WEED SCIENCE

RESEARCH & EXTENSION

INVESTIGATOR: L. Calderwood, D. Hammond, J. Stubbs, and B. Tooley
8. TITLE: Well Water Testing for Tribenuron-methyl (Express)

OBJECTIVES

- Select three representative wells proximal to spray locations
- Apply Tribenuron Methyl at the recommended rate in the specified locations
- Collect and test well water samples on 3 dates following the initial spray application

LOCATION: Deblois and Jonesboro, ME
PROJECT TIMEFRAME: May 2019 – October 2019

INTORDUCTION:

Tribenuron-methyl, trade name Express with TotalSol soluble granules manufactured by FMC Corporation, is a selective post-emergence broadleaf herbicide that has been granted a Special Local Need Label 24(C) in Maine for bunchberry (*Cornus canadensis)* control in wild (lowbush) blueberries since 2008. The use of Express (EPA Reg. No. 279-9594) to control primarily bunchberry in wild blueberry fields in Maine expired in December 31st, 2018 and has been renewed for a one-year 24(c) Special Local Need label which will expire December 31st, 2020. In order to establish the potential efficacy and safety of this product in Maine wild blueberry fields, a performance trial was conducted in 2018 which was followed by this well water evaluation for the Board of Pesticide Control in 2019.

Figure 1. Well water sampling performed in Washington County in 2019. Map created using the Esri/ CGIAR/USGS resource, (https://www.maine.gov/megis/)

The Board of Pesticide Control (BPC) oversees the Pesticides and Groundwater Monitoring Program to help preserve one of Maine's most vital resources. Wild blueberry fields are known to have high leachate potential (Perkins & Yarborough 2006) and undergo intensive management in numerous locations throughout the state. Pesticides have been detected in some of Maine's wells (BPC 2005). In wild blueberry, the pre-emergent herbicide, Hexazinone, has been documented to have the greatest presence and persistence in Maine's groundwater than any other wild blueberry pesticide (BPC 2005). Since the 1994 discovery of frequent trace amounts of Hexazinone in ground water, the BPC has implemented a 'State Management Plan for Protection' to ensure environmental and public safety. This monitoring program is employed when relatively new products are introduced or renewed, or when a previously detected product requires monitoring. In this case, Extension was asked by the BPC to test three wells on three dates in 2019 for the presence of tribenuron-methyl (Express) for future renewal following expiration of the current 24(C) on December 31st, 2020.

METHODS

Site Selection & Tribenuron-methyl Application

Three existing drilled wells were selected in eastern Maine for sampling in 2019. Two were located in Delois and one in Jonesboro (Figure 1) to monitor groundwater for residual Tribenuron-methyl following a localized application. Tribenuron-methyl was applied within ¼ mile of the target well while still maintaining the standard minimum 50' buffer. The herbicide was applied on June 4th at the two Deblois sites and on June 5th at Blueberry Hill Farm in Jonesboro. The standard application rate of 1 oz/A as stated on the Special Local Need 24(C) for bunchberry in Maine was applied.

Figure 2. Well head at the Deblois 2 site with sounding tape, HDPE tubing, post-sample extraction and pre-decontamination.

Well Water Collection & Testing

Each of the three wells were sampled on May 21st, August 7th and October 29th, 2019. The depth to static well water was recorded using a Solinst water level meter at the time of each sampling. A high quality, low voltage Super Whale Pump attached to a portable 12V battery and single use HDPE plastic tubing was used to extract water from the well. Well water was pumped for 10 minutes prior to collection to prevent air bubbles or surface water contamination. One liter was collected per site and date. The three samples collected per date were shipped on ice overnight to University of Massachusetts Pesticide Analysis Laboratory for tribenuron-methyl residue testing. Following each sample, all equipment was rinsed (decontaminated) using distilled bottled water. Water sampling procedure was adapted from the Maine Board of Pesticide Control Standard Operating Procedure of the Groundwater Monitoring Program (BPC 2019).

RESULTS

Total well depths varied across sites with the deepest well at 104' (Table 1). Residues were not detected in any of the three sampled wells over the 6-month time period. Results have been sent to the BPC for review.

Table 1. 2019 Ground water test result summary by month. No residues were detected across all months.

Wells	Total Water Depth (ft)	Average Water Depth (ft)	Detection Results		
			May	August	October
Jonesboro	97.3	53.5	ND*	ND	ND
Deblois 1	57.7	22.8	ND	ND	ND
Deblois 2	104.25	49.45	ND	ND	ND

ND = No residues detected at or above a level of 0.004 µg/L of water (ppb)

CURRENT RECOMMENDATIONS

Continue to monitor pesticide update sources for product information. Express TotalSol is currently labeled as a special local need 24(C) product until December 31, 2020. Therefore, wild blueberry farms in Maine are allowed to use this product for bunchberry control.

This product should be applied according to the Maine 24(C) label at the recommended 1.0 oz/acre rate. Application timing is in the fall after blueberry harvest prior to the first killing frost OR in the spring of a non-crop year. This product is most effective when bunchberry leaves are at a 45 degree angle before flowering, which usually occurs in mid to late May. Bunchberry turns pink/red to yellow after application but can take weeks to die. As the current Maine 24(C) label states, this product can be used as a spot spray to control additional weeds including alder, bracken fern, wild rose, and yellow loosestrife. Note that other species are tolerant, such as birch, bayberry, and sweet fern. Some stunting to blueberry plants should be expected, yet stunting does not appear to reduce production at this time. Please see additional resources below.

Maine 24C Label: https://extension.umaine.edu/blueberries/wp-content/uploads/sites/41/2020/01/Express-Herbicide-withTotalSol-24c-2020-label.pdf

UMaine Herbicide Chart: https://extension.umaine.edu/blueberries/factsheets/weeds/weed-control-for-wild-blueberries-2/

NPIRS: http://npirspublic.ceris.purdue.edu/state/

CMDS: http://www.cdms.net/

NEXT STEPS

- Attend BPC meeting for well sampling review.
- Renew 24C before current 24C expires December 31st, 2020.

ACKNOWLEDGEMENTS

This project was funded by the Wild Blueberry Commission of Maine.

REFERENCES

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