Washington Red Raspberry Commission
Progress Report for 2018 Projects

Project No: 3455-6642 (0640)

Title: Application of Biodegradable Mulches in Tissue Culture Red Raspberry: Impacts on Weed Control, Parasitic Nematodes, and Crop Growth

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Reporting Period: This report presents data from 2018.

Accomplishments: The overall goal of this project is to develop knowledge and practical strategies to manage weeds while improving establishment and yield in commercial red raspberry planted as tissue culture (TC) transplants. Our main accomplishments for 2018 include: 1) Collecting all data as planned (additional data on plant moisture status, photosynthetic rates, soil removed during mulch removal, and plant and soil macro- and micro-nutrient content were also collected); and 2) Extension of project information through 2, 4, 1, 4 and 4 presentations held at international, national, regional, state, and local levels, respectively. Publication of project information also occurred through one international proceeding article and a scientific article is in review. This project is the first study to investigate PE mulch and BDMs application in floricane raspberry production and is one of the few studies that evaluate plastic mulches in a perennial fruit production system. Information from this study demonstrates that both polyethylene (PE) mulch and biodegradable plastic mulches (BDMs) managed weed and improved TC transplant establishment and fruit yield.

Results: 1) Spring-planted trial: PE mulch was removed by the grower in mid-March while BDMs still remain in the field. Primocane emergence on 5 July 2018 was greatest in the bare ground (BG) control and lowest in Bio360 0.5 and PE, while all remaining treatments were similar. There were no differences in primocane height and number in September 2018 across all treatments and the average primocane height and number for all treatments was 126 inches and 6 primocanes/plant, respectively. Yield was determined from 13 harvests during harvesting season. Average total fruit yield was 34% greater across all mulched treatments relative to the BG control. There were no differences in average berry size among treatments. In September 2018, soil treated with PE mulch had greater root lesion nematode (RLN) population densities than soil treated with Novamont 0.5. Root population densities of RLN were higher for plants treated with PE mulch relative to BASF 0.6 and BG control. 2) Summer-planted trial: BDMs were removed in mid-March as they were torn by winds during the winter while PE mulch still remains in the field. PE mulch managed weeds compared to the BDMs and BG control and had higher primocane growth than the BG control in September 2018. There were no differences in RLN populations among treatments and RLN population densities remained low across all treatments from the samples collected in May and October 2018.
Publications/Outputs:

Scientific articles:

Proceeding:

Presentation:
A. International

B. National

C. Regional

D. State

E. Local