

# ORGANIC CODLING MOTH MANAGEMENT PROJECT HOTCHKISS COLORADO: DELTA COUNTY

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## PROJECT INTRODUCTION

- Codling Moth is a serious pest for commercial apple growers. The larva of this moth enters a developing apple to consume the seeds inside, resulting in a damaged and unmarketable fruit.
- Codling moth control in organic systems is achieved primarily spray application of a biocontrol virus, granulosis virus, or by using oils which disrupt the eggs ability to develop.
- Both methods require precise timing of application as these treatments are only effective against the eggs or 1<sup>st</sup> instar larva before they enter the apple
- Calculating degree days, farmers can predict when the moth adults are laying eggs, informing them as to when to apply their pest control treatments.



## INTERNSHIP GOALS

- Monitor codling moth populations on multiple farms on Rogers Mesa to help understand why the typically codling moth control mechanisms have been less effective in recent years
- Assess the willingness of the local farmers to participate in inter-farm pest monitoring and management

## HOW DOES THIS APPLY TO YOUR EDUCATION

- Experiencing commercial scale organic farming practices
  - Gains perspective on the similarities and difference between organic and conventional production while understanding the magnitude of resources required to produce food commercially
- Engaging communities through providing services
  - Bringing services to communities helps establish trust in the person, the organization and project itself.
- Exploring community engagement methods within the current pandemic climate
  - Adapting traditional methods of engagement to fit this situation

## WHAT YOU DID

- Weekly monitoring of codling moth pheromone traps
  - Travel farm to farm to count the number of moths trapped that week
  - Compared trap count observations to degree day life cycle estimations to assess correlation with degree day model
- Weekly Apple Damage Assessment
  - Completed systematic sampling of apple fruits to determine the percentage of damaged apples and the type of damage that occurred
- Communicate with growers about their pest management protocols
  - At the beginning of the season, I talked with each grower outside about what their approach to controlling codling moth is
  - Throughout the season I updated this information to compare control methods to the number of moths trapped
- Interview growers about past pest management and apple cultivating experiences
  - Interviews allowed me a better understanding of the history of apple cultivation and codling moth control on Rogers Mesa
  - This information informed possible solutions for engaging the community in a region wide effort to control the codling moth pest
- General Farm Work
  - Harvesting apples
    - Periodically through the season, damaged/ larva infested apples need removed from trees
  - Build irrigation systems
    - Constructed irrigation for squash and a pollinator garden
  - Greenhouse plant maintenance
    - Daily watering of native starter plants to add to the pollinator garden
  - Grape vine training
    - Learned the methodology of training grape vines to maximize fruit production in commercial production

Figure 1. (image)



## WHAT YOU LEARNED

- Agriculture in this part of the world is an extreme challenge because of the water availability and temperature swings
- Farmers are interested in region wide moth control but there is not the funding or available time for them to establish communication on their own.
  - One grower told me that in 1996-1998 there was a USDA grant that allowed funds for a person to do moth monitoring and share information between farms, since the funding ended another project has not been established
  - A different grower shared with me his 3-year journey to get his neighbors to manage the pests on their apples trees since it was affecting his ability to produce marketable fruit. Each farm handles pests differently, this can affect the success of others
- Mail-in surveys were not successful in this community, door to door contact may be more effective
- The issues in for growers in Delta county are not that different from those of the farmers in Costa Rica
  - In both situations, growers' issues have solutions that can be found through increasing shelf life of their produce and having fair access to large markets.

Table 1.



## NEXT STEPS

- Continue extension funded monitoring plan with farmers
- Work to establish communication between farmers so they can work together in their pest management goals
- Provide resources and information for growers; a focus on new growers may cultivate greater trust and opportunities for CSU extension services
- Continue to promote inter-farm communication channels such as shared files including trap counts and pest management protocols