

P51 Tech Transfer: Testing Methyl Anthranilate (MA) Application in Substations to Address Roosting Bird Concerns – Laboratory Test Results



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In this project P51 is testing Methyl Anthranilate (MA) application to address roosting bird concerns in substations

The Problem:

Roosting birds at substations can cause outages and create hazardous conditions. Mitigation of impacts and solutions for their removal can be costly or effective only in the short-term

Approach:

- Review available information on methyl anthranilate (MA) application
- Quantify performance on insulators following MA application in a controlled environment at EPRI's Charlotte laboratory
- Conduct field trials at host substations to compare bird abundance, behavior, and nesting before and after MA application.



Picture: NES Power

MA is a natural ester widely used in food flavoring, fragrances, and consumer products

Avian Repellent Function:

MA acts as an effective, humane bird repellent by altering bird behavior without lethal methods or constant human intervention

Regulatory Approval and Safety:

Registered as a biopesticide by EPA and GRAS (Generally Recognized As Safe) by FDA. MA is safe for humans and the environment when used properly

Utility Sector Application:

MA may help manage bird-related challenges in electric substations, supporting equipment reliability and worker safety



Characteristics of MA as a non-lethal bird deterrent



Sensory Mechanism:

MA stimulates birds' trigeminal receptors causing temporary irritation without harm or toxicity



Behavioral Conditioning:

Birds learn to avoid MA-treated areas due to discomfort, leading to sustained deterrence



Non-Lethal and Humane:

MA is a non-lethal deterrent supporting ethical wildlife management

Why may utilities want to use MA in substations?

- ✓ Reduce Operational and Safety Risks
- ✓ Flexible Application Methods
- ✓ Generally Recognized As Safe (GRAS) by FDA
- ✓ Improved Reliability and Cost Savings

Testing conducted at the Charlotte's laboratory characterized the chemical and the interactions with substation equipment

The following tests were performed:

- Reference: Dry and clean glass without MA – “Dry test (no MA)”
- Freshly applied MA – “Wet test (MA)”
- After MA drying – “Dry test (MA)”
- Freshly applied mixture of MA and Salt (NaCl) – “Wet test (MA + salt)”

During each test, the voltage was raised in fixed steps of 1 kV, until flashover was observed

Voltage and current were measured

DC resistance value across the gap was calculated



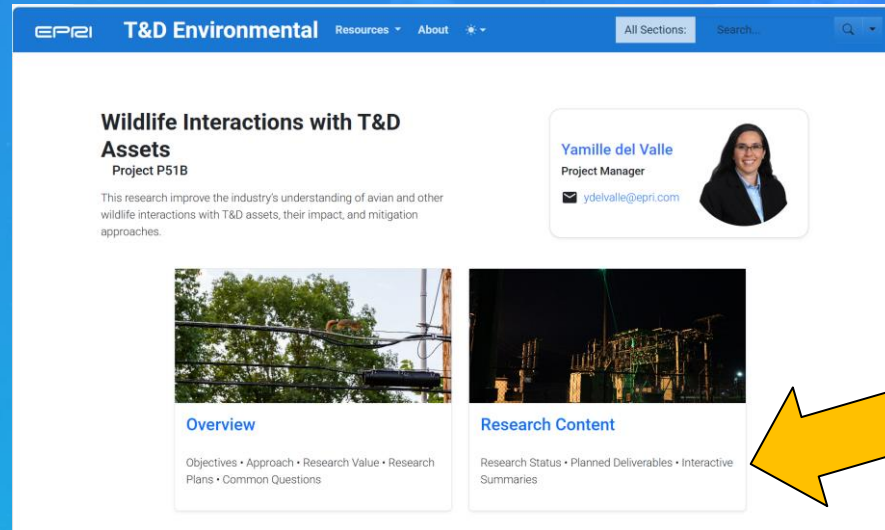
Test setup for the electrical tests on MA

Initially, the tests were performed with an AC high-voltage supply, but results were greatly influenced by stray capacitance values which resulted in non-repeatable and erratic values. This problem was mitigated by using an HVDC supply instead.

Questions?

Please contact Yamille del Valle
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Tech Transfer Video



Full Report

