

Selective Control of Submersed Invasive Plants with a New Arylpicolinate Herbicide

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Problem

- Limited number of registered aquatic herbicides
 - Aquatic sites 14 active ingredients
 - Terrestrial sites ~ 200 active ingredients

- Obstacles to submersed plant control using current chemistries
 - Active ingredient specificity – MOA based
 - Systemic vs contact action
 - Species resistance/tolerance issues – hydrilla, hybrid milfoils
 - Water exchange processes – impacts on efficacy

- **Critical need for new chemistries to overcome these management obstacles**



Work Unit Objectives

- Determine aqueous concentration and exposure time (CET) requirements for a new arylpicolinate herbicide --- PROCELLACOR®
- Utilize data to support species-selective control of important submersed invasive plants.



PROCELLACOR®

- Arylpicolinate class – auxin mimic – dicot/monocot active
- Developed without an EUP - critical to generate data at growth chamber/mesocosm scale for field recommendations
- Rice label (Dow Agrosiences); Aquatics label (SePRO)
- No other use sites
- **Aquatic label anticipated by 2018 via SePRO Corp**



- **Product-specific CET requirements drive efficacy**
- Contacts (control shoots) – fast acting, short CETs (min to hrs)
- Systemics (control entire plant) – slower acting, longer CETs (intermediate – hrs to days; long – days to weeks)

Need fast-acting systemic product



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Unique Aquatic Herbicide

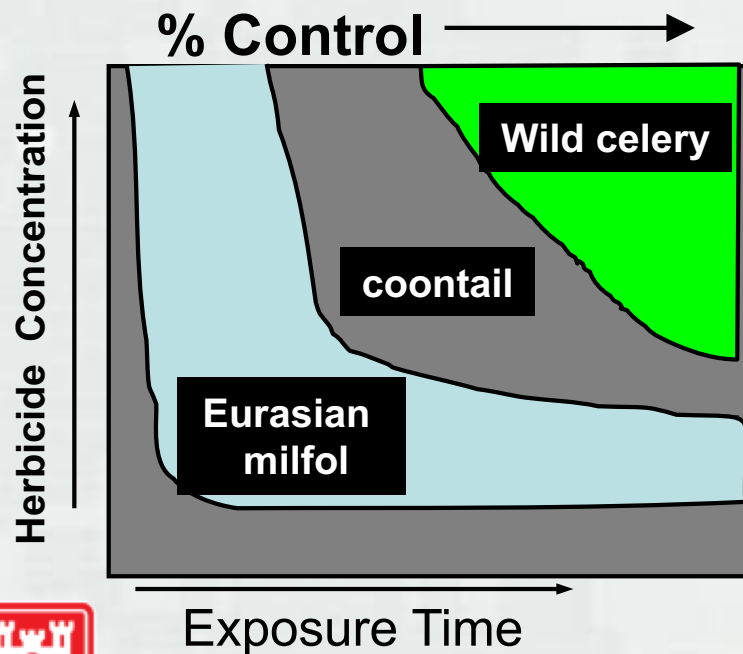
PROCELLACOR®

- ✓ **Fast-acting – short aqueous herbicide exposure time (CET)**
- ✓ **Systemic – translocates to control shoots and roots**
- ✓ Very low concentrations – ppb range
- ✓ Short persistence in water and sediment
- ✓ Species selective – active on target plants, limited impacts on non-target plants
- ✓ Reduced-risk classification by USEPA – excellent tox profiles on non-target organisms



Description of Work

- Evaluate PROCELLACOR® against target and non-target submersed plants
 - ▶ Focus on early growth stage – short exposures
 - ▶ **Need detailed CET information for field recommendations**



FY 17 Accomplishments (Jun-Sep)

- ✓ Worked w/registrant and USEPA-OPP on Section 3 label
 - ✓ Worked w/registrant + Univ Washington on salmon tox tests
 - ✓ Coordinated w/local agencies to identify field-verification sites
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- **Replicated CET study in ERDC growth chamber**
Idaho hybrid watermilfoil: auxin, fluridone, endothall tolerant



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FY 17 CET Results – Procellacor® vs HWM

- Rates: 0, 3, 6, 9, 12 ppb
- Exposures: 3, 6, 12, 24 hr
- Biomass endpoint: 4 WAT

