Weed Science Program

AAFC Agassiz Research and Development Centre

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Research Areas of Interest

Ecology of perennial weed species

Identify weak links in their life cycles






Research Areas of Interest

Winter cover cropping systems

Herbicide application tools and strategies






BCCMC Research (2021-)

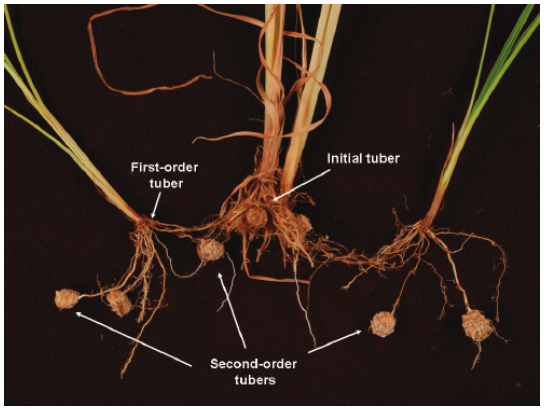
Assessing an herbicide layering strategy in newly renovated and established cranberry fields

- Team members:
  - Jichul Bae (AAFC Weed Scientist)
  - Miranda Elsby (Sr. Agricultural Scientist, Ocean Spray of Canada Ltd.)
  - Nathan Young (Master's student, Environmental Toxicology Program at Simon Fraser University)
  - Ryan Critchley (AAFC Weed Science Technician)

cranberries

Current Challenge: Perennial Weed Management

- The majority of registered herbicides useful for annual weed management
- Seldom controlled by a single herbicide application
  - Extensive and deep underground root/shoot systems.
  - Nutrient reserves in storage organs to regrow



Successful Perennial Weed Management

- **Forcing weeds to deplete their nutrient reserves**
  - Killing storage organs
  - Forcing growth of leaves/stems without opportunity to photosynthesize and replenish nutrient reserves

(Chicouene 2007; Melander et al. 2012)

- **Herbicide layering strategy** composed of both single and multiple applications of pre-emergence (PRE), post-emergence (POST) and/or post-harvest (POST-H)

Herbicide Layering Strategy

- **POST-H (fall or early winter)**
  - Prevent new spring growth
  - Damaging/killing overwintering storage organs
  - Residual effects that carry into spring
- **PRE at lower label rate (Spring)**
  - Control spring emergence while minimizing cranberry root injury
- **POST (Spring and Summer)**
  - Damage/kill perennial weed plants
  - Prevent photosynthesizing and replenishing nutrient reserves

Herbicide Layering Strategy

Treat Type	Application time (cranberry phenology)						
	Pre-bud break	Bud break	Bud elongation	Hook	Bloom	Fruit set	Post-harvest
PRE+POST	Napropamide	Clopyralid	-	Mesotrione + Sethoxydim	-	-	-
PRE+POST	Napropamide	-	Clopyralid	-	Mesotrione + Sethoxydim	-	-
PRE+POST	Napropamide	-	-	Clopyralid	-	Mesotrione + Sethoxydim	-
PRE+POST	Sulfentrazone	Clopyralid	-	Mesotrione + Sethoxydim	-	-	-
PRE+POST	Sulfentrazone	-	Clopyralid	-	Mesotrione + Sethoxydim	-	-
PRE+POST	Sulfentrazone	-	-	Clopyralid	-	Mesotrione + Sethoxydim	-
POST+POST-H	-	Clopyralid	-	Mesotrione + Sethoxydim	-	-	Dichlobenil
POST+POST-H	-	-	Clopyralid	-	Mesotrione + Sethoxydim	-	Dichlobenil
POST+POST-H	-	-	-	Clopyralid	-	Mesotrione + Sethoxydim	Dichlobenil
PRE+POST+POST-H	Napropamide	Clopyralid	-	Mesotrione + Sethoxydim	-	-	Dichlobenil
PRE+POST+POST-H	Napropamide	-	Clopyralid	-	Mesotrione + Sethoxydim	-	Dichlobenil
PRE+POST+POST-H	Napropamide	-	-	Clopyralid	-	Mesotrione + Sethoxydim	Dichlobenil
PRE+POST+POST-H	Sulfentrazone	Clopyralid	-	Mesotrione + Sethoxydim	-	-	Dichlobenil
PRE + POST + POST-H	Sulfentrazone	-	Clopyralid	-	Mesotrione + Sethoxydim	-	Dichlobenil
PRE + POST + POST-H	Sulfentrazone	-	-	Clopyralid	-	Mesotrione + Sethoxydim	Dichlobenil

Research Objectives

- To identify and evaluate **an effective and safe herbicide layering strategy** to manage persistent perennial weeds in both newly renovated (establishing) and established cranberry beds

- To establish **the safety of the herbicide layering strategy** for use in cranberry production in both crop tolerance and subsequent fruit resides.

Herbicide Resistance Testing

- Weed Science Program at AAFC Agassiz RDC

- If you suspect you have herbicide resistant weeds, please contact us

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Thank you


WORLDWIDE,
30,000
WEEDS
COMPETE
WITH CROPS
FOR SPACE, NUTRIENTS,
WATER AND LIGHT
Source: CropLife International