a summary of the individual trial results.

Table 1. List of Imazamox treated crops with no or minimal transitory injury.

None

Table 2. List of Imazamox treated crops with no injury at 1X but significant injury at 2X or 4X.

None

Table 3. List of Imazamox treated crops with significant injury.

None

Table 4. List of Imazamox treated crops where more information is needed.

Acer rubrum
Acer saccharum
Diospyros virginiana
Juglans nigra
Liquidamber styraciflua
Picea abies
Pinus taeda
Platanus sp.
Prunus serotina
Pseudotsuga menziesii
Quercus alba
Quercus palustris
Quercus rubra
Taxodium distichum

Table 5 Detailed Summary of Crop Safety Testing with Imazamox

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 12/15/2016 are listed below.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
29230	Maple, Red (Acer rubrum)	Field In-Ground	Beste/Frank (ARS)	MD	2009	Over the top	Moderate injury with complete recovery at 0.031, 0.063 and 0.094 lb ai per acre; no significant growth reduction; all plants marketable.
29230	Maple, Red (Acer rubrum)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	Severe crop injury with single application of 0.0.093 lb ai per acre and reduction in size for 0.0313, 0.0625, 0.093 lb ai per acre but all plants marketable.
29347	Maple, Sugar (Acer saccharum) A. saccharum Marsh	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	One application at 0.03125, 0.0625, and 0.0938 lb ai per acre caused severe but transient crop injury and reduction in height. 1x and 2x treated plants had no reduction in market value.
29357	Persimmon, Common (Non-Bearing) (Diospyros virginiana)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	A single application at 0.03135 to 8cm seedlings caused transient injury with reduced height but marketable. Plants treated 0.0625 and 0.0938 lb ai per acre were not marketable.
29350	Walnut (Non-Bearing) (Juglans sp.) J. nigra	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	No injury with 0.03125 but severe injury with .0625 and .0938. Stunting at all rates. Study should be repeated due to seedling blight disease.
29352	Sweetgum (Liquidamber styraciflua)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	Severe injury and growth reduction with 0.031, 0.062, 0.093 lb ai per acre; 4x not marketable.
29355	Spruce, Norway (Picea abies) P. abies Karst.	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	A single application with 0.03125, 0.0625, 0.0938 lb ai per acre caused no crop injury but height reduction and reduction in marketability compared to untreated.
28148	Pine, Loblolly (Pinus taeda)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	Severe crop injury and height reduction with 0.03125, 0.06250, 0.09375 lb ai per acre; 2x and 4x unmarketable.
29349	Plane Tree, Sycamore (Platanus sp.)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	Severe crop injury with 0.031, 0.0625, 0.093 lb ai per acre with mortality from 2x and 4x.
29348	Cherry, Black (Non-Bearing) (Prunus serotina)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	Slight to severe crop injury and mortality with 0.03125, 0.625, and 0.9375 lb ai per acre; unmarketable at 2x and 4x.
29354	Fir, Douglas (Pseudotsuga menziesii)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	Severe crop injury and stunting (50%) with .0312, .0625, .0938 lb ai per acre. Effective control of marsh yellowcress and marestail.
29231	Oak, White (Quercus alba)	Field In-Ground	Beste/Frank (ARS)	MD	2009	Over the top	Significant injury with complete recovery at 0.031, 0.063 and 0.094 lb ai per acre; significant height reduction at 3X; all plants marketable.
29231	Oak, White (Quercus alba)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	No significant injury at 0.0313, 0.0625, and 0.0938 lb ai per acre, but the 3X rate were significantly shorter than the untreated.
29232	Oak, Pin (Quercus palustris)	Field In-Ground	Beste/Frank (ARS)	MD	2009	Over the top	Significant injury with complete recovery at 0.031, 0.063 and 0.094 lb ai per acre; no significant height reduction; all plants marketable.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
29232	Oak, Pin (Quercus palustris)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	Slight to moderate transient injury increasing with rate (0.0313, 0.0625, 0.0938 lb ai per acre) with stunting also increasing with rate; all plants marketable by 8 WAT.
29229	Oak, Northern Red (Quercus rubra)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	Very slight injury with 0.031, 0.061, 0.093 lb ai per acre; 2x severe height reduction (outlier). All plants marketable.
29356	Bald Cypress (Taxodium distichum)	Field In-Ground	Beste/Frank (ARS)	MD	2010	Over the top	One application at 0.03125, 0.0625, 0.0938 lb ai per acre resulted in severe crop injury and reduced marketability with 2x and 3x compared to control.

Appendix 1: Contributing Researchers

Dr. Ed Beste	University of Maryland LESREC – Salisbury Facility 27664 Nanticoke Road Salisbury, MD 21801
Dr. Ray Frank *(retired)*	6916 Boyers Mill Road New Market, MD 21774