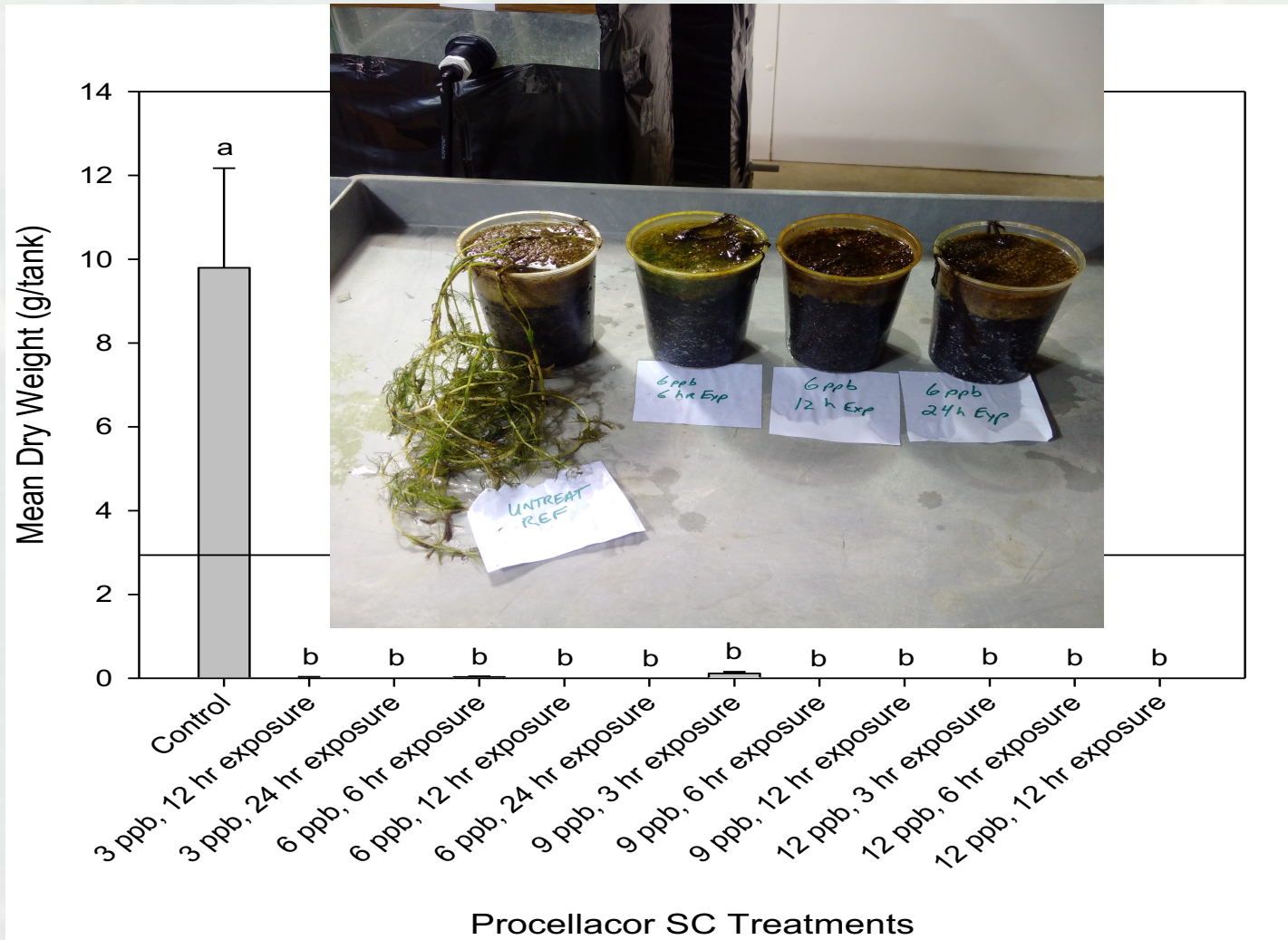


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FY 17 CET Results – Procellacor® vs HWM



Products, Work Plans, Budget

PRODUCTS:


2018 – Journal Article (Sep 18) Procellacor vs HWM and EWM

2019 – Journal Articles (Sep 19 Procellacor vs hydrilla; vs native plants

WORK PLANS (FY18):

Four (4) CET Chamber/Mesocosm Studies

- a) Refine FY17 CET study w/HWM: very short exposures (0.5–3 hr)
- b) Conduct CET study w/EWM: 3-12 hr exposures
- c) Conduct CET study w/native plants: 3-12 hr exposures
- d) Conduct CET study w/fluridone tolerant hydrilla: moderate-long exposures

BUDGET: FY18 \$ 160K  \$ 200K



Importance and Benefits of Work

- Effective on fluridone-resistant hydrilla; auxin-tolerant hybrid milfoils
- Selective control to protect/enhance native plant communities
- Overcome short herbicide contact time issues
 - ▶ Controlling pioneer plant infestations
 - ▶ Partial lake treatments
 - ▶ Reservoir/riverine settings
- Reduced-risk tox classification – low environmental impacts
- New environmentally compatible aquatic plant management tool
- **Procellacor® should have excellent fit in CE and public waters**



Critical Partnerships

- Collaborate with academia and registrant on development of aquatic use patterns
- Coordinate future field studies with CE districts
- Work with Districts and others on listed species concerns -- NOAA Fisheries in Seattle
- Interact with USEPA and state regulators per label development



Acknowledgements

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