Farm Innovation Program - Final Report

Please note that the final payment for projects will not be released until a final report has been submitted and accepted by the AAC. Final Reports must be a minimum of two pages and should answer all of the questions outlined below and be **submitted by the completion date of the project and/or no later than December 1st, 2012.**

Applicant Name:	Fresh Vegetable Growers of Ontario
Project Title:	Tolerance of Sweet Potato to Chateau® Hebricide
FIP Project Number:	1174
Reporting Period:	May 1, 2012 to October 1, 2012
Date of Submission:	September 27, 2012
AAC Program Coordinator:	

Executive Summary

Trials were established at locations in southern Ontario to assess the tolerance of sweet potato to Chateau (flumioxazin), and to provide crop tolerance data to PMRA in support of minor use application (D.3.1: 2011-0060) for the registration of Chateau on sweet potatoes. Chateau was applied prior to planting sweet potato at rates of 54 and 108 g ai/ha. Data were collected on visual injury and yield to provide the necessary data to determine sweet potato tolerance to the herbicide.

Visual injury was less than 5% in all treatments. Average tuber weight, and sweet potato yield were the same as the untreated check in all herbicide treated areas, indicating that sweet potato has excellent tolerance to preemergence applications of Chateau at both the proposed and twice proposed label rates. In order for PMRA to grant approval of a minor use application, tolerance at twice the proposed label rate must be demonstrated – (ie. visual injury must be less than 10%, and yield should be within 10% of the untreated check.

Detailed Description of the Project

1. Identify overall project objectives reached:

1. To assess the tolerance of sweet potatoes to Chateau® Herbicide (flumioxazin) under Ontario conditions. - completed

2. To provide crop tolerance data to PMRA in support of minor use registration D.3.1: 2011-0060, resulting in a registration of Chateau® Herbicide on sweet potatoes. – completed

2. Identify <u>all activities</u> undertaken to reach the project objectives (link these activities to the Milestone Performance as per Schedule "B" Part III of the Agreement):

Research studies were conducted at the University of Guelph Ridgetown Campus and the Simcoe Horticultural Research Station. These sites were chosen to represent the main areas in which this crop is grown in Ontario, with similar soil types and climactic conditions. Treatments were applied with a small-plot sprayer (200 L/ha, 240 kPa) at one and two times the proposed registered rates. Untreated check plots were established to compare with treated plots. Chateau® was applied at 54 g ai/ha (1X) and 108 g ai/ha (2X) the proposed label rates to the variety "Beauregard", one of the main varieties currently being grown in Ontario. Visual injury at 7, 14 and 28 days after herbicide application, crop yield, soil conditions (texture, percent organic matter, pH) and environmental conditions were recorded. Treatment means were compared to the untreated check to demonstrate that herbicide application did not injure or reduce marketable yield of sweet potato.

3. Identify the outputs created as a result of the activities undertaken (if materials are produced, a sample should be included in the report):

The output of this research are the data needed to support the minor use registration of Chateau on sweet potato (URMULE D.3.1: 2011-0060).

4. Explain changes or issues affecting completion of activities:

None

5. Identify the project inputs used to complete the activities and during the course of the project (include: farmer(s) involved, funding level, financial contributions, staff resources, other resources, etc.). If you did not access all of the FIP funding, or If your actual budget is different from the approved budget, please explain why and outline the reason(s) for those variances. All categories that are over/under budget should be discussed:

The trials were conducted on grower fields or at University of Guelph research stations.

All of the funds allocated to the project were used. In the original budget, $5,000 was allocated to summer student salaries. However, we required some supplies – sample bags, stakes and herbicide (approximately $300.00) and travel to research sites (approximately $200.00 for mileage). Therefore, approximately $4,500 was spent on summary student salaries.

Benefits & Impact

6. Compare final project results with the expected short term results and explain any differences:

Final project results are comparable with expected short term results.

7. Explain if the final project results are satisfactory:

Visual injury was less than 5% in all treatments. Average tuber weight, and sweet potato yield were the same as the untreated check in all herbicide treated areas, indicating that sweet potato has excellent tolerance to preemergence applications of Chateau at both the proposed and twice proposed label rates. In order for PMRA to grant approval of a minor use application, tolerance at twice the proposed label rate must be demonstrated – (ie. visual injury must be less than 10%, and yield should be within 10% of the untreated check. This indicates that sweet potato is tolerant to Chateau when applied at the proposed label rate – a satisfactory final project result.

8. Identify the public good/benefit of the project to date:

Currently, only one herbicide, Command 360 ME (clomazone) is registered to control broadleaf weeds in this crop, however it does not control pigweed species. Ontario sweet potato growers are therefore forced to spend considerable time and money controlling this problem weed in their fields. To address this problem, a User Requested Minor Use Label Expansion (URMULE) was submitted to the Pest Management Regulatory Agency (PMRA) to register Chateau® Herbicide (flumioxazin) as a pre-plant application to sweet potatoes. The PMRA has requested crop tolerance trials be completed in the sweet potato growing areas of Ontario to ensure that Chateau® Herbicide is safe to sweet potatoes before it can be registered.

9. Explain how many on farm technologies the project has assessed:

This research assessed the potential for Chateau herbicide to be used preemergence in sweet potato.

10. Explain how the project success will be measured in the long-term (include the indicators outlined in Schedule "B" of the Agreement):

If the project can establish, as expected, that sweet potatoes are tolerant of this herbicide at the proposed rates, it is expected to lead to the registration of Chateau® on sweet potatoes for the 2013 field season. Use of this product is expected to increase yield and decrease labour costs, and could in the long term aid in the expansion of sweet potato acreage in Ontario.

11. If applicable, indicate how this initiative will be economically viable and self-sustaining from this point forward. Explain what the next steps are for this initiative:

Thus far, our results indicate sweet potato has excellent tolerance to flumioxazin. The data will be submitted to Jim Chaput, OMAFRA minor use coordinator, to support the minor use for Chateau in sweet potato (URMULE D.3.1: 2011-0060).

12. Indicate the current actual financial impact to farmers who may adopt the technology versus the estimated impact (see question '6.e.' in the application):

Registration of Chateau® will reduce the number of cultivations required by the growers to control weeds (currently more than 4). It costs approximately $40 to cultivate one acre, therefore, if this technology reduces the number of cultivations to 2, this will save the growers $104,000 ($40 / ac x 1300 ac x 2 cultivations). Also after vines close growers often send field hands in to manually remove large pigweeds from the fields, which is considerably more expensive.

13. Indicate the target audience and the total number of people reached by this project:

Sweet potato production in Ontario has grown considerably over the last decade, with approximately 1300 acres and more than 20 growers in 2011, making it a significant specialty crop for the province. Currently, only one herbicide, Command 360 ME (clomazone) is registered to control broadleaf weeds in this crop, however it does not control pigweed species. Ontario sweet potato growers are therefore forced to spend considerable time and money controlling this problem weed in their fields. To address this problem, a User Requested Minor Use Label Expansion (URMULE) was submitted to the Pest Management Regulatory Agency (PMRA) to register Chateau® Herbicide (flumioxazin) as a pre-plant application to sweet potatoes. The PMRA has requested crop tolerance trials be completed in the sweet potato growing areas of Ontario to ensure that Chateau® Herbicide is safe to sweet potatoes before it can be registered. The proposed project will apply Chateau in the manner proposed in the registration submission to sweet potatoes planted in Simcoe and Ridgetown the two major areas where this crop is grown in Ontario. Sweet potatoes will be assessed for tolerance to these applications and the data will be submitted to PMRA in support of a registration of Chateau ® Herbicide on this crop.

Knowledge Transfer Plan & Translation

14. Indicate how information has been communicated with industry for the duration of the project (refer to the plan developed as part of question 7 in the final funding application):

Information Requested	Commodity Association Activities	Researcher Activities
Indicate the type and number of communication materials that were developed (i.e. brochure, display, CD/DVD, poster, website, handbook, etc.) and how they were distributed:	NO KTT activities to date. FVGO will post report on website and will have a report given at the FVGO AGM including post report in AGM package	0
Indicate the number of presentations that were made and the total audience reached:	0	3 field tours – total of 500 producers and 5 other researchers
Indicate the number of scientific and popular press articles that were developed and how they were distributed:	0	0
Identify any other communication activities, including but not limited to internet publications, advertising, billboards, radio and television broadcasts:	0	0

Indicate if any project materials have been made available for use in the French language:	0	0

15. Indicate when AAFC/OMAFRA/AAC were identified as a supporter throughout the period of the project:

At all field tours, AAFC, OMAFRA, and AAC were identified as a supporter during the period of the project.

Conclusion & Final Comments

16. Provide a discussion of lessons learned, recommendations and overall perception of project success:

The primary conclusion of this project is that sweet potato showed excellent tolerance to Chateau (flumioxazin) when applied prior to planting sweet potato at 54 and 108 g ai/ha. Given the effectiveness of this herbicide for control of difficult to control annual broadleaf weeds, (including, but not limited to lambsquarters, redroot pigweed and eastern black nightshade), registration of this herbicide would be an extremely effective weed management tool for sweet potato growers. Currently, annual broadleaf weed control is one of the constraints limiting the ability of growers to successfully grow this high value crop, as the available herbicides (Command, Dacthal and Poast Ultra) are weak or non-effective on annual broadleaf weeds. Chateau also has a different mode-of-action than the currently registered herbicides, which will improve growers' ability to rotate herbicide chemistry to reduce the potential for the development of herbicide-resistant weeds.

Media Coverage – *If possible please provide a copy of the media coverage for our files*

Date	Source	Title	Reach	FIP Recognition (Yes/No)

(Add additional rows if needed)