

**AGRICULTURAL RESEARCH FOUNDATION  
INTERIM REPORT  
FUNDING CYCLE 2020 – 2022**

**TITLE:** Developing a Natural Liquid Mulches as Polyethylene Alternative

**RESEARCH LEADER:** Marcelo Moretti

**COOPERATORS:**

**EXECUTIVE SUMMARY:** This project was not initiated due to the restrictions resulted from the Covid pandemic. I request a no-cost extension.

**OBJECTIVES:**

- 1) To develop and evaluate new formulations of liquid mulches using locally available sources in combination with plant herbicides containing precursors to isothiocyanate.

**PROCEDURES:**

The liquid mulch: the liquid mulch will be prepared based on the recipe described on the US patent 6,029,395 (Morgan 2000), which is near expiration. The final slurry will have approximately 8% solids including natural sources of fibers (wheat chaff, hazelnut shells), natural surfactants for structure, natural pesticide products (mustard or meadow foam seed meal), and other adjuvants for hydrophobicity and stability. The liquid will be initially poured manually, but in large scale trial we will use a hydro-seeder.

The first step will be to test the liquid mulch in greenhouse to optimize the formulation followed by a field study.

Greenhouse study. The experiment will be established as a two by three factorial design with four replications. Main effects will be mulch rates, and the second effect seed meals rates. A nontreated control will be included for comparison. Trays will be treated with mulches and then seeded with different weed species including annual sowthistle, barnyardgrass, common lambsquarters, kochia, and yellow nutsedge. The soil used will be collected from Lewis Brown farm certified organic plots to ensure herbicide residues will not confound the results.

Assessments: weed seedlings will be identified and counted weekly for 6 weeks. At the end of the experiment, plants will be harvested by excising plants near the soil surface and the aboveground biomass will be dried and weighed. Data will be subjected to General Analysis of Variance and means separated by a Tukey test.

Once the liquid mulch formulation is developed, a field test will be conducted in a blueberry field located at the OSU Lewis Brown Farm using similar methodology.

The work developed in these project will support a patent submission.

**SIGNIFICANT ACCOMPLISHMENTS TO DATE:**

None at this time.

**ADDITIONAL FUNDING RECEIVED DURING PROJECT TERM:** none at this time.

**FUTURE FUNDING POSSIBILITIES:** none at this time